New Brunswick Undergraduate Catalog 2001~2003

Douglass College
Livingston College
Rutgers College
University College~New Brunswick
Cook College
Mason Gross School of the Arts
College of Pharmacy
School of Business~New Brunswick
School of Communication, Information and Library Studies
School of Engineering
Edward J. Bloustein School of Planning and Public Policy

Academic Calendars

Dates are subject to change.

2000–2001

September		
4	Monday	No classes—Labor Day.
5	Tuesday	Fall term begins.
November		
21	Tuesday	Thursday classes meet.
22	Wednesday	Friday classes meet.
23	Thursday	Thanksgiving recess begins.
26	Sunday	Thanksgiving recess ends.
December		
13	Wednesday	Last day of classes.
14	Thursday	Reading period.
15	Friday	Final examinations begin.
22	Friday	Final examinations end.
23	Saturday	Winter recess begins.
January		
15	Monday	Winter recess ends.
16	Tuesday	Spring classes begin.
March		
11	Sunday	Spring recess begins.
18	Sunday	Spring recess ends.
April		
30	Monday	Last day of classes.
May		
1	Tuesday	Reading period begins.
2	Wednesday	Reading period ends.
3	Thursday	Final examinations begin.
9	Wednesday	Final examinations end.
17	Thursday	Commencement.
28	Monday	Memorial Day.

2001–2002

September		
3	Monday	No classes—Labor Day.
4	Tuesday	Fall term begins.
November		
20	Tuesday	Thursday classes meet.
21	Wednesday	Friday classes meet.
22	Thursday	Thanksgiving recess begins.
25	Sunday	Thanksgiving recess ends.
December		
12	Wednesday	Last day of classes.
13	Thursday	Reading period.
14	Friday	Final examinations begin.
21	Friday	Final examinations end.
22	Saturday	Winter recess begins.
January		
21	Monday	Winter recess ends.
22	Tuesday	Spring classes begin.
March		
17	Sunday	Spring recess begins.
24	Sunday	Spring recess ends.
May		
6	Monday	Last day of classes
7	Tuesday	Reading period begins.
8	Wednesday	Reading period ends.
9	Thursday	Final examinations begin.
15	Wednesday	Finals examinations end.
23	Thursday	Commencement.
27	Monday	Memorial Day.

Contents

About the University

Rutgers, The State University of New Jersey, with more than 48,000 students on campuses in Camden, Newark, and New Brunswick, is one of the major state university systems in the nation. The university comprises twenty-nine degree-granting divisions: twelve undergraduate colleges, eleven graduate schools, and six schools offering both undergraduate and graduate degrees. Five are located in Camden, eight in Newark, and sixteen in New Brunswick.

Rutgers has a unique history as a colonial college, a land-grant institution, and a state university. Chartered in 1766 as Queen's College, the eighth institution of higher learning to be founded in the colonies, the school opened its doors in New Brunswick in 1771 with one instructor, one sophomore, and a handful of first-year students. During this early period the college developed as a classical liberal arts institution. In 1825, the name of the college was changed to Rutgers to honor a former trustee and Revolutionary War veteran, Colonel Henry Rutgers.

Rutgers College became the land-grant college of New Jersey in 1864, resulting in the establishment of the Rutgers Scientific School with departments of agriculture, engineering, and chemistry. Further expansion in the sciences came with the founding of the New Jersey Agricultural Experiment Station in 1880, the College of Engineering (now the School of Engineering) in 1914, and the College of Agriculture (now Cook College) in 1921. The precursors to several other Rutgers divisions also were founded during this period: the College of Pharmacy in 1892, the New Jersey College for Women (now Douglass College) in 1918, and the School of Education (now a graduate school) in 1924.

Rutgers College assumed university status in 1924, and legislative acts in 1945 and 1956 designated all its divisions as The State University of New Jersey. During these years the university expanded significantly with the founding of an evening division, University College, in 1934, and the addition of the University of Newark in 1946 and the College of South Jersey at Camden in 1950.

Since the 1950s, Rutgers has continued to expand, especially in the area of graduate education. The Graduate School–New Brunswick, Graduate School–Newark, and Graduate School–Camden serve their respective campuses. In addition, several professional schools have been established in such fields as management, social work, criminal justice, planning and public policy, applied and professional psychology, the fine arts, and communication, information, and library studies. A number of these schools offer undergraduate programs as well. Livingston College was founded in 1969 to provide a diverse community of students with the opportunity to pursue undergraduate degrees in the liberal arts and professions.

Today, Rutgers continues to grow, both in its facilities and in the variety and depth of its educational and research programs. The university's goals for the future include the continued provision of the highest-quality undergraduate and graduate education along with increased support for outstanding research to meet the needs of society and fulfill Rutgers' role as The State University of New Jersey.

Institutional and Specialized Accreditation

Rutgers, The State University of New Jersey, is accredited by the Commission on Higher Education of the Middle States Association of Colleges and Schools, 3624 Market Street, Philadelphia, PA 19104-2680; 215 / 662-5606. The Commission on Higher Education of the Middle States Association of Colleges and Schools is an institutional accrediting agency recognized by the U.S. secretary of education and the Council for Higher Education Accreditation. That accreditation was renewed and endorsed in 1998, at the time of its last review. Documents describing the institution's accreditation may be downloaded from the university's web site at http://www.rci.rutgers.edu/~oirap/OIRAP/msa/overview.html or may be reviewed during regular office hours by contacting the Office of Institutional Research and Academic Planning, Rutgers, The State University of New Jersey, 85 Somerset Street, New Brunswick, NJ 08901-1281; 732 / 932-7956.

Certain undergraduate programs on the Camden, Newark, and New Brunswick campuses of Rutgers are subject to specialized accreditation. For further information about specialized accreditation, including the names of associations that accredit university programs, please contact the Office of Institutional Research and Academic Planning.

Licensure

Rutgers, The State University of New Jersey, is duly licensed by the New Jersey Commission on Higher Education. For more information, please contact its Office of Programs and Services at 609 / 292-2955.

Undergraduate Education in New Brunswick

Undergraduate students in New Brunswick enroll in one of eleven degree-granting undergraduate colleges. Four are liberal arts colleges: Douglass College, Livingston College, Rutgers College, and University College–New Brunswick; and seven are professional schools: Cook College, Mason Gross School of the Arts, College of Pharmacy, School of Business–New Brunswick, School of Communication, Information and Library Studies, School of Engineering, and the Edward J. Bloustein School of Planning and Public Policy.

While all of the colleges are dedicated to providing the highest quality education, each college establishes its own admission, scholastic standing, and graduation requirements, and each offers specific academic programs that reflect the college's particular mission and philosophy. Students are urged to consult each college section both for a general description of the college and for a list of the academic programs that each offers.

In addition to the eleven undergraduate colleges in New Brunswick, there is a large faculty unit, the Faculty of Arts and Sciences, that offers most of the academic programs available to students at the four liberal arts colleges. The Faculty of Arts and Sciences encompasses more than one thousand faculty members and offers more than forty major programs, as well as numerous minor programs and other specializations.

The seven undergraduate degree-granting professional schools each have their own separate faculty, as do the several graduate professional schools in New Brunswick. Taken together, the Rutgers faculty in New Brunswick comprises a distinguished teaching and research staff of nearly two thousand faculty members.

Rutgers' Campus at New Brunswick is actually made up of five campuses located on both sides of the Raritan River in New Brunswick and Piscataway. The campuses are connected by a free, campuswide bus system. Four of the undergraduate colleges are residential colleges, offering a variety of living accommodations on the campuses. With the exception of students enrolled at University College–New Brunswick, who are commuters, students at the other schools affiliate with one of the residential colleges for housing and/or student services.

The university's extensive facilities and extracurricular activities are described in the Student Life and Services chapter.

MAJOR PROGRAMS OF STUDY

A wide variety of academic programs are offered at the eleven undergraduate colleges in New Brunswick. The following list summarizes the major programs available at one or more of the colleges. Students should consult the individual college sections for a list of majors offered at each school.

In addition, academic departments offer numerous options and specialized programs of study within these general fields, as well as opportunities for interdisciplinary work. Several dual-degree programs also are available, and in some subjects both liberal arts and professional programs are offered. Thus, the list of majors merely serves to suggest the breadth of academic programs for undergraduate students.

- Accounting
- Administration of Justice
- Africana Studies
- Agricultural Science
- American Studies
- Animal Science
- Anthropology
- Applied Sciences in Engineering
- Art History
- Biochemistry
- Biological Sciences
- Biomathematics
- Biomedical Engineering
- Bioresource Engineering
- Biotechnology
- Cell Biology and Neuroscience
- Ceramic Engineering
- Chemical Engineering
- Chemistry
- Chinese
- Civil Engineering
- Classics
- Communication
- Comparative Literature
- Computer Science
- Dance
- East Asian Languages and Area Studies
- Economics
- Electrical and Computer Engineering
- English
- Environmental and Business Economics
- Environmental Planning and Design
- Environmental Policy, Institutions, and Behavior
- Environmental Sciences
- Evolutionary Anthropology
- Exercise Science and Sport Studies
- Finance
- Food Science
- French
- Genetics and Microbiology
- Geography
- Geological Sciences
- German
- History
- History/French
- History/Political Science
- Independent/Individualized Major
- Industrial Engineering
- Italian
- Jewish Studies
- Journalism and Media Studies
- Labor Studies
- Latin American Studies
- Linguistics
- Management
- Management Science and Information Systems
- Marine Sciences
- Marketing
- Mathematics
- Mechanical Engineering
- Medical Technology
- Medieval Studies
- Meteorology
- Middle Eastern Studies
- Molecular Biology and Biochemistry
- Music
- Natural Resource Management
- Nursing
- Nutritional Sciences
- Pharmacy
- Philosophy
- Physics
- Plant Science
- Political Science
- Portuguese
- Psychology
- Public Health
- Puerto Rican and Hispanic Caribbean Studies
- Religion

Russian
Russian, Central and East European Studies
Social Work
Sociology
Spanish
Statistics
Statistics / Mathematics
Theater Arts
Urban Studies
Visual Arts
Women's Studies

MINOR PROGRAMS OF STUDY

The minors listed below are offered by various disciplines and are available to students attending Douglass College, Livingston College, Rutgers College, and University College–New Brunswick. Students at the other colleges should consult their advisers concerning the availability of minors.

Africana Studies
Agroecology *
American Studies
Animal Science *
Anthropology
Art History
Astronomy
Biological Sciences
Chemistry
Chinese
Classical Humanities
Communication
Comparative Literature
Computer Science
Economics
English
Entomology *
Environmental and Business Economics *
Environmental Policy, Institutions, and Behavior
Equine Science *
Food Science *
French
Geography
Geological Sciences
German
Greek (Ancient)
Greek (Modern)
Hebraic Studies
History
Human Ecology *
Hungarian
Italian
Japanese
Jewish Studies
Korean
Labor Studies
Latin
Linguistics
Marine Sciences *
Mathematics
Medieval Studies
Meteorology *
Music
Natural Resource Management *
Nutrition *
Philosophy
Physics
Plant Science *
Political Science
Portuguese
Psychology
Puerto Rican and Hispanic Caribbean Studies
Religion
Russian Language and Literature
Science and Agriculture Teacher Education *
Sociology
Spanish
Statistics
Theater Arts
Urban Studies
Women's Studies

Interdisciplinary minors are available in:

African Area Studies
Aging
Asian Studies
Cinema Studies
Cognitive Science
Latin American Studies
Medieval Studies
Middle Eastern Studies
Operations Research
Professional Youth Work *
Russian, Central and East European Studies
Science, Technology, and Society

CERTIFICATE PROGRAMS

Certificate programs are available in a number of fields and are open to all undergraduate students in New Brunswick, regardless of college.

The certificate programs are designed to allow students to complement their major program with study in either a broad, but well-defined, area or a specialized field. Since the certificate programs are intended to enhance a major program, a certificate may be awarded only in conjunction with the awarding of a baccalaureate degree in a major field.

Behavioral Pharmacology
Cartography
Criminology
Eagleton Undergraduate Associates (American Politics and Public Policy)
Environmental Geomatics
Environmental Planning
Foreign Language Proficiency (French, German, Hungarian, Italian, and Russian)
Global Politics
Housing and Real Estate Development
International Agriculture / Environment
International Geographic Perspectives
International Studies
Internet Certificate Program
Professional Writing
Romance Linguistics
Social Strategies for Environmental Protection
Spanish-English, English-Spanish Translation Proficiency
Spanish Major / Global Studies
Teacher Education †
Technical Writing
Urban Planning

HONORS PROGRAMS

As part of its ongoing commitment to academic excellence, Rutgers University offers numerous honors programs that provide outstanding students with challenges beyond those found in regular course work.

Many of the undergraduate colleges offer specially designed honors programs which involve introductory seminars for well-prepared first-year students. Selection into a college honors program is based on SAT or ACT scores and high school record, and is at the invitation of each college. Students conclude their college honors programs by taking the honors courses offered by their majors.

In addition, exceptional upper-class students who are not in college honors programs may be selected to participate in honors seminars offered by the department of their major. Information on college honors programs may be found in the college sections of this catalog; departmental honors programs are described under each major.

Students who participate in honors programs receive a high degree of individual attention from faculty. Seminars, tutorials, lectures, discussions, and independent research afford an opportunity for sophisticated scholarship and growth in self-understanding and also may assist Rutgers students in pursuing their special interests and professional ambitions after graduation.

* Available through Cook College.
† The Graduate School of Education and, in certain fields, Cook College administer teacher certification programs in numerous areas. See Education in the Programs of Study for Liberal Arts Students section.

PRIZES AND AWARDS

Many academic departments offer prizes and awards for outstanding achievement. In some cases, eligibility is based on achievement in specific courses. Information about these awards should be obtained from the departments so that students are aware in advance of the criteria for selection.

ORGANIZATION OF THE CATALOG

This catalog includes all undergraduate education at Rutgers' Campus at New Brunswick.

The catalog begins with the Programs of Study for Liberal Arts Students section, a large A to Z listing of undergraduate programs and courses offered by several faculties, principally to students at the four liberal arts colleges. Since not all major programs are available at all schools, it is important for the student to consult the individual liberal arts college sections that follow to determine which majors are offered at each school. Each liberal arts college section also includes important information about the college's specific aims, policies, academic programs, and degree requirements.

The seven professional school sections include similar college information and also include detailed programs of study and course listing chapters covering the academic programs offered by each of their faculties. Professional students also should refer to the large introductory A to Z listing both for courses required in their curriculum that are taught by other faculties and for elective courses in the arts and sciences.

In general, individual undergraduate courses offered at Rutgers in New Brunswick are open to students at all the undergraduate colleges, subject to prerequisite restrictions and space limitations.

The General Information chapters at the back of the catalog are relevant for students at all the undergraduate colleges in New Brunswick. It is important for students to familiarize themselves with these chapters as well as with their own particular college's section.

Some courses are cross-listed in more than one department. Students should note that a cross-listed course is the same course listed under two or more subject indexes.

PROGRAMS OF STUDY FOR LIBERAL ARTS STUDENTS

Faculties Offering the Programs

Note: The faculties and programs of the seven degree-granting professional schools (Cook College, Mason Gross School of the Arts, College of Pharmacy, School of Business–New Brunswick, School of Communication, Information and Library Studies, School of Engineering, and Edward J. Bloustein School of Planning and Public Policy) appear in those colleges' separate sections later in this catalog.

The following faculties offer most of the programs of study for liberal arts students outlined in this section.

FACULTY OF ARTS AND SCIENCES

The Faculty of Arts and Sciences offers undergraduate and graduate programs in a wide variety of arts and sciences disciplines and in numerous interdisciplinary fields. It is the largest academic unit in the university, comprising more than one thousand faculty members.

Richard S. Falk, Acting Executive Dean
Robert L. Wilson, Executive Vice Dean

Area Deans
Michael Beals, Educational Initiatives
Douglas Blair, Social and Behavioral Sciences
Kenneth J. Breslauer, Life Sciences
Michael Carr, Physical and Mathematical Sciences
Barry V. Qualls, Humanities

Seth A. Gopin, Associate Dean and Director of Global Programs
Barbara A. Lemanski, Associate Dean for Policy and Personnel

Department	Chairperson
Africana Studies	TBA
American Studies	Michael A. Rockland
Anthropology	John Harris
Art History	Tod Marder
Asian Languages and Cultures	Ching-I Tu
Cell Biology and Neuroscience	Richard Triemer
Chemistry	Roger Jones
Classics	John Bodel
Computer Science	Tomasz Imielinski
Economics	TBA
English	Cheryl Wall
Exercise Science and Sport Studies	David Feigley
French	Richard Lockwood
Genetics	Jay Tischfield
Geography	David Robinson
Geological Sciences	Kenneth Miller
Germanic, Russian, and East European Languages and Literatures	Nicholas Rennie (Acting)
History	Deborah White
Italian	Laura S. White
Jewish Studies	Yael Zerubavel
Linguistics	Akinbiyi Akinlabi
Mathematics	Roe Goodman (Acting)
Molecular Biology and Biochemistry	Stephen Anderson
Philosophy	Brian McLaughlin
Physics and Astronomy	Paul Leath
Political Science	Milton Heumann
Psychology	Terence Wilson
Puerto Rican and Hispanic Caribbean Studies	Luis Martinez-Fernandez
Religion	Chun-fang Yu
Sociology	Ellen Idler
Spanish and Portuguese	Mary Lee Bretz
Statistics	Yehuda Vardi
Women's Studies	Harriet Davidson

MASON GROSS SCHOOL OF THE ARTS

The Mason Gross School of the Arts offers both liberal arts and professional undergraduate programs, as well as professional graduate programs, in the arts. The school's programs for liberal arts students appear in this section. See the school's separate section later in this catalog for undergraduate professional program information.

George B. Stauffer, Dean
Dennis Benson, Associate Dean
Scott Cagenello, Assistant Dean/Dean of Students

Department	Chairperson
Dance	Patricia Mayer
Music	William Berz
Theater Arts	William Esper
Visual Arts	Gary Kuehn

SCHOOL OF SOCIAL WORK

The School of Social Work offers undergraduate major programs in social work and administration of justice in addition to its graduate offerings.

Mary E. Davidson, Dean
Bernard Neugeboren, Associate Dean for Academic Affairs and Director of the Ph.D. Program
Ann A. Abbott, Director of the Undergraduate Social Work Program and Associate Dean for the Camden Campus
Gregory A. Stosuy, Assistant Dean for Student Services
Sheryl M. Sharry, Executive Assistant to the Dean

GRADUATE SCHOOL OF EDUCATION

The Graduate School of Education offers teacher certification programs for undergraduates in New Brunswick in addition to its graduate offerings.

Louise Cherry Wilkinson, Dean
Paul Elwood, Associate Dean
Annell Simcoe, Director of Teacher Education Programs and Certification Officer
Linda Swerdlow, Associate Director, Office of Teacher Education
Dale Bartell, Business Manager

SCHOOL OF MANAGEMENT AND LABOR RELATIONS

The School of Management and Labor Relations offers undergraduate major and minor programs in labor education.

Barbara A. Lee, Dean
Adrienne Eaton, Associate Dean
Betty Lou Heffernan, Assistant Dean

Programs, Faculty, and Courses

AVAILABILITY OF MAJORS

The programs of study outlined in this section are, in general, available to undergraduate students enrolled in the four liberal arts colleges in New Brunswick: Douglass College, Livingston College, Rutgers College, and University College–New Brunswick. However, not all programs are offered at all colleges. (In addition, a few of the major programs described here are open to Cook College students.) Therefore, it is important to consult the college sections of this catalog for lists of the majors available to students at each of these schools:

Douglass College: Page 199
Livingston College: Page 211
Rutgers College: Page 225
University College: Page 237
Cook College: Page 251

Individual undergraduate courses offered at Rutgers in New Brunswick are, in general, open to students at all the undergraduate colleges, subject to prerequisite restrictions and space limitations.

COURSE NOTATION INFORMATION

Changes in Course Numbers and/or Titles

It is the student's responsibility to read course descriptions carefully, and, when in doubt, to check with his or her adviser or the appropriate department to avoid registering for a course that the student already may have taken. Credit will not be given twice for the same course, despite a change in number and/or title.

Cross-Listed Courses

Some courses are cross-listed in more than one department. Students should note that a cross-listed course is the same course listed under two or more subject indexes.

Explanation of Three-Part Course Numbers

The number preceding each course title is divided into three parts. The first two digits are the administrative code (standing for a faculty or a school), the next thee digits are the subject code, and the final three digits are the course code.

Administrative Codes

The following administrative codes are used in this catalog and are positioned as the first two digits in all course numbers.

01 Faculty of Arts and Sciences
02 Livingston College
03 Office of the Provost
04 School of Communication, Information and Library Studies (undergraduate)
05 Graduate School of Education
06 Douglass College
07 Mason Gross School of the Arts (undergraduate)
09 School of Social Work (undergraduate)
10 Edward J. Bloustein School of Planning and Public Policy
11 Cook College
12 Rutgers College
14 School of Engineering
16 Graduate School–New Brunswick
21 Newark College of Arts and Sciences
22 Graduate School of Management
30 College of Pharmacy
33 School of Business–New Brunswick
37 School of Management and Labor Relations
50 Camden College of Arts and Sciences
61 University College–New Brunswick

Subject Codes

A subject code comprises the third through fifth digits in all course numbers and indicates the subject matter of the course. Courses with the following subject codes are listed in this section of the catalog. (This list does not constitute a list of majors. See pages v–vi for a list of majors. This list also does not constitute a list of all subjects offered at the university. See the individual professional-school sections of this catalog for further subject and course listings.)

012 Administration of Justice
013 African Languages and Literatures
014 Africana Studies
016 African Area Studies
018 Aging
050 American Studies
070 Anthropology
078 Armenian
080 Art, Visual
081 Art
082 Art History
090 Arts and Science (college courses)
098 Asian Studies
115 Biochemistry
119 Biological Sciences
145 Catalan
146 Cell Biology and Neuroscience
160 Chemistry
165 Chinese
175 Cinema Studies
185 Cognitive Science
190 Classics
195 Comparative Literature
198 Computer Science
203 Dance
206 Dance
214 East Asian Languages and Area Studies
220 Economics
300 Education
350 English
351 English: Topics
353 English: Literary Theory
354 English: Film Studies
355 English: Composition and Writing
377 Exercise Science and Sport Studies
420 French
447 Genetics and Microbiology
450 Geography
460 Geological Sciences

470 German
489 Greek, Modern
490 Greek, Ancient
505 Hindi
506 History: General/Comparative
508 History: African, Asian, and Latin American
510 History: European
512 History: American
513 History: French
535 Hungarian
556 Interdisciplinary Studies, FAS
560 Italian
563 Jewish Studies
565 Japanese
567 Journalism and Media Studies
574 Korean
575 Labor Studies
580 Latin
590 Latin American Studies
615 Linguistics
628 Marine Sciences
640 Mathematics
660 Medical Technology
667 Medieval Studies
685 Middle Eastern Studies
690 Military Education, Air Force
691 Military Education, Army
694 Molecular Biology and Biochemistry
700 Music
701 Music, Applied
711 Operations Research
730 Philosophy
750 Physics
787 Polish
790 Political Science
810 Portuguese
830 Psychology
836 Puerto Rican and Hispanic Caribbean Studies
840 Religion
860 Russian
861 Russian, Central and East European Studies
910 Social Work
920 Sociology
940 Spanish
959 Study Abroad
960 Statistics
965 Theater Arts
966 Theater Arts
967 Ukrainian
988 Women's Studies

Course Codes

The course code comprises the sixth, seventh, and eighth digits in all course numbers. Course codes from 100 to 299 indicate introductory and intermediate undergraduate courses. Codes from 300 to 499 indicated advanced undergraduate courses. Courses coded from 500 to 799 are graduate courses and are described in the graduate catalogs of the university.

Two courses codes separated by a comma indicate that each term course may be taken independently of the other (example: 01:350:219,220. Two course codes separated by a hyphen indicate that satisfactory completion of the first term course is a prerequisite to the second term (example: 01:160:315-316); the first term may be taken for credit without taking the second, except if a statement is added to indicate that both term courses must be completed in order to receive credit.

Credits awarded for the successful completion of each course are indicated in parentheses following the course title. The notation BA indicates that the number of credits is determined by arrangement with the department offering the course.

Unless otherwise indicated, a course normally meets for a number of lecture hours equal to the number of credits to be earned. Special hours or modes of class, other than lecture, are usually indicated in italics below the course title.

ACCOUNTING 010

(See School of Business–New Brunswick section)

ADMINISTRATION OF JUSTICE 012

School of Social Work

Dean: Mary Edna Davidson

Acting Program Director: Bernard Neugeboren

Professors:

Lennox Hinds, B.S., CUNY (City College); J.D., Rutgers (School of Law–Newark)
Bernard Neugeboren, B.A., CUNY (Brooklyn College); M.S.W., Case Western Reserve; Ph.D., Brandeis
Albert R. Roberts, B.A., C.W. Post College; M.A., Long Island; D.S.W., Maryland

Associate Professor:

Michael Welch, B.A., Benedictine College; M.A., Missouri (Kansas City); M.S., Illinois State; Ph.D., North Texas

Major Requirements

A major in administration of justice requires a total of 36 credits distributed as follows:

1. 9 credits in 200-level courses
2. 15 credits in 300-level courses
3. 12 credits in 400-level courses

To be admitted into the program, students must have a cumulative grade-point average (GPA) of 2.75 or better at the time they declare their major. In addition, students must have a GPA of 3.0 or higher in two courses in the major. A grade of C or better is required in all other courses that comprise the major. A minimum of 6 credits must be earned in internships.

Courses

09:012:201. JUSTICE IN AMERICAN SOCIETY (3)
The societal responses to people and organizations that violate criminal codes; police, courts, juries, prosecutors, defense and correctional agencies, and the standards and methods used to respond to crime and criminal offenders; social pressures that enhance or impair the improvement of criminal laws.

09:012:202. POLICE (3)
The function of police in contemporary society; the problems arising between citizens and police from the enforcement and nonenforcement of laws, from social changes, and from individual and group police attitudes and practices.

09:012:203. PRISONS AND PRISONERS (3)
Origins and methods of revenge, coercive custody, confinement, punishment, rehabilitation, restitution, deterrence, and prisoner education programs examined. Includes emphasis on current controversies related to jail and prison overcrowding, treatment of violent juveniles and chemically dependent offenders, and AIDS risk assessment of juvenile and adult offenders.

09:012:204. CRIMINAL LAW OF NEW JERSEY (3)
Study of the substantive criminal laws and judicial opinions with emphasis on the New Jersey Code of Criminal Justice to enlarge insights into an understanding of the potentialities and limitations on the law as an instrument of social control.

09:012:205. CRIMINAL PROCEDURE (3)
Description and discussion of what is commonly characterized as the "criminal justice process and public policy consideration" through which the substantive criminal law is enforced.

09:012:208. CRIME PREVENTION AND VICTIM ASSISTANCE (3)
Analysis of the concepts and methods underlying major criminal justice endeavors to prevent crimes; examination of research literature concerning the effectiveness of crime prevention policies and strategies; review of policies, programs, and treatment for crime victims and witnesses.

09:012:209. WHITE-COLLAR CRIME (3)
Crimes organized by persons whose economic, political, and privileged positions offer ease and relative impunity in the commission of unusual crimes that are often national and international in scope and that have serious, long-term consequences.

09:012:210. INTRODUCTION TO SECURITY (3)
Principles and methods for screening people, monitoring environments, effective use and care of preventive techniques, preventive response and control, response procedures, legal aspects of security, individual and collective behavior, and developing problems in security such as terrorism and organized vandalism.

09:012:301. HUMAN RIGHTS AND LEGAL REMEDIES (3)
Prerequisite: 09:012:201 or permission of instructor.
Case studies of denial of human rights on an international level and the legal responses, national and international, to correct deprivation and suppression of such rights.

09:012:302. POLICE ORGANIZATION AND ADMINISTRATION (3)
Prerequisite: 09:012:201 or permission of instructor.
The effect of organizational structure and administrative procedure on police function; the processes of police recruitment, career advancement, and leadership.

09:012:303. CORRECTIONAL SYSTEMS (3)
Prerequisite: 09:012:201.
The major types of community-based correctional alternatives ranging from probation, shock incarceration, parole, work-release, overnight and weekend incarceration, and halfway houses to community-based centers; discussion of correctional laws, personnel development, correctional management, controversies, political pressures, and emerging trends in organization and goals.

09:012:304. COURT MANAGEMENT AND ADMINISTRATION (3)
Prerequisite: 09:012:201 or permission of instructor.
Court organization, management and administration, planning, budgeting, coordination, and personnel effectiveness; judicial standards for improving the quality of justice; development and training of nonjudicial personnel as court administrators.

09:012:305-306. SCIENTIFIC APPLICATIONS IN JUSTICE (3,3)
Prerequisite: 09:012:201 or permission of instructor.
Contributions of physical science to crime prevention, detection, and prosecution; significant forensic aspects of chemistry, biology, geology, and physics as applied to prevention planning, contraband control, preserving evidence, ballistics, optics, sound, and sampling natural materials.

09:012:310. VICTIMOLOGY AND DOMESTIC VIOLENCE (3)
Definitions and scope of violent crime in society. Includes a review of the issues, prevalence, myths, policies, programs, and services aimed at victims of violent crimes. The expanding role of the courts, police, battered women shelters, victim / witness assistance programs, crisis intervention units, and legislation highlighted.

09:012:311. POLITICAL TERRORISM (3)
Analysis of diverse organizations using terror, starvation, torture, and murder for political objectives.

09:012:312. CRIMES AGAINST HUMANITY (3)
Applies the concept of "crimes against humanity," as developed at the Nuremberg trials, to an analysis of similar events.

09:012:322. JUVENILE JUSTICE (3)
Prerequisite: 09:012:201 or permission of instructor.
Examination of the recent political history of American juvenile justice; the policies, trends, and programs in juvenile justice during the past two decades. Focus on historical developments, the full range of contemporary alternatives for counseling and treatment, legal issues and functions of juvenile justice agencies, an exploration of future directions, and a reform agenda for the next two decades.

09:012:324. JUSTICE PLANNING (3)
Prerequisite: 09:012:201 or permission of instructor.
Survey of changing social methods for developing comprehensive short-term and long-term planning documents for criminal justice system components; planning documents explained and justified in oral and written presentations.

09:012:327. SEX, CRIME, AND JUSTICE (3)
Prerequisite: 09:012:201 or permission of instructor.
Survey of changing social values about sex, changing criminal codes about sex crimes, changing law enforcement policies and procedures in prosecuting sex offenders, and emerging legal doctrines about privacy and sexual rights.

09:012:402. PRINCIPLES OF LEGAL RESEARCH AND WRITING (3)
Instruction in legal research and writing through the utilization of legal materials, case studies, and research assignments. State and federal statutes, judicial opinions and digests, and computer assisted research techniques such as Westlaw and Lexus.

09:012:403-404. INTRODUCTION TO ADMINISTRATION OF JUSTICE RESEARCH (3,3)
Prerequisites: 09:012:201, senior standing, and permission of instructor.
Underlying research concepts, methodologies, and techniques appropriate for application in the main behavioral environments of justice; application of course content to justice agencies, policies, and programs.

09:012:405. IDEAS IN JUSTICE (3)
Prerequisites: 09:012:201, senior standing, and permission of instructor. An independent reading course under the supervision and guidance of the department.
Twentieth-century contributions to the development and application of penology, criminology, and criminal and social justice; study of the main ideas and key events that influenced the ideas and ideals evident in our social institutions.

09:012:406,407,408. INTERNSHIP IN ADMINISTRATION OF JUSTICE (3,3,3)
Prerequisites: 09:012:201, 15 credits in administration of justice, senior standing, and permission of instructor. Students may register simultaneously for more than one internship course.
The internships range from a one hundred and twenty-hour internship in a local administration of justice agency (3 credits) to a 360-hour internship over a sixteen-week period in Washington, DC (9 credits). Involves an intensive learning experience under professional agency supervision, as well as periodic symposiums and study sessions, research, term papers, and oral presentations.

09:012:422. CRISIS INTERVENTION IN CRIMINAL JUSTICE SETTINGS (3)
Focuses on the conceptual framework for crisis intervention practice, including crisis theory, crisis concepts, crisis intervention models and strategies, and guidelines for evaluating program outcomes.

09:012:496. SPECIAL TOPICS (3)
Focuses on critical issues in criminal justice. May encompass topics related to law, law enforcement, the courts, corrections, etc. Specific issues are determined by the instructor.

AFRICAN AREA STUDIES 016

Faculty of Arts and Sciences

Program Director: Abena P.A. Busia, English; D.Phil., Oxford

Program Committee:
Adesoji Adelaja, Agricultural, Food and Resource Economics; Ph.D., West Virginia
Akinbiyi Akinlabi, Linguistics; Ph.D., Ibadan (Nigeria)
Ousseina Alidou, Africana Studies (Hausa); Ph.D., Indiana
Cesar Braga-Pinto, Spanish and Portuguese; Ph.D., California (Berkeley)
Sarah Brett-Smith, Art History; Ph.D., Yale
Carolyn Brown, History; Ph.D., Columbia
Barbara J. Callaway, Political Science; Ph.D., Boston
Barbara Cooper, History; Ph.D., Boston
Emmet Dennis, Biology; Ph.D., Connecticut
Ernest Dunn, Africana Studies; Ph.D., Michigan State
Salah El-Shakhs, Urban Planning; Ph.D., Harvard
Lillian Farhat, Africana Studies (Arabic); A.B.D., Rutgers
John Harris, Anthropology; Ph.D., California (Berkeley)
Angelique Haugerud, Anthropology; Ph.D., Northwestern
Dorothy L. Hodgson, Anthropology; Ph.D., Michigan
Allen Howard, History; Ph.D., Wisconsin
David McDermott Hughes, Human Ecology; Ph.D., California (Berkeley)
Walton Johnson, Africana Studies; Ph.D., London
Donald Krueckeberg, Urban Planning; Ph.D., Pennsylvania
Renée Larrier, French; Ph.D., Columbia
Barbara Lewis, Political Science; Ph.D., Northwestern
Olubayi Olubayi, Africana Studies (Swahili); Ph.D., Rutgers
Edward Ramsamy, Africana Studies; A.B.D., Rutgers
Richard Schroeder, Geography; Ph.D., California (Berkeley)
Richard Serrano, French; Ph.D., California (Berkeley)
George Suliali, Assistant Dean, Rutgers College; A.B.D., South Africa
Meredith Turshen, Urban Studies; Ph.D., Sussex

Minor Program

The curricular program in African area studies is designed to complement major degrees in the applied sciences, fine arts, humanities, social sciences, and professional schools. The field of African area studies emphasizes continental Africa and embraces all of the major regions of the continent. The interdisciplinary minor in African area studies requires a minimum of six courses (18 credits); students must earn a grade of C or better in all courses counted toward the minor. Students are expected to form a core concentration of three courses in one of the following fields: humanities, language and literature, or social sciences. These courses and the three remaining electives are to be drawn from the approved course lists, applied learning opportunities, and study abroad programs described below. At least three courses must be at the 300 level or above, and at least three courses must be outside the student's major. Students are expected to take at least 9 credits from the core concentration course fields at the New Brunswick campus. Students are strongly encouraged to take advantage of the language learning opportunities offered through the program.

Applied Learning Opportunities

The curriculum in African area studies places a premium on courses with applied learning opportunities, including internships, honors courses, and independent study programs arranged through students' major departments.
In keeping with this emphasis, the Center for African Studies currently sponsors a seminar that prepares students to participate in model Organization of African Unity exercises held annually in Washington, DC. The center also periodically cosponsors Africa-related internships organized through the United Nations in New York City. The appropriate number

of credits for these learning experiences and their application toward distribution requirements will be determined in consultation with the program director.

Study Abroad

Students may apply toward the minor up to 9 credits earned in courses offered as part of a recognized Rutgers African study abroad program. Four programs currently exist that would qualify for these credits: Ghana Study Abroad in Kokrobitey, Ghana; the archaeological field school at Kobi Foora, Kenya; the CASE program in Pietermaritzburg, South Africa; and the Study Abroad Program at the University of Namibia, Windhoek. Additional information about these programs is available through the Rutgers Study Abroad Program.

Student Research Prize

The Center for African Studies awards the Claude Ake Prize annually to the best undergraduate student paper in African studies.

Courses

1. Language and Literature
   - 01:013:101-102 Elementary Hausa (4,4)
   - 01:013:105-106 Elementary Swahili (4,4)
   - 01:013:127-128 Elementary Arabic (4,4)
   - 01:013:205 Introduction to African Literature in Translation (3)
   - 01:013:227-228 Intermediate Arabic (4,4)
   - 01:013:231-232 Intermediate Hausa (4,4)
   - 01:013:235-236 Intermediate Swahili (4,4)
   - 01:013:301 African Linguistics (3)
   - 01:014:360 Writers of Africa and the New World (3)
   - 01:420:413 African and Caribbean Literature in French (3)
   - 01:810:309 Introduction to Civilization and Culture of Portugal and Lusophone Africa (3)
   - 01:810:350 African Literatures of Portuguese Expression (3)
   - 01:810:440 Studies in Luso-Brazilian Civilization (3)
2. Social Sciences
   - 01:014:212 Politics and Power in Modern Africa (3)
   - 01:014:330 Contemporary Issues in Southern Africa (3)
   - 01:014:371 African Development (3)
   - 01:014:376 Pan-African Movement (3)
   - 01:070:338 Anthropology of Africa (3)
   - 01:070:379 Gender and Power in Africa (3)
   - 01:070:412 Topics in African Prehistory and Paleoanthropology (3)
   - 01:450:338 Africa (3)
   - 01:790:314 Sub-Sahara African Policies (3)
3. Humanities
   - 01:013:311 African Folklore (3)
   - 01:082:107 Introduction to Oceanic, African, Pre-Columbian Art (3)
   - 01:082:371 Arts of West Africa (3)
   - 01:082:376 Arts of Central Africa (3)
   - 01:508:220 Ancient Africa (3)
   - 01:508:222 Modern Africa (3)
   - 01:508:320 History of Southern Africa (3)
   - 01:508:322 West Africa (3)
   - 01:508:420 African Labor History (3)
   - 01:508:422 African Cultural History (3)
   - 01:988:312 African Feminism (3)

AFRICANA STUDIES (African Languages and Literatures 013, Africana Studies 014)

Department of Africana Studies, Faculty of Arts and Sciences

Chairperson: Leonard L. Bethel

Professor:

Walton R. Johnson, B.A., Oberlin College; M.A., Ph.D., London

Associate Professors:

Leonard L. Bethel, B.A., Lincoln (Pennsylvania); M.A., New Brunswick Theological Seminary; M.Div., Johnson C. Smith; Ed.D., Rutgers
Kim D. Butler, B.A., Sarah Lawrence College; M.A., Howard; M.A., Ph.D., Johns Hopkins
Ernest F. Dunn, B.A., Wesleyan; M.Div., Hartford Seminary Foundation; M.A., Ph.D., Michigan State
Ivan G. VanSertima, B.A., London; M.A., Rutgers; D.H.L., Sojourner-Douglass College

Assistant Professors:

Ousseina Alidou, B.A., M.A., Universite de Niamey (Niger); Ph.D., Indiana
Regina Jennings, B.A., M.A., Ph.D., Temple
Gayle T. Tate, B.A., CUNY (City College); M.S., Columbia; M.A., New York; Ph.D., CUNY

Lecturers:

Lillian Farhat, B.A., M.A., Rutgers
Edward Ramsamy, B.A. (Hons), Durban (South Africa); M.C.R.P., A.B.D., Rutgers

Major Requirements

A major in Africana studies consists of eleven term courses offered by the department of at least 3 credits each; students must earn a grade of C or better in all courses counted toward the major. These eleven courses comprise four compulsory core courses and seven elective courses and must include two term courses in one foreign language taught by the Department of Africana Studies. Declared majors may petition the department to substitute another language in which the student is competent. Upon petition, students may substitute the two terms of a foreign language with two departmental electives, one of which must be at the 300 or 400 level. At least six of the courses counted toward the major must be at the 300 or 400 level. Students are encouraged to take courses in other disciplines that relate to their area of concentration or interest, and with departmental approval, may apply up to two of these courses toward the major.

The compulsory core courses are:

- 01:014:103 Introduction to Africana Studies (3)
- 01:014:203 or 204 The Black Experience in America (3)
- 01:014:233 Introduction to the Methodology of Africana Studies (3)
- 01:014:490 Seminar in Africana Studies (3)

Minor Requirements

The minor in Africana studies consists of six term courses offered by the department of at least 3 credits each, including 01:014:103 Introduction to Africana Studies, 01:014:203 or 204 The Black Experience in America, and 01:014:490 Seminar in Africana Studies. At least three of these courses must be at the 300 level or above. Students must earn a grade of C or better in all courses counted toward the minor. To complement the minor in Africana studies, the department recommends, but does not require, two terms of instruction in a foreign language taught by the Department of Africana Studies.

Departmental Honors Program

To qualify for departmental honors, an Africana studies major must have a cumulative grade-point average of 3.0 or better and a cumulative grade-point average of 3.4 or better in Africana studies. The department awards a Paul Robeson Africana Prize to students graduating with honors. In order to graduate with highest honors, a student must participate in the departmental honors project; or, upon petition and with the approval of the faculty, a student may participate in the Mabel Smith Douglass Honors Project, the Livingston College Paul Robeson Scholars Project, the Henry Rutgers Scholars Program, or the University College–New Brunswick Honors Program.

The Africana Studies Scholars Project

The department sponsors the Africana Studies Scholars Project, a two-term, 12-credit (01:014:497,498; 6,6) senior-year course for honors majors in the discipline. To be eligible, students must have a cumulative grade-point average of 3.0 or better and a cumulative grade-point average of 3.4 or better in Africana studies by the end of the junior year.

Program at the University of the West Indies

The Department of Africana Studies sponsors a course, 01:014:495 African Diaspora to the Caribbean, in affiliation with the University of the West Indies–Barbados, Cave Hill Campus. In addition to this course work, the program allows students to study, firsthand, the culture of the Caribbean and Barbados.

Courses (013)

01:013:101-102. ELEMENTARY HAUSA (4,4)
Development of oral and written proficiency. Students exposed to, gain an appreciation for, and possibly identify with a number of African peoples and cultures.

01:013:105-106. ELEMENTARY SWAHILI (4,4)
Development of oral and written proficiency. Students exposed to, gain an appreciation for, and possibly identify with a number of African peoples and cultures.

01:013:127-128. ELEMENTARY ARABIC (4,4)
Development of oral and written proficiency.

01:013:131-132. INTERMEDIATE HAUSA (4,4)
Continued development of oral and written proficiency. Elementary literary material. Detailed explanation of the underlying linguistic structures of the language and continued exposure to the culture.

01:013:205. INTRODUCTION TO AFRICAN LITERATURE IN TRANSLATION (3)
Survey of contemporary creative writing by black Africans. Literary and nonliterary characteristics. Problems connected with the serious study and criticism of African literature.

01:013:227-228. INTERMEDIATE ARABIC (4,4)
Continued development of oral and written proficiency. Elementary literary material. Detailed explanation of the underlying linguistic structures of the language.

01:013:235-236. INTERMEDIATE SWAHILI (4,4)
Continued development of oral and written proficiency. Elementary literary material. Detailed explanation of the underlying linguistic structures of the language.

06:090:273,274. THE AFRICAN LANGUAGE EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Africana House. May not be used in satisfaction of major requirements. Courses may not be repeated.
Development of understanding of the linguistic map of Africa with consideration of language policies and their social and political implications.

01:013:301. AFRICAN LINGUISTICS (3)
Study of the genetic relationships of African languages and some of the phonological, morphological, and syntactic features of these languages.

01:013:311. AFRICAN FOLKLORE (3)
Study of forms and problems of folklore in continental Africa and relationships to forms of folklore elsewhere in the African diaspora.

01:013:317,318. AFRICANA CULTURES TODAY (1.5,1.5)
Contemporary cultural, social, and political life in Africana countries, with emphasis on the daily experience.

01:013:322. INDEPENDENT STUDY (1-4)
Prerequisites: 01:013:105-106 and 235-236 or 01:013:127-128 and 227-228; or permission of instructor. Student must be in good academic standing and must receive permission from department.

01:013:327,328. ADVANCED ARABIC (3,3)
Prerequisites: 01:013:127-128 and 227-228; or permission of instructor.
Introduction to literary and popular forms of modern Arabic and to general aspects of Arab culture. Readings on contemporary themes by well-known authors; typical articles from journals and newspapers. Development of skills in translation, composition, and oral expression within the context of culturally relevant topics.

01:013:437,438. TWENTIETH-CENTURY ARABIC LITERATURE (3,3)
Prerequisite: At least one prior course in literature (English or world) or one course in Middle Eastern studies. Credit not given for both these courses and 01:195:437,438 or 01:685:437,438.
Representative works of Arabic literature in translation, including poetry, the novel, the short story, and plays. Emphasis on how new literary trends reflect sociocultural change in the Arab world, including debates over tradition, gender relations, and cultural pluralism.

Courses (014)

01:014:103. INTRODUCTION TO AFRICANA STUDIES (3)
Interdisciplinary survey of the social, economic, political, and historical aspects of the black experience in America and abroad.

01:014:107. AFRICAN-AMERICAN FOLKLORE (3)
Introductory course on the forms and applications of African-American folklore.

01:014:130. AFRICAN-AMERICAN LITERATURE (3)
Contemporary African-American expressive literatures—poetry, critical essays, novels, films, folklores, plays—analyzed for cosmology, style, structure, and content.

01:014:132. BLACK EXPERIENCE AND FILM MEDIUM (3)
Critical evaluation of images of blacks in films. Screening of films.

01:014:140. INTRODUCTION TO AMERICAN CULTURES (1.5)
Credit not given for both this course and 01:512:140.
Develops an understanding of the historical, social, and political factors that distinguish the diverse cultures of present day America.

01:014:201. AFRICAN BELIEF SYSTEMS AND THE LATINO COMMUNITY (3)
Credit not given for both this course and 01:836:201.
Historical examination of ancestor worship, Santeria (Cuba), Vodun (Santa Domingo), Espiritismo (Puerto Rico), and other African-based belief systems. Formation from African to slave societies and use in contemporary period.

01:014:203,204. THE BLACK EXPERIENCE IN AMERICA (3,3)
Interdisciplinary examination of African-Americans within the context of American political economy, special conditions of oppression, responses to exploitation, and resultant social changes.

01:014:205. ISLAMIC CIVILIZATION (3)
Credit not given for both this course and 01:508:204.
Survey of Islamic societies from seventh-century Arabia to modern times. Religious, political, military, social, economic, and cultural institutions and organizational patterns.

01:014:206. THE BLACK WOMAN (3)
Credit not given for both this course and 01:988:206.
Role of black women in survival and evolution of the black race as presented in fictional and nonfictional literature.

01:014:208. THE SOCIOLOGY OF BLACK ECONOMIC DEVELOPMENT (3)
Socioeconomic, spatial, and political development of alternatives to minority or black capitalism within the local, regional, and national development strategy of the U.S.

01:014:212. POLITICS AND POWER IN MODERN AFRICA (3)
Social and political change in twentieth-century Africa, with an emphasis on South Africa since 1950.

01:014:213. BLACKS IN HISTORY (3)
Roles played by Africans and people of African descent in world history. An African-centric approach to historical inquiry.

01:014:215. CONTEMPORARY ISSUES AND THEIR BACKGROUND (3)
Key controversial issues important to understanding the contemporary black experience. Primary focus on three basic dimensions: double-consciousness, decolonization and neocolonialism, and cultural control. Systematic conceptual analysis.

01:014:222. THE BLACK ELITE (3)
Emergence of a black elite; social relationships with the white community and the black masses.

01:014:223,224. INDEPENDENT STUDY (1-4,1-4)
Prerequisites: 01:014:103, a minimum of 9 credits in department or approved equivalent, and good academic standing. Faculty proctor required. Registration by permission only.

01:014:230. PSYCHOLOGY OF THE BLACK EXPERIENCE (3)
Evaluation of psychological principles, theories, and assessment techniques in relation to the personality and behavioral development of African-Americans.

01:014:233. INTRODUCTION TO THE METHODOLOGY OF AFRICANA STUDIES (3)
Introduction to Africana studies through lectures, multidisciplinary approaches to the study of Africana materials, original research projects, and introduction to major archival resources.

01:014:240. THIRD-WORLD CREATIVE WRITING (3)
Third-world contemporary prose classics as models of creative expressions and as a basis for creative writing exercises, geared to meet individual aptitudes, needs, and interests.

01:014:247. HEALTH ISSUES IN THE AFRICAN-AMERICAN COMMUNITY (3)
Health problems affecting black communities and their relevance to understanding black political, social, and psychological attitudes.

01:014:255. HISTORY OF BLACK EDUCATION IN THE UNITED STATES (3)
Principles and policies underlying the educational process among blacks; social and political impact.

01:014:258. INTELLECTUAL THOUGHT IN THE AFRICAN DIASPORA (3)
Basic social and political ideas in the history of black ideology.

01:014:269. BLACK RELIGION (3)
Social, philosophical, historical, and sociopsychological understanding of black America's oldest and largest institution. Influence in economic, political, social, and spiritual life of the black community.

01:014:274. BLACK CIVILIZATIONS (3)
Introduction to ancient and medieval black African civilizations with emphasis on the political and religious thought and technological achievement of African empires.

01:014:276. BLACK SOCIAL AND POLITICAL DEVELOPMENT (3)
Survey of the recent trends regarding health, unemployment, poverty, economics, electoral politics, and international relations.

01:014:285. AFRICAN-AMERICAN NARRATIVE ANALYSIS (3)
Collection and analysis of African-American narrative material. Evaluation based on various analytical structures and approaches.

01:014:304. AFROMUSICOLOGY (3)
Various forms of African-American music: spiritual, gospel, blues, folk, and jazz. African and Western influences: role, development patterns, and function in sociocultural context.

01:014:306. THE BLACK WOMAN IN POLITICAL CONTEXT (3)
Takes political-historical approach from precolonial traditional African women to contemporary black feminism and liberation; emphasis on the black woman's distinct consciousness, family relationships, organizations, institutions, political activities, and revolutionary ideologies.

01:014:316. CARIBBEAN SOCIETY IN LITERATURE (3)
Introduction to the political, social, and historical life of the Caribbean (Jamaica, Trinidad, Barbados, Guyana, and St. Lucia) through the novels, poems, and essays of its writers.

01:014:317. BLACK PROFILES (3)
Portrayal of the movements and events of Africa and dispersion through studies of black leaders—their lives, works, and writings.

01:014:318. BIGOTRY, PREJUDICE, AND RACISM: PSYCHOLOGICAL FOUNDATIONS (3)
Basic conscious and unconscious psychological factors in racist behavior and attitudes. Evaluation of explanatory theories and empirical data as presented by contemporary psychiatrists and psychologists.

01:014:321. AFRICAN PRESENCE IN AMERICAN CULTURES (3)
Examination of African influence on black life and culture in the New World—on language, art, music, and cuisine.

01:014:323. SEMINAR IN THE PHILOSOPHY OF AFRICANA STUDIES (3)
Disciplinary problems involved in constructing a paradigm for the philosophy of the discipline.

01:014:330. CONTEMPORARY ISSUES IN SOUTHERN AFRICA (3)
Examines contemporary events in South Africa and Namibia within the neocolonial problems of the frontline states (Tanzania, Zimbabwe, Angola, Mozambique, and Botswana).

01:014:340. THIRD-WORLD WRITING AND CRITICISM (3)
Essays in literary criticism with third-world prose classics as basis for critiques. Study of the short story and exercises in short-story writing.

01:014:341,342. SUPERVISED COMMUNITY PLACEMENT (3,3)
Supervised study and experience in a black community of the U.S., the Caribbean, South America, or Africa.

01:014:349. TOPICS IN AMERICAN POLITICS (3)
Prerequisite: Special permission. Credit not given for both this course and 01:790:349.
Special topics in American politics that vary with the instructor.

01:014:350. AFRICAN-AMERICAN LINGUISTICS (3)
Historical and varying manifestations of black English in the Western hemisphere.

01:014:353. BLACK COMMUNITY LAW AND SOCIAL CHANGE (3)
Origins of racism in the judicial process and its effects on the black community since slavery.

01:014:355. BLACKS AND ECONOMIC STRUCTURES (3)
Scope and organization of economic activity in the black community; investments, ownership of capital, exploitation of the consumer and wage earner.

01:014:356. MUSLIMS AND ISLAMIC INSTITUTIONS IN AMERICA (3)
Credit not given for both this course and 01:685:355.
Explores the bonds of Muslim community, the meaning of Muslim American identity, how immigrant groups are assimilating into American society, and institutional frameworks being adopted for national integration.

01:014:359. BLACKS AND JEWS IN AMERICAN HISTORY (3)
Credit not given for both this course and 01:512:359 or 01:563:359.
Explores the history of blacks and Jews in America with an eye on three centuries of cooperation and conflict.

01:014:360. WRITERS OF AFRICA AND THE NEW WORLD (3)
Comparison of black writers of Africa, the U.S., and the Caribbean, with focus on areas of commonality and divergence.

01:014:362. BLACK IDENTITY, RELIGION, AND POLITICS (3)
Analysis of social, psychological, and institutional forces shaping group and individual identity of blacks.

01:014:363. RACE, CLASS, GENDER, AND SCHOOLING (3)
Pre- or corequisite: 01:070:101 or permission of instructor. Credit not given for both this course and 01:070:363 or 01:988:363.
Examines racial and gender differences in adolescents' school performance. Structural, historical, and cultural foci. Ethnographic and autobiographical cases of black students and other students of color.

01:014:365. BLACK MIGRATION AND URBANIZATION (3)
Black migration to industrial-urban centers; problems of urbanization. Present interrelationships among racial demography, ecology, social psychology, and the planning process within cities.

01:014:366. THE HISTORY OF RACE AND SEX IN AMERICA (3)
Credit not given for both this course and 01:512:366.
Examines how race and gender have independently and jointly determined life chances throughout American history.

01:014:367. AFRICAN LABOR HISTORY (3)
Credit not given for both this course and 01:508:420.
Precolonial and colonial labor mobilization, control, and resistance; working class formation; the labor process and worker consciousness.

01:014:369. BLACK THEOLOGY (3)
Pre- or corequisite: 01:014:269.
Exploration into theological concepts, terms, and expressions as they relate to the African and the African-American.

01:014:370. THE AFRICAN-ATLANTIC DIASPORA (3)
Introduction to history of African diaspora in the Americas and the Caribbean. Traces origins and development of the Atlantic slave trade and the creation of new African-based cultures in the Americas.

01:014:371. AFRICAN DEVELOPMENT (3)
Prerequisite: 01:014:212.
Analysis of the historical, political, demographic, economic, and sociocultural problems of African underdevelopment within world spatial structure and the contemporary scene.

01:014:376. PAN-AFRICAN MOVEMENT (3)
Pan-Africanism and its development among the black elite on both sides of the Atlantic from the early nineteenth century to the present.

01:014:380. BLACKS IN SCIENCE: ANCIENT AND MODERN (3)
Pre- or corequisite: 01:014:274 or 321.
Lost sciences of inner Africa; African contributions to early dynastic Egyptian science and, with Arabs, to medieval Moorish science; African-American science and invention.

01:014:404. SEMINAR ON CONTEMPORARY RACE RELATIONS (3)
Analysis of the theoretical structure of race relations and evaluation of its relevance to research in contemporary situations.

01:014:410. AFRICAN-BRAZILIAN HISTORY (3)
Open to juniors and seniors only. Credit not given for both this course and 01:590:410.
Overview of history of largest African diaspora community in world. Encourages critical analysis of major issues in African-Atlantic diaspora studies. Principal scholarship supplemented with selected readings in literature, oral history, African-Brazilian movement documents, and iconography.

01:014:413. COLONIALISM AND NEOCOLONIALISM (3)
Political and economic aspects of colonialism. Colonized mind and behavior as portrayed by such authors as Mannoni, Balandier, Memmi, and Fanon. Neocolonialism as a technique of control.

01:014:418. MAJOR AFRICAN-AMERICAN WRITERS (3)
Study of one to three major African-American writers, such as Richard Wright, Ralph Ellison, James Baldwin, Langston Hughes, and Imamu Baraka; social implications of their creative work.

01:014:423. BLACK THOUGHT: A PHILOSOPHICAL INQUIRY (3)
Prerequisite: 01:014:323.
Investigation into a notion of a black philosophy as various philosophical terminologies explored.

01:014:460. METHODOLOGY IN AFRICANA STUDIES RESEARCH (3)
Techniques of research. Historical and contemporary research models used. Methodologies and theories of research.

01:014:461. AFRICAN POLITICAL ECONOMY (3)
Examination of the explanation for the contradictions between Africa's wealth and apparent poverty. Analysis of various national development paths, such as capitalism, African socialisms, Ujamaa, and communism.

01:014:481. THE BLACK FAMILY (3)
Prerequisite: Junior, senior, or graduate standing. Recommended: Previous seminar course work.
Consideration of the black family in historical and contemporary contexts: nuclear versus extended families; two-parent and female-headed households; rural and urban environmental effects.

01:014:490. SEMINAR IN AFRICANA STUDIES (3)
Independent research under faculty guidance, or classroom orientation focusing on a major topic exploring the black experience.

01:014:491,492. INDEPENDENT STUDY (1-4,1-4)
Prerequisites: 01:014:233, a minimum of 18 credits in department or approved equivalent, and good academic standing. Faculty proctor required. Registration by permission only.

01:014:495. AFRICAN DIASPORA TO THE CARIBBEAN (3)
Only available through the Rutgers Study Abroad Program.
Social and scientific history and development of Barbados, West Indies, and other Caribbean islands from their African past to the present.

01:014:497-498. AFRICANA STUDIES SCHOLARS PROJECT (6,6)
Both terms must be completed to receive credit.
To graduate with highest honors, students must participate in this departmental honors project or, with approval, substitute the Mabel Smith Douglass Honors Project, the Livingston College Paul Robeson Project, the Henry Rutgers Scholars Program, or the University College–New Brunswick HonorsProgram.

AGING 018

Faculty of Arts and Sciences

Program Director: Ellen L. Idler, Sociology; Ph.D., Yale

Program Committee:

Stephen Crystal, Social Work; Ph.D., Harvard
Cynthia Daniels, Political Science; Ph.D., Massachusetts
Adrienne Eaton, Labor Studies; Ph.D., Wisconsin
Philip Greven, History; Ph.D., Harvard
Gerald Grob, History; Ph.D., Northwestern
James Jones, Religion; Ph.D., Brown
Deirdre Kramer, Psychology; Ph.D., Temple
Robert Kusch, English; Ph.D., Northwestern
Howard Leventhal, Psychology; Ph.D., North Carolina (Chapel Hill)
Karen Mittleman, Exercise Science and Sport Studies; Ph.D., Simon Fraser
Daniel Ogilvie, Psychology; Ph.D., Harvard
Michelle Ochsner, Urban Studies and Community Health; Ph.D., Columbia
Adria Sherman, Nutrition; Ph.D., Pennsylvania State
Margaret Snell, Health Care Education and Supervision; Ed.D., Rutgers
Heather Strange, Anthropology; Ph.D., New York
Daniel Tichenor, Political Science; Ph.D., Brandeis

Additional Faculty:

For a list of additional faculty associated with the program, contact the program director.

Minor Program

The interdisciplinary minor in aging consists of seven courses, which must include either 01:830:335 Adult Development and Aging or 01:920:303 Social Gerontology, normally taken as introductory courses. Both courses may be counted toward the minor. The remaining courses must be selected from the list below. A minimum of three courses must be taken at the 300 level or above. At least five of the seven courses must be taken outside the student's major, with at least two courses in one other discipline. The minor also requires the completion of a culminating paper that may be done in conjunction with any upper-level course listed below, in a faculty-sponsored independent study course, or as a departmental or college honors project. This paper is considered for approval by two members of the interdisciplinary committee, one of whom may be a faculty member in the student's major.

Courses approved for satisfaction of minor requirements include the following:

01:070:366 Anthropology of Old Age (3)
01:220:316 Health Economics (3)
01:220:340 Economics of Income Inequality and Discrimination (3)
01:220:348 Economics of Social Welfare Programs (3)
01:377:218 Exercise and Health (3)
01:377:304 Exercise and Aging (3)
01:506:113 Patterns in Civilization: Death (3)
01:506:331 The Family in History (3)
01:512:121 Health and Environment in America (3)
01:512:220 Your Family in History (3)
37:575:315 Protective Labor Legislation (3)
11:709:345 Nutrition and Development through the Life Span (3)
11:709:498 Nutrition and Disease (3)
01:730:249 Medical Ethics (3)
01:730:371 Philosophies of Death and Dying (3)
01:790:305 Public Policy Formation (3)
01:830:271 Psychology of the Family (3)
01:830:335 Adult Development and Aging (3)
01:830:495 or 496 Research in Psychology (3)
10:832:238 Health and Public Policy (3)
01:840:112 Death and Afterlife (3)
01:840:341 Religion and Psychology (3)
01:920:303 Social Gerontology (3)
01:920:438 Sociology of Age (3)
01:920:495 Research in Sociology (3)

AMERICAN HISTORY 512

(See History)

AMERICAN LITERATURE

(See English 350, 351)

AMERICAN STUDIES 050

Department of American Studies, Faculty of Arts and Sciences

Chairperson: Michael A. Rockland

Professors:

Angus K. Gillespie, B.A., Yale; Ph.D., Pennsylvania
Michael A. Rockland, B.A., CUNY (Hunter College); M.A., Ph.D., Minnesota

Associate Professors:

Ann Fabian, B.A., California (Santa Cruz); M.A., Ph.D., Yale
Leslie E. Fishbein, B.A., CUNY (Hunter College); Ph.D., Harvard

Lecturers:

Louise Duus, B.A., Oberlin College; M.A., Michigan; Ph.D., Minnesota
Stephanie Ledgin, B.A., Rutgers
Albert Nigrin, B.A., M.A., M.F.A., Rutgers

American studies examines American culture and society from the colonial era through the present. It explores the nature of the American character and American ideas and institutions. Particular emphasis is placed on grappling with the totality of the American experience through the unifying concept of culture.

The Department of American Studies is interested in striking a balance between depth and breadth. While some students majoring in American studies pursue the widest range of interdisciplinary studies, others concentrate their courses in one or two areas of interest. Possible emphases include the arts, ethnic studies, communications, preparation for foreign service, history, literature, museum work, popular culture and folklore, prelaw or political science, teaching, and urban affairs.

Major Requirements

Course work for the American studies major is composed of (1) the core courses in American studies that present the methodology and the conceptual framework for a cultural approach to the civilization of the United States and (2) courses in related fields. Majors in American studies must take 01:050:302, 303, 489, and two more American studies courses, at least one of which is numbered over 300. Majors must also take History 01:512:103,104 and English 01:350:227,228. Under exceptional circumstances, these survey courses may be waived by the chairperson of the department and replaced by other American history and American literature courses (at least 6 credits of each).
A minimum of 15 more elective credits (at least five courses) must be taken in American life and culture, 9 credits of which must be at the 300 level or above. These courses are selected from among other American studies offerings or from the Americana offerings in the handbook for majors, which is revised yearly and available in the departmental office. In the case of double majors only, 3 of these 15 elective credits may overlap with the major requirements of other departments.

American studies majors interested in certification for teaching social studies, or English, should consult the Office of Teacher Education of the Graduate School of Education. Substitution of courses in the American studies handbook for courses required for social studies certification should be cleared by the same office.

Minor Requirements

A minor consists of at least 18 credits including the following: three 300- or 400-level American studies courses (3 or 4 credits each) and three more American studies courses at any level (3 or 4 credits each). For the second category, two minicourses may count as one 3-credit course.

The American Studies Association

The American Studies Association is an organization of students and faculty interested in all aspects of Americana. The annual New Jersey Folk Festival is sponsored by the association. It also publishes The Salad Bowl, a student-faculty magazine.

Departmental Honors Program

Students with cumulative grade-point averages of 3.0 or better and averages of 3.4 or better in courses taken for the major are eligible to do honors work. Honors students must complete a distinguished independent essay or project in connection with enrollment in 01:050:390 and / or 490 in their senior year. They also must satisfactorily pass an oral examination administered by the American studies faculty, based largely on the essay or project.

The American Studies Prize

The American Studies Prize is awarded annually to the best interdisciplinary student project that illuminates the culture of the United States. Projects must be submitted to the American studies faculty by April 30.

Courses

01:050:216. AMERICA IN THE ARTS (3)
Gillespie, Rockland
What is "American" about American art and design; examination of the architecture as well as fine, folk, and industrial arts and artifacts of the U.S. Normally a craft project required of students.

01:050:228. THE CONTEMPORARY AMERICAN (3)
Fabian, Rockland. Recommended for students interested in an introduction to the interdisciplinary field of American studies.
The emerging American of our times. Forces shaping American culture as revealed in literature, the media, social criticism, and psychology.

01:050:259. POPULAR CULTURE (3)
Fabian, Rockland
How popular culture shapes and reflects society in advertising, music, popular entertainments, fads, fashion, radio, television, sports, and games.

01:050:261. THE AMERICAN BEST-SELLER (3)
Duus, Rockland
Representative best-selling novels of recent decades and what they and their popularity indicate about American values and assumptions.

01:050:262. AMERICAN FILM AND AMERICAN MYTH (3)
Duus, Gillespie, Rockland
American film and its relationship to American myths, society, and culture. Representative classic films screened.

01:050:263. AMERICAN FOLKLORE (3)
Gillespie
Traditional verbal and material lore. American folk narratives, myths, legends, tales, ballads, and songs. How folklore functions in American society and institutions.
One field trip: $10.

01:050:264. AMERICAN FOLKLIFE (3)
Gillespie
Examination of the lifestyles of American folk groups with emphasis on artifacts: folk architecture, handicrafts, art, costume, and foods.
One field trip: $10.

01:050:281,282,283,284. TOPICS IN AMERICAN STUDIES (1.5,1.5,1.5,1.5)
Lec. 3 hrs. May be repeated for credit when topic differs.
Half-term minicourses given each year on topics of contemporary interest that lend themselves to interdisciplinary treatment.

01:050:291. JERSEYANA: NEW JERSEY AS A CULTURE (3)
Gillespie, Rockland
Interdisciplinary, regional approach to New Jersey, examining its landscape, the peculiarities of its history, its folklore and myths, arts and architecture, music, and literature.
One field trip: $10.

01:050:300,301. TOPICS IN AMERICAN STUDIES (3,3)
May be repeated for credit when topic differs.
Topics of contemporary interest that lend themselves to interdisciplinary treatment.

01:050:302. AMERICAN CULTURE AND VALUES (3)
Fabian, Gillespie, Rockland. Majors urged to complete prior to enrollment in 01:050:489.
Methodological survey of American culture emphasizing the origin, development, and influence of the ideas and assumptions that have shaped fundamental American values.

01:050:303. A DECADE IN AMERICAN CULTURE (3)
Duus, Fabian, Fishbein. Open only to American studies majors. To be completed prior to enrollment in 01:050:489.
Interdisciplinary approach to understanding a particular decade in American culture, employing the arts, humanities, and social sciences. Decade studied depends on the instructor.

01:050:304. THE AMERICAN CITY (3)
Fishbein
Interdisciplinary approach to the origin, development, and problems of the American city.
One field trip: $10.

01:050:305. IMAGES OF VIETNAM (3)
Duus, Rockland
Examination of the various ways that the Vietnam war has been represented in American popular culture. Material includes films, novels, memoirs, reportage, and histories.

01:050:306. AMERICAN DETECTIVE FICTION AND FILM (3)
Duus
Examination of the distinctively American literary genre of the hard-boiled detective novel and the many films that this genre has inspired, including a look at film noir.

01:050:307. THE CULTURE OF THE SIXTIES (3)
Fishbein, Rockland
Examination of the culture of the 1960s, with emphasis on the civil rights movement, the war in Vietnam and student radicalism, Woodstock, women's liberation, and the sexual revolution, using social history, literature, music, and film.

01:050:308. THE CULTURE OF METROPOLIS (3)
Fishbein
Examination of the urban culture of New York City in the nineteenth and twentieth centuries, emphasizing the impact of race, class, gender, and ethnicity on developing subcultures.

01:050:312. SPORTS IN AMERICAN CULTURE (3)
Rockland
Examines the place of sports in American life and how sports may be thought of as "the American religion," as a metaphor for American ideals and values. Figures from the world of sports—players and coaches—will be regular guest speakers.

01:050:314. TECHNOLOGY AND CULTURE IN AMERICA (3)
Cultural responses to the growth and elaboration of American technology as reflected in literature, art, and popular culture.

01:050:315. DOCUMENTARY EXPRESSION IN AMERICA (3)
Fabian, Fishbein, Rockland
Relationship between the social and aesthetic functions of documentary in film, photography, journalism, biography, and the nonfiction novel.

01:050:324. WAYWARD AMERICANS (3)
Fishbein
Cultural approach to the means by which socially dominant groups in American society have sought to control deviant behavior. Examination of social theory, social history, literature, and film.

01:050:325. WOMEN ON THE FRINGE: PERCEPTIONS OF WOMEN AS SOCIAL AND SEX-ROLE DEVIANTS IN AMERICAN CIVILIZATION (3)
Fishbein
Societal reaction to female behavior deviating from social and feminine norms. Use of historical narratives, literature, and film to treat such themes as heresy, madness, prostitution, adultery, criminality, political protest, and lesbianism.

01:050:326. THE CULTURE OF AMERICAN WOMEN (3)
Fabian, Fishbein
Construction of feminine culture as distinct from the dominant patriarchal culture, examining social history, religion, psychology, sociology, oral history, literature, and film.

01:050:329. THE UNITED STATES AS SEEN FROM ABROAD (3)
Rockland
U.S. as perceived by foreign commentators, such as Dickens, Trollope, and Waugh, and American expatriate intellectuals and artists, such as James, Hemingway, and Baldwin.

01:050:330. AMERICAN CULTS AND COMMUNES (3)
Rockland
Examination of historic and fictional communal and religious experiments, illuminating their surprising similarities and what they tell us about American society and culture. From the Shakers and the Oneida community through Jonestown and the Hare Krishnas. Texts include novels and feature films.

01:050:331. ETHNIC AMERICA (3)
Rockland
Examination of cultural pluralism and the means by which ethnic groups such as Irish, Italians, Jews, African Americans, Asian Americans, and Hispanics have constructed their ethnic identities and the political and cultural forces that shaped those constructions.

01:050:332. THE AMERICAN JEWISH EXPERIENCE IN LITERATURE (3)
Fishbein, Rockland
Patterns of alienation and assimilation of an American ethnic group as portrayed in its literature. Attention to early narratives as well as the works of contemporary writers such as Roth, Potok, Bellow, Malamud, and Singer.

01:050:333. THE CULTURES OF CONSUMPTION (3)
Fabian
Examination of the development of mass society, mass production, and consumption from the 1880s to the present. Areas considered may include: industrialization and the development of work in relation to leisure, the development of the advertising industry, television, technology, and popular and mass production and consumption.

01:050:341. THE CHILD IN AMERICA (3)
Fishbein
Evolution of concepts of childhood and adolescence in America and of child-rearing practices through an examination of social history, religious tracts, novels, poetry, film, and child-care manuals.

01:050:342. AMERICAN SEXUALITY (3)
Rockland
Changing American attitudes toward sexual expression and changes in sexual behavior. Examination of literature, film, nineteenth- and twentieth-century advice manuals, and reports on sexual behavior such as the Kinsey Report and the works of Masters and Johnson.

01:050:365. AMERICAN FOLK SONG AND BALLAD (3)
Gillespie
Social concerns in folk songs—sources and circulation in oral tradition, with reference to lyrical folk songs, narrative folk songs, traditional ballads, broadside ballads, and native American ballads.

01:050:366. FOLKLORE OF AMERICAN OCCUPATIONAL AND REGIONAL GROUPS (3)
Gillespie
Folklore of occupational groups such as sailors, lumbermen, cowboys, and miners, and of regional groups such as southern mountaineers, Mississippi Delta blacks, Louisiana Cajuns, and Jersey Pineys.

01:050:390. SPECIAL PROBLEMS IN AMERICAN CULTURE (4)
Permission of department and instructor during preceding term required. May be repeated for credit with permission of department.
Independent study of an interdisciplinary nature, which may be expressed in a paper, audiovisual project, or other creative enterprise.

01:050:398. WORKSHOP IN AMERICAN STUDIES (4)
Open only to junior American studies majors; others by permission.
Workshop on the American studies method; often team-taught by the faculty. Topic to be announced.

01:050:489. SEMINAR IN AMERICAN STUDIES (4)
For senior American studies majors.
Advanced reading in the interdisciplinary literature of the U.S. Seminar's theme chosen by majors in the spring of their junior year.

01:050:490. ADVANCED PROBLEMS IN AMERICAN CULTURE (4)
Permission of department and instructor during preceding term required. May be repeated for credit with permission of department.
Independent study of an interdisciplinary nature, which may be expressed in a paper, audiovisual project, or other creative enterprise.

ANTHROPOLOGY 070

Department of Anthropology, Faculty of Arts and Sciences

Chairperson: John W.K. Harris

Undergraduate Director: Craig S. Feibel

Professors:

Robert J. Blumenschine, B.A., Wesleyan; Ph.D., California (Berkeley)
John W.K. Harris, B.A., M.A., Ph.D., California (Berkeley)
Michael Moffatt, B.A., Reed College; B.Lit., Oxford; M.A., Ph.D., Chicago
George Edward Bradshaw Morren, Jr. (Associate Member), B.A., M.Phil., Ph.D., Columbia
Carmel Schrire, B.A., Capetown (South Africa); B.A., Cambridge; Ph.D., Australian National
Warren Shapiro, B.A., CUNY (Brooklyn College); M.A., Chicago; Ph.D., Australian National
Horst Dieter Steklis, A.B., M.A., Ph.D., California (Berkeley)
Lionel Tiger, B.A., M.A., McGill; Ph.D., London School of Economics
Robert L. Trivers, B.A., Ph.D., Harvard
Andrew P. Vayda (Associate Member), B.A., Ph.D., Columbia

Associate Professors:

Susan Marie Cachel, B.A., M.A., Ph.D., Chicago
Lee Cronk, B.A., Northwestern; M.A., Wisconsin; Ph.D., Northwestern
Angelique Haugerud, B.A., Washington (Seattle); M.A., Ph.D., Northwestern
Uli H. Linke, B.A., Macalester College; M.A., Ph.D., California (Berkeley)
Louisa Schein, B.A., Brown; M.A., Ph.D., California (Berkeley)

Assistant Professors:

Susan Anton, B.A., M.A., Ph.D., California (Berkeley)
Craig S. Feibel, B.A., Dartmouth; M.S., Iowa; Ph.D., Utah
Dorothy L. Hodgson, B.A., Virginia; M.A., Ph.D., Michigan
Ryne Palombit, B.A., B.S., New Mexico; Ph.D., California (Berkeley)

Major Requirements

There are two options for completing a major in anthropology, the general option and the evolutionary option. The general option is for those interested in all the subfields of anthropology, as well as for those most interested in cultural anthropology; students who wish to focus on archaeology or biological anthropology also may take the general option. The option in evolutionary anthropology is a more intensive introduction to biological anthropology and archaeology, which also trains students in related sciences.

Option in General Anthropology (Bachelor of Arts)

Students must take a minimum of 36 credits, of which 18 credits are at the 300 or 400 level. One course in each of the subfields of anthropology is required: Introduction to Cultural Anthropology (01:070:101), Introduction to Human Evolution (01:070:102), Introduction to Archaeology (01:075:105), and linguistics (01:070:312 or 313, or 01:615:101 or 201). 01:615:201 Introduction to Linguistic Theory counts as a 300-level course toward the six required 300- or 400-level courses in the major. In the junior or senior year, one 400-level course is required. Other anthropology courses may fulfill these subfield requirements, subject to approval by an adviser. One course in environmental policy (11:374:___) may be substituted for an anthropology course, out of the remaining electives.

Option in Evolutionary Anthropology (Bachelor of Science)

Students must take a minimum of 50 credits. Requirements are divided among the following three areas:

Basic courses (16–20 credits): 01:070:101, 102, and 105 (anthropology); 01:070:395, or 01:960:211, 212, 379, or 401 (statistics); 01:119:101-102, or 01:460:101 and 103 (biology or geology).

One course in each of the following topics in anthropology: (18 credits, of which 12 are at the 300–400 level): 01:070:212, 348, 349, or 350 (primatology); 01:070:204, 210, 310, or 356 (social evolution); 01:070:326, 327, or 354 (skeletal biology / hominid paleontology); 01:070:206, 207, 208, 230, 231, 232, 330, 332, 335, 391, or 392 (prehistoric archaeology); 01:070:213 or 394 (geoarchaeology / paleoecology); and one 200-level course or higher in cultural anthropology.

Other requirements (12–16 credits): Other 070 courses, including 01:070:497-498; relevant classes in biology (119), chemistry (160), geology (460), and physics (750). See the undergraduate director for guidance and approval.

Minor Requirements

For a minor in anthropology, students must complete a minimum of 18 credits. Required courses include one course each in basic cultural anthropology (01:070:101) and biological anthropology (01:070:102). Of the remaining 12 credits, at least 6 must be at the 300 level, and 3 must be at the 400 level.

Departmental Honors Program

Students with a 3.0 or better cumulative grade-point average and a 3.4 or better average in anthropology at the end of the junior year may make written application for honors to the undergraduate director in the spring term of the junior year or the first week of the senior year. Candidates who are accepted spend two terms writing an honors paper under the supervision of a faculty member in anthropology (or other qualified faculty chosen by the chairperson) and take an oral examination on the paper at the end of the senior year.

Courses

01:070:101. INTRODUCTION TO CULTURAL ANTHROPOLOGY (3)
History of cultural anthropology; changing theoretical and methodological approaches; fieldwork, ethnographic writing, and the culture concept; cross-cultural analyses and comparisons; complex society; local, regional, and global perspectives.

01:070:102. INTRODUCTION TO HUMAN EVOLUTION (3)
Evolutionary processes, including adaptation and speciation; fossil and archaeological records of human morphological and social-behavioral evolution.

01:070:105. INTRODUCTION TO ARCHAEOLOGY (3)
Overview of human prehistory over the past 5 million years, from origins in Africa to the spread of people first to Asia and Europe, and later to Australia and the Americas, culminating in the archaeology of colonial contact between Europe and distant lands.

01:070:204. INTRODUCTION TO SOCIAL EVOLUTION (3)
Principles underlying social evolution with special emphasis on humans: natural selection, kinship, parent-offspring conflict, parental investment, parasites, sexual selection, cooperation, deceit, and self-deception.

01:070:206. SURVEY OF NEW WORLD PREHISTORY (3)
Prerequisite: 01:070:105.
Focus on the major cultural traditions and adaptations from the earliest appearance of humans in the Americas through the colonial period.

01:070:207. SURVEY OF OLD WORLD PREHISTORY (3)
Prerequisite: 01:070:105.
Focus on the major cultural traditions and adaptations from the earliest appearance of the human lineage to the establishment of literate complex societies and early civilizations.

01:070:208. SURVEY OF HISTORICAL ARCHAEOLOGY (3)
Prerequisite: 01:070:105.
Introduction to the archaeology of historic times—the interpretation of the past using both archaeological residues and written documents. Emphasis on Africa, Britain, and North America.

01:070:210. APPROACHES TO HUMAN NATURE (3)
Critique of the "cultural relativist" and "cultural constructionist" positions through a consideration of the literature on cultural universals, human ethology and sociobiology, small groups, and play.

01:070:212. SURVEY OF THE LIVING PRIMATES (3)
Introduction to the primate order, emphasizing the morphological and behavioral adaptations of the major groups.

01:070:213. ENVIRONMENT AND HUMAN EVOLUTION (3)
Analysis of influence of environment on evolution in record of human ancestry. Morphological and physiological adaptations of humans in reaction to environmental controls.

01:070:216. ANTHROPOLOGY AND MODERN PROBLEMS (3)
Selected topics including conflict of productive and reproductive systems, location and nature of social power, roles of symbolism and zealotry in defining group boundaries.

01:070:220. FOOD AND CULTURE (3)
Culinary customs studied cross-culturally. Food in relation to sex, kinship, politics, economics, religion. Visual, olfactory, textural, and gastronomic food preferences. Values and nutrition. World nutritional systems.

01:070:222. ANTHROPOLOGY OF SEXUALITY AND EROTICISM (3)
Anthropological approaches to human sexuality, including social evolutionary, ethnographic, cross-cultural, sociobiological, cultural constructionist, and postcolonial.

01:070:225. WOMEN IN AN ANTHROPOLOGICAL PERSPECTIVE (3)
Women in evolutionary and cross-cultural perspectives. Economic, public, and domestic roles; social status; gender and sexuality.

01:070:230. INDIANS OF NORTH AMERICA I (3)
Ways of life of North American Indians and Eskimos. Histories, languages, economic bases, social forms, belief systems.

01:070:231. INDIANS OF NORTH AMERICA II (3)
Concentration by each student on a particular Indian society and culture.

01:070:232. AMERICAN INDIANS OF NEW JERSEY (3)
Prerequisite: 01:070:105.
Archaeological and ethnohistorical perspectives on the origins and way of life of the Lenape (Delaware).

01:070:238. ANTHROPOLOGY OF EUROPE (3)
European societies and cultures in modern history; changing anthropological perspectives. Gender, ethnicity, and class. Representations and realities of Europe in the making, including issues of nation-building, colonialism, mass culture, and violence.

01:070:244. ANTHROPOLOGY OF SOUTH ASIA (3)
"Traditional" south Asia, emphasizing "Hindus"; contemporary reconstructions and contestations. Sexuality, gender, family, village, caste, religion; regional and national identities; class, urban south Asia, contemporary pop culture; the diaspora.

01:070:246. ANTHROPOLOGY OF SOUTHEAST ASIA (3)
Peoples of Indonesia, the Philippines, Malaysia, and Singapore, indigenous and immigrant. Relative gender egalitarianism in relation to various subsistence types and religious systems. Intercultural relations in multiethnic societies.

01:070:248. ANTHROPOLOGY OF CHINA (3)
No knowledge of Chinese required.
Chinese society and culture before and after 1949. Socialism and reform. Issues of gender, ethnicity, popular culture, ecology, and population. Internal diversity; China in a world context.

01:070:250. ANTHROPOLOGY OF THE CONTEMPORARY UNITED STATES (3)
Older characterizations and analyses of "American" culture; current constructions and contestations of U.S. national, regional, and local culture(s). Ethnographic descriptions and analyses.

01:070:291,292,293,294. TOPICS IN ANTHROPOLOGY (1.5,1.5,1.5,1.5)
Seven-week courses; may be taken consecutively or separately. Topics vary with term and instructor.

01:070:301. PSYCHOLOGICAL ANTHROPOLOGY (3)
Prerequisite: 01:070:101 or 01:830:101.
Relation between social and cultural systems and psychological processes in different groups. Identity, perception, and motivational patterns. Cultural construction of psychology in other cultures.

01:070:302. ENVIRONMENT AND CULTURAL BEHAVIOR (3)
Prerequisite: 01:070:101 or permission of instructor.
Relationships between cultural and environmental phenomena; how the relationships are studied and explained. Readings deal with culture and environment in Asia, Africa, the Americas, Europe, and Oceania.

01:070:303. WEALTH AND CULTURE (3)
Introduction to economic anthropology. Cultural notions of wealth in the United States, Africa, Asia, Latin America, and Europe. Anthropological perspectives on economic inequality, individualism, rationality, moral economy, exchange, consumption, production, and globalization.

01:070:304. POLITICAL ANTHROPOLOGY (3)
Prerequisite: 01:070:101; one other course in cultural anthropology recommended.
Comparative analysis of political systems and practices. Emergent anthropological theories of power, violence, and patterns of domination. Relation of culture to power and political practice. Politics in local and global contexts.

01:070:305. ANTHROPOLOGY OF DEVELOPMENT (3)
Prerequisite: 01:070:101.
Anthropological theories of and approaches to social, cultural, and economic development. Use of concepts such as "culture" and "social change" in construction of development paradigms and policies; role of anthropologists as practitioners, consultants, and critics in development projects; relation of "development" to lived experience of people being "developed."

01:070:306. ANTHROPOLOGY OF EDUCATION (3)
Prerequisite: 01:070:101 or permission of instructor.
Ways adults and children are organized for socialization and education. Comparison of such organization with other social institutions.

01:070:307. MEDICAL ANTHROPOLOGY (3)
Prerequisite: 01:070:101.
Cultural diversity and similarity in the interpretation of health, illness, and death. Preventive and therapeutic medicine. Premodern and modern populations. Interaction between western and other medical systems.

01:070:308. ANTHROPOLOGY OF RELIGION (3)
Prerequisite: 01:070:101 or permission of instructor.
Cross-cultural comparison of religious concepts, roles, and practices. The analysis of religious symbolism. Sociopolitical and economic concomitants.

01:070:309. VISUAL ANTHROPOLOGY (3)
Prerequisite: 01:070:101.
Use of film, videotape, still photography, and painting as media of anthropological analysis.

01:070:310. HUMAN AGGRESSION (3)
Not open to first year students.
Roots and circumstance of human aggressive behavior. Interplay of phylogenetic and cultural variables. Relevance of ethnological and paleontological data to modern forms of personal violence and warfare.

01:070:311. HISTORY OF ANTHROPOLOGY (3)
Prerequisite: 3 credits in anthropology or permission of instructor.
Development of contemporary professional western anthropology from eighteenth- and nineteenth-century roots to modern schools of thought.

01:070:312. LANGUAGE AND SOCIAL DIVERSITY (3)
Prerequisite: 01:070:101 or a linguistics course or permission of instructor.
Language and communication in social life. Class, ethnic, and sex-role differences in language use. Bilingualism and linguistic diversity studied cross-culturally.

01:070:313. CULTURE, LANGUAGE, AND COGNITION (3)
Prerequisite: 01:070:101 or a linguistics course or permission of instructor.
Cross-cultural study of human thought. Influence of language on culture and cognition. Universals in language and culture. Implications for ethnography and communication.

01:070:314. INTRODUCTION TO ETHNOMUSICOLOGY (3)
Methods, aims, and findings of studies of ethnic music and dance. Music in culture, stability and change, acculturation. Stylistic features and comparative analyses of selected musical forms and instrumentation.

01:070:315. AMERICAN INDIAN MUSIC AND DANCE (3)
Cross-cultural description and analysis of music and dance of historical and contemporary American Indians.

01:070:317. METHOD AND ANALYSIS IN CULTURAL ANTHROPOLOGY (3)
Prerequisite: 01:070:101 or permission of instructor.
Designing and implementing research projects: formulating problems; selecting methodologies; methods of collecting, constructing, and analyzing qualitative, quantitative, and textual data (emphasis on computer-based techniques). Training in participant-observation, census and questionnaire construction and coding, interview techniques, narrative analysis.

01:070:318. READING ETHNOGRAPHIC WRITING (3)
Prerequisite: 01:070:101 or permission of instructor.
Exemplary fieldwork-based monographs in cultural anthropology, with an emphasis on most recent ones. Ethnography as text; ethnography as cultural description, inscription, interpretation, and criticism; ethnography as theory-laden, vs. ethnography as data for theorizing.

01:070:320. DIASPORA, MULTICULTURALISM, AND ETHNICITY IN THE UNITED STATES (3)
Prerequisite: 01:070:101 or permission of instructor.
Theory and ethnography of recent immigrations; community, identity construction; class, race, gender, and age; local, national, and transnational factors; various case studies.

01:070:323. WOMEN WRITING CULTURE (3)
Prerequisite: 01:070:101. Credit not given for both this course and 01:988:323.
How gender, power, and difference shape the writings of women ethnographers. Interpretation, analysis, authority, intellectual representation, and creativity; life experiences and ethnography.

01:070:326. PLEISTOCENE HOMINID ADAPTATIONS (3)
Prerequisites: 01:070:102, 105 or permission of instructor.
Cultural and biological aspects of hominid evolution during the Pleistocene.

01:070:327. POST-PLEISTOCENE HOMINID ADAPTATIONS (3)
Prerequisite: 01:070:105 or permission of instructor.
African, Asian, and European cultural developments after the Pleistocene, including origins of farming, village life, and complex society.

01:070:330. ARCHAEOLOGY OF AUSTRALASIA (3)
Prerequisite: 01:070:105.
Prehistory of Australasia in its worldwide perspective, with special reference to Asian origins, impact of human colonization, and interpretative models based on modern Aboriginal hunter-gatherer behavior.

01:070:332. NORTH AMERICAN ARCHAEOLOGY (3)
Prerequisite: 01:070:105.
Prehistory of North America from the appearance of humans on the continent to European discovery. Varieties of adaptation, cultural interrelationships, developmental trends.

01:070:333. COLONIAL ARCHAEOLOGY (3)
Prerequisites: 01:070:105, 208.
Archaeology of post-Colombian European colonial spread worldwide, with particular reference to North America and Africa. Strong focus on practical laboratory work, specifically analysis of colonial artifacts, including ceramics, glass, pipes, and fauna.

01:070:334. FIELD STUDY IN ARCHAEOLOGY (6)
Prerequisite: 01:070:105; open to juniors and seniors only. Minimum of six to ten weeks at field location. Course may be repeated with permission of department.
Supervised participation in fieldwork with instruction in excavation methods and practice. Personnel and field project location vary from year to year. Fees: tuition, transportation to site, room and board.

01:070:335. Analysis of Archaeological Data (3)
Prerequisites: 01:070:105, 334.
Processing and analysis of new archaeological data from supervised field programs; metrical, physical, and statistical analysis may be utilized on various classes of material.

01:070:338. Anthropology of Africa (3)
Prerequisite: One introductory course in social science or permission of instructor.
Precolonial, colonial, and postcolonial African cultures and societies. Gender, ethnicity, and class. Representations and realities of Africa in a global context, including issues of development, conservation, tourism. Popular culture, contemporary rural and urban experiences.

01:070:340. Anthropology of Aboriginal Australia (3)
Prerequisite: 01:070:101 or permission of instructor.
Aboriginal cultures of Australia and their "re-invention" in response to European and East Asian contact, with emphasis on kinship and other social ideologies, ritual and gender, and microsociology of everyday life.

01:070:348. Primate Socioecology (3)
Prerequisites: 01:070:102, 212 or permission of instructor.
Principles and data of primate ecology. Feeding and ranging behaviors. Niche separation and ecological functioning of primate social groups.

01:070:349. Advanced Physical Anthropology (3)
Prerequisite: 01:070:102 or permission of instructor.
Advanced evolutionary theory. Biochemical and genetic approaches. Primate morphology and behavior. Modern theories of human variability.

01:070:350. Primatology and Human Evolution (3)
Pre- or corequisites: 01:070:102, 212 or permission of instructor.
Anatomy, behavior, and evolution of primates. Evolution of social life. Sexual behavior, dominance, aggression, territoriality, social alliances, communication, ecology.

01:070:354. Functional and Developmental Anatomy of the Primate Skeleton (3)
Prerequisite: 01:070:102.
Morphology and function of the human / primate skeleton, integrating developmental bone biology, functional morphology and biomechanics, and descriptive musculoskeletal anatomy.

01:070:355. Lab in Skeletal Biology of Primates (1)
Pre- or corequisite: 01:070:354.
Examination of human skeletal and dental anatomy in comparison to closely related primates and casts of fossil hominids. Emphasis on identification of human bone fragments and teeth.

01:070:356. Human Variation (3)
Prerequisite: 01:070:102 or permission of instructor.
History of the concept of race in the west. Physical anthropological perspective, with emphases on human variation through time and on the principles of study of modern human variability.

01:070:360. Families (3)
Prerequisite: 01:070:101.
Traditional family types and organization studied cross-culturally. Modern western family and alternatives: utopian communities, "intentional" communities.

01:070:361. Hunters and Gatherers (3)
Prerequisite: 01:070:101 or permission of instructor.
Consideration of data from Aboriginal Australia, the Southern African Bushmen, and elsewhere, in light of social theory, including gender studies.

01:070:363. Race, Class, Gender, and Schooling (3)
Prerequisite: 01:070:101 or permission of instructor. Credit not given for both this course and either 01:014:363 or 01:988:363.
Examines racial and gender differences in adolescents' school performance. Structural, historical, and cultural foci. Ethnographic and autobiographical cases of black students and other students of color.

01:070:364. Sex Roles and Social Structure (3)
Prerequisite: 01:070:102 or permission of instructor.
Sexual differences in primates; implications for social, economic, and political relationships in contemporary society. Cross-cultural comparison. Adaptive and maladaptive features of sociosexual patterns.

01:070:366. Anthropology of Old Age (3)
Prerequisite: 01:070:101.
Cross-cultural approaches to aging and the aged. Sex-role differences between aged men and women in various societies.

01:070:368. Anthropology of Mass Media (3)
Pre- or corequisite: 01:070:101 or permission of instructor.
Mass media and culture. The impact of mass media on the production and consumption of cultural identities. Inquiry into representations of gender, sexuality, the body, ethnicity, race, and nationhood in mass media discourse. The mass media in a postcolonial, global, and transnational context.

01:070:370. Folklore and Ideology (3)
Prerequisite: 01:070:101.
Folklore and expressive culture; the political and ideological importance of narrative traditions. Interpretations of folklore with reference to gender, ethnicity, the family, and the state. Folklore as an agent of social transformation: socialism, nationalism, fascism.

01:070:371. The Politics of Culture (3)
Prerequisite: 01:070:101.
Politics of cultural processes. Race, gender, ethnicity, and sexuality in representations. Theories of cultural production, domination, distribution, and consumption. Resistance and nonmainstream culture; ethnographic examples of ideology, economy, and global cultural flows.

01:070:372. Anthropology of the Body (3)
Prerequisite: 01:070:101. Recommended: an additional course in cultural anthropology.
Body in history and society. Comparative approaches to cultural construction of bodies. Impact of gender, sexuality, ethnonational, racial, and class differences on body practices. Formation of normative discourses on body in medical science, consumer culture, mass media.

01:070:374. Localities and Global Systems (3)
Prerequisite: 01:070:101. Recommended: an additional course in cultural anthropology.
Interaction of transnational and local processes through case studies and theory. Political economy, world systems, and cultural imperialism. Global culture and media. Intercultural representation and stereotyping. Diaspora, transnational movements, and nation-state.

01:070:375. Jewish Immigrant Experience (3)
Credit not given for both this course and 01:506:375 or 01:563:375.
Comparative study of modern Jewish immigrant experience, focusing on European and Middle Eastern communities resettled in America, Israel, and Europe.

01:070:376. Power and Difference (3)
Prerequisite: 01:070:101. Recommended: two additional courses in cultural anthropology. Intended for majors.
Emergent theories of inequality. Social constructions of difference. Topics challenging conventional notions of cultural anthropology—identity, representation, discrimination, exclusion, marginalization, contestation, resistance.

01:070:378. THE ANTHROPOLOGY OF GENDER (3)
Prerequisite: 01:070:101 or permission of instructor. Credit not given for both this course and 01:988:378.
Gender as an analytic category; exchange, production, reproduction, binarism, representation. Intersections of gender with class, race, and ethnicity. Theoretical and ethnographic readings.

01:070:379. GENDER AND POWER IN AFRICA (3)
Credit not given for both this course and 01:988:379.
Experiences and expressions of gender in historical and contemporary Africa emphasizing issues of diversity and commonality, modalities of power, and articulation with other forms of difference, such as ethnicity, class, and nationality.

01:070:380. CULTURE, MEMORY, HISTORY (3)
Prerequisite: 01:070:101 or course in sociology or history approved by instructor.
Anthropological approaches to history and memory. Theory, method; comparative study of remembering, forgetting, commemorating, narrating, ritualizing, structuring time. Early, contemporary scholarship; political economy, identity, authority, representation in shaping cultural memory, historical constructions.

01:070:390. PLIO-PLEISTOCENE HOMINID ANATOMY (3)
Prerequisite: 01:070:102.
Human fossil record during Plio-Pleistocene; taxonomy, phylogenetics, and functional morphology. Origins of Hominidae, diversity in Australopithecus and Paranthropus, rise of Homo and of Homo sapiens. Castes and published reports; methods of inference.

01:070:391. LITHIC ANALYSIS IN ARCHAEOLOGY (3)
Prerequisite: 01:070:105.
Archaeological study of how stone tools were made and used. Consideration of manufacturing technology, use and wear, and experimental replication, and their implications for archaeological interpretation.

01:070:392. FAUNAL ANALYSIS IN ARCHAEOLOGY (3)
Prerequisite: 01:070:105.
Identification of animal bones, teeth, and other faunal remains in archaeological contexts. Quantifying number of individuals and skeletal elements; butchery techniques and bone modification, and their implications for archaeological interpretation.

01:070:393. CULTURAL RESOURCE MANAGEMENT (3)
Prerequisite: 01:070:105.
Legal, administrative, executive, and practical aspects of the theory and practice of cultural resource management, with emphasis on archaeological resources. One field trip.

01:070:394. MICROSTRATIGRAPHIC ANALYSIS IN ARCHAEOLOGY (3)
Recommended: 01:460:340 (may be concurrently enrolled). Credit not given for both this course and 01:460:394.
Field and laboratory studies of geological context in archaeological sites. Data collection and sampling, sediment analysis, and reporting. Interpretation of depositional and postdepositional features.

01:070:395. QUANTIFICATION OF ARCHAEOLOGICAL DATA (3)
Prerequisite: 01:070:105.
Data analysis, coding schemes, data management, and the application of statistical techniques to problems in archaeology. Emphasis on creating, maintaining, and using computer files of archaeological data.

01:070:401. THEORIES IN CULTURAL ANTHROPOLOGY (3)
Prerequisite: 6 credits in anthropology or permission of instructor.
Analysis and comparison of the major contemporary theoretical approaches in cultural anthropology.

01:070:402. THEORIES IN PHYSICAL ANTHROPOLOGY (3)
Prerequisite: 01:070:102 or permission of instructor.
Intensive study of major figures in physical anthropological thought. Origins and spread of new ideas; methods of study of humans and nonhuman primates.

01:070:403. ADVANCED SEMINAR IN NORTH AMERICAN INDIANS (3)
Prerequisite: Two courses from 01:070:230, 231, 315, or related courses in other departments approved by instructor; or permission of instructor.
Each student conducts research on specific topics in North American Indians.

01:070:404. ADVANCED SEMINAR IN ARCHAEOLOGY (3)
Prerequisite: 01:070:105. Open only to juniors and seniors.
Selected topics and problems in archaeology.

01:070:405. PERSPECTIVES ON LATINO ETHNIC CONSCIOUSNESS (3)
Credit not given for both this course and 01:836:405.
Contemporary understandings about formation of Latino ethnic consciousness in the United States. Theoretical and critical perspectives informing social issues relevant to Latinos.

01:070:410. EXPLANATION IN ANTHROPOLOGY (3)
Prerequisite: 01:070:101 or permission of instructor.
Analysis of anthropologists' explanations, with consideration of such topics as the explanatory use of generalizations, models, narratives, culture-specific categories, and causal, functionalist, and essentialist claims.

01:070:412. TOPICS IN AFRICAN PREHISTORY AND PALEOANTHROPOLOGY (3)
Prerequisite: 01:070:326 or 327 or permission of instructor.
Focused consideration of current research and explanatory theory, on topics ranging from hominid origins to Holocene adaptations in Africa.

01:070:414. TOPICS IN EUROPEAN PREHISTORY AND PALEOANTHROPOLOGY (3)
Prerequisite: 01:070:326 or 327 or permission of instructor.
Focused consideration of current research and explanatory theory, on topics ranging from initial human colonization of Europe to Holocene adaptations in Europe.

01:070:495,496. INDEPENDENT STUDY IN ANTHROPOLOGY (BA,BA)
Prerequisite: Permission of instructor.
Supervised study or research on selected anthropological topics.

01:070:497,498. HONORS IN ANTHROPOLOGY (3,3)
Prerequisites: Senior standing and acceptance into departmental honors program.
Two-term supervised project, usually resulting in a thesis, for qualified seniors.

ARCHAEOLOGY

(See Anthropology 070)

ARMENIAN 078

Faculty of Arts and Sciences

For more information about these courses, contact the Office of the Dean of the Faculty of Arts and Sciences.

Courses

01:078:115,116. ELEMENTARY ARMENIAN (3,3)
Introduction to speaking, reading, and writing modern western Armenian.

01:078:117,118. INTERMEDIATE ARMENIAN (3,3)
Development of fluency in written and spoken modern western Armenian.

ART 080, 081

(See also Art History 082)

Department of Visual Arts, Mason Gross School of the Arts

See the Mason Gross School of the Arts section for faculty listing and B.F.A. program information.

The Bachelor of Arts program in the visual arts explores techniques and materials, places, events, and images that are the basis of creative work. The program offers workshops and seminars that seek to develop professional skills as well as an understanding of the cultural and social implications of art. The visual arts program has two major aspects. Studio courses focus on the mastery of skills within specialized media, such as ceramic and sculpture, computer art, drawing and graphic design, film and video, painting, photography, and printmaking. Critical studies courses analyze art in relation to social, environmental, psychological, and philosophical systems and provide a basis for understanding the position of the artist in the modern world.

Major Requirements: B.A. Program

Visual arts majors in the B.A. program are required to complete a total of 60 credits as follows: 39 credits in studio, 9 credits in critical studies, i.e., courses listed under 07:080, and a minimum of 12 credits in art history (6 credits in 01:082:105,106 Introduction to Art History, 3 credits in pre-1800 or non-Western art, and 3 elective credits in art history above the 100 level). Art majors are required to take, as a foundation program, 07:081:101-102 Artmaking, 07:081:121 Drawing Fundamentals, and 07:080:200-201 Seminar in Contemporary Art. These foundation courses are credited toward the required 39 studio credits and 9 critical studies credits. Within these requirements, students develop a cohesive program with their advisers and plan a balance of studio, critical studies, art history, and related courses. Transfer students must complete at least 15 credits in studio courses (081) in residence in order to receive a B.A. in visual arts.

Dual majors and special interdisciplinary degree programs that include the visual arts should be arranged through the Faculty of Arts and Sciences and the fellows of individual colleges, along with the visual arts faculty.

Bachelor of Arts students who desire to major in art must submit a portfolio and transcripts for review by the Visual Arts Evaluation Committee for acceptance into the program.

All B.A. visual arts majors must declare and complete a 12-credit concentration in one of the following subject areas: ceramics, film, graphic design* (limited to twenty students combined in both the B.A. and B.F.A. programs), painting, photography, printmaking, sculpture, or video.

Courses (080)

All descriptions for courses offered in visual arts are listed in the Mason Gross School of the Arts section of this catalog.

Art classes are open to students who are not majoring in visual arts on a space-available basis.

07:080:200-201. SEMINAR IN CONTEMPORARY ART (3,3)

07:080:295. WORKS ON PAPER: INVESTIGATIONS (3)

07:080:300. WOMEN ARTISTS (3)

07:080:301. THIRD-WORLD ARTISTS (3)

07:080:309. ISSUES IN DESIGN (3)
Design majors only, junior year.

07:080:319. ART/CRAFT/DESIGN CONNECTION (3)

07:080:320. ART/CRAFT/DESIGN CONNECTION II (3)

07:080:340. FILM/VIDEO AS A VISUAL ART (3)

07:080:367. DOCUMENTARY TRADITION (3)

07:080:369. NINETEENTH-CENTURY PHOTOGRAPHY (3)

07:080:370. TWENTIETH-CENTURY PHOTOGRAPHY (3)

07:080:400. VIDEO, ART, AND POLITICS (3)

07:080:493. CONTEMPORARY ART (3)

Courses (081)

The following B.F.A. courses serve as the advanced courses for the B.A. curriculum and are open to all B.A. majors after fundamental requirements have been met.

Note: All but a few of these courses have prerequisites. See Art 081 in the Course Listing chapter in the Mason Gross School of the Arts section for prerequisites and course descriptions.

07:081:101-102. ARTMAKING (3,3)

07:081:105. VISUAL ARTS PRACTICE (1)

07:081:121. DRAWING FUNDAMENTALS I (3)

07:081:122. DRAWING FUNDAMENTALS II (3)

07:081:211-212. CERAMICS I (3,3)

07:081:221-222. DRAWING I (3,3)

07:081:223-224. FIGURE DRAWING I (3,3)

07:081:227. DESIGN AND VISUAL THINKING: BLACK AND WHITE (3)

07:081:228. DESIGN AND VISUAL THINKING: COLOR (3)

07:081:231-232. GRAPHIC DESIGN I (3,3)

07:081:237. COMPUTER SKILLS FOR ART AND DESIGN (3)

07:081:241. FILM I (3)

07:081:243. VIDEO I (3)

07:081:251-252. PAINTING I (3,3)

07:081:261-262. PHOTOGRAPHY I (3,3)

07:081:271. SILKSCREEN I (3)

07:081:273. LITHOGRAPHY AND MONOPRINT (3)

07:081:275. INTAGLIO (3)

07:081:277. RELIEF PRINTMAKING (3)

07:081:281-282. SCULPTURE I (3,3)

07:081:311-312. CERAMICS II (3,3)

07:081:313-314. CERAMIC SCULPTURE (3,3)

07:081:317. SCRIPTWRITING FOR FILM, VIDEO, AND PERFORMANCE (3)

07:081:321-322. DRAWING II (3,3)

07:081:323-324. FIGURE DRAWING II (3,3)

07:081:325-326. FIGURE DRAWING FOR PAINTING (3,3)

07:081:331-332. GRAPHIC DESIGN II (3,3)

07:081:333-334. TYPOGRAPHY (3,3)

07:081:337,338. PAINTED CONSTRUCTION AND RELIEF (3,3)

07:081:341. INTERMEDIATE FILM (3)

07:081:342. INTERMEDIATE FILM PRODUCTION (3)

* Acceptance into the B.A. art major does not guarantee admittance into the graphic design concentration.

07:081:343. INTERMEDIATE VIDEO PRODUCTION (3)
07:081:344. INTERMEDIATE MEDIA WORKSHOP (3)
07:081:351-352. PAINTING II (3,3)
07:081:355. DIGITAL AUDIO (3)
07:081:358. PHOTO BOOKWORKS (3)
07:081:359. COLOR PHOTOGRAPHY I (3)
07:081:360. COLOR PHOTOGRAPHY II (3)
07:081:361-362. PHOTOGRAPHY II (3,3)
07:081:365. SOCIAL DOCUMENTARY PHOTOGRAPHY (3)
07:081:367. ALTERNATIVE PHOTOGRAPHY PROCESSES (3)
07:081:371-372. ADVANCED PRINTMAKING (3,3)
07:081:375,376. ARTISTS' BOOKS: BOOKWORKS (3,3)
07:081:379. PAPERMAKING I (3)
07:081:381-382. SCULPTURE II (3,3)
07:081:386. PAPERMAKING II (3)
07:081:391,392. INDEPENDENT STUDY (BA,BA)
07:081:393,394. INTERNSHIPS (3,3)
07:081:411-412. CERAMICS III (3,3)
07:081:413-414. ADVANCED CERAMICS (3,3)
07:081:431-432. GRAPHIC DESIGN III (3,3)
07:081:445. DIGITAL EDITING FOR FILM/VIDEO (3)
07:081:446,447. ADVANCED MEDIA WORKSHOP (3,3)
07:081:451-452. PAINTING III (3,3)
07:081:453-454. ADVANCED PAINTING (3,3)
07:081:461-462. PHOTOGRAPHY III (3,3)
07:081:471-472. ADVANCED PRINTMAKING II (3,3)
07:081:475. ARTISTS' BOOKS: BOOKWORKS II (3)
07:081:481-482. SCULPTURE III (3,3)
07:081:483-484. ADVANCED SCULPTURE (3,3)
07:081:491-492. INDEPENDENT STUDY (BA,BA)
07:081:493,494. INTERNSHIPS (3,3)
07:081:497-498. THESIS AND EXHIBITION (3,3)

ART HISTORY 082

Department of Art History, Faculty of Arts and Sciences

Chairperson: Tod Marder

Professors:

Matthew Baigell, B.A., Vermont; M.A., Columbia; Ph.D., Pennsylvania
Martin P. Eidelberg, B.A., Columbia; M.F.A., Ph.D., Princeton
Rona Goffen, B.A., Mt. Holyoke College; Ph.D., Columbia
Tod A. Marder, B.A., California (Santa Barbara); M.A., Ph.D., Columbia
Joan M. Marter, B.A., Temple; M.A., Ph.D., Delaware
Sarah Blake McHam, B.A., Smith College; M.A., Ph.D., Institute of Fine Arts (New York)
Jocelyn Penny Small, B.A., Bryn Mawr College; Ph.D., Princeton
Jack J. Spector, B.S., CUNY (City College); M.A., Ph.D., Columbia

Associate Professors:

Sarah Brett-Smith, B.A., Harvard; Ph.D., Yale
Archer St. Clair Harvey, B.A., Bryn Mawr College; M.A., Ph.D., Princeton
Angela Falco Howard, B.A., Università di Torino; M.A., Ph.D., Institute of Fine Arts (New York)
John F. Kenfield III, B.A., Brown; M.A., Ph.D., Princeton
Elizabeth P. McLachlan, B.A., McMaster (Canada); M.A., Toronto; Ph.D., Courtauld Institute of Art (London)
Catherine R. Puglisi, B.A., Harvard; M.A., Westfield College (London); Ph.D., Institute of Fine Arts (New York)
Mariët Westermann, B.A., Williams College; M.A., Ph.D., Institute of Fine Arts (New York)

Assistant Professors:

Jane Sharp, B.A., California (Los Angeles); Ph.D., Yale
Carla Yanni, B.A., Wesleyan; Ph.D., Pennsylvania

Major Requirements

Art history majors are required to complete 30 credits in the department, including the introductory courses 01:082:105,106; at least 3 credits each in five of the six following areas: ancient, medieval, Renaissance, baroque, modern, and non-Western; and one term of 01:082:491,492. A minimum of 50 percent of the credits for the major must be at the 300 level or above. The minicourses 01:082:291,292,293,294 and the seminars 01:082:491,492 may not be used to satisfy distribution requirements within the major. Only courses completed with grades of C or better are counted toward the major. Art history students considering graduate school are urged to study German and French.

Minor Requirements

Students minoring in art history are expected to complete 18 credits (six courses) in the department including 01:082:105 and 106. Nine credits must be at the 300 or 400 level. There are no distribution requirements. Only courses completed with grades of C or better are counted toward the minor.

Departmental Honors Program

Candidates for honors in art history must, at the end of their junior year, have a cumulative grade-point average of 3.0 or better and an average of 3.5 or better in the major. In their senior year, students enroll in 01:082:497,498, in which independent research on a specific topic is undertaken, and an honors thesis is written under the supervision of a department faculty member. The committee determines whether the candidate merits honors based on the thesis and the student's overall record. For a more complete description of the honors program guidelines, refer to the art history handbook.

Summer Programs in France, Germany, and Italy

The Department of Art History offers a six-week summer program of study in Paris, France. Two courses 01:082:394,395 (3,3) are offered. The subject matter varies from year to year to take full advantage of Paris and its environs.

The Department of Germanic, Russian, and East European Languages and Literatures and the Department of Italian, in collaboration with the Department of Art History, offer art history courses as part of their summer programs in Constance, Germany, and Urbino, Italy. The following courses are available: 01:082:384 Romanesque and Gothic Art and Architecture in Germany; 01:082:385 Renaissance to Modern Art and Architecture in Germany; and 01:082:309,310 Italian Renaissance Art.

Courses

01:082:105,106. INTRODUCTION TO ART HISTORY (3,3)
Lec. 2 hrs., rec. 1 hr.
Survey of the major monuments and trends in the history of painting, sculpture, and architecture.

01:082:107. INTRODUCTION TO OCEANIC, AFRICAN, AND PRE-COLUMBIAN ART (3)
Basic concepts in the arts of pre-Columbian Mesoamerica, Africa, and Oceania: time, natural landscape and architecture, and the ritual functions of art.

01:082:108. SURVEY OF RUSSIAN ART (3)
Introduction to the art of Russia covering the tenth century through the twentieth century.

01:082:109. EAST ASIAN ART (3)
Discussion of major works (painting, sculpture, and architecture) of China and Japan. Stress on techniques and styles radically different from those of Western art.

01:082:111. HONORS SEMINAR I (1)
Corequisite: 01:082:105. Enrollment in college honors or special permission by department required.
Discussions of assigned readings or further investigation of themes treated in lecture.

01:082:112. HONORS SEMINAR II (1)
Corequisite: 01:082:106. Enrollment in college honors or special permission by department required,
Discussions of assigned readings or further investigation of themes treated in lecture.

01:082:276. GREAT WORKS OF MODERN ARCHITECTURE (3)
For students with little or no background in art history or architecture.
Great monuments of architecture in Europe and America from the late seventeenth century to the present; emphasis on building types, ideas, and the language of architecture.

01:082:291,292,293,294. TOPICS IN ART HISTORY (1.5,1.5,1.5,1.5)
Prerequisites: 01:082:105,106 or permission of instructor.
Such topics as erotic art; symbolism; landscape painting from the fifteenth through the nineteenth century; the frontier in American art.

01:082:300. HISTORY OF MODERN CRAFTS AND DESIGN (3)
Prerequisite: 01:082:106 or permission of instructor.
Crafts from the midnineteenth century to the present, with particular attention to major developments such as art nouveau, art deco, and functionalism. Developments in England, France, Germany, and the United States.

01:082:301. ANCIENT ARCHITECTURE (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Survey of the architecture of ancient civilizations, emphasizing development of monumental architecture in Egypt, Mesopotamia, Greece, and Rome. Development of classical orders and principles of design stressed.

01:082:302. INTRODUCTION TO CONTEMPORARY ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Developments in painting and sculpture since 1950. Classes include field trips to galleries and museums in New York City.

01:082:303. ART OF EGYPT AND THE ANCIENT NEAR EAST (3)
Not open to students who have taken specialized courses in this area.
Introductory survey of the architecture, painting, and sculpture of the ancient civilizations of the Nile Valley, Asia Minor, and Persia. One field trip.

01:082:304. ARCHITECT AND SOCIETY IN ENGLAND (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Architecture and the development of the profession in England from the Renaissance through the eighteenth century, emphasizing the diffusion of classical tradition.

01:082:305. WOMEN AND ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Selected topics on women as subjects of art and / or makers of art. Several field trips.

01:082:306. ROMAN ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Roman art from its Hellenic and native Italic origins to the end of the pagan tradition.

01:082:307. PAINTING OF THE NINETEENTH AND TWENTIETH CENTURIES (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Painting in modern times: impressionism, cubism, fauvism, expressionism, surrealism, and others.

01:082:308. THE AGE OF GIOTTO (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Italian art and architecture from ca. 1250 to ca. 1400, with an emphasis on the stylistic and thematic innovations of Giotto and his successors and the developments of the schools of Florence, Siena, and Venice.

01:082:309. MASACCIO AND HIS CONTEMPORARIES (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Italian art and architecture of the fifteenth century, focusing on such masters as Masaccio, Donatello, Botticelli, and Alberti; the triumph of naturalism; Renaissance humanism and art theory.

01:082:310. THE HIGH RENAISSANCE IN ITALY (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Sixteenth-century art and architecture, emphasizing the achievements of the great central Italian masters: Leonardo da Vinci, Raphael, and Michelangelo; the artistic cult of personality and rivalry with classical antiquity; the crisis of Mannerism.

01:082:311. EGYPTIAN ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Survey of art and architecture in ancient Egypt from pre-Dynastic to Ptolemaic times. Extensive examination of the culture of Egypt—burial customs, religion, kingship, etc. Related discussions centered on the legacy of Egypt in Western art and popular culture.

01:082:312. BYZANTINE ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Art and architecture of the Eastern Roman Empire, third through the fifteenth centuries. Emphasis on sources of Byzantine style and iconography and on the historical context of Byzantine art.

01:082:313. THE RENAISSANCE IN NORTHERN EUROPE (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Religious and secular art in Germany, the Netherlands, and France during the sixteenth century; painting, sculpture, and prints; impact of reformation and humanism.

01:082:315. SEVENTEENTH-CENTURY ART IN EUROPE (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Baroque painting, sculpture, and architecture, emphasizing thematic and stylistic characteristics of the period in works of major artists: Caravaggio, Bernini, Velázquez, Poussin, Rubens, and Rembrandt.

01:082:316. ANGLO-SAXON ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Art and architecture of Anglo-Saxon England from Sutton Hoo through the Bayeux Tapestry.

01:082:318. MYTH AND LEGEND IN ART (3)
Mythology and the artist's response to the myths and legends of his or her civilization, from antiquity through the Middle Ages. Continuity and transformation of central themes.

01:082:319. CELTIC AND EARLY IRISH ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Celtic, early Irish, and Anglo-Saxon art ca. 800 B.C. to A.D. 800. Emphasis on sculpture, metalwork, and enamel, and manuscript illumination.

01:082:320. ISLAMIC ART AND ARCHITECTURE (3)
Pre- or corequisites: 01:082:105,106. Credit not given for both this course and 01:667:320 or 01:685:320.
Intensive overview of the art and architecture of the Islamic world, from Spain to India.

01:082:321. ART OF EARLY CHINA (3)
Prerequisite: 01:082:109 or permission of instructor.
Concentration on archaeological finds: pottery, jade, bronze, precious metals, lacquer from the Neolithic through the early great dynasties (5000 B.C. to A.D. 600).

01:082:322. SURVEY OF JAPANESE ART (3)
Prerequisite: 01:082:109 or permission of instructor.
The many facets of Japanese art (5000 B.C. to modern times). Study of sculpture and painting, religious buildings, pottery, and weaving.

01:082:323. BUDDHIST ART OF ASIA (3)
Prerequisite: 01:082:109 or permission of instructor.
Buddhist iconography and art as it spread from India to East Asian countries between 200 B.C. and A.D. 1250.

01:082:324. JAPANESE PAINTING (3)
Prerequisite: 01:082:109 or permission of instructor.
Religious and secular painting from 700 to 1800. Secular paintings as decorations reflecting famous literary themes and sensitivity to nature.

01:082:325. CHINESE PAINTING (3)
Prerequisite: 01:082:109 or permission of instructor.
Special techniques, special link to calligraphy, format, subject matter, aesthetic principles, and symbolism governing artistic process, from 400 to 1600.

01:082:326. CHINESE SCULPTURE (3)
Prerequisite: 01:082:109 or permission of instructor.
Major religious (Buddhist and Taoist) and secular sculpture of China of the three great dynasties, Han, Tang, and Song (from common era to 1250).

01:082:331. INTRODUCTION TO AFRICAN AND OCEANIC ART (3)
Prerequisite: 01:082:107 or permission of instructor.
Emphasis on the sculptural traditions of black Africa; the art of Melanesia and Polynesia; stylistic analysis; art in relation to total culture; the impact of these arts on twentieth-century Western developments. One field trip.

01:082:332. AFRICAN-AMERICAN ART (3)
Art of peoples of African descent in the United States during the nineteenth and twentieth centuries. Emphasis on artistic, political, and philosophical issues.

01:082:333. PRE-COLUMBIAN ART (3)
Prerequisite: 01:082:107 or permission of instructor.
Art and archaeology of pre-Columbian North and South America; major contributions of the Olmec, Mayan, and Aztec peoples.

01:082:334. BLACKS IN WESTERN ART (3)
Examination of representations and presentations of peoples of African descent by late-eighteenth- and nineteenth-century European and Euro-American artists.

01:082:335. PAINTING IN ENGLAND FROM HOLBEIN TO TURNER (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Survey of major painters and artistic movements in England from ca. 1530 to 1860.

01:082:341. VENICE (3)
Prerequisites: 01:082:105,106 or permission of instructor.
City and art of Venice considered in context of social / cultural history as reflected in masters such as Bellini, Titian, Palladio; their interpretation of favored Venetian themes: sensuality, religion, politics.

01:082:342. EARLY GREEK ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Survey of art in the Aegean from the early Bronze Age through the Archaic period (ca. 2500-500 B.C.).

01:082:343. LATER GREEK ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Survey of classical and Hellenistic Greek art.

01:082:344. FRENCH RENAISSANCE ART (3)
Prerequisite: 01:082:106 or permission of instructor.
French art in the Renaissance from Francis I to Henry IV; the arts at court and the growth of Paris.

01:082:345. FIELD STUDY (6)
Prerequisite: Permission of instructor. Offered only in summer (eight weeks).
Provides supervised participation in fieldwork. Involves participation and instruction in techniques of archaeological excavation and in analysis, evaluation, and conservation of objects.

01:082:346. FRENCH SEVENTEENTH-CENTURY ART (3)
Prerequisite: 01:082:106 or permission of instructor.
The triumph of French art from Henry IV to Louis XIV; the emergence of French classicism and the creation of Versailles.

01:082:347. EARLY NORTHERN EUROPEAN PAINTING (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Development of fifteenth-century easel painting in France, the Netherlands, and Germany; relationship of painting to decorative arts; symbolism, realism, invention from Van Eyck to Bosch.

01:082:348. NORTHERN EUROPEAN PAINTING OF THE SEVENTEENTH CENTURY (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Styles, themes, and historical context of painting in seventeenth-century Northern Europe, with emphasis on the Netherlands. Artists include Rubens, Van Dyck, Rembrandt, and Vermeer.

01:082:349. RUBENS AND THE BAROQUE IN FLANDERS (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Rubens's career and oeuvre, emphasizing his impact on courtly and Counter-Reformation art of the seventeenth century; van Dyck, Jordaens, Brouwer, Teniers; architecture, sculpture, graphics.

01:082:350. REMBRANDT AND HIS FOLLOWERS (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Rembrandt's paintings and graphics, emphasizing his development as an artist and his impact on Netherlandish traditions.

01:082:352. ART OF THE EIGHTEENTH CENTURY (3)
Prerequisites: 01:082:105,106 or permission of instructor.
The creation and subsequent dissolution of the rococo style under the impact of the neoclassical mode and the French Revolution.

01:082:353. NETHERLANDISH GENRE PAINTING (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Origins and development of secular themes in the art of the Low Countries from 1400 to 1700.

01:082:354. ITALIAN RENAISSANCE SCULPTURE (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Examination of Italian sculpture from the mid-thirteenth through the sixteenth century, including the Pisani, Donatello, Ghiberti, Leonardo, Michelangelo, and Giambologna. One field trip.

01:082:356. LANDSCAPE OF THE MIND: COUNTRY AND CITY IN RUSSIAN LITERATURE AND ART (3)
Major/minor credit by permission of department. Credit not given for both this course and 01:860:335.
Moscow and St. Petersburg; the Russian countryside compared with the exotic sublime; the idyll versus the reality of peasant life; the city and modernism; utopia and antiurban impulse.

01:082:357. ART AND LITERATURE OF THE SOVIET PERIOD AND THE VARIETIES OF NONCONFORMISM (3)
Permission of department. Credit not given for both this course and 01:860:336.
Official and unofficial literature and art; literary and art institutions; alternative venues.

01:082:358. SPECIAL TOPICS IN RUSSIAN STUDIES (3)
Major/minor credit by permission of department. Credit not given for both this course and 01:860:320.
Variable content. Intensive study of a particular topic related to Russia and Russian culture. Specific topics available at time of registration. Conducted in English.

01:082:359,360. ZIMMERLI MUSEUM INTERNSHIP IN RUSSIAN ART (3,3)
Prerequisite: Permission of program director. Credit not given for both this course and 01:860:335. Knowledge of Russian necessary.
Research work related to Riabov and Dodge collections, assisting in development and coordination of special exhibitions, translations, and compiling artists' files.

01:082:361. TWENTIETH-CENTURY RUSSIAN/SOVIET ART (3)
Prerequisite: 01:082:106 or permission of instructor.
Twentieth-century developments in Russian art from cubo-futurism through the art of the perestroika period.

01:082:362. NATIVE ARTS OF NORTH AMERICA (3)
The traditional arts and architecture of the indigenous peoples of the U.S., Canada, and Greenland surveyed through archaeological data and ethnohistoric records. Field trips to museums with relevant collections.

01:082:363. BERNINI AND THE BAROQUE (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Bernini's sculpture and architecture, its artistic context, and its influence throughout Europe.

01:082:364. ARTS IN BAROQUE ROME (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Review of practical and aesthetic concerns in painting, sculpture, and architecture, with discussions of urbanism, stage design, theater and ephemeral arts, and antiquarian studies.

01:082:365. ITALIAN BAROQUE PAINTING AND SCULPTURE (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Baroque painting and sculpture from the Carracci to Tiepolo.

01:082:366. SPANISH PAINTING (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Major Spanish painters from El Greco to Goya.

01:082:367. AMERICAN ART 1650-1900 (3)
Prerequisites: 01:082:105,106 or permission of instructor.
American painting from colonial times to 1900. The importation of European styles and the development of an American art.

01:082:368. AMERICAN ART: TWENTIETH CENTURY (3)
Prerequisites: 01:082:105,106 or permission of instructor.
American painting and sculpture from 1900 to the present.

01:082:369. HISTORY OF ART CRITICISM TO 1800 (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Concepts of criticism from Greek civilization to 1800. Different modes of analysis. Changing standards. Relationship of form and content. Relationship of criticism and society.

01:082:370. ART CRITICISM: 1800 TO THE PRESENT (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Concepts of criticism from 1800 to the present. Different modes of analysis. Changing standards. Relationship of form and content. Relationship of criticism and society.

01:082:371. ARTS OF WEST AFRICA (3)
Pre- or corequisite: 01:082:107.
In-depth history of the traditional arts of West Africa (Guinea, Mali, Togo, Ghana, and Nigeria).

01:082:372. HISTORY OF THE PRINT (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Media of woodcut, engraving, etching, lithography, and silk-screen, from the fifteenth century through the present; processes, functions, and historical development exemplified by principal artists represented in the Zimmerli Art Museum.

01:082:373. EARLY MEDIEVAL ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Art of western Europe from Constantine to ca. A.D. 1000, with emphasis on transformation of classical image of physical man to medieval image of spiritual man.

01:082:374. ROMANESQUE AND GOTHIC ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Art and architecture of Western Europe from A.D. 1000 to 1400, from Romanesque symbolic style to Gothic realism.

01:082:375. RENAISSANCE AND BAROQUE ARCHITECTURE (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Survey of the most important buildings, architects, and stylistic developments from 1400 to 1750 in Italy, France, England, and Germany.

01:082:376. ARTS OF CENTRAL AFRICA (3)
Pre- or corequisite: 01:082:107 or 371.
In-depth survey of the traditional arts of Cameroon, Gabon, the Central African Republic, Zaire, and Angola.

01:082:380. MODERN JEWISH ART (3)
Prerequisites: 01:082:105,106 or permission of instructor. Credit not given for both this course and 01:563:383.
The Jewish experience in modern art.

01:082:382. HISTORY OF PHOTOGRAPHY (3)
Prerequisites: 01:082:105,106 or permission of instructor.
History of photography from 1830 to 1900. Style and subject. Interaction of photography and art. Some attention given to technical procedures. Development of color in film.

01:082:383. HISTORY OF PHOTOGRAPHY (3)
Prerequisites: 01:082:105,106 or permission of instructor.
History of photography from 1900 to 1960. Style and subject. Interaction of photography and art. Some attention given to technical procedures. Development of color in film.

01:082:384. ROMANESQUE AND GOTHIC ART AND ARCHITECTURE IN GERMANY (3)
Taught in connection with German Summer Program in Constance.
Romanesque and Gothic art and architecture in Germany, with particular attention given to major monuments in southern Germany. Field trips to the monuments an important aspect of this course.

01:082:385. RENAISSANCE TO MODERN ART AND ARCHITECTURE IN GERMANY (3)
Taught in connection with German Summer Program in Constance.
German painting, sculpture, and architecture from the Renaissance to the present. Special attention given to southern German development of baroque and rococo styles. Field trips to various architectural monuments and museums in Germany.

01:082:386. SCULPTURE OF THE TWENTIETH CENTURY (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Significant developments in twentieth-century sculpture, including constructivism, kinetic sculpture, primary structures, performance, and environmental works. One field trip.

01:082:387. REALISM (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Analysis of themes and characteristics of nineteenth-century realist art, especially in England and France, and topics such as photographic realism, orientalists, Pre-Raphaelites.

01:082:388. THE CITY OF ROME (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Archaeology and architectural mythology of a city, its buildings, and its planning from Romulus to Mussolini.

01:082:389. MODERN ART: NINETEENTH CENTURY (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Modern painting from romanticism through postimpressionism. Field trips to museums.

01:082:390. MODERN ART: TWENTIETH CENTURY (3)
Prerequisites: 01:082:105,106 or permission of instructor.
European painting and sculpture to World War II; emphasis on American art from 1945 to the present. Field trips to museums.

01:082:391. NINETEENTH-CENTURY ARCHITECTURE (3)
Prerequisites: 01:082:105,106 or 276 or permission of instructor.
European and American architecture and planning from 1750 to 1900; emphasis on major architects, styles, and buildings from neoclassicism to the Chicago school.

01:082:392. TWENTIETH-CENTURY ARCHITECTURE (3)
Prerequisites: 01:082:105,106 or 276 or 391 or permission of instructor.
European and American architecture and planning from 1900 to the present; emphasis on major architects, styles, and buildings from art nouveau to postmodernism.

01:082:393. ARCHITECTURE AND SOCIETY IN LATIN AMERICA (3)
Prerequisites: 01:082:105,106 or 276 or 391,392 or permission of instructor. Credit not given for both this course and 01:590:393.
Architecture in Latin America after the Conquest; emphasis on urban development from the Laws of the Indies to Brasilia in social and historical contexts.

01:082:394. SURVEY OF WESTERN ART IN PARIS FROM ANTIQUITY TO 1800 (3)
Offered only in summer program in Paris.
Painting, sculpture, and architecture from antiquity to 1800, as found in the city of Paris and in the collections of its museums.

01:082:395. SURVEY OF WESTERN ART FROM 1800 TO THE PRESENT (3)
Offered only in summer program in Paris.
Covers movements of the nineteenth century (neoclassicism, romanticism, realism, impressionism, postimpressionism) and of the twentieth century (fauvism, cubism, expressionism, conceptualism) and planning and development of Paris.

01:082:396. IMPRESSIONISM (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Subjects, style, and social significance of nineteenth-century French impressionism, including Manet, Monet, Degas, and themes of women, cafe society, urbanization, leisure.

01:082:397. MEDIEVAL ARCHITECTURE (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Western European and Byzantine architecture from the third through the fourteenth century. Emphasis on planning and structure in the Early Christian basilica, the Middle Byzantine church, and the Gothic cathedral.

01:082:398. NINETEENTH-CENTURY FRENCH PRINTS (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Seminar in the history of nineteenth-century French prints and their relation to social development of the period.

01:082:399. CLASSICAL ARCHITECTURE FROM ANCIENT TO MODERN TIMES (3)
Prerequisites: 01:082:105,106 or permission of instructor.
An investigation of classical architecture and theory from antiquity through the Renaissance to the present.

01:082:400. POSTIMPRESSIONISM (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Late nineteenth-century art from 1880 through 1914; historical, political, cultural analysis; painting, sculpture, prints; Symbolism, Nabis, Rosicrucians. Artists studied include Cezanne, Gauguin, Rodin, Seurat, Toulouse-Lautrec, Van Gogh.

01:082:417. CUBISM AND ABSTRACT ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Intensive study of early modernists in France and parallel developments in Italy (futurism) and elsewhere. Abstract painting from the 1920s to the present. One field trip.

01:082:420. AFRICAN ARCHITECTURE (3)
Prerequisites: Introductory courses in art history or African studies or permission of instructor.
In-depth study of various concepts and traditional forms of shelter in Africa south of the Sahara.

01:082:421. CONTEMPORARY AMERICAN ARCHITECTURE (3)
Prerequisite: 01:082:276 or permission of instructor.
Contribution of the modern masters (Wright, Gropius, Mies van der Rohe, and Le Corbusier) and their American students in the 1950s and early 1960s. Postmodern architecture of the late 1960s and 1970s.

01:082:423. AMERICAN LANDSCAPE PAINTING (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Landscape painting in America from ca. 1780 to the present.

01:082:428. THE MODERN CITY (3)
Pre- or corequisites: 01:082:391,392 or permission of instructor.
Architecture and urban design in select European and American cities from the eighteenth century to the present. Attention to political, socioeconomic, and cultural contexts.

01:082:449. EARLY CHRISTIAN ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Origins and development of Christian art and architecture, third to sixth century. Pagan and imperial sources and emergence of the cults of relics and saints stressed. One field trip.

01:082:450. SEMINAR: MAJOR ITALIAN RENAISSANCE ARTISTS AND THEMES (3)
Prerequisite: Permission of instructor. Sections designed by individual instructors. Consult department announcement.
Special studies in Italian Renaissance art. Deals with different subjects, changing from year to year, such as artists (Donatello, Michelangelo, Titian); themes (death, women, patronage); and genres of art (portraits, nudes, altarpieces).

01:082:454. SEMINAR: MAJOR BAROQUE ARTISTS AND THEMES (3)
Pre- or corequisites: 01:082:105,106.
Principal artists of the seventeenth and eighteenth centuries in Italy, Spain, France, and / or England in monographic format.

01:082:462. WORKSHOP IN CURATORIAL PRACTICES (3)
Prerequisite: By special permission of instructor only.
Practical experience for students interested in curatorial work in museums and / or galleries. Investigation of various responsibilities of museum professionals through field trips to museums and galleries in New York. Organizing exhibitions and preparing accompanying catalogs.

01:082:473. ILLUMINATED MANUSCRIPTS (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Materials, techniques, and styles of decoration and illustration of manuscripts from antiquity to the introduction of printing. Relationship of ornament to text in various genres and style periods, and to patterns of use and patronage. Types of functional and ornamental bindings, and their relationship to function and storage of luxury manuscripts.

01:082:480. BUDDHIST CAVE TEMPLES OF CHINA (3)
Prerequisite: 01:082:323.
Painting and sculpture at the sacred cave sites of China. Development of iconography and style from A.D. 400 to 900.

01:082:481. SEMINAR ON BUDDHIST RELIGION AND ART OF CHINA (3)
Prerequisite: 01:082:323 or 01:840:323.
Evolution of the Buddha image in the scriptures and art of China.

01:082:482. GERMAN EXPRESSIONISM AND EUROPEAN DADA (3)
Prerequisites: 01:082:105,106 or permission of instructor.
German painting from 1900 to 1930. Dada in Europe and its impact on later developments, including contemporary art.

01:082:483. FROM TEXT TO IMAGE IN JAPANESE ART (3)
Pre- or corequisite: 01:082:324 or permission of instructor. Credit not given for both this course and 01:565:483.
Impact of classic literature on Japanese paintings; artistic transformations of emotions and events of literary masterpieces into images.

01:082:484. SEMINAR IN ANCIENT ART (3)
Prerequisite: 01:082:105 or permission of instructor.
Focus on various problems of Greek, Etruscan, and Roman art, such as style, iconography, painting, sculpture, portraits, minor arts, architecture, cities, and sanctuaries.

01:082:485. SURREALISM (3)
Prerequisites: 01:082:389,390 or permission of instructor.
The origins and influences of surrealist art forms and their relationship to Freudianism. Fantastic art, psychotic art, and related tendencies.

01:082:486. SPECIAL TOPICS IN MEDIEVAL ART HISTORY (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Particular genre, medium, monument, or area within Medieval art (e.g.: ivory carving, seals, the Bayeux tapestry, Chartres cathedral).

01:082:487. SEMINAR: SPECIAL TOPICS IN MODERN ART (3)
Prerequisite: 01:082:106 or permission of instructor.
Specialized study in nineteenth- and twentieth-century art and architecture. Seminar may be organized by the time period, thematic content, artistic movement, artist, type of monument, or genre.

01:082:488. SEMINAR: SPECIAL TOPICS IN AMERICAN ART (3)
Prerequisites: 01:082:105,106 or permission of instructor.
Specialized study in American art. Seminar considers various topics, such as artists, monuments, artistic movements, genres, and periods.

01:082:491,492. SEMINAR IN ART HISTORY (3,3)
Required of art history majors. Others need permission of instructor.
Advanced study in selected area of art history.

01:082:493,494. INDIVIDUAL STUDIES IN ART HISTORY (3,3)
Open only to seniors in art history or by special permission of instructor.
Guided independent research in a particular area of interest.

01:082:497-498. HONORS IN ART HISTORY (3,3)
Candidates for honors in art history must, at the end of their junior year, have a cumulative grade-point average of 3.0 or better and an average of 3.5 or better in the major. Both terms must be completed in order to receive credit for the course.
Independent research on a specific topic leading to an honors thesis written under the supervision of a department faculty member.

ARTS AND SCIENCE 090
(College Courses)

Douglass College

06:090:101. SHAPING A LIFE (3)
Limited to first-year Douglass College students.
Study of the ways women's lives are shaped, as they are lived and as they are told in autobiography, biography, and oral history. Analysis and discussion of presentations by a broad spectrum of speakers, with accompanying readings.

06:090:130. INTRODUCTION TO SCIENTIFIC RESEARCH (3)
Pre- or corequisites: 01:640:112 or 115; one course in the natural sciences. Enrollment limited to students in Project SUPER.
How research projects are developed and what skills are needed to undertake research projects. Lectures, discussions, and small-group activities. Serves as a prerequisite for the research-oriented internship of Project SUPER.

06:090:198,199. SCHOLARS PROGRAM FIRST-YEAR SEMINAR (3,3)
Open only to first- or second-year students in the Douglass Scholars Program.
Research-oriented interdisciplinary seminar. Scholars choose from among four seminars each term.

06:090:248,249. SCHOLARS PROGRAM TUTORIAL (3,3)
By arrangement. Open only to second-year students in the Douglass Scholars Program.
Individualized study within or outside the student's intended major aimed at in-depth analysis of some major concerns of the field.

06:090:273,274. AFRICAN CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass Africana House. May not be used in satisfaction of major requirements. Course may be repeated for credit.
Cultural, social, and political life of peoples of Africa. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:275,276. FRENCH CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass French House. May not be used in satisfaction of major requirements. Course may be repeated for credit.
Cultural, social, and political life of peoples of France and other French-speaking countries. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events. Development of active communication skills through immersion in the daily foreign-language activities of the French House.

06:090:277,278. CHINESE CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass East Asian or Chinese House. May not be used in satisfaction of major requirements. Course may be repeated for credit.
Cultural, social, and political life of peoples of China. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:279,280. JAPANESE CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass East Asian or Japanese House. May not be used in satisfaction of major requirements. Course may be repeated for credit.
Cultural, social, and political life of peoples of Japan. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:281,282. GERMAN CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass German House. May not be used in satisfaction of major requirements. Course may be repeated for credit.
Cultural, social, and political life of peoples of Germany. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events. Development of active communication skills through immersion in the daily foreign-language activities of the German House.

06:090:283,284. ITALIAN CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass Italian House. May not be used in satisfaction of major requirements. Course may be repeated for credit.
Cultural, social, and political life of peoples of Italy. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events. Development of active communication skills through immersion in the daily foreign-language activities of the Italian House.

06:090:285,286. SLAVIC CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass Slavic House. May not be used in satisfaction of major requirements. Course may be repeated for credit.
Cultural, social, and political life of Slavic-speaking peoples of Eastern and Central Europe. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:287,288. SPANISH CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass Spanish House. May not be used in satisfaction of major requirements. Course may be repeated for credit.
Cultural, social, and political life of peoples of Spanish-speaking countries. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events. Development of active communication skills through immersion in the daily foreign-language activities of the Spanish House.

06:090:289,290. PUERTO RICAN AND HISPANIC CARIBBEAN CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass Casa Boricua. May not be used in satisfaction of major requirements. Course may be repeated for credit.
Cultural, social, and political life of Puerto Rico and Spanish-speaking Caribbean countries. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:291,292. KOREAN CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass East Asian or Korean House. May not be used in satisfaction of major requirements. Course may be repeated for credit.
Cultural, social, and political life of peoples of Korea. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:293,294. EAST ASIAN CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass East Asian House. May not be used in satisfaction of major requirements. Course may be repeated for credit.
Cultural, social, and political life of peoples of East Asia. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:298,299. SCHOLARS PROGRAM SOPHOMORE-JUNIOR SEMINAR (3,3)
Open only to students in the Douglass Scholars Program.
Interdisciplinary seminar, oriented either to research or to community service. Students enrolled in sections designated Citizenship and Service Education (CASE) may be required to enroll concurrently in 06:090:300.

06:090:300. WOMEN IN COMMUNITY SERVICE (1)
Corequisite: Enrollment in 06:090:298 or 299. Open only to students in the Douglass Scholars Program.
Community service internship taken in conjunction with a designated Citizenship and Service Education (CASE) course offered through the Douglass Scholars Program.

06:090:361. COLLOQUIUM (3)
Lecture series with recitation. Title announced as offered.

06:090:395,396. SCHOLARS PROGRAM: INDEPENDENT STUDY (3,3)
By arrangement. Open only to third-year students in the Douglass Scholars Program. May not be taken P/NC.
Independent study, usually in student's major department. Students develop, under faculty supervision, their own research design and work on the project for one or both terms.

06:090:410,411. GENERAL HONORS INTERDISCIPLINARY PROJECT (3,3)
Open only to seniors in the Douglass Scholars Program. Degree credit not given for both these courses and 06:090:497,498.
Supervised independent research project leading to an interdisciplinary senior honors thesis or its equivalent.

06:090:497,498. MABEL SMITH DOUGLASS HONORS PROJECT (BA,BA)
Open to Douglass College seniors by application. Degree credit granted only after completion of two terms.
Independent research and preparation of a written thesis under the direction of a faculty member. Taken in lieu of two courses in each term of senior year.

06:090:499. SUPERVISED RESEARCH (3)
By permission only. Open only to seniors.

Livingston College

02:090:101. BUILDING COMMUNITY THROUGH LEADERSHIP AND UNDERSTANDING (3)
Open only to first-year students; fall term.
Examines the nature of community and the function of leadership in building community. Mindful of the importance of individual responsibility, the course also analyzes the lure of individualism, the value of getting involved, and the inherent tension between altruism and selfishness. Through readings, discussions, and class projects, students examine the effect of leadership in communities on personal development and human growth. Also explores efficient use of the library, the learning resource center, and the academic information center. Syllabi and notices available online where students also may engage in discussions.

02:090:103. CULTURE, IDENTITY, AND EDUCATION (3)
Open only to first-year students in the Livingston College Educational Opportunity Fund Program.
Examines how personal and cultural identities are constructed, how they change, and the role of education in these processes.

02:090:153,154. FIRST-YEAR HONORS PROSEMINAR (3,3)
Open only to students in the Livingston College Honors Program. Taken concurrently with 02:090:155,156.
Readings, discussions, and written assignments designed to develop analytical and expressive skills. Emphasis on the development of research skills.

02:090:155,156. FIRST-YEAR HONORS (3,3)
Open only to first-year students in the Livingston College Honors Program.
Interdisciplinary seminars in liberal arts or social sciences; content determined by instructor.

02:090:189,190,289,290,389,390,489,490. HONORS COLLOQUIUM
Open to all students in the Livingston College Honors Program.
Ongoing series of meetings, lectures, discussions, and cultural events organized on a term basis.

02:090:202. INTRODUCTION TO ORGANIZATION LEADERSHIP (3)
Open only to students minoring in organizational leadership.
Examines the nature of leadership, the processes that underpin group decisions, and the basic features of organizational culture. Provides a basic understanding of the organizational challenges that leaders must meet in order to guide successfully the course of events in a complex group, and analyzes how leaders must prepare themselves to meet those challenges. Familiarizes students with the basic literature and with fundamental issues that are covered in-depth in other courses within the minor. Students develop strategies for integrating and sharing their knowledge through extracurricular projects, including designing a web site that facilitates and enhances dialogue with each other and with students in other universities.

02:090:214. COMMUNITY AND SOCIAL INVOLVEMENT (3)
Open only to students in the Livingston College Educational Opportunity Fund Program. Primarily designed for sophomores and juniors,
Through theory and practice, the course challenges the students to develop a deep understanding of life in diverse local or global communities. Students work with organizations such as the Paul Robeson School in New Brunswick and the United Nations in New York City.

02:090:303. INTRODUCTORY ORGANIZATIONAL APPLICATIONS (1)
Open only to students minoring in organizational leadership; to be taken with Leadership Theory II.
Students assume positions of leadership or function as active members of a university organization, maintain a log of their activities, and complete an eight- to ten-page essay analyzing each aspect of their participation and assessing their impact in the organization. Work is supervised directly and graded by the organization's adviser.

02:090:304. IMMEDIATE ORGANIZATIONAL APPLICATIONS (1)
Open only to students minoring in organizational leadership; to be taken with Leadership Theory III.
Students learn to simulate organizations electronically. Through interactive models, they analyze group dynamics and learn to anticipate outcomes, as well as gain a clear sense of the impact that their behavior has on organizational outcomes. They implement their vision and effectively engage in problem-solving scenarios in this electronic environment. Laboratory instruction focuses on strategies for leading within organizations outside the university setting.

02:090:308. DIVERSITY IN THE WORKPLACE (3)
Open only to students in the Livingston College Educational Opportunity Fund Program.
Theory, research, and practice in the ways that cultural diversity is managed in organizations and social institutions.

02:090:358. JUNIOR HONORS THESIS WORKSHOP (1)*
Open only to juniors in the Livingston College Honors Program.
Preparation for the senior project; development of topics, compilation of bibliographic material.

02:090:398. PAUL ROBESON JUNIOR SEMINAR (1)*
Overview of research methodology and development of thesis proposals in preparation for the Paul Robeson Scholars Project in the senior year.

02:090:404. ADVANCED ORGANIZATIONAL APPLICATIONS/ CAPSTONE SEMINAR (4)
Open only to students minoring in organizational leadership. Prerequisites: 02:090:202, 303, and 304.
Capstone experience for the minor; designed to integrate what students have learned and to utilize fully every facet of their experience. Coordinated by instructors of the introductory course (02:090:202 Introduction to Organizational Leadership). The same instructors also select and organize the faculty that will grade the students' final work.

02:090:455,456. SENIOR HONORS THESIS WORKSHOP (1,1)*
Open only to seniors in the Livingston College Honors Program.
Taken in conjunction with senior project. May be combined with departmental honors thesis credit, departmental independent study credit, or 02:090:493,494 Honors Independent Study.

02:090:491,492. SENIOR ROBESON THESIS WORKSHOP (1,1)*
Open only to Livingston College seniors designated Paul Robeson Scholars.
Taken in conjunction with 02:090:495,496.

02:090:493,494. SENIOR HONORS INDEPENDENT STUDY (3,3)
Open only to seniors in the Livingston College Honors Program.
Interdisciplinary or cross-curricular senior honors projects; supervised by director of honors program.

02:090:495,496. PAUL ROBESON SCHOLARS PROJECT (3,3)*
Open only to Livingston College seniors designated Paul Robeson Scholars.
Taken in conjunction with independent research project in the senior student's major department.

Rutgers College

12:090:120. FIRST-YEAR INTEREST GROUP SEMINAR (1)
Open to first-year students only. Students may receive credit only once for this course.
Highly interactive seminars on selected topics focusing on career goals of first-year students. Analysis and discussion of presentations by a broad spectrum of faculty and alumni speakers; introduction to and utilization of university resources.

12:090:131. LIBRARY RESEARCH (1.5)
Introduction to the collections and services of the Rutgers University libraries and to the skills necessary to define a research topic and develop an effective research strategy.

12:090:170 TO 199. STUDY IMPROVEMENT TECHNIQUES (E1.5)
LSAT skills, GRE skills, GMAT skills, speed reading, study skills.

12:090:220. STUDENTS IN TRANSITION SEMINAR (1)
Open to new fall or spring transfer students only. Students may receive credit only once for this course.
Introduction to the university and technology services for new transfer students. Topics designed to assist students in the adjustment to the university and to facilitate better first-term academic performance; characterized by small-group learning.

12:090:260. SPECIAL TOPICS (1.5)
Exploration of problems and issues relating to a particular theme.

12:090:270 TO 299. COLLEGE HONORS SEMINAR (3)
By invitation of the college honors chairperson. Used in partial satisfaction of the general college honors program requirements.
Selected topics in the arts and sciences. Titles vary from term to term.

12:090:320. PEER INSTRUCTOR EDUCATION FOR FIRST-YEAR INTEREST GROUP SEMINARS (3)
Open to selected upper-class students only. May be repeated only once.
Student peer educators learn how to teach a first-year interest group seminar and help new students make transition to university life. Selected topics focus on effective methods of college teaching and program strategies to increase understanding of the first-year and transfer experiences. Discussions center on teaching techniques to integrate faculty, current research topics, academic advising, developmental and adjustment issues, and cooperative / group-learning experiences.

12:090:393,394. INDEPENDENT STUDY AND RESEARCH (3,3)
Open only to juniors in the Rutgers College General Honors Program, with permission of the director.
Individual work on a topic designed by the student in conference with an instructor who has agreed to direct the project.

12:090:410,411. GENERAL HONORS INTERDISCIPLINARY THESIS (3,3)
Open only to seniors in the Rutgers College General Honors Program.
Independent research leading to an interdisciplinary senior honors thesis.

12:090:497-498. HENRY RUTGERS HONORS PROJECT (BA,BA)
Both terms must be completed to receive degree credit.
Independent research and preparation of a written thesis under direction of a faculty member. In lieu of two courses in each term of the senior year.

* Offered on a pass/no credit basis.

University College–New Brunswick

61:090:298,299. UNIVERSITY COLLEGE MISSION COURSES (3,3)
Open only to University College students.
An opportunity to study, with a senior faculty member, a topic closely related to the instructor's intellectual interests. Topics and instructors change each term.

61:090:361,362,363,364. HONORS MINI SEMINARS (1.5,1.5,1.5,1.5)
Open only to students in the University College Honors Program.
Selected topics in arts and sciences.

61:090:375,376,377,378. COLLEGE HONORS SEMINARS (3,3,3,3)
Open only to students in the University College Honors Program.
Selected topics in arts and sciences.

61:090:394. HONORS INDEPENDENT PROJECT (1.5)
Open only to students in the University College Honors Program.
Allows students to conduct honors research outside the classroom.

61:090:395. HONORS INDEPENDENT STUDY (3)
Open only to students in the University College Honors Program.
Allows students to conduct honors research outside the classroom.

61:090:401,402. ADVANCED HONORS SEMINARS (3,3)
Open only to students in the University College Honors Program.
Selected topics in arts and sciences.

61:090:493,494. SENIOR HONORS THESIS (3,3)
Open only to students in the University College Honors Program.
Independent research and preparation of a written thesis under the direction of the University College Honors Committee.

ASIAN STUDIES 098

Faculty of Arts and Sciences

Web Site: http://www.rci.rutgers.edu/~easian/studies.html

Program Director: Ching-I Tu, Asian Languages and Cultures; Ph.D., Washington

Program Faculty:
Michael Adas, History; Ph.D., Wisconsin
Sarane S. Boocock, Graduate School of Education; Ph.D., Johns Hopkins
Kuang-Yu Chen, Chemistry; Ph.D., Yale
Young-mee Yu Cho, Asian Languages and Cultures; Ph.D., Stanford
Veneeta Dayal, Linguistics; Ph.D., Cornell
Manoranjan Dutta, Economics; Ph.D., Pennsylvania
Ira Gang, Economics; Ph.D., Cornell
Michael Gasster, History; Ph.D., Washington
Peter B. Golden, History; Ph.D., Columbia
Angela Howard, Art History; Ph.D., New York
Dorothy Yo Ko, History; Ph.D., Stanford
Cheng-Few Lee, Finance; Ph.D., SUNY (Buffalo)
Indra Levy, Asian Languages and Cultures; Ph.D., Columbia
Peter Li, Asian Languages and Cultures; Ph.D., Chicago
Matt K. Matsuda, History; Ph.D., California (Los Angeles)
Senko Maynard, Asian Languages and Cultures; Ph.D., Northwestern
Michael Moffatt, Anthropology; Ph.D., Chicago
Hiroshi Obayashi, Religion; Ph.D., Pennsylvania
Donald Roden, History; Ph.D., Wisconsin
Kazuo Sato, Economics; Ph.D., Yale
Paul Schalow, Asian Languages and Cultures; Ph.D., Harvard
Louisa Schein, Anthropology; Ph.D., California (Berkeley)
Nobuo K. Shimahara, Graduate School of Education; Ed.D., Boston
Richard VanNess Simmons, Asian Languages and Cultures; Ph.D., Washington
Leslie Small, Agricultural Economics and Marketing; Ph.D., Cornell
Dietrich Tschanz, Asian Languages and Cultures; Ph.D., Princeton
Margaret Varma, Nutritional Sciences; Ph.D., Brigham Young
Andrew Vayda, Human Ecology; Ph.D., Columbia
Janet Walker, Comparative Literature; Ph.D., Harvard
Steven Walker, Comparative Literature; Ph.D., Harvard
Ban Wang, Asian Languages and Cultures; Ph.D., California (Los Angeles)
Richard Wilson, Political Science; Ph.D., Princeton
Odoric Wou, History; Ph.D., Columbia
Chun-fang Yu, Religion; Ph.D., Columbia

Students interested in Asian studies should be aware that courses also are offered in Chinese (165), Hindi (505), Japanese (565), and Korean (574). An interdisciplinary major is available in East Asian languages and area studies (214).

Minor Program

The interdisciplinary minor program in Asian studies consists of nine courses distributed as follows: (1) four courses in one Asian language, normally two years of Chinese, Japanese, or Korean; (2) three courses in Asian studies, specifically 01:098:321,322, and 444 (when these three specific courses in Asian studies are not offered, other courses from the following approved list of courses may be substituted); (3) two courses from the list given below, selected from two different discipline areas (e.g., humanities, social sciences, ecological sciences); and (4) a substantial paper written in 01:098:444 Seminar on Asian Societies or an approved equivalent. Students interested in the minor program should see the program director for advising on selection of courses.

Courses in other disciplines approved for minor requirements include:

01:070:244 Anthropology of South Asia (3)
01:070:246 Anthropology of Southeast Asia (3)
01:070:248 Anthropology of China (3)
01:082:109 East Asian Art (3)
01:082:321 Art of Early China (3)
01:082:322 Survey of Japanese Art (3)
01:082:323 Buddhist Art of Asia (3)
01:082:324 Japanese Painting (3)
01:082:325 Chinese Painting (3)
01:082:326 Chinese Sculpture (3)
01:082:480 Buddhist Cave Temples of China (3)
01:082:481 Seminar on Buddhist Religion and Art of China (3)
01:082:483 From Text to Image in Japanese Art (3)
01:165:101,102 Elementary Chinese (4,4)
01:165:111,112 Chinese Calligraphy (2,2)
01:165:121 Intensive Reading and Writing in Chinese (3)
01:165:125 Introduction to Chinese Civilization (3)
01:165:131,132 Intermediate Chinese (4,4)
01:165:210 Characteristics of the Chinese Language (3)
01:165:220 Chinese Classics and Thought: I-Ching, Taoism, and Confucianism (3)
01:165:241 Chinese Literature in Translation I: Prose and Poetry (3)
01:165:242 Chinese Literature in Translation II: Popular Fiction and Drama (3)
01:165:262 The Chinese Cinema (3)
01:165:264 Chinese Drama and Performing Arts (3)
01:165:301,302 Introduction to Literary Chinese (3,3)
01:165:303,304 Advanced Modern Chinese (3,3)
01:165:310 Twentieth-Century Chinese Literature in Translation (3)
01:165:325 Advanced Chinese Grammar (3)
01:165:341,342 Major Traditions in Chinese Thought (3,3)
01:165:361 Business Chinese (3)
01:165:362 Business Chinese II (3)
01:165:371 Contemporary Expository Chinese (3)
01:165:401 Advanced Chinese Conversation and Composition (3)

01:165:402 The Origin and Development of Chinese Writing (3)
01:165:410 The Chinese Novel (3)
01:165:412 Chinese Poetry (3)
01:165:419,420 Readings in Classical Chinese Literature (3,3)
01:165:451,452 Readings in Modern Chinese Literature (3,3)
01:165:490 Seminar in Chinese Literature and Thought (3)
01:195:243 Introduction to the Literatures of India (3)
01:195:329 Modern Japanese Novel and the West (3)
01:195:331 The Novel, East and West (3)
01:195:332 Love, Honor, and Suicide in Japanese Literature (3)
01:195:333 Modern Writers and East Asia (3)
01:214:241 East Asian Civilizations: Traditional Era (3)
01:214:242 East Asian Civilizations: Modern Era (3)
01:214:338 Religious Themes in East Asian Literature (3)
01:220:357 Economics of India (3)
01:220:358 Economics of Japan (3)
01:220:359 Economics of Asia (3)
01:450:341 South Asia and the Middle East (3)
01:450:342 East Asia (3)
01:505:101,102 Elementary Hindi (4,4)
01:506:366 Asia and Africa in the Postcolonial Era (3)
01:508:240 Classical Asia (3)
01:508:242 Modern East Asia (3)
01:508:244 China and the United States (3)
01:508:330 History of Indian Civilization (3)
01:508:340 Late Imperial Chinese Culture and Society (3)
01:508:342 China, 1800 to the Present (3)
01:508:344 China's Socialist Revolution (3)
01:508:346 Women in Chinese History (3)
01:508:350 Traditional Japan (3)
01:508:352 Japan's Rise to World Power (3)
01:508:442 China's Foreign Relations (3)
01:508:450 Society and Culture in Japan (3)
11:559:308 Chinese Environment: Elements in Landscape Evolution and Change (3)
01:565:101,102 Elementary Japanese (4,4)
01:565:103 Introduction to Japanese Writing (3)
01:565:104 Speaking Elementary Japanese (3)
01:565:131,132 Intermediate Japanese (4,4)
01:565:213,214 Japanese Conversation and Culture (3,3)
01:565:241 Japanese Literature in Translation (3)
01:565:242 Modern Japanese Literature in Translation (3)
01:565:250 Language and Society in Japan (3)
01:565:301,302 Advanced Japanese (3,3)
01:565:303,304 Advanced Japanese for Business (3,3)
01:565:313,314 Advanced Japanese Conversation and Contemporary Issues (3,3)
01:565:315 Japanese Literature and the Atomic Bomb (3)
01:565:317 Love, Honor, and Suicide in Japanese Literature (3)
01:565:325 Advanced Japanese Grammar and Rhetoric (3)
01:565:350 Japanese Film (3)
01:565:360 Japanese Women Writers (3)
01:565:370 Community and Difference in Japanese Literature and Film (3)
01:565:401,402 Advanced Readings in Japanese (3,3)
01:565:411 Readings in Classical Japanese: Bungo (3)
01:565:470 Seminar in Japanese Language and Literature (3)
01:565:483 From Text to Image in Japanese Art (3)
01:574:101,102 Elementary Korean (4,4)
01:574:131,132 Intermediate Korean (4,4)
01:574:210 Introduction to Korean Culture (3)
01:574:301,302 Advanced Korean (3,3)
01:574:401,402 Advanced Readings in Korean (3,3)
01:730:368 Hindu Philosophy (3)
01:730:470 Buddhist Philosophy (3)
01:790:353 Government and Politics of Southeast Asia (3)
01:790:354 Southeast Asia in World Affairs (3)
01:790:386 Political Change in China (3)
01:790:454 Political Development of Asia (3)
01:840:211 Religions of the Eastern World (3)
01:840:322 Hinduism (3)
01:840:323 Buddhism (3)
01:840:324 Chinese Religions (3)
01:840:335 Buddhist Meditation Traditions (3)
01:840:338 Religious Themes in East Asian Literature (3)
01:840:350 Women in Eastern Religions (3)
01:840:411 Historical Studies in Eastern Religion (3)
01:840:481 Seminar on Buddhist Religion and Art of China (3)

Courses offered to fulfill the minor requirements generally refer to courses of 3 or more credits.

Courses

01:098:241. EAST ASIAN CIVILIZATIONS: TRADITIONAL ERA (3)
Credit not given for both this course and 01:214:241.
Introduction to traditional Chinese, Japanese, and Korean civilizations, including governmental institutions, educational systems, belief systems, language, literature, art, and everyday life.

01:098:242. EAST ASIAN CIVILIZATIONS: MODERN ERA (3)
Credit not given for both this course and 01:214:242.
Introduction to modern Chinese, Japanese, and Korean civilizations, including the impact of modernization, East-West contact, governmental institutions, belief systems, educational systems, language, literature, art, and everyday life.

01:098:321. INTERDISCIPLINARY TOPICS IN SOUTH ASIA (3)
Interdisciplinary introduction to the cultures of South Asia: geographic foundations, extended family, village-centered society, agricultural systems, and confrontation of Hindu and Muslim traditions with Western technology.

01:098:322. SELECTED INTERDISCIPLINARY TOPICS IN EAST ASIA (3)
Interdisciplinary introduction to the cultures of East Asia: geographic foundations, extended family, village-centered society, agricultural systems, and confrontation of Chinese and Japanese traditions with Western technology.

01:098:444. SEMINAR ON ASIAN SOCIETIES (3)
Prerequisite: Permission of instructor.
Comparative examination of major themes, problems, and patterns in Asian politics, economics, history, and / or culture. Research on aspects of a common topic examined in the seminar.

ASTRONOMY

(See Physics 750)

BIOCHEMISTRY

(For Biochemistry 115, see the Cook College section; for Molecular Biology and Biochemistry 694, see Life Sciences)

BIOLOGICAL SCIENCES

(See Life Sciences)

BIOMATHEMATICS

(See Life Sciences)

BIOMEDICAL SCIENCES

(See Life Sciences)

BOTANY

(See Life Sciences)

BUSINESS LAW 140

(See School of Business–New Brunswick section)

CATALAN 145

Department of Spanish and Portuguese, Faculty of Arts and Sciences

Courses

01:145:301-302. ACCELERATED CATALAN (3,3)
Prerequisite: Fluency in another Romance language and knowledge of its grammar, or permission of department.
Intensive study of Catalan, especially as it contrasts with Spanish and other Romance languages. Practice of specific areas of grammar, linguistic structure, style, and literary analysis. Selected readings, compositions, class discussions.

01:145:305. CATALAN CULTURE (3)
Prerequisite: 01:145:301, or equivalent, or permission of department. Study abroad option offered in alternate years during winter break. Carries major credit in Spanish.
Three-week visit to Barcelona and surrounding region. Museum and theater trips. Lectures and discussion on Catalan culture, with emphasis on art, music, and literature.

CELL BIOLOGY

(See Life Sciences)

CENTRAL AND EAST EUROPEAN AREA STUDIES

(See Russian, Central and East European Studies 861)

CHEMISTRY 160

Department of Chemistry, Faculty of Arts and Sciences

Web Site: http://rutchem.rutgers.edu

Chairperson: Roger A. Jones

Executive Officer, Curriculum and Undergraduate Advising: John Krenos

Executive Officer, Instruction and Graduate Advising: Martha Cotter

Professors:

Edward Arnold, B.A., Ph.D., Cornell
Jean S. Baum, A.B., Barnard College; Ph.D., California (Berkeley)
Helen M. Berman, A.B., Barnard; Ph.D., Pittsburgh
Robert S. Boikess, B.A., M.A., Ph.D., Columbia
Kenneth J. Breslauer, B.S., Wisconsin; M.Phil., Ph.D., Yale
Kuang-Yu Chen, B.Sc., National Taiwan; Ph.D., Yale
Martha A. Cotter, B.A., Southern Illinois; Ph.D., Georgetown
Richard H. Ebright, A.B., Ph.D., Harvard
Eric L. Garfunkel, B.S., Haverford; Ph.D., California (Berkeley)
Alan Goldman, B.S., Ph.D., Columbia
Lionel Goodman, B.A., New York; M.S., Cornell; Ph.D., Iowa State
Martha Greenblatt, B.S., Brooklyn College; Ph.D., Polytechnic Institute of Brooklyn
Gregory F. Herzog, B.A., Cornell; M.A., Ph.D., Columbia
Stephan S. Isied, B.S., M.S., American University of Beirut (Lebanon); Ph.D., Stanford
Roger A. Jones, B.S., Delaware; Ph.D., Alberta
Spencer A. Knapp, B.A., Ph.D., Cornell
Joachim Kohn, B.Sc., Hebrew (Israel); M.Sc., Ph.D., Weizmann Institute (Israel)
Karsten Krogh-Jespersen, M.S., Ph.D., New York
Ronald Levy, A.B., Reed College; Ph.D., Harvard
Theodore E. Madey, B.S., Loyola College; Ph.D., Notre Dame
Gerald S. Manning, B.A., Rice; Ph.D., California (San Diego)
Robert A. Moss, B.S., Brooklyn College; M.S., Ph.D., Chicago
Wilma K. Olson, B.S., Delaware; Ph.D., Stanford
Joseph A. Potenza, B.S., Polytechnic Institute of Brooklyn; Ph.D., Harvard
Laurence S. Romsted, A.B., De Pauw; Ph.D., Indiana
Heinz D. Roth, Dipl. Chem., Dr. Rer. Nat., Köln (Germany)
Ronald R. Sauers, B.S., Pennsylvania State; Ph.D., Illinois
Harvey J. Schugar, B.S., Carnegie Institute of Technology; M.A., Ph.D., Columbia

Associate Professors:

John G. Brennan, B.S., SUNY (Albany); Ph.D., California (Berkeley)
Edward W. Castner, Jr., B.A., Rochester; M.S., Ph.D., Chicago
Gene S. Hall, B.S., Tusculum College; Ph.D., Virginia Polytechnic Institute and State University
B. Jane Hinch, B.A., M.A., Ph.D., Cambridge
Leslie Jimenez, B.A., Pomona College; M.S., Cornell; Ph.D., California (Los Angeles)
John Krenos, B.A., Connecticut; M.S., Ph.D., Yale
John W. Taylor, B.A., Oxford; Ph.D., Chicago
Kathryn Uhrich, B.S., North Dakota; Ph.D., Cornell

Assistant Professors:

Kieron J. Burke, B.A., Trinity College (Dublin); Ph.D., California (Santa Barbara)
Millie M. Georgiadis, B.S., Indiana; Ph.D., California (Los Angeles)
Jeehiun Katherine Lee, B.A., Cornell; Ph.D., Harvard
David S. Talaga, A.B., Occidental; Ph.D., California (Los Angeles)

Lecturers:

Rameshwar Agarwal, B.S., Agra; M.S., Vikram (India); Ph.D., California (Berkeley)
Evelyn S. Erenrich, B.S., Ph.D., Cornell
Barbara L. Gaffney, B.A., Rutgers (Douglass); Ph.D., Rutgers
Asbed Vassilian, B.A., M.A., Ph.D., American University of Beirut (Lebanon)

Entry Requirements for the Major and Minor in Chemistry

Students wishing to declare a major or minor in chemistry must have successfully completed one term of a general chemistry course for science majors (01:160:159, 161, 163, or the equivalent) with a grade of C or better. A score of 4 or 5 on the advanced placement test or appropriate transfer

credit from another institution also is acceptable. Petitions for exceptions may be addressed to the executive officer of the undergraduate program.

Major Requirements

The Department of Chemistry offers a program of study that provides broad and comprehensive training in all areas of modern chemistry. A certain core of courses is required for completion of the major in chemistry. Included is course work in the four major subdisciplines of chemistry—inorganic, organic, physical, and analytical—as well as work in mathematics and physics. A minimum grade-point average of 2.0 in all chemistry courses is required for graduation.

Within the program, the following six options permit students to select an area of concentration that reflects their particular interests and career goals: core option (A), general American Chemical Society option (B), biological option (C), environmental option (D), business / law option (E), and chemical physics option (F). Normally, this selection is made in consultation with a chemistry adviser in the term that the major is declared.

The required core courses for option A are listed below. Completion of these courses satisfies the requirements in chemistry for graduation. Additional advanced and research courses are required in options B, C, and D, each of which leads to a degree certified by the American Chemical Society (ACS). Degree options also are available for students interested in using chemistry as a basis for interdisciplinary training (options E, F). For options E and F, courses marked with an asterisk (*) or dagger (†) in the core are substituted by appropriate courses from other disciplines. The required additional courses or substitutions are described under the individual options.

Some options require upper-level courses in disciplines other than chemistry. These courses may have as prerequisites lower-level courses in those other disciplines. When planning the courses for an option, make sure to research the prerequisites well in advance to avoid being prevented from entering a particular course.

An advanced chemistry course is a course that is not part of the core and has a major portion of the curriculum as a prerequisite, including physical chemistry, in many cases. All 400-level courses offered by the department are considered advanced courses.

Overall, the curriculum is designed to permit the student a wide range of career choices, including, but not limited to, chemistry, medicine, law, business, chemical physics, environmental science, and secondary-school teaching.

Required Core Courses

01:160:161-162 General Chemistry (4,4) or 01:160:163-164 Honors General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:160:251 Analytical Chemistry (2.5)
01:160:307-308 Organic Chemistry (4,4) or 01:160:315-316 Principles of Organic Chemistry (4,4)
01:160:309-310 or 01:160:311,310 Organic Chemistry Laboratory (2,2) *†
01:160:323-324 Physical Chemistry (3,3) or 01:160:341-342 Physical Chemistry: Biochemical Systems (3,3) ‡
01:160:329 Experimental Physical Chemistry (2.5)
01:160:348 Instrumental Analysis (3)† or 01:160:344 Introduction to Molecular Biophysics Research (3) †
01:160:361 Chemical Bonding (1.5)
01:160:371 Inorganic Chemistry (3)
01:160:491-492 Seminar in Chemistry (1,1)
01:640:151-152 Calculus for Mathematical and Physical Sciences (4,4)
01:640:250 Introductory Linear Algebra (3)*
01:640:251 Multivariable Calculus (4)
01:750:203-204 General Physics (3,3) †
01:750:205-206 General Physics Laboratory (1,1) †

Core Option (A). For students who plan to seek immediate employment as chemists, and who do not seek accreditation by the American Chemical Society.

Required: Core courses

General ACS Option (B). For students who seek to find immediate employment as chemists, or who plan to attend graduate or medical school. Leads to a degree accredited by the American Chemical Society.

Required: In addition to the core courses, 4 credits of senior-level research and two advanced courses in chemistry or two terms of senior-level research of at least 3 credits each and one advanced course in chemistry.

Biological Option (C). For students whose interests are in the application of chemistry to the solution of biological problems. Appropriate for students who plan to attend graduate school in chemistry or related biological sciences or medical school, or who plan to seek immediate employment. Leads to a degree accredited by the American Chemical Society.

Required: In addition to the core courses, 4 credits of senior-level research and two courses from the following:

01:160:418 Bioorganic Mechanisms (3) or 11:115:412 Protein and Enzyme Chemistry (3)
01:160:437 Physical Chemistry of Biological Systems (3) or 11:115:410 Physical Biochemistry (3)
01:160:476 Bioinorganic Chemistry (3)
01:694:407,408 Molecular Biology and Biochemistry (3,3) or 11:115:403,404 General Biochemistry (3,3)
30:715:409 Medicinal Chemistry (3)

Environmental Option (D). For students whose interests are in the application of chemistry to environmental problems, who plan to seek employment in environmentally related areas, or who plan to attend graduate school. Leads to a degree accredited by the American Chemical Society.

Required: In addition to the core courses, 4 credits of senior-level research and two courses from the following:

01:160:415 Theory and Interpretation of Organic Spectra (3)
01:160:439 Physical Chemistry of the Environment (3)
01:160:451 Analytical Spectroscopy (3)
11:375:416 Chemical Reactions in the Environment (3)
11:375:422 Air Sampling and Analysis (3)
11:375:425 Radioactivity and the Environment (3)
11:375:444 Water Chemistry (3)
11:375:451 Soil Chemistry (4)
01:460:401 Introduction to Geochemistry (4)
01:460:417 Environmental Geochemistry (3)
11:628:472 Chemical Oceanography (3)

* This course requires a substitute course in Option E.
† This course requires a substitute course in Option F.
‡ This course must be taken in Option C.

Business/Law Option (E). For students who seek business or law careers that require a scientific background. Appropriate for those seeking nonlaboratory employment in industry as well as those planning to attend graduate school in business or law.

Required substitutions in the core curriculum: For the following two courses from the list of core courses, 01:160:310 Organic Chemistry Laboratory (2) and 01:640:250 Introductory Linear Algebra (3), substitute three business or business-related courses. One of the three courses must be chosen from the following:

33:010:272 Introduction to Accounting (3)
01:355:302 Scientific and Technical Writing (3)
01:830:373 Organizational and Personnel Psychology (3)

The remaining courses must be at the 200 level or above and offered in accounting, communication, economics, finance, management, or marketing. Students electing this option should consult with the executive officer of the undergraduate program in chemistry as early as possible for assistance in selecting the courses for the option and in meeting professional or graduate school requirements.

Chemical Physics Option (F). For students whose interests are in chemical physics and who plan to attend graduate school.

Required substitutions in the core curriculum: For 01:750:203-204 General Physics (3,3), substitute either 01:750:123-124 Analytical Physics (2,2) and 01:750:227-228 Analytical Physics IIA,B (3,3) or 01:750:271-272-273 Honors Physics (3,3,3). For 01:750:205-206 General Physics Laboratory (1,1), substitute either 01:750:229-230 Analytical Physics II Laboratory (1,1) or 01:750:275-276 Classical Physics Laboratory (1,1). For 01:160:310 Organic Chemistry Laboratory (2) and 01:160:348 Instrumental Analysis (3), substitute 01:640:252 Elementary Differential Equations (3) and 01:750:381 Mechanics (3) and 01:750:385 Electromagnetism (3).

Students who choose the Chemical Physics option only after having taken 01:750:203-204 General Physics and 01:750:205-206 General Physics Laboratory normally should take 01:750:323 Advanced General Physics before enrolling in either 01:750:381 Mechanics or 01:750:385 Electromagnetism. A physics adviser should be consulted if there is uncertainty about the proper preparation for any physics course in this option.

Required advanced courses: Two courses chosen from the following:

01:160:421 Physical Chemistry III (3) or 01:750:361 Quantum Mechanics and Atomic Physics (3)
01:160:425 Thermodynamics I (3)
01:160:434 Kinetics (3)
01:750:362 The Structure of Matter (3)
01:750:464 Mathematical Physics (3)

Two terms of senior-level research of at least 3 credits each may be used as a substitute for one advanced course.

The major in chemistry provides an excellent basis for those students who wish to teach in secondary school. Additional requirements for students interested in certification as teachers are set by the Graduate School of Education, which should be consulted for details.

Those students whose needs are not met by any of these options may plan an individual program through consultation with a departmental adviser. Individual programs require written approval of the department chairperson.

Minor Requirements

A core of courses is required for the minor in chemistry. The core includes general introductory and organic chemistry. Additional laboratory work and upper-level courses in either inorganic or physical chemistry are required for completion of the minor.

Required Core Courses

The following courses are required of all chemistry minors:

01:160:161-162 General Chemistry (4,4) or 01:160:163-164 Honors General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:160:307-308 Organic Chemistry (4,4) or 01:160:315-316 Principles of Organic Chemistry (4,4)

Inorganic Chemistry Option

The following courses are required for the inorganic chemistry option:

01:160:311 Organic Chemistry Laboratory (2) or 01:160:309 Organic Chemistry Laboratory (2)
01:160:361 Chemical Bonding (1.5)
01:160:371 Inorganic Chemistry (3)

Physical Chemistry Option

The following courses are required for the physical chemistry option:

01:160:311 Organic Chemistry Laboratory (2) or 01:160:309 Organic Chemistry Laboratory (2) or 01:160:251 Quantitative Chemistry Laboratory (2.5)
01:160:323-324 Physical Chemistry (3,3) or 01:160:341-342 Physical Chemistry: Biochemical Systems (3,3)

Departmental Honors Program

To qualify, a student must have attained, at the end of the junior year, a cumulative grade-point average of 3.0 and a grade-point average of at least 3.4 in courses required for the major. Preferably by the end of the junior year, but no later than the first week of the senior year, the student should apply formally to the chemistry undergraduate executive officer for admittance to the chemistry honors program. A student with an undergraduate cumulative grade-point average of at least 3.0 and a grade-point average between 3.0 and 3.4 in courses required for the major also may be admitted upon review by the Undergraduate Research and Honors Committee. Accepted candidates are expected to complete at least 3 credits per term in an independent research project (01:160:497-498), to write a paper on their research, and to make an oral presentation at the end of the senior year.

Courses

01:160:110. FRONTIERS OF CHEMISTRY (1.5)
For the nonscientist, topics currently at the forefront of chemical research and their social implications. Presented by experts in layman's terms. Recombinant DNA, chemistry of planets, chemical approaches to the harnessing of solar energy, chemical basis of disease, and drug action.

01:160:111. CHEMISTRY OF DRUGS (1.5)
For nonscientists, a nontechnical chemical approach to the drug phenomenon in our world. Topics include oral contraceptives, psychedelics, stimulants, and depressants.

01:160:127. IMPACT OF CHEMISTRY (3)
Intended primarily for students majoring in social sciences and humanities.
Relation of chemistry to human life, culture, and everyday decisions. Case studies used to illustrate chemical principles and examine issues of current concern, such as global warming, drug testing, ozone depletion, and heavy-metal poisoning.

01:160:128. CHEMISTRY OF LIFE (3)
Does not make a sequence with 01:160:161.
Topics chosen from fields of organic chemistry and biochemistry including proteins, DNA, RNA, and chemical origins of life. Emphasis given to nature of chemical and biochemical discoveries and the social responsibility of scientists.

01:160:130. LABORATORY IN THE CHEMISTRY OF LIFE (1)
Lab. 3 hrs. Pre- or corequisite: 01:160:128.
Projects related to 01:160:128.
Lab. deposit: $20.

01:160:133. PREPARATION FOR GENERAL CHEMISTRY (2)
Prerequisites: 01:640:026 or equivalent and permission of instructor.
Beginning after five weeks of the term for students who start General Chemistry and encounter serious difficulties. Fall term only.

01:160:134. INTRODUCTION TO CHEMISTRY (3)
Prerequisites: 01:640:026 or equivalent and permission of instructor.
For students who are advised that they are not ready to undertake General Chemistry. Students who have taken higher-level chemistry courses for science majors are not eligible. Fall term only.

01:160:140. THE GREENHOUSE EFFECT (3)
Lec. 2 hrs., lab. 1.5 hrs. For nonscience majors; not for major credit in science and engineering. Credit not given for both this course and 01:450:140, 01:556:140, or 01:750:140.
The physical and chemical bases of the "greenhouse effect" and its global impact: biological, climatic, economic, and political. Reducing the emission of "greenhouse" gases; nuclear energy and other alternative energy sources.

01:160:159-160. GENERAL CHEMISTRY FOR ENGINEERS (3,3)
Lec. 2 hrs., rec. 1 hr. Prerequisite for 159: 01:640:026 or equivalent.
Pre- or corequisite for 160: 01:160:171.
Introduction to chemical principles and their application. Includes stoichiometry, states of matter, atomic and molecular structure, solutions, thermodynamics, equilibrium, oxidation-reduction, kinetics, nonmetals, metals and coordination compounds, and nuclear chemistry.

01:160:161-162. GENERAL CHEMISTRY (4,4)
Lec. 3 hrs., rec. 1 hr. Prerequisite for 161: 01:640:026 or equivalent. Pre- or corequisite for 162: 01:160:171. For science majors. Credit not given for both these courses and 01:160:163-164.
Introduction to chemical principles and their application. Topics include stoichiometry, states of matter, atomic and molecular structure, solutions, thermodynamics, equilibrium, oxidation-reduction, kinetics, nonmetals, metals and coordination compounds, and nuclear chemistry.

01:160:163-164. HONORS GENERAL CHEMISTRY (4,4)
Prerequisite: One year of high school chemistry. Corequisite for 163: 01:640:151 or permission of instructor. Pre- or corequisites for 164: 01:640:152 and 01:160:171 or permission of instructor. For students with a strong interest in chemistry and/or those considering majoring in a science or engineering discipline requiring a strong background in chemistry. Credit not given for both these courses and 01:160:161-162.
Covers topics of 01:160:161-162 in more depth. Material related to current research topics and other fields of scientific interest.

01:160:171. INTRODUCTION TO EXPERIMENTATION (1)
Lab. 3 hrs. Pre- or corequisite: 01:160:159, 161, or 163.
Laboratory illustrating basic chemical methods.
Lab. deposit: $20.

01:160:192. TOPICS IN CHEMISTRY (1.5)
Pre- or corequisites: 01:160:161 or 163 or advanced placement and permission of department. Enrollment limited to twenty students. Intended primarily for first-year students with a strong interest in chemistry.
Seminar on current applications of chemistry to real-world problems and issues. Practice in use of computational tools and the Internet in chemical applications.

01:160:209. ELEMENTARY ORGANIC CHEMISTRY (3)
Prerequisites: 01:160:127 and 128, 162, or 164. Not for major credit. Credit not given for both this course and 01:160:307-308.
Carbon compounds, including biologically and nutritionally interesting compounds, and textile polymers.

01:160:211. ELEMENTARY ORGANIC CHEMISTRY LABORATORY (1)
Lab. 3 hrs. Prerequisite: 01:160:171. Pre- or corequisite: 01:160:209.
Synthesis and analysis of organic compounds.
Lab. deposit: $20.

01:160:251. ANALYTICAL CHEMISTRY (2.5)
Lec. 1 hr., lab. 4.5 hrs. Prerequisites: 01:160:171 and 160, 162, or 164.
Quantitative applications of gravimetric, volumetric, and instrumental methods of analysis to samples of environmental significance. Offered fall and spring terms.
Lab. deposit: $20.

01:160:305-306. ORGANIC CHEMISTRY (3,3)
Lec. 3 hrs. Prerequisite : 01:160:160, 162, or 164. 01:160:305 does not substitute for 01:160:209. Credit not given for both 01:160:305-306 and 01:160:307-308 or 01:160:315-316.
Basic theory. Survey of structure, properties, and reactivity of main classes of compounds, including a number of biological interest.

01:160:307-308. ORGANIC CHEMISTRY (4,4)
Lec. 3 hrs., rec. 1 hr. Prerequisite: 01:160:160, 162, or 164. 01:160:307 does not substitute for 01:160:209. Credit not given for both 01:160:307-308 and 01:160:305-306 or 01:160:315-316.
Basic theory. Survey of structure, properties, and reactivity of main classes of compounds, including a number of biological interest.

01:160:309-310. ORGANIC CHEMISTRY LABORATORY (2,2)
Lec. 1 hr., lab. 4.5 hrs. Prerequisite for 309: 01:160:171. Pre- or corequisite for 309: 01:160:308 or 316. Prerequisites for 310: 01:160:309 or 311, and 308 or 316. The sequence 01:160:311, 310 is permissible. Open only to students majoring in chemistry, biochemistry, and chemical engineering or by permission of instructor.
Develops proficiency in preparation and manipulation. Hands-on use of modern spectroscopic and chromatographic instrumentation (FT-NMR, FT-IR, GC, GCMS).
Lab. deposit: $20.

01:160:311. ORGANIC CHEMISTRY LABORATORY (2)
Lec. 1 hr., lab. 4.5 hrs. Prerequisites: 01:160:171 and 307.
Develops facility in both preparation and manipulation and applies chromatographic and spectroscopic techniques to solutions of problems.
Lab. deposit: $20.

01:160:313-314. ORGANIC CHEMISTRY LABORATORY (1,1)
Lab. 3 hrs. Prerequisites for 313: 01:160:171; 01:160:160, 162, or 164. Prerequisites for 314: 01:160:305 or 307 or 315, and 01:160:313. Pre- or corequisite for 313: 01:160:305 or 307 or 315. Pre- or corequisite for 314: 01:160:306, 308, or 316. 01:160:313-314 is equivalent to 01:160:311. Offered in summer only.
Develops proficiency in preparation and manipulation. Chromatographic and spectroscopic techniques applied to solutions of problems. Qualitative organic analysis.

01:160:315-316. PRINCIPLES OF ORGANIC CHEMISTRY (4,4)
Lec. 3 hrs., rec. 1 hr. Prerequisite: 01:160:160, 162, or 164. Corequisite for 316: 01:160:309. 01:160:209 does not substitute for 01:160:315. Credit not given for both 01:160:315-316 and 01:160:305-306 or 01:160:307-308. Recommended for students planning to pursue graduate work in chemistry, biochemistry, molecular biology, or medicine.
Survey of structure, properties, and reactivity of main classes of organic compounds with a focus on qualitative molecular orbital theory, reaction mechanisms, and synthesis.

01:160:323-324. PHYSICAL CHEMISTRY (3,3)
Prerequisites: 01:160:160, 162, or 164; 01:640:251. Pre- or corequisites: 01:750:203-204, or 227 and 228. Credit not given for both these courses and 01:160:327-328 or 341-342.
Fundamental principles of physical chemistry. First term: thermodynamics with applications to chemical and phase equilibria. Second term: quantum theory, spectroscopy, and chemical dynamics.

01:160:325. PHYSICAL CHEMISTRY LABORATORY FOR ENGINEERS (2.5)
Lec. 1 hr., lab. 4.5 hrs. Prerequisite: 01:160:171. Pre- or corequisite: 01:160:323, 327, or 341.
Experiments in physical chemistry illustrating principles and techniques. Use of computers to process experimental data.

01:160:327-328. PHYSICAL CHEMISTRY (4,4)
Lec. 3 hrs., rec. 1 hr. Prerequisites: 01:160:160, 162, or 164; 01:640:251. Pre- or corequisites: 01:750:203-204, or 227 and 228. Credit not given for both these courses and 01:160:323-324 or 341-342. Equivalent to 01:160:323-324 but includes a recitation.
Fundamental principles of physical chemistry. First term: thermodynamics with applications to chemical and phase equilibria. Second term: quantum theory, spectroscopy, and chemical dynamics.

01:160:329. EXPERIMENTAL PHYSICAL CHEMISTRY (2.5)
Lec. 1 hr., lab. 4.5 hrs. Prerequisites: 01:160:251 and 323, 327, or 341.
Experiments in physical chemistry illustrating principles and techniques. Use of computers to process experimental data.

01:160:341-342. PHYSICAL CHEMISTRY: BIOCHEMICAL SYSTEMS (3,3)
Prerequisites: 01:160:160, 162, or 164; 01:640:251. Pre- or corequisites: 01:750:203-204, or 227 and 228. Credit not given for both these courses and 01:160:323-324 or 327-328.
Fundamental principles of physical chemistry: thermodynamics, ideal and nonideal solutions, chemical dynamics, catalysis, electrochemistry, phase equilibria. Biologically relevant examples and applications stressed.

01:160:344. INTRODUCTION TO MOLECULAR BIOPHYSICS RESEARCH (3)
Prerequisites: 01:160:309 and 323, 327, or 341, and permission of instructor.
Basic principles and methods of research, followed by a research project involving preparation of biopolymer analogs, X-ray crystallography, spectroscopy, calorimetry, computer simulation, and other relevant physical techniques. Description of research opportunities at the university available to undergraduates.

01:160:348. INSTRUMENTAL ANALYSIS (3)
Lec. one 80-minute period and one 5-hour lab. Prerequisite: 01:160:251. Intended for chemistry majors.
Theory and practice of instrumental analysis, including electrochemistry, separations, and spectroscopy.
Lab. deposit: $20.

01:160:361. CHEMICAL BONDING (1.5)
Prerequisite: 01:160:160 or 162 or equivalent.
Theories of ionic and covalent bonding. Elementary molecular orbital theory applied to simple molecules.

01:160:371. INORGANIC CHEMISTRY (3)
Prerequisites: 01:160:308, 361 or permission of instructor.
Introduction to the bonding, electronic structure, and chemical properties of transition metal and main group inorganic compounds.

01:160:391-392. INDEPENDENT STUDY IN CHEMISTRY (1-3,1-3)
Prerequisite: Permission of department. Not open to seniors.
Original problem under the direction of a member of the department. Written report required.

01:160:409. ORGANIC CHEMISTRY OF HIGH POLYMERS (3)
Prerequisites: 01:160:308 and 324, 328, or 342.
Introduction to the synthesis and reactions of macromolecules, free-radical polymerization, stereospecific polymerization, and stepwise polymerization.

01:160:410. INTRODUCTION TO MOLECULAR MODELING (3)
Prerequisites: 01:160:307,308 and 01:160:323,324 or equivalent.
Introduction to computer-assisted molecular modeling techniques for the study of chemical problems. Lectures on theoretical principles. Instruction in use of modern modeling programs. Computer projects involving solution of chemical problems.

01:160:411-412. ADVANCED ORGANIC CHEMISTRY (3,3)
Prerequisites: 01:160:308 and 324, 328, or 342.
Advanced survey of organic chemistry; structure and stereochemistry of organic molecules, chemistry of reactive intermediates, structure-reactivity relationships, molecular rearrangements, molecular orbital theory, and orbital symmetry correlations.

01:160:415. THEORY AND INTERPRETATION OF ORGANIC SPECTRA (3)
Prerequisites: 01:160:308 and 324, 328, or 342.
Theory and interpretation of nuclear magnetic resonance, infrared, ultraviolet, and mass spectra.

01:160:418. BIOORGANIC MECHANISMS (3)
Prerequisites: 01:160:308 and 324, 328, or 342.
Catalysis of organic reactions that are model systems for enzymatic processes. Emphasis on mechanisms of enzyme catalyzed reactions.

01:160:421. ATOMIC AND MOLECULAR STRUCTURE (3)
Prerequisites: 01:160:324, 328, or 342; 01:640:250 and 251 or equivalent.
Introduction to quantum mechanics and statistical mechanics. Elementary solutions of the Schrödinger wave equation; valence bond and molecular orbital theory; Boltzmann distribution; partition functions.

01:160:422. STATISTICAL MECHANICS (3)
Prerequisites: 01:160:324, 328, or 342; 01:640:250 and 251 or equivalent.
Basic concepts and methods of equilibrium statistical mechanics. Applications to systems and phenomena of chemical interest, including ideal and real gases, chemical equilibria, phase transitions, classical liquids, and polymer solutions. Use of Monte-Carlo and molecular dynamics simulations to solve problems of current interest.

01:160:425. THERMODYNAMICS I (3)
Prerequisites: 01:160:327-328 or equivalent.
Principles of classical and statistical thermodynamics, treated in an integral manner; interrelations of molecular properties with the energy and entropy of macroscopic systems. Applications include phase changes and chemical reactions.

01:160:426. THERMODYNAMICS II (3)
Prerequisite: 01:160:425.
Application of thermodynamics to solutions of nonelectrolytes and electrolytes.

01:160:433. CHEMICAL APPLICATION OF GROUP THEORY (3)
Prerequisite: 01:160:421 or permission of instructor.
Aspects and consequences of molecular symmetry; point groups and character tables; group theory and quantum mechanics; symmetry aspects of the electronic structure in organic and inorganic molecules; selection rules for electronic and vibrational spectroscopy; ligand field theory.

01:160:434. KINETICS (3)
Prerequisite: 01:160:324, 328, or 342 or equivalent.
Chemical reaction rates in homogeneous systems and at interfaces. Experimental and mathematical methods of elucidating reaction mechanisms. Photochemical and ultrafast reactions.

01:160:437. PHYSICAL CHEMISTRY OF BIOLOGICAL SYSTEMS (3)
Prerequisite: 01:160:324 , 328, or 342 or equivalent. Recommended: 11:115:403,404 or 01:694:407,408 previously or concurrently.
Introduction to the physical chemistry of proteins, nucleic acids, and their complexes. Forces that determine biopolymer structure. Principles of protein and nucleic acid structure. Transitions and interactions of biopolymers.

01:160:438. INTRODUCTION TO COMPUTATIONAL CHEMISTRY (3)
Prerequisite: 01:160:324, 328, or 342 or permission of instructor.
Solution of chemical problems using computer and graphics equipment. Applications to molecular structure and reactivity, conformational analysis, molecular interactions, and dynamics.

01:160:439. PHYSICAL CHEMISTRY OF THE ENVIRONMENT (3)
Prerequisite: 01:160:324 or 328 or equivalent.
Application of physical chemical principles to environmental problems.

01:160:446. CHEMICAL SEPARATIONS (3)
Prerequisite: 01:160:324 or 328 or equivalent.
The principles of chemical separations by various chromatographic techniques.

01:160:451. ANALYTICAL SPECTROSCOPY (3)
Prerequisites: 01:160:324 or 328, and a course in analytical chemistry.
Theory of spectroscopy and spectrophotometry, including the analytical applications of spectrochemical methods.

01:160:471. ADVANCED INORGANIC CHEMISTRY (3)
Prerequisites: 01:160:371 and 421, or equivalent.
Advanced treatment of bonding, electronic-spectral, magnetic, and chemical properties of transition metal complexes.

01:160:475. ORGANOMETALLIC CHEMISTRY (3)
Prerequisites: 01:160:308; 324 or 328; 371.
A detailed survey of the mechanisms of organometallic reactions.

01:160:476. BIOINORGANIC CHEMISTRY (3)
Prerequisite: 01:160:371 or equivalent.
Spectroscopic, chemical, and other properties of metal-containing biological systems such as hemoglobin, vitamin B_{12}, carboxypeptidase, etc.

01:160:491-492. SEMINAR IN CHEMISTRY (1,1)
Open only to seniors.
Development of communication skills needed by professionals in chemistry and related fields. Oral reports, discussions of topics of current interest, journal club, poster sessions. Introduction to the chemical research literature.

01:160:493-494. INTERNSHIP IN CHEMISTRY (1,1)
Corequisites: 01:160:491-492. Open only to seniors. Graded Pass/No Credit.
Work in chemistry with a designated community partner; an appropriately designed academic project resulting in a written and / or oral report.

01:160:495-496. SENIOR RESEARCH PROJECT: CHEMISTRY (1-6,1-6)
Prerequisite: Permission of department. Open only to seniors.
Research on original problem under the direction of a member of the department. Written report and one oral or poster presentation required.

01:160:497-498. HONORS RESEARCH IN CHEMISTRY (3-6,3-6)
Prerequisite: Permission of department. Open only to senior honors students.
Research on original problem under the direction of a member of the department. Written report and one oral presentation required.

CHINESE 165

(See Asian Studies 098 and East Asian Languages and Area Studies 214)

Department of Asian Languages and Cultures, Faculty of Arts and Sciences

Web Site: http://www.rci.rutgers.edu/~easian/east

Chairperson: Ching-I Tu

Professor:
Ching-I Tu, B.A., National Taiwan; Ph.D., Washington

Associate Professors:
Peter Li, B.A., Washington; Ph.D., Chicago
Richard VanNess Simmons, B.A., Ph.D., Washington
Ban Wang, B.A., M.A., Beijing Foreign Studies; Ph.D., California (Los Angeles)

Assistant Professor:
Dietrich Tschanz, M.A., Zurich; Ph.D., Princeton

Adjunct Faculty:
Kuang-Yu Chen, B.Sc., National Taiwan; Ph.D., Yale

Major Requirements

The major in Chinese requires 24 credits in courses taught in Chinese beyond the intermediate level, including courses in both modern and literary Chinese. Chinese majors are strongly urged to take courses in English, comparative literature, linguistics, economics or business, and courses on China offered by other departments.

Minor Requirements

The minor in Chinese consists of six courses of 3 or more credits beyond the elementary level, in both modern and literary Chinese. Of the six courses, at least three must be at the 300 or 400 level, and must be chosen from those acceptable for the major.

Departmental Honors Program

To qualify, a student must have a cumulative grade-point average of 3.0 or better and a grade-point average of 3.4 or better in the major at the end of the junior year. At that time, the student should formally apply to the chairperson for admission to the honors program. In addition to completing all requirements of the Chinese major, candidates are required to register for 01:165:497,498 Honors in Chinese, write an honors paper under the guidance of an assigned faculty member, and take a comprehensive examination at the end of the senior year.

Courses in English

01:165:111,112. CHINESE CALLIGRAPHY (2,2)
No previous knowledge of Chinese necessary. For Chinese language students, recommended to be taken simultaneously with 01:165:101,102.
Principles, techniques, and art of Chinese calligraphy; techniques of using the Chinese writing brush, writing styles, and construction of Chinese characters.

01:165:125. INTRODUCTION TO CHINESE CIVILIZATION (3)
Material and cultural achievements of Chinese civilization, including such areas as the fine arts, literature, religion, and thought.

01:165:210. CHARACTERISTICS OF THE CHINESE LANGUAGE (3)
Phonology, grammar, and the writing system of Mandarin Chinese; brief discussion of other major dialects of China; the influence of the Chinese language on Asian languages; the role of language in Chinese culture.

01:165:220. CHINESE CLASSICS AND THOUGHT: I-CHING, TAOISM, AND CONFUCIANISM (3)
Introduction to the I-Ching or Book of Changes, Taoism, Confucianism, and Chinese Buddhism, with emphasis on their origins and inter-relations, their influence on Chinese culture, and on values in the modern world.

01:165:241. CHINESE LITERATURE IN TRANSLATION I: PROSE AND POETRY (3)
Chinese literature from early times to the fourteenth century, with emphasis on poetry and on both philosophical and historical prose.

01:165:242. CHINESE LITERATURE IN TRANSLATION II: POPULAR FICTION AND DRAMA (3)
Chinese literature from the fourteenth century to the present, with emphasis on novels, short stories, and drama.

01:165:262. THE CHINESE CINEMA (3)
Cinematic developments in China in the past two decades. Topics reflecting the emergence of a new aesthetic, and recent political, social, and cultural changes.

01:165:264. CHINESE DRAMA AND PERFORMING ARTS (3)
Survey of Chinese dramatic performance from traditional times to the present, including opera, storytelling, and shadow plays, focusing on regional origins and variations.

01:165:310. TWENTIETH-CENTURY CHINESE LITERATURE IN TRANSLATION (3)
Chinese interests from the 1920s to the present, with emphasis on themes of identity and national crisis.

01:165:341,342. MAJOR TRADITIONS IN CHINESE THOUGHT (3,3)
Rise and development of pristine Confucianism, Mohism, Taoism, Legalism, the School of Names, Sinicized Buddhism, and Neo-Confucianism; their influences on Chinese civilization, their reevaluation in the light of new tendencies of thought after contact with the West.

Courses in Chinese

01:165:101,102. ELEMENTARY CHINESE (4,4)
Introduction to sounds, structure, and writing system of modern Chinese (Mandarin); practice in speaking and reading.

01:165:121. INTENSIVE READING AND WRITING IN CHINESE (3)
Offered spring term only. Prerequisite: Speaking proficiency in Chinese.
Development of reading and writing skills to the level of proficiency required for Intermediate Chinese. Learn 600 characters.

01:165:131,132. INTERMEDIATE CHINESE (4,4)
Prerequisite: 01:165:102 or equivalent.
Development of language skills: vocabulary building, oral proficiency, listening, and reading comprehension.

01:165:301,302. INTRODUCTION TO LITERARY CHINESE (3,3)
Prerequisite: 01:165:132 or equivalent.
Grammatical analysis of wen-yen, or literary Chinese, and reading of simple texts in semiclassical and classical Chinese.

01:165:303,304. ADVANCED MODERN CHINESE (3,3)
Prerequisite: 01:165:132 or equivalent.
Readings in a variety of literary styles with introduction to simplified characters; written and oral exercises.

01:165:325. ADVANCED CHINESE GRAMMAR (3)
Prerequisite: 01:165:132 or equivalent.
Analysis and discussion of Chinese grammar. Explanation of linguistic concepts through problem-solving exercises on Chinese word formation, sentence grammar, and paragraph structure.

01:165:361. BUSINESS CHINESE (3)
Prerequisite: 01:165:301 or 303 or equivalent.
Fundamental principles governing commercial organizations and foreign trade in China, Taiwan, Hong Kong, and other Chinese-speaking regions in East Asia; practice in business correspondence.

01:165:362. BUSINESS CHINESE II (3)
Prerequisite: 01:165:361 or equivalent.
Continuation of 01:165:361 with emphasis on practice in advanced business correspondence.

01:165:371. CONTEMPORARY EXPOSITORY CHINESE (3)
Prerequisite: 01:165:301 or 303 or equivalent.
Reading and discussion of selections from scholarly writings on history, philosophy, and political and social issues in modern Chinese prose. Analysis of structural pattern and practice in writing.

01:165:401. ADVANCED CHINESE CONVERSATION AND COMPOSITION (3)
Prerequisite: 01:165:302 or 304 or equivalent.
Practice of speech conversation, discussion, and composition in Mandarin Chinese; exercises in Chinese grammar and rhetoric.

01:165:402. THE ORIGIN AND DEVELOPMENT OF CHINESE WRITING (3)
Pre- or corequisites: 01:165:302 or 304 or equivalent.
Investigation of the early evolution of Chinese writing within the context of the beginnings of Chinese civilization. Emphasis on textual understanding of the oracle bone inscriptions of the Shang period (ca. 1700 to 1100 B.C.).

01:165:410. THE CHINESE NOVEL (3)
Prerequisite: 01:165:302 or 304 or equivalent.
Analysis of such classic Chinese novels as San-kuo yen-i (The Romance of the Three Kingdoms), Shui-hu chuan (Water Margin), Hsi-yu-chi (Monkey), and Hung-lou meng (Dream of the Red Chamber).

01:165:412. CHINESE POETRY (3)
Prerequisite: 01:165:302 or 304 or equivalent.
Reading, analysis, and discussion of Chinese poetry in various forms from the classical period to the present.

01:165:419,420. READINGS IN CLASSICAL CHINESE LITERATURE (3,3)
Prerequisite: 01:165:302 or 304 or equivalent.
Such major literary works as Shih-ching, Mencius, Shih-chi, T'ang poetry, Sung tz'u, Yuan drama, and Ming-Ch'ing fiction.

01:165:451,452. READINGS IN MODERN CHINESE LITERATURE (3,3)
Prerequisite: 01:165:302, 304 or equivalent.
Selections from representative literary, historical, and ideological works of modern China; emphasis on stylistic and linguistic variations.

01:165:490. SEMINAR IN CHINESE LITERATURE AND THOUGHT (3)
Prerequisite: Permission of instructor.
Readings and research on topics in Chinese literature and thought of either the classical or modern period.

01:165:493,494. INDEPENDENT STUDY (3,3)
Prerequisites: Permission of instructor and department.
Supervised independent reading and study of a topic selected by the student and approved by the instructor.

01:165:497-498. HONORS IN CHINESE (6,6)
Both terms must be completed to receive credit.

CINEMA STUDIES 175

Faculty of Arts and Sciences

Program Director: John Belton, English; Ph.D., Harvard

Faculty:

Louise Barnett, English; Ph.D., Bryn Mawr College
Louise Duus, American Studies; Ph.D., Minnesota
Franco Ferrucci, Italian; Dottore in Lettere, Pavia
Leslie Fishbein, American Studies; Ph.D., Harvard
Sandy Flitterman-Lewis, English; Ph.D., California (Berkeley)
Angus Gillespie, American Studies; Ph.D., Pennsylvania
Hildburg Herbst, German; Ph.D., Princeton
Richard Koszarski, English; Ph.D., New York
Peter Li, Chinese, Comparative Literature, and Slavic Languages; Ph.D., Chicago
David Marsh, Italian; Ph.D., Harvard
Susan Martin-Márquez, Spanish and Portuguese; Ph.D., Pennsylvania

Albert G. Nigrin, Humanities and Communication; M.F.A., Rutgers
Gerald Pirog, Chinese, Comparative Literature, and Slavic Languages; Ph.D., Yale
Michael A. Rockland, American Studies; Ph.D., Minnesota
Martha Rossler, Visual Arts; M.F.A., California (San Diego)
Adolf Snaidas, Spanish and Portuguese; Ph.D., Rutgers
Alan Williams, French; Ph.D., SUNY (Buffalo)

Minor Program

The interdisciplinary minor in cinema studies consists of seven courses distributed as follows: (1) three required courses, 01:354:201, 202 (01:354:210 may be substituted for either 01:354:201 or 202), and 01:175:425 (01:354:420 may be substituted for 01:175:425); (2) four courses from the list below, two of which must be selected from category A and two additional courses from category A or B. A minimum of three courses must be at the 300 level or above.

Students pursuing a minor in cinema studies must select five courses for the minor that are outside their major. Exception: English literature majors who pursue a cinema studies minor may include more than two 01:354 courses in their minor program, but only two of those may be counted toward the major. Students who select the film option for the English major may not pursue a minor in cinema studies.

Category A

01:354:210 Close Readings of Cinema (3)
01:354:315,316 American Cinema I,II (3,3)
01:354:320,321 World Cinema I,II (3,3)
01:354:330,331 Critical Methodology in Film (3,3)
01:354:370 Film Genres (3)
01:354:375 Film and Society (3)
01:354:385 Theories of Women and Film (3)
01:354:420 Seminar: Film Theory (3)
01:420:305,306 French Film (3,3)
01:860:337 Ideology and the Construction of Fact (3)

Category B

01:014:132 Black Experience and Film Medium (3)
01:050:262 American Film and American Myth (3)
01:050:398 Workshop in American Studies (3) (when topic is documentary)
01:354:308 Screenwriting (3)
01:354:312 Cinema and the Arts (3)
01:354:350,351 Major Filmmakers (3,3)
01:354:373 The Documentary (3)
01:354:391,392 Special Topics in Film Studies (3,3)
01:420:371,372 Topics in French Cinema (3,3)
01:470:349 Contemporary German Cinema (3)
01:470:350 The Nazi Period in Film (3)
01:506:241 Film and History (3)
01:560:345,346 The Italian Cinema (3,3)
01:565:350 Japanese Film (3)
01:730:364 Aesthetics of Film (3)
01:940:348 Latin American Cinema (3)
11:554:346 Environmental Documentation in Photography, Film, and Video (3)

Courses

01:175:425. SENIOR SEMINAR IN CINEMA STUDIES (3)
Prerequisite: Permission of adviser. Also open to students not pursuing the minor. One or more topics selected for their relevance to the interdisciplinary study of film. Emphasis on advanced problems and issues together with methodology and theory. Extended research paper required on a topic chosen in consultation with the instructor.

01:354:201. INTRODUCTION TO FILM (3)
Film study, with emphasis on basic concepts of film analysis (narrative, editing, mise-en-scéne, sound) and the historical development of cinema as an institution.

01:354:202. INTRODUCTION TO FILM (3)
Film study, with emphasis on commercial cinema as an institution (genres, directors, stars) and on nonnarrative types of film (documentary, experimental).

01:354:210. CLOSE READINGS OF CINEMA (3)
Formal analyses of six or seven individual films; emphasis on visual track, sound track, and scenario-narrative construction.

01:354:420. SEMINAR: FILM THEORY (3)
Major developments in film theory from the silent era to the present; writings on film by Eisenstein, Kracauer, Bazin, Metz, Barthes, and others; practice in different methods to analyze films.

CLASSICS (Classical Humanities 190, Greek 490, Greek and Latin 492, Latin 580)

Department of Classics, Faculty of Arts and Sciences

Web Site: http://classics.rutgers.edu

Chairperson: John Bodel

Professors:

John Bodel, B.A., Princeton; M.A., Ph.D., Michigan
Lowell Edmunds, A.B., Harvard; M.A., California (Berkeley); Ph.D., Harvard
Thomas J. Figueira, B.A., Fordham; Ph.D., Pennsylvania
William W. Fortenbaugh (Emeritus), B.A., Princeton; B.A., Oxford; Ph.D., Pennsylvania
Barbara A. Shailor, A.B., Wilson College; M.A., Ph.D., Cincinnati

Associate Professor:

T. Corey Brennan, B.A., Pennsylvania; M.A., Oxford; Ph.D., Harvard

Assistant Professor:

Shirley Werner, B.A., Brandeis; M.A., North Carolina (Chapel Hill); Ph.D., Yale

The department offers a major in classics with options in classical humanities, Greek, Greek and Latin, and Latin. Selected courses in history, philosophy, and art history also may count for credit toward the classics major. Students with a strong interest in ancient history may pursue the ancient history and classics option within the history major (see the History section of this catalog).

Minors are offered in ancient Greek, Latin, and classical humanities. For more information, consult the departmental web site (http://classics.rutgers.edu).

Major Requirements

Classics majors choose one of four options. Those who wish to concentrate on one or both ancient languages may choose an option in ancient Greek and Latin, ancient Greek, or Latin. The classical humanities option is for those who wish to balance a general study of classical antiquity with study of the ancient languages.

Classical Humanities Option (Classical Humanities 190). A major who pursues the classical humanities option must take 36 credits in the department, of which 18 credits must be in ancient Greek and / or Latin languages. The language courses may be equally divided between Greek and Latin, or they may be entirely in one language and may include courses at the 100 and 200 levels. At least six courses counting toward the major must be at the 300 level or above.

Greek Option (Greek 490). A student majoring in classics with emphasis on Greek must take 35 credits in the department, of which 26 credits must be in the ancient Greek language (including at least six courses at the 300 level or above).

Greek and Latin Option (Greek and Latin 492). A student majoring in classics with emphasis on Greek and Latin must take 35 credits in the department, of which 29 credits must be in the ancient Greek and Latin languages. The credits may be distributed between the two languages, but at least 11 credits must be taken in each language. At least six courses must be at the 300 level.

Latin Option (Latin 580). A student majoring in classics with emphasis on Latin must take 35 credits in the department, of which 26 credits must be in the Latin language (including at least six courses at the 300 level or above).

Minor Requirements

Classical Humanities. A minor in classical humanities requires a minimum of seven courses, of which at least two must be in the Greek or Latin languages and three must be at the 300 level or above.

Ancient Greek. A minor in ancient Greek requires a minimum of six courses, including 01:490:102, 207, 208, and three at the 300 level or above.

Latin. A minor in Latin requires a minimum of six courses, including 01:580:102, 203, 204, and three at or above the 300 level.

Teacher Certification

Classics majors interested in earning eligibility for teacher certification (K–12) in New Jersey should contact advisers in the Graduate School of Education and in the Department of Classics in their first year, or as soon as possible thereafter.

Departmental Honors Program

Honors in classics may be earned by eligible students who wish to work on a research project chosen with the help of an adviser. To qualify, students must have a cumulative grade-point average of 3.0 or better and a grade-point average in the major of 3.4 or better at the end of the junior year. At that time, students should apply formally to the undergraduate director. Candidates for honors enroll in 01:190:495, 496 (8 credits) in the senior year, and should discuss their projects with their advisers by the end of the first term of the junior year.

Courses in Classical Humanities (190)

Courses in classical humanities are open to students without a knowledge of the Greek or Latin languages.

01:190:101. WORD POWER (3)
Systematic study of the basic Greek and Latin derivatives in English. Emphasis is on Greek and Latin elements in current scientific and literary use.

01:190:102. MEDICAL TERMINOLOGY (1.5)
May be taken concurrently with 01:190:101.
Systematic study of scientific terminology based on ancient Greek and Latin elements, with emphasis on the field of medicine.

01:190:202. MEDICAL AND BIOLOGICAL TERMINOLOGIES (3)
Study of Greek and Latin origins of medical and biological terms. Analysis of stems, prefixes, and suffixes. Historical background of terminological development.

01:190:205. GREEK CIVILIZATION (3)
Survey of Greek thought and literature. Readings include Homer, the lyric poets, the Athenian dramatists, and selected readings from historians and philosophers. Artistic material may be included.

01:190:206. ROMAN CIVILIZATION (3)
Surveys Roman thought and literature. Readings include Virgil, Ovid, Livy, Cicero, Tacitus, Petronius. Artistic material may be included.

01:190:208. PHILOSOPHY OF THE GREEKS (3)
Introduction to the major philosophical thinkers of the ancient Greek world with special emphasis on Plato and Aristotle.

01:190:309. GREEK ATHLETICS (3)
The Olympic and other Panhellenic games investigated through their representation in Greek artifacts and their archaeological settings. The agonistic ideology of Greek athletic competition explored through literary sources.

01:190:310. LITERATURE AND CULTURE IN AUGUSTAN ROME (3)
Prerequisite: One course in Roman history or culture or in Latin. Course meets once each week jointly with students enrolled in 01:580:310 during the lecture period scheduled for that course and once separately. Students may not receive credit for both 01:190:310 and 01:580:310. Students wishing to earn language credit in Latin should enroll in Latin 01:580:310.
The cultural renaissance under Augustus (44 B.C.–A.D. 14): the writings of Virgil, Horace, Livy, Ovid, and the elegiac poets; the building program at Rome; artistic trends.

01:190:312. THE SEARCH FOR THE HISTORICAL SOCRATES (3)
Prerequisite: One course in ancient Greek history, culture, or philosophy, or permission of instructor. Course is jointly taught with 01:490:312. Students wishing to earn language credit in Greek should enroll in 01:490:312. Students may not receive credit for both 01:190:312 and 01:490:312.
Portraits of Socrates in Plato, Xenophon, Aeschines of Sphettus, and Aristophanes. Birth of the philosophical dialogue and other genres; life and thought of Socrates; later Socratic movements.

01:190:315. LATIN POETS IN ENGLISH (3)
Prerequisite: One year of Latin or permission of instructor.
Selections from the Augustan poets Horace, Virgil, and Propertius. Translations by Dryden, Ezra Pound, and others, with close reference to the Latin original. Theories of translation.

01:190:320. WOMEN IN ANTIQUITY (3)
Credit not given for both this course and 01:510:251.
Women in the ancient societies of Greece and Rome. Their roles and images in the social, legal, political, domestic, philosophical, and artistic spheres examined using primary sources.

01:190:321. CLASSICAL RHETORIC (3)
Origins and development of rhetorical theory: persuasive argument, emotional appeal, good style, and delivery.

01:190:322. GREEK POLITICAL PHILOSOPHY (3)
Political philosophies of Plato and Aristotle, supplemented by readings in contemporary political philosophers.

01:190:326. GREEK AND ROMAN RELIGION (3)
Study of pagan gods and goddesses, cults and practices of the classical Greek world, Roman Republic, and Roman Empire.

01:190:327. SCIENCE IN ANCIENT GREECE AND ROME (3)
Explores the nature and development of science in ancient Greece and Rome, focusing on medicine, biology, physics, and mathematics.

01:190:328. ANCIENT LAW IN ACTION (3)
Explores Greek and Roman constitutions and legal systems in their social contexts. Illustrates procedural elements of ancient criminal and civil law through mock trials.

01:190:350. GREEK SOCIAL INSTITUTIONS (3)
Recommended: 01:510:201.
Social and economic life of the Greeks from the Mycenaean period through the Hellenistic age. Written and material evidence employed.

01:190:353. ARISTOTLE (3)
Philosophy of Aristotle through his selected works, supplemented by relevant readings in Plato and in modern philosophers.

01:190:355. GREEK AND ROMAN MYTHOLOGY (3)
Examination of the nature, meaning, and continued vitality of the principal classical myths through readings, lectures, and slide presentations.

01:190:372. CITIES OF THE CLASSICAL WORLD (3)
Study of urban development in antiquity, focusing on Athens and Rome, and synthesizing the evidence of literary, historical, and archaeological sources.

01:190:375. MASTERPIECES OF GREEK AND ROMAN ART (3)
Analyses of selected monuments of architecture, sculpture, and painting from 800 B.C. to A.D. 500. Emphasis on the development of style and the cultural significance of the monuments. Field trips to museums in the New York area.

01:190:381. GREEK DRAMA IN TRANSLATION (3)
Readings in English of the major Greek tragedies and comedies, with emphasis on the dramatic structure, literary analysis, and the theatrical conventions of the ancient stage.

01:190:391. ROMAN DRAMA IN TRANSLATION (3)
Readings in English of the comedies of Plautus and Terence and the tragedies of Seneca to emphasize the contributions of Latin authors to the dramatic genre and their influence on European and English drama.

01:190:411. GREEK AND ROMAN SATIRE (3)
Readings in English of classical satire from its origins in the Greek world through the fourth century A.D. Emphasis on the significance of ancient satire for comedy and satire in Western culture.

01:190:421. INDO-EUROPEAN ORIGINS OF THE CLASSICAL LANGUAGES (3)
Open only to advanced undergraduates in classics and linguistics and to graduate students with some knowledge of Latin and/or Greek.
Comparative survey of Latin and Greek grammar, with historical analysis of those features that the two languages share due to their common origin as Indo-European languages. Reference to the major characteristics of Indo-European languages in general.

01:190:431. SANSKRIT I (3)
Open only to upper-level undergraduate and graduate students.
Introduction to the grammatical system of the classical Sanskrit language; survey of basic features of Indo-European grammar, as manifested in Sanskrit.

01:190:432. SANSKRIT II (3)
Open only to upper-level undergraduate and graduate students.
Continuation of 01:190:431; extensive practice in translation and interpretation of texts from various genres and various periods of Old Indic literature.

01:190:491,492. INDEPENDENT STUDY IN CLASSICS (3,3)
Open only to juniors and seniors majoring in classics.
Directed reading and research on an assigned topic in classics under the supervision of a member of the department. An extensive essay required, reflecting in-depth research on the assigned topic.

01:190:495,496. HONORS PROJECT (4,4)
Open only to honors students in one of the fields in classics.
Independent or team projects resulting in a written paper, a performance, or some other appropriate form of public presentation such as drama, poetry, narrative prose, or museum excavation materials.

Classical Humanities Courses in Other Departments

01:082:301. ANCIENT ARCHITECTURE (3)
01:082:306. ROMAN ART (3)
01:082:342. EARLY GREEK ART (3)
01:082:343. LATER GREEK ART (3)
01:510:201. ANCIENT GREECE (3)
01:510:203. ANCIENT ROME (3)
01:510:205. BYZANTIUM: THE IMPERIAL AGE (3)
01:510:207. BYZANTIUM: THE LAST CENTURIES (3)
01:510:251. WOMEN IN ANTIQUITY (3)
01:510:301. EARLY GREECE (3)
01:510:302. CLASSICAL GREECE (3)
01:510:303. HELLENISTIC WORLD (3)
01:510:304. ROMAN REPUBLIC (3)
01:510:305. ROMAN EMPIRE (3)
01:510:306. THE ROMAN WORLD IN LATE ANTIQUITY (3)
01:510:307. ANCIENT CULTURAL AND INTELLECTUAL HISTORY (3)
01:510:403. ANCIENT WARFARE AND DIPLOMACY (3)
01:730:203. INTRODUCTION TO CLASSICAL PHILOSOPHY (3)
01:730:301. SOCRATES AND PLATO (3)
01:730:302. PLATO AND ARISTOTLE (3)
01:730:401. PLATO (3)
01:730:402. ARISTOTLE (3)
01:730:403. ANCIENT PHILOSOPHY AFTER ARISTOTLE (3)

Courses in Greek, Ancient (490)

01:490:101. ELEMENTARY GREEK I (3)
One weekly meeting in the Instructional Microcomputing Lab.
Intensive study of Greek grammar in conjunction with readings in simple Greek prose.

01:490:102. ELEMENTARY GREEK II (3)
Prerequisite: 01:490:101 or permission of instructor. One weekly meeting in the Instructional Microcomputing Lab.
Continued study of Greek grammar in conjunction with readings.

01:490:207. CLASSICAL GREEK PROSE (3)
Prerequisite: 01:490:102 or permission of instructor.
Advanced review of Greek grammar through the reading of a work of Plato or several speeches of Lysias.

01:490:208. EURIPIDES (3)
Prerequisite: 01:490:102 or permission of instructor.
Study of fifth-century Athenian drama through the reading of a play of Euripides.

01:490:304. ARISTOPHANES (3)
Prerequisites: 01:490:207, 208 or permission of instructor.
Reading of Clouds and of one other comedy; comparison of the Aristophanic with the Platonic Socrates; study of relation of Old Comedy to Athenian life.

01:490:305. GREEK DRAMA (3)
Prerequisite: 01:490:207 or 208 or permission of instructor.
Readings in the works of fifth-century Greek dramatists with special emphasis on Sophocles.

01:490:306. FROM ATHENS TO ALEXANDRIA (3)
Prerequisite: 01:490:207 or 305 or permission of instructor.
Major works of the literature of Greece from the fourth century B.C. into the Hellenistic Age.

01:490:308. GREEK HISTORICAL WRITINGS (3)
Prerequisites: 01:490:207, 208 or permission of instructor.
Readings of selected narratives in Herodotus and of main speeches, excursuses, and parts of Books six and seven of Thucydides. Comparative study of historical method.

01:490:309. LYRIC POETRY (3)
Prerequisites: 01:490:207, 208 or permission of instructor.
Survey of the main poets of the "lyric age" of Greece (Alcman, Sappho, Alcaeus, Archilochus, Solon, Theognis, Anacreon); reading of an ode of Pindar.

01:490:310. GREEK HEROIC POETRY (3)
Prerequisites: 01:490:207, 208 or permission of instructor.
Studies in the poetry and culture of Homeric Greece. Selections from the Iliad or Odyssey.

01:490:311. NEW TESTAMENT GREEK (3)
Selections from the Gospels, Acts, and Epistles supplemented by a review of grammar and syntax.

01:490:312. SOCRATIC LITERATURE (3)
Prerequisite: 01:490:207 or 208 or permission of instructor. Course is jointly taught (in part) with 01:190:312. Credit not given for both this course and 01:190:312.
Portraits of Socrates in Plato, Xenophon, Aeschines of Sphettus, and Aristophanes, with emphasis on the reading, in Greek, of selections from the writings of these authors.

01:490:315. MENANDER (3)
Prerequisites: 01:490:207, 208 or permission of instructor.
Study of Dyskolos and Samia as examples of "New Comedy"; their relation to Athenian life at the end of the fourth century.

01:490:335. GREEK PROSE COMPOSITION (3)
Prerequisite: 01:490:207 or 208.
Review of syntax, composition in Greek, and translation from English to Greek of continuous passages adapted from classical authors.

01:490:391. READINGS IN GREEK PROSE (3)
Prerequisites: 01:490:305, 306 or permission of instructor.
Readings in selected ancient Greek prose authors or genres.

01:490:392. READINGS IN GREEK POETRY (3)
Prerequisites: 01:490:305, 306 or permission of instructor.
Readings in the works of selected Greek poets or poetic genres.

01:490:400. DEMOSTHENES (3)
Prerequisites: 01:490:207, 208 or permission of instructor.
Reading of one public and one private oration; study of Demosthenes as orator; as source for Athenian law, commerce, and private life; as statesman.

01:490:402. PLATO AND ARISTOTLE (3)
Prerequisites: 01:490:207, 208 or permission of instructor.
Reading of one Platonic dialogue followed by selected portions of an Aristotelian treatise. Attention to prose style and also to common problems and diverging solutions.

Courses in Latin (580)

01:580:101. ELEMENTARY LATIN I (4)
Beginning course in Latin, introducing the Latin language and its grammar and syntax.

01:580:102. ELEMENTARY LATIN II (4)
Prerequisite: 01:580:101 or permission of instructor.
Continued beginning instruction in Latin, introducing Latin language, grammar, and syntax.

01:580:203. INTERMEDIATE LATIN PROSE (3)
Prerequisite: 01:580:102 or permission of instructor.
Selections from prose authors of the late Republican and / or early Empire; e.g., Caesar, Cicero, Livy; development of skill in reading continuous passages of Latin prose.

01:580:204. INTERMEDIATE LATIN POETRY (3)
Prerequisite: 01:580:102 or permission of instructor.
Representative poems of Catullus, Horace, and Ovid, read and studied with a view to their style, imagery, and topicality. Introduction to Latin metrics.

01:580:302. MEDIEVAL LATIN (3)
Prerequisite: 01:580:203 or 204 or permission of instructor.
Readings in major Latin writings and documents of the Middle Ages.

01:580:303. CICERO: PHILOSOPHICAL WRITINGS (3)
Prerequisites: 01:580:203, 204.
Selected philosophical dialogues and rhetorical treatises of Cicero.

01:580:304. CICERO: ORATIONS (3)
Prerequisites: 01:580:203, 204.
Selected orations of Cicero, with emphasis on the development of Cicero's style and the significance of historical and biographical background.

01:580:310. PROSE AND POETRY IN THE AGE OF AUGUSTUS (3)
Prerequisite: 01:580:203 or 204 or permission of instructor. Course meets once each week jointly with students enrolled in 01:190:310 during the lecture period scheduled for that course and once separately. Students may not receive credit for both 01:190:310 and 01:580:310. Students wishing to earn language credit in Latin should enroll in Latin 01:580:310.
The cultural renaissance under Augustus (44 B.C.–A.D. 14), with emphasis on the reading, in Latin, of selections from the writings of Virgil, Horace, Livy, Ovid, and the elegiac poets.

01:580:321. ROMAN COMEDY (3)
Prerequisites: 01:580:203, 204.
Study of the principal meters, the theater, and the staging of plays through the reading of plays of Plautus and of Terence.

01:580:323. LUCRETIUS (3)
Prerequisites: 01:580:203, 204.
Readings from Lucretius' De Rerum Natura with analysis of its place within the literary and philosophical traditions of Rome and Greece.

01:580:324. SALLUST (3)
Prerequisites: 01:580:203, 204.
Readings from Sallust's Jugurthine War, Histories, and Catiline with a study of selected problems from the historical periods relevant to those works.

01:580:325. THE HISTORY OF LIVY (3)
Prerequisites: 01:580:203, 204.
Readings from Livy's Ab Urbe Condita with a study of selected problems in Roman Republican history.

01:580:327. LATIN ELEGY (3)
Prerequisites: 01:580:203, 204.
Survey of Latin poetry written in elegiac meter, with selections from Catullus, Tibullus, Sulpicia, Propertius, and / or Ovid.

01:580:328. ROMAN SATIRE (3)
Prerequisites: 01:580:203, 204.
Selected poems of Horace, Martial, and Juvenal and a study of their interrelationship.

01:580:329. TACITUS (3)
Prerequisites: 01:580:203, 204.
Reading of a minor work of Tacitus and / or selections from the Annals of Tacitus with an investigation of their value as sources for Imperial history in the first century A.D.

01:580:335. LATIN PROSE COMPOSITION (3)
Prerequisites: 01:580:203, 204.
Review of syntax and prose style; composition in Latin and translation into Latin of continuous passages of prose.

01:580:369,370. THE SEMINAR IN LATIN (3,3)
Primarily for juniors and seniors majoring in classical humanities; open to others with permission of instructor.
Extensive and rapid reading in Latin literature from the early Republic to the Empire.

01:580:401. ADVANCED STUDY OF THE POETRY OF OVID (3)
Prerequisites: 01:580:203, 204.
Readings and interpretation of selected works of Ovid. A study of the poet's contribution to Roman literature and his importance in the Western literary tradition.

01:580:402. ADVANCED STUDY OF VERGIL'S Aeneid (3)
Prerequisites: 01:580:203, 204.
Readings of Vergil's Aeneid with an analysis of selected problems in its interpretation.

01:580:403. READINGS IN LATIN LITERATURE I: LITERATURE OF THE REPUBLIC (3)
Prerequisites: 01:580:203, 204.
Prose and poetry of Rome from its beginnings in the third century B.C. to the end of the Republic in the first century B.C. Extensive selections from epic, drama, lyric, elegy, pastoral, and other poetry and from history, rhetoric, and oratory.

01:580:404. READINGS IN LATIN LITERATURE II: LITERATURE OF THE EMPIRE (3)
Prerequisites: 01:580:203, 204.
Prose and poetry of imperial Rome. Extensive selections from epic, history, satire, the novel, and other genres, with emphasis on writers of the Augustan and Neronian ages.

01:580:407. ADVANCED STUDY OF THE POETRY OF HORACE (3)
Prerequisites: 01:580:203, 204.
Intensive reading of Horace's poems with emphasis on the variety of style and content.

COGNITIVE SCIENCE 185

Faculty of Arts and Sciences

Web Site: http://ruccs.rutgers.edu

Program Director: Karin Stromswold

Program Faculty:

Mark Baker, Linguistics, RuCCS; Ph.D., Massachusetts Institute of Technology
Douglas DeCarlo, Computer Science, RuCCS; Ph.D., Pennsylvania
Sven Dickinson, Computer Science, RuCCS; Ph.D., Maryland
Jacob Feldman, Psychology, RuCCS; Ph.D., Massachusetts Institute of Technology
Jerry Fodor, Philosophy, RuCCS; Ph.D., Princeton
C.R. Gallistel, Psychology, RuCCS; Ph.D., Yale
Rochel Gelman, Psychology, RuCCS; Ph.D., California (Los Angeles)
Lila Gleitman, RuCCS; Ph.D., Pennsylvania
Jane Grimshaw, Linguistics, RuCCS; Ph.D., Massachusetts
Bela Julesz, RuCCS; Ph.D., Hungarian Academy of Sciences
Ilona Kovács, Psychology, RuCCS; Ph.D., Eotvos Loránd University of Sciences, Budapest (Hungary)
Eileen Kowler, Psychology; Ph.D., Maryland
Ernest Lepore, Philosophy, RuCCS; Ph.D., Minnesota
Alan Leslie, Psychology, RuCCS; Ph.D., Oxford
L. Thorne McCarty, Computer Science; J.D., Harvard Law School
Thomas Papathomas, Biomedical Engineering, RuCCS; Ph.D., Columbia
Alan Prince, Linguistics, RuCCS; Ph.D., Massachusetts Institute of Technology
Zenon Pylyshyn, Psychology, RuCCS; Ph.D., Saskatchewan
Suzanne Stevenson, Computer Science, RuCCS; Ph.D., Maryland
Stephen Stich, Philosophy, RuCCS; Ph.D., Princeton
Matthew Stone, Computer Science, RuCCS; Ph.D., Pennsylvania
Karin Stromswold, Psychology, RuCCS; Ph.D., Massachusetts Institute of Technology; M.D., Harvard Medical School
Bruce Tesar, Linguistics, RuCCS; Ph.D., Colorado

Additional Faculty:

For a list of additional faculty associated with the program, contact the program director or consult the cognitive science web pages.

Cognitive science is an interdisciplinary area of scholarship concerned with understanding the nature and development of such intelligent capacities as perception, language, reasoning, planning, problem solving, and related skills, whether these capacities are instantiated in biological or artificial systems. The goal of the cognitive science minor is to provide a structured way for undergraduates to study and carry out research in cognitive science with guidance from faculty members affiliated with the program in cognitive science. Any undergraduate may pursue a minor in cognitive science, regardless of his or her major. The interdisciplinary cognitive science minor is likely to be of particular interest to undergraduates majoring in fields that are directly related to cognitive science (e.g., computer science, linguistics, philosophy, psychology, anthropology, biological sciences, mathematics, statistics, biomathematics, communication, and engineering). For additional information about the cognitive science minor, call the Rutgers Center for Cognitive Science (RuCCS) at 732 / 445-0635; send email to admin@ruccs.rutgers.edu, or consult the cognitive science undergraduate web pages at http://ruccs.rutgers.edu/academicugrad.html.

Minor Program

The interdisciplinary minor in cognitive science consists of six courses, distributed as follows:

1. 01:185:201 Cognitive Science: A Multidisciplinary Introduction (3)
2. One course devoted to formal or analytic methods used in cognitive science. The following courses fulfill the formal / analytic requirement:

   01:198:111 Introduction to Computer Science (4)
   01:198:112 Data Structures (4)
   01:198:205 Introduction to Discrete Structures I (4)
   01:198:206 Introduction to Discrete Structures II (4)
   01:615:305 Syntax (3)
   01:615:315 Phonology (3)
   01:615:325 Semantics (3)
   01:615:411 Morphology (3)
   01:640:300 Introduction to Mathematical Reasoning (3)
   01:730:201 Introduction to Logic (3)
   01:730:315 Applied Symbolic Logic (3)
   01:730:407 Intermediate Logic I (3)
   01:730:408 Intermediate Logic II (3)
   01:830:472 Computational Cognition (3)
   01:960:379 Basic Probability and Statistics (3)
   01:960:381 Theory of Probability (3)
   01:960:382 Theory of Statistics (3)
3. Four additional elective courses. Any of the computer science, linguistics, philosophy, and psychology courses listed as approved "formal / analytic" courses may be counted as elective courses. The following additional courses fulfill the elective requirement:

01:119:255 Fundamentals of Neurobiology (3)
01:119:302 Computers in Biology (3)
01:119:440 Neuroanatomy and Anthropogenesis (4)
01:119:445 Advanced Neurobiology (3)
01:185:411 Advanced Topics I (3)
01:185:412 Advanced Topics II (3)
01:185:495 Research in Cognitive Science (3)
01:198:314 Principles of Programming Languages (4)
01:198:344 Design and Analysis of Computer Algorithms (4)
01:198:415 Compilers (4)
01:198:440 Introduction to Artificial Intelligence (4)
01:198:452 Formal Languages and Automata (3)
01:615:201 Introduction to Linguistic Theory (3)
01:615:330 Historical Linguistics (3)
01:615:340 Romance Linguistics (3)
01:615:350 Language and Context (3)
01:615:360 Theories of Language (3)
01:615:421 Language Typology (3)
01:615:441 Linguistics and Cognitive Science (3)
01:730:210 Philosophy of Language (3)
01:730:328 Philosophy of Psychology (3)
01:730:329 Minds, Machines, and Persons (3)
01:730:360 Philosophical Aspects of Cognitive Science (3)
01:730:418 Philosophy of Mind (3)
01:730:420 Philosophy of Language (3)
01:730:422 Philosophy of Logic (3)
01:730:424 The Logic of Decision (3)
01:730:428 Topics in the Philosophy of Psychology (3)
01:830:201 Principles of Cognitive Science (3)
01:830:301 Sensation and Perception (3)
01:830:303 Memory and Attention (3)
01:830:305 Cognition (3)
01:830:307 Perception in Cognitive Science (3)
01:830:311 Conditioning and Learning (3)
01:830:313 Physiological Psychology (3)
01:830:351 Psychology of Language I (3)
01:830:353 Language Acquisition (3)
01:830:401 Advanced Topics–Human Cognition (3)

Additional Requirements for the Minor

1. Grades of C or better must be earned in all courses counted toward the minor.
2. No more than one course at the 100-level may be counted toward the minor.
3. At least three of the six courses counted toward the minor must be at the 300-level or above.
4. No more than three elective courses may be taken from any one department.
5. The same course cannot be used to fulfill both the formal / analytic and elective requirements.
6. Courses taken within a student's major field of study cannot be used to fulfill the elective requirement unless special permission is granted by the undergraduate program director in cognitive science.

Students who wish to declare a minor in cognitive science should do so either at the same time or after they have declared a major field of study. Either before or immediately after declaring the cognitive science minor, students must take Cognitive Science 201 (01:185:201) and a formal / analytic methods course. Students should be aware that many of the courses listed have prerequisites and not all of the courses are offered each term. Contact the departments that offer courses to learn about prerequisites and course schedules. The Cognitive Science Program Faculty, under the direction of the undergraduate program director, advises students about selection of courses, mentors, and research / independent study projects. Students may petition the undergraduate program director to have alternate courses count as formal / analytic or elective courses.

Courses

01:185:201. COGNITIVE SCIENCE: A MULTIDISCIPLINARY INTRODUCTION (3)
Pre- or corequisite: A course in computer science, linguistics, philosophy, or psychology; or permission of the instructor.
Introduction to computational, linguistic, philosophical, and psychological approaches taken within cognitive science, through a survey of topics such as reasoning, language, and vision.

01:185:411. ADVANCED TOPICS I (3)
By special permission.
Detailed focus on computational, linguistic, philosophical, and psychological approaches taken within cognitive sciences through a survey of topics such as reasoning, language, vision, and cognitive development.

01:185:412. ADVANCED TOPICS II (3)
By special permission.
Detailed focus on computational, linguistic, philosophical, and psychological approaches taken within cognitive sciences through a survey of topics such as reasoning, language, vision, and cognitive development.

01:185:495. RESEARCH IN COGNITIVE SCIENCE (3)
Pre- or corequisites: 01:185:201; an approved formal/analytic course; and permission of the instructor and the undergraduate program director. Open only to juniors and seniors.
Supervised research / independent study. May include library or laboratory research. Written agreement with supervisor and final written report required.

COMMUNICATIONS

(See the School of Communication, Information and Library Studies section)

COMMUNITY DEVELOPMENT

(See the Edward J. Bloustein School of Planning and Public Policy)

COMPARATIVE LITERATURE 195

Program in Comparative Literature, Faculty of Arts and Sciences

Undergraduate Director: Janet A. Walker

Professors:

Derek Attridge (Distinguished Visiting Professor), B.A., Natal; B.A., Ph.D., Cambridge (Clare College)
Louise K. Barnett, B.A., North Carolina; M.A., Ph.D., Bryn Mawr
Stephen Eric Bronner, B.A., CUNY (City College); M.A., Ph.D., California (Berkeley)
Drucilla Cornell, B.A., Antioch; J.D., UCLA Law School
Marianne DeKoven, B.A., Radcliffe College; M.A., Ph.D., Stanford
Elin Diamond, B.A., Brandeis; M.A., Ph.D., California (Davis)
M. Josephine Diamond, B.A., Leeds (England); M.A., Ph.D., Cornell
Lowell Edmunds, A.B., Harvard; M.A., California (Berkeley); Ph.D., Harvard
Uri Eisenzweig, B.A., Tel Aviv; M.A., Doctorate, Paris
Franco Ferrucci, Dottore in Lettere, Pavia
Jerry A. Flieger, B.A., Wisconsin; M.A., Ph.D., California (Berkeley)
William Galperin, A.B., Chicago; A.M., Ph.D., Brown
Michael McKeon, B.A., Chicago; M.A., Ph.D., Columbia

Alicia Ostriker, B.A., Brandeis; M.A., Ph.D., Wisconsin
Bruce Robbins, B.A., M.A., Ph.D., Harvard
Susana Rotker, B.A., Universidad Católica Andrés Bello (Venezuela); M.A., Ph.D., Maryland
Louis A. Sass, B.A., Harvard; M.A., Ph.D., California (Berkeley)
Mary Speer, B.A., Duke; M.A., Ph.D., Princeton
Ching-I Tu, B.A., National Taiwan; Ph.D., Washington
Janet A. Walker, B.A., Wisconsin; M.A., Ph.D., Harvard
Steven F. Walker, B.A., Wisconsin; M.A., Ph.D., Harvard
Alan Williams, B.A., M.A., Washington; Ph.D., SUNY (Buffalo)
Yael Zerubavel, B.A., Hebrew (Jerusalem); M.A., Ph.D., Pennsylvania

Associate Professors:

Abena P.A. Busia, B.A., M.A., St. Anne's College (Oxford); Ph.D., St. Anthony's College (Oxford)
Ed Cohen, A.B., Georgetown; Ph.D., Stanford
Harriet Davidson, B.A., Texas (Austin); M.A., Ph.D., Vanderbilt
Sandy Flitterman-Lewis, B.A., M.A., Ph.D., California (Berkeley)
Mary Gossy, B.A., Bryn Mawr College; M.A., Ph.D., Harvard
Peter Li, B.A., Washington; Ph.D., Chicago
Jorge Marcone, B.A., Pontificia Universidad Católica del Perú; M.A., Ph.D., Texas
Gerald Pirog, B.A., Rutgers; M.Phil., Ph.D., Yale
Paul Schalow, B.A., Hampshire College; M.A., Ph.D., Harvard
Louisa Schein, B.A., Brown; M.A., Ph.D., California (Berkeley)
Serge Sobolevitch, B.A., CUNY (Queens College); M.A., Ph.D., Princeton
James B. Swenson, Jr., B.A., Brown; M.A., Ph.D., Yale
Antonia Tripolitis, B.S., Temple; M.S., Ph.D., Pennsylvania
Andrew Welsh, B.S., M.A., Ph.D., Pittsburgh

Assistant Professor:

Richard Serrano, B.A., Stanford; M.A., Ph.D., California (Berkeley)

Comparative literature studies literature across national and cultural boundaries in an effort to address fundamental questions about its nature, function, and value. It introduces students to literary theory and criticism and investigates the relationship between literature and other disciplines. Shifting the focus from "national" to "literature," comparative literature is able to study the communality of all practices called "literature" and to investigate the importance these practices might have for our ethical and political lives. At the same time, the major recognizes the singular importance of language in the formation of these values, and requires advanced work in at least one foreign literature. Students also are strongly urged to pursue course work in "non-Western" literatures and cultures.

Major Requirements

The major in comparative literature requires 36 credits:

Comparative Literature Core Courses

Five courses in comparative literature constitute the core of the major. In them, students bring their diverse experiences in the major to bear on common texts and common theoretical issues, in an effort to create a shared discourse about literature.

01:195:301 Theory of Literature (3)
01:195:303 Genre in Cultural Context (3)
01:195:481 Senior Seminar (3)
01:195:482 Senior Thesis (3)

Plus one of the following:

01:195:304 Fiction and Ideology (3)
01:195:306 Literature and Cultural Conquest (3)
01:195:308 Gender, Race, and Textual Imagination (3)
01:195:310 Literary Institutions (3)

Foreign Literature

One literature course (3 credits) in a foreign language department at the 200 level or above (including English for nonnative speakers, as well as course work in Provencal, Old French, or Old English literature) in which texts are read in the original languages. Prospective majors are strongly advised to begin the advanced study of a foreign language as early as possible in their academic careers, and majors are strongly urged to continue the study of at least one foreign language throughout their four years of work.

Major Focus

After consultation with the undergraduate director, students are required to select a group of at least six term courses (18 credits) at or above the 300 level chosen from among a list of courses approved by the comparative literature program. These courses constitute an area of concentration. Students particularly are encouraged to pursue studies in non-Western literatures.

Minor Requirements

The minor consists of 18 credits of course work in comparative literature including:

01:195:301 Theory of Literature (3)
01:195:303 Genre in Cultural Context (3)

Plus one of the following:

01:195:304 Fiction and Ideology (3)
01:195:306 Literature and Cultural Conquest (3)
01:195:308 Gender, Race, and Textual Imagination (3)
01:195:310 Literary Institutions (3)

In addition, two other comparative literature courses and one course at or above the 300 level chosen from among a list of approved courses, in consultation with the student's adviser, must be completed.

Departmental Honors Program

To graduate with honors in comparative literature, the student must complete a thesis on a significantly more demanding topic than the usual senior thesis and pass an oral examination on the thesis at the end of the senior year. The honors thesis requires an additional 3 credits (01:195:496) to be taken during the last term of the senior year.

To qualify, majors must have a cumulative grade-point average of 3.0 or better, and a grade-point average of 3.5 or better in the major at the end of the junior year. They must have their topic approved as adequate for an honors thesis by their chosen thesis director. Such approval is usually required by the end of the spring term of the junior year and in no case later than the end of the add-drop period of the first term of the senior year. The normal sequence for completing the honors thesis is 01:195:482 in the first term of the senior year followed by 01:195:496 in the final term.

Courses

01:195:101. INTRODUCTION TO WORLD LITERATURE (3)
Classics of Western and Eastern literature. Readings may include: the Odyssey, the Tao Te Ching, Roman poetry, Beowulf, Shakuntala, The Tale of Genji, troubadour poetry, and Dante's Inferno.

01:195:102. INTRODUCTION TO WORLD LITERATURE: COLLOQUIUM (1)
Corequisite: 01:195:101.
Readings and in-depth discussion and analysis of literary texts as well as works in theory.

01:195:135. INTRODUCTION TO SHORT FICTION (3)
The novella, short story, and short novel in Western and non-Western literary traditions. Authors: Boccaccio, Kleist, Hoffmann, Gogol, Dostoevsky, Mann, Kafka, Gide, and Akutagawa.

01:195:136. INTRODUCTION TO SHORT FICTION: COLLOQUIUM (1)
Corequisite: 01:195:135.
Readings and in-depth discussion and analysis of short fiction as well as works in theory.

01:195:150. WORLD MYTHOLOGY (3)
Story, structure, and meaning in myths of many cultures. Myth as a primary literary phenomenon, with some attention to anthropological and psychological perspectives.

01:195:151. WORLD MYTHOLOGY: COLLOQUIUM (1)
Corequisite: 01:195:150.
Readings and in-depth discussion and analysis of mythological and folkloric texts as well as works in theory.

01:195:160. INTRODUCTION TO COMPARATIVE LITERATURE (1.5)
Introduction to the comparative study of literature: across cultures, media, and disciplines. Focus on short texts, visual art, and films. Discussion format.

01:195:203,204. MASTERWORKS OF WESTERN LITERATURE (3,3)
Comparative study of selected classical texts from the Western literary tradition. First term: Antiquity and Middle Ages. Second term: Renaissance to the present.

01:195:216. INTRODUCTION TO WORLD LITERATURES IN ENGLISH (3)
Credit not given for both this course and 01:351:216.
Survey of English language literatures, including Asian, African, and Caribbean, in a global context.

01:195:241. MASTERPIECES OF MODERN GREEK LITERATURE IN TRANSLATION (3)
Credit not given for both this course and 01:489:241.
Readings and discussions of representative works from the Erotokritos of Vitzentos Kornaros to the contemporary works of Giannis Ritsos.

01:195:243. INTRODUCTION TO THE LITERATURES OF INDIA (3)
Indian literatures from Vedic times to the present. Emphasis on the Golden Age of Sanskrit literature and on the modern Indian novel and short story.

01:195:245. INTRODUCTION TO FOLKLORE (3)
Credit not given for both this course and 01:351:245.
Major genres of folklore, including folktale, folk song, and legend, with attention to the methods of collecting and analyzing these materials.

01:195:301. THEORY OF LITERATURE (3)
Credit not given for both this course and either 01:353:301 or 302. 01:353:301 or 302 may be counted for major core or minor core requirement with permission of undergraduate director.
Critical approaches to major contemporary literary theories.

01:195:303. GENRE IN CULTURAL CONTEXT (3)
Credit not given for both this course and 01:351:385. 01:353:385 may be counted for major core or minor core requirement with permission of undergraduate director.
Analysis of exemplary generic formations in their cultural contexts; genres considered cross-culturally.

01:195:304. FICTION AND IDEOLOGY (3)
Fictional narratives as statements about the social order. Texts by major thinkers such as Marx, Lukács, Goldmann, Benjamin, and Williams.

01:195:306. LITERATURE AND CULTURAL CONQUEST (3)
Credit not given for both this course and 01:353:326. 01:353:326 may be counted for major core requirement with permission of undergraduate director.
Dissemination and reception of hegemonic literatures: the function of travel literature; the transformation and appropriation of popular cultures.

01:195:308. GENDER, RACE, AND TEXTUAL IMAGINATION (3)
Literature as the privileged representation of the other. The connection between the form(s) of creative writing and the evolution of the very notion of sexual, and / or racial, differences. Theoretical readings: Irigaray, Kristeva, Johnson, Gates.

01:195:309. MAJOR LITERARY TRENDS (3)
Survey of the major literary periods or movements such as classical, medieval, Renaissance, romanticism, realism, and naturalism.

01:195:310. LITERARY INSTITUTIONS (3)
Literature as a socially determined phenomenon. The historical evolution of the status of the writer, of the work, of the critic, as well as of the means of, and the obstacles to, the dissemination of literary writing in various societies.

01:195:312. LITERATURE AND THE PSYCHE (3)
Texts by Freud, Lacan, and Jung. Introduction to the various literary questions raised by modern theories in psychology, particularly psychoanalysis.

01:195:314. LITERATURE AS A KIND OF LANGUAGE (3)
Introduction to criticism influenced by modern philosophies of language. Emphasis on formalism, structuralism, semiotics, and deconstruction. Readings: Saussure, Jakobson, Levi-Strauss, Barthes, Derrida, de Man.

01:195:315. DANTE AND MEDIEVAL CULTURE (3)
Credit not given for both this course and 01:560:315.
Dante's work in historical perspective: the theological antecedents, memory of the classical writers, and new profane literary experience.

01:195:316. POLITICS, LITERATURE, AND THE ARTS (3)
Credit not given for both this course and 01:790:316.
Discussion and analysis of political elements in selected aesthetic works that vary with the instructor.

01:195:318. LITERARY APPROACHES TO SACRED TEXTS (3)
Credit not given for both this course and 01:351:322.
Literary analysis of the formation and structure of the major texts of several world religions. Attention to style, genre, and cross-cultural interpretation.

01:195:320. WORLD CINEMA I (3)
Credit not given for both this course and 01:354:320.
Developments in French, Italian, British, Russian, and other national cinemas from 1896 to World War II; also examines cross-influences between foreign and American cinema.

01:195:321. WORLD CINEMA II (3)
Credit not given for both this course and 01:354:321.
Developments in French, Italian, British, Russian, Japanese, and other national cinemas after World War II; also examines cross-influences between foreign and American cinema.

01:195:324. TWENTIETH-CENTURY LITERATURE IN A GLOBAL CONTEXT (3)
Credit not given for both this course and 01:350:378.
Twentieth-century writing in English other than British and American.

01:195:326. BACKGROUNDS OF HOMOEROTIC LITERATURE (3)
Credit not given for both this course and 01:351:315.
Survey of gay and lesbian literature from the Greeks to the 1920s, stressing formal and generic analysis between cultures.

01:195:327. WOMEN'S TRADITIONS IN LITERATURE (3)
Prerequisite: One course in women writers or permission of instructor.
Fiction and poetry by women in three periods: Heian Japan (800–1200), the continental European Renaissance, and nineteenth-century England. Focus on the social context of a feminine literary tradition and the relationship between gender and genre.

01:195:328. MATRIARCHY AND MODERNITY (3)
In English. Credit not given for both this course and either 01:470:374 or 01:988:374.
Study of matriarchal undercurrents and their (r)evolutionary shifts and subversions in major literary and theoretical texts from twentieth-century German, British, American, and French culture.

01:195:329. MODERN JAPANESE NOVEL AND THE WEST (3)
Introduction to Japanese literature in translation from 1885 to the present, focusing on the influence of Western cultural ideals and literary forms. Special emphasis on the development of the novel form. Authors: Sõseki, Tõson, Akutagawa, Tanizaki, Kawabata, and Mishima.

01:195:331. THE NOVEL, EAST AND WEST (3)
The novel of the last one hundred years as a cross-cultural form. Comparison of novels from America, Europe, Asia, India, and Africa.

01:195:332. LOVE, HONOR, AND SUICIDE IN JAPANESE LITERATURE (3)
Credit not given for both this course and 01:565:317.
Suicide as a theme in Japanese literature from the eighth century to the present, with comparisons to the theme of suicide in Western literature. Selected texts from Western literature read to gain a comparative perspective. Films shown as well.

01:195:333. MODERN WRITERS AND EAST ASIA (3)
Influence of Asian literature and philosophy on the development of Western poetry, drama, and fiction of the twentieth century. Works include poems of Pound, Brecht, and Gary Snyder; plays of Yeats and Brecht; novels of Forster, Conrad, and Hesse.

01:195:335. MINORITY LITERATURES (3)
Credit not given for both this course and 01:351:369.
Cross-national and comparative studies of literature of one or more ethnic, racial, or cultural groups. Topics vary; consult department announcement.

01:195:336. LITERATURES OF MIGRATION, IMMIGRATION, AND DIASPORA (3)
Credit not given for both this course and 01:351:366.
Writings, mainly in English, that foreground representations of place, community, and identity in relation to national and international movement and displacement.

01:195:340. RENAISSANCE AND BAROQUE (3)
Intellectual currents and representative works, including epic, lyric, prose fiction, and drama of the European Renaissance. Readings from Marlowe, Rabelais, Montaigne, Erasmus, More, and others.

01:195:341. EUROPEAN NEOCLASSICISM (3)
European literature in the seventeenth and early eighteenth centuries and its connections with political, philosophical, and scientific thought of the time. Authors: Galileo, Descartes, Corneille, Molière, Milton, Dryden, Pope, and Grimmelshausen.

01:195:342. THE ROMANTIC MOVEMENT (3)
Intellectual currents and representative works, including lyric, prose fiction, and drama of the European romantic movement. Major romantic texts of France, Germany, and Russia.

01:195:345. LITERARY MODERNISM (3)
Exploration of the concept of "modernism" through major literary works written in English and other languages.

01:195:346. CLASSICAL BACKGROUNDS OF LITERATURE (3)
Credit not given for both this course and 01:351:317.
Influence on literature of classical Greek and Roman epic, tragedy, comedy, and other literary forms.

01:195:347. THE LIFE AND WORKS OF ODYSSEUS ELYTIS (3)
Credit not given for both this course and 01:489:347.
Examination of the works of Odysseus Elytis; the writers and artists who influenced his work.

01:195:349. THE BIBLE AND WESTERN LITERATURE (3)
Credit not given for both this course and 01:351:319.
Influence of the King James and other versions of the Bible on literature in English.

01:195:350. THEORY OF NARRATIVE (3)
Prerequisite: One course in literature or permission of instructor.
Logic of narrative and its implications in modern culture. Theoretical texts by Jakobson, Foucault, Genette, and Propp. Modern fiction (Poe, Borges, Robbe-Grillet), newspaper articles, and advertisements.

01:195:352. THE EUROPEAN NOVEL (3)
Comparative study of the emergence of forms, themes, and techniques of the novel from the Renaissance to the twentieth century.

01:195:354. THE NINETEENTH-CENTURY NOVEL (3)
Major works of fiction in their historical and social context. Authors include Balzac, Stendhal, Dickens, Turgenev, Dostoevsky, Eliot, and Mann.

01:195:356. MODERN FICTION (3)
Major works of fiction from 1900 to 1945 in their historical and political context. Works by such authors as Lawrence, Gide, Woolf, Mann, Malraux, Kafka, Proust, Sõseki, and Lu Xun.

01:195:357. CONTEMPORARY NOVEL (3)
Major novels written since 1945. Authors include Camus, Solzhenitsyn, Kundera, Böll, Tanizaki, Kawabata, Lessing, and Pavese.

01:195:358. ODYSSEUS: FROM HOMER TO KAZANTZAKIS (3)
Credit not given for both this course and 01:489:358. Taught in English.
Examination of the Homeric figure of Odysseus; his reincarnation and transformation in modern Greek.

01:195:359. LITERATURE OF THE FANTASTIC (3)
Short stories of the nineteenth and twentieth centuries, with some consideration of longer forms and parallel literary developments in ancient and Eastern cultures. Structuralist and psychological approaches to genre.

01:195:360. AUTOBIOGRAPHY (3)
Credit not given for both this course and 01:351:341.
Major works with special focus on theory and poetics.

01:195:380. POETRY (3)
Poetry from the ancient Greeks to the twentieth century, including Western and Asian poetry.

01:195:383. THE LIFE AND WORKS OF NIKOS KAZANTZAKIS (1885–1957) (3)
Pre- or corequisite: 01:489:241 or permission of instructor. Credit not given for both this course and 01:489:383.
Works of Nikos Kazantzakis (1885–1957) and the Eastern and Western ideas that influenced him—Homer, Henri Bergson, Nietzsche, Freud, and Buddhist philosophy.

01:195:385. MODERN POETRY (3)
Comparative survey of poetry in languages other than English from 1850 to the present. Poets include: Baudelaire, Mallarmé, Rimbaud, Rilke, Brecht, Neruda, Vallejo, Mandelstam, Akhmatova, Pessoa, Apollinaire, and Artaud.

01:195:390. COMEDY (3)
Study of the major comic traditions, especially the Menandrian (Menander, Plautus, Terence, Molière) and its modern descendant, the comedy of social criticism (Beaumarchais, Gogol, Chekhov, Shaw).

01:195:391. TRAGEDY (3)
Credit not given for both this course and 01:351:326.
Study of the literature and theory of tragedy from the Greeks to the twentieth century.

01:195:392. THE REALISTIC THEATER (3)
History of the realistic presentation of theatrical spectacles in Europe from the eighteenth to the twentieth century. Equal emphasis on staging and playwriting. Includes Ibsen, Chekhov, Shaw, and Becque.

01:195:393. ISRAELI THEATER AND FILM (3)
Credit not given for both this course and 01:563:393.
Comparative and interdisciplinary approaches to Israeli theater and film as a crossroads between East and West.

01:195:395. ISSUES IN COMPARATIVE LITERATURE (3)
Prerequisite: Permission of instructor. May be taken more than once. Content will differ each term.
Separate sections focusing on comparative, interdisciplinary topics. Specific titles announced at the time of registration.

01:195:399. SERVICE LEARNING INTERNSHIP (1)
Must be taken in conjunction with a designated CASE (Citizenship and Service Education) course offered in comparative literature.
One credit community service placement in comparative literature.

01:195:407. HOMER AND JOYCE (3)
Comparison of the Odyssey and Ulysses to show how a modern author employs the past in an attempt to construct a world epic. Homer read in translation.

01:195:419. HISTORY OF CRITICISM (3)
History of criticism from Plato and Aristotle to the twentieth century.

01:195:420. HISTORY OF CRITICISM (3)
Major criticism of the twentieth century.

01:195:437,438. TWENTIETH-CENTURY ARABIC LITERATURE (3,3)
Prerequisite: At least one prior course in literature (English or world) or one course in Middle Eastern studies. Credit not given for both these courses and 01:013:437,438 or 01:685:437,438.
Survey of representative works of Arabic literature in translation, including poetry, the novel, the short story, and plays. Emphasis on how new literary trends reflect sociocultural change in the Arab world, including debates over tradition, gender relations, and cultural pluralism.

01:195:440. SEMINAR: TOPICS IN GENRE (3)
Credit not given for both this course and 01:351:440.
Intensive study, in a discussion-oriented format, of a particular genre (e.g., pastoral, epic, comedy, lyric) or relationship among genres. Topics vary; consult department.

01:195:480. SPECIAL TOPICS IN COMPARATIVE LITERATURE (3)
Prerequisite: Permission of instructor.
Variable content. Special studies in particular ideas, themes, forms, and historic units in literature. Designed by individual instructor.

01:195:481. SENIOR SEMINAR (3)
Prerequisites: Two 300- or 400-level courses in literature.
Subject selected by instructor. Major topics or issues in literary studies. Research and oral presentation of work-in-progress.

01:195:482. SENIOR THESIS (3)
Prerequisite: 01:195:481.
Extended research paper required in consultation with the faculty member who directs it. Some work must be done on texts in the original language.

01:195:490. MODERN MIDDLE EASTERN LITERATURE IN TRANSLATION (3)
Credit not given for both this course and 01:563:480 or 01:685:490.
Modern literature in Arabic, Hebrew, Persian, and Turkish traditions, with focus on poetry, the short story, and the novel.

01:195:493,494. INDEPENDENT STUDY (BA,BA)
Prerequisites: Permission of instructor and department.
Independent reading under supervision of a member of the department.

01:195:496. HONORS IN COMPARATIVE LITERATURE (3)
Prerequisites: 01:195:482 and permission of the department.
Continued independent research on a topic selected for 01:195:482 with approval by the Honors Committee and leading to an oral presentation.

COMPUTER SCIENCE 198

Department of Computer Science, Faculty of Arts and Sciences

Chairperson: Tomasz Imielinski

Professors:

Eric Allender, B.A., Iowa; Ph.D., Georgia Tech
Saul Amarel, Turing Professor of Computer Science; B.S., Israel Institute of Technology: M.S., D.Eng.S., Columbia
Alexander T. Borgida, B.S., M.S., Ph.D., Toronto
Vasek Chvatal, M.S., Charles (Canada); Ph.D., Waterloo
Michael Fredman, B.S., California Institute of Technology; Ph.D., Stanford
Herbert Freeman (Associate Member), D.Eng.S., Columbia
Apostolos Gerasoulis, B.S., Ioannina (Greece); M.S., Ph.D., SUNY (Stony Brook)
Michael D. Grigoriadis, B.S., Robert College (Turkey); M.S., Lehigh; Ph.D., Wisconsin
Peter L. Hammer (Associate Member), M.S., Ph.D., Bucharest
Tomasz Imielinski, M.S., Gdansk Politechnica (Poland); Ph.D., Polish Academy of Sciences
Jeffrey Kahn (Associate Member), Ph.D., Ohio State
Leonid Khachiyan, M.Sc., Moscow Institute of Physics and Technology; Ph.D., Computing Center of the USSR Academy of Sciences (Moscow)
Janos Komlos (Associate Member), Ph.D., Budapest
Casimir A. Kulikowski, Board of Governors Professor of Computer Science; B.S., M.S., Yale; Ph.D., Hawaii
L. Thorne McCarty, Professor of Law and Computer Science; B.A., Yale; J.D., Harvard Law School
Naftaly Minsky, M.S., Ph.D., Hebrew (Jerusalem)
Marvin C. Paull, B.S., Clarkson College of Technology
Gerard Richter, B.S., Pennsylvania State; M.S., Northwestern; Ph.D., Harvard
Barbara Ryder, B.A., Brown; M.S., Stanford; Ph.D., Rutgers
Charles Schmidt (Associate Member), B.A., Concordia Senior College; M.A., Ph.D., Iowa
Eduardo D. Sontag (Associate Member), B.S., Buenos Aires; Ph.D., Florida
William L. Steiger, B.S., M.S., Massachusetts Institute of Technology; Ph.D., Australian National
Endre Szemeredi, State of New Jersey Professor of Computer Science; D.Sc., Moscow
Robert Vichnevetsky, B.S., M.S., Ph.D., Brussels

Associate Professors:

B.R. Badrinath, Ph.D., Massachusetts
Stanley M. Dunn (Associate Member), B.S., Drexel; M.S., Ph.D., Maryland
Martin Farach, B.S., South Carolina; M.D., Johns Hopkins; Ph.D., Maryland
Haym Hirsh, B.S., UCLA; Ph.D., Stanford
Bahman Kalantari, B.S., Wisconsin; M.S., Ph.D., Minnesota
Kenneth R. Kaplan, B.E.E., M.E.E., Ph.D., Polytechnic Institute of Brooklyn
Saul Y. Levy, B.S.E.E., M.S., Ph.D., Yeshiva
Louis Steinberg, B.S., Illinois; Ph.D., Stanford
Mario Szegedy, M.S., Eötvös Lóránd; Ph.D., Chicago

Research Associate Professors:

Sandeep Bhatt, B.S., M.S., Ph.D., Massachusetts Institute of Technology
S. Naqvi (Associate Member), Ph.D., Northwestern
Don Smith, B.S., M.S., Brown; Ph.D., Rutgers

Assistant Professors:

Ricardo Bianchini, B.Sc., Federal University of Rio de Janeiro; M.Sc., Ph.D., Rochester
Douglas DeCarlo, B.S., Carnegie Mellon; Ph.D., Pennsylvania
Liviu Iftode, Dipl.Eng., Polytechnic Institute of Bucharest; M.A., Ph.D., Princeton
Ulrich Kremer, M.S., Ph.D., Rice
Richard P. Martin, B.A., Rutgers; M.S., Ph.D., California (Berkeley)
Craig Nevill-Manning, B.Sc., Canterbury (New Zealand); Ph.D., Waikato (New Zealand)
Thu Duc Nguyen, B.S., California (Berkeley); M.S., Massachusetts Institute of Technology; Ph.D., Washington (Seattle)
Matthew Stone, Sc.B., Brown; Ph.D., Pennsylvania
Brett Vickers, B.S., M.S., Ph.D., California (Irvine)

Entry Requirements for the Major

Students wishing to declare a major in computer science must achieve a grade of C or better in 01:198:111, 112, 205, and 01:640:151-152. For purposes of declaring a major, these courses may be repeated to replace D/F grades, subject to the condition that all such D/F grades are earned in a single term.

Major Requirements

The basic major, leading to a bachelor of arts degree, consists of: 1) seven required courses in computer science, 01:198:111, 112, 205, 206, 211, 323, and 344; 2) three required courses in mathematics, 01:640:151-152 and 250; and 3) four electives from a designated list of courses in computer science and related disciplines (e.g., electrical engineering, mathematics). For details, see a computer science adviser or the departmental brochure.

To receive a bachelor of science degree, students must satisfy requirements 1) and 2) for the bachelor of arts degree, and, in addition, complete computer science courses 01:198:314 and 416, three (not four) other courses from category 3), plus physics courses 01:750:203-204 and 205-206 (or 01:750:123-124, 227, 229-230, required in the School of Engineering).

The B.A. option requires 51–55 credits (depending on 3-credit or 4-credit elective options), and the B.S. option requires 64–67 credits. No more than one grade of D can be accepted in the courses required for the major.

Declared computer science majors (198) will not receive credit (major or degree) for subsequent enrollment in computer science 110 and 170.

Minor Requirements

The minor consists of six courses in computer science, at least two of which are at the 300 or 400 level, chosen in consultation with a departmental adviser. Computer science 110 and 170 cannot be credited toward a minor in computer science. Only courses that count toward the major may be counted toward the minor.

Internet Certificate Program

The objective of the Internet Certificate Program is to teach the set of principles and skills necessary to build large web-based software applications, to understand the internal workings of Internet protocols, and to maintain and manage large web sites. Students who earn this certificate will include web designers and implementors, web masters, and network administrators. The course of study will stress "hands-on" knowledge, with a large number of programming assignments and projects.

The key principles and skills included in this program are distributed systems, World Wide Web networking protocols, network management, web-based software development tools, advanced user interfaces, and web server design. To earn an Internet certificate, students must complete the following courses with a grade of B or better in each: 01:198:336, 352, 417, and 476, and 01:198:415 or 431. The certificate is granted in conjunction with completion of a B.A. or B.S. degree.

Courses *

01:198:110. Introduction to Computers and Their Application (3)
Lec. 2 hrs., rec. 1 hr. Students planning further study in computer science should take 01:198:111. Credit not given for both this course and 01:198:170. Not open to students with a declared major in computer science.
General survey about what computers are and how they are used, including an introduction to computer programming and contemporary application packages.

01:198:111. Introduction to Computer Science (4)
Prerequisite: 01:640:115 or placement in CALC1. For students in science, mathematics, and engineering. Credit not given for both this course and 14:330:252.
Intensive introduction to computer science. Problem solving through decomposition. Writing, debugging, and analyzing programs in Java. Algorithms for sorting and searching. Introduction to data structures, recursion.

01:198:112. Data Structures (4)
Prerequisites: 01:198:111, CALC1.
Queues, stacks, trees, lists, and recursion; sorting and searching; hashing; complexity of algorithms; graph representations and algorithms.

01:198:170. Computer Applications for Business (3)
Lec. 2 hrs., rec. 1 hr. This course is for students seeking admission to the School of Business–New Brunswick. Credit not given for both this course and 01:198:110. Not open to students with a declared major in computer science.
Introduction to business applications of spreadsheet software, computer technology, data communications, network applications, and structured programming.

01:198:205. Introduction to Discrete Structures (4)
Prerequisites: 01:198:111, CALC2.
Sets, propositional and predicate logic, logic design, relations and their properties, and definitions and proofs by induction with applications to the analysis of loops of programs.

01:198:206. Introduction to Discrete Structures II (4)
Prerequisites: 01:198:205, CALC2. Credit not given for both this course and 01:640:477.
Counting (binomial coefficients, combinations), methods of finding and solving recurrence relations, discrete probability, regular expressions and finite automata, basic graph theory.

01:198:211. Computer Architecture (4)
Prerequisite: 01:198:112. Credit not given for both this course and 14:332:331.
Levels of organization in digital computer systems; assembly language programming techniques; comparative machine architectures; assemblers, loaders, and operating systems. Programming assignments in assembly language.

* Throughout this course listing, the course designations CALC1 and CALC2 are used. These designations refer to a variety of calculus courses offered by the Department of Mathematics. Please see that section of the catalog for further information.

01:198:221. NUMERICAL PROBLEMS AND COMPUTER PROGRAMMING (4)
Prerequisite: CALC2. Similar to 01:198:323, but designed for nonmajors. May not be used for major credit.
Introductory numerical analysis course. Fortran taught in recitation.

01:198:230. INTRODUCTION TO INFORMATION SYSTEMS (4)
Prerequisite: 01:198:110 or 111. May not be used for major credit.
Introduction to databases and file structures, and to network access tools for information storage and retrieval.

01:198:314. PRINCIPLES OF PROGRAMMING LANGUAGES (4)
Prerequisites: 01:198:112, 205.
Syntax, semantics, names and values, control structures, data types, procedures and parameters, scope rules, applicative languages, recursion, very high-level languages, dynamic structures, and object-oriented languages.

01:198:323. NUMERICAL ANALYSIS AND COMPUTING (4)
Prerequisites: CALC2, 01:640:250. Credit not given for both this course and 01:640:373.
Approximation, interpolation, numerical differentiation, integration; numerical solution of nonlinear equations, linear algebraic systems, and ordinary differential equations.

01:198:324. NUMERICAL METHODS (4)
Prerequisite: 01:198:323 or 01:640:373. Credit not given for both this course and 01:640:374.
Computational methods for linear algebraic systems, eigenvalues and eigenvectors, approximation of functions, splines; numerical solution of initial and boundary value problems for differential equations.

01:198:336. PRINCIPLES OF DATABASE MANAGEMENT SYSTEMS (4)
Prerequisites: 01:198:112, 205.
Introduction to the concepts and design principles used in database management systems. Principles of physical and logical database design, query languages, transaction management, reliability and security, and relational and object-oriented models.

01:198:344. DESIGN AND ANALYSIS OF COMPUTER ALGORITHMS (4)
Prerequisites: 01:198:112, 206.
Study of algorithms. Techniques for efficiency improvement. Analysis of complexity and validity for sorting (internal, external), shortest path, spanning tree, connected and biconnected components, and string matching. Introduction to NP-completeness.

01:198:352. INTERNET TECHNOLOGY (4)
Prerequisite: 01:198:211.
TCP / IP protocols, media access protocols, socket programming in C / UNIX, multicasting, wireless and mobile communication, multimedia over the Internet, ATM, switching theory, and network architectures.

01:198:405. SEMINAR IN COMPUTERS AND SOCIETY (3)
Prerequisites: At least one computer science course and one course in sociology, political science, anthropology, or philosophy; senior standing. May not be used for major credit.
Study and discussion of the impact of computers on man andsociety. For all students interested in exploring the social consequences of computer developments.

01:198:415. COMPILERS (4)
Prerequisites: 01:198:211 or 14:332:331; 01:198:314.
Study of compilers and interpreters. Parsing, lexical analysis, semantic analysis, code generation, and optimization.

01:198:416. OPERATING SYSTEMS DESIGN (4)
Prerequisites: 01:198:205, 211.
Batch processing, multiprogramming, timesharing, job scheduling, synchronization, resource management, protection, hierarchical design, and virtual concepts. Complete design of a simple operating system to be implemented and tested under program load as a project.

01:198:417. DISTRIBUTED SYSTEMS: CONCEPTS AND DESIGN (4)
Prerequisite: 01:198:416.
Introduction to the concepts and design principles used in distributed computer systems. Communication methods, concepts and strategies used in distributed services such as file systems, distributed shared memory, and distributed operating systems.

01:198:424. MODELING AND SIMULATION OF CONTINUOUS SYSTEMS (4)
Prerequisite: 01:198:221 or 323 or 01:640:373 or permission of instructor.
Principles and examples of mathematical models in the physical, economic, and life sciences. Numerical methods for differential equations. Special computers and languages for the simulation of continuous systems. Individual projects.

01:198:425. COMPUTER METHODS IN STATISTICS (4)
Prerequisites: 01:198:206 or equivalent; CALC2. Strongly recommended: Numerical methods (01:198:221, 323, or 01:640:373).
Computer science in applied and theoretical statistics; exploratory data analysis; algorithms for univariate and multivariate statistical analyses; use of statistical libraries; Monte Carlo and simulation.

01:198:428. INTRODUCTION TO COMPUTER GRAPHICS (4)
Prerequisite: 01:198:323 or 01:640:373. Credit not given for both this course and 14:332:484.
Displays, colors, perception, images, sampling, image processing, geometric transformations, viewing and visibility, modeling hierarchies, curve and surface design, animation, lighting, rendering, rasterization, shading, and ray tracing.

01:198:431. SOFTWARE ENGINEERING (4)
Prerequisites: 01:198:314, 344. Recommended: 01:198:415 or 416.
Problems and techniques involved in the specification, design, and implementation of large-scale software systems, studied in conjunction with actual group construction of such a system.

01:198:440. INTRODUCTION TO ARTIFICIAL INTELLIGENCE (4)
Prerequisite: 01:198:314.
Broad introduction to artificial intelligence, including search, knowledge representation, natural language understanding, and computer vision.

01:198:442. TOPICS IN COMPUTER SCIENCE (3–4)
Advanced topics in computer science. Topics vary from year to year according to the interests of students and faculty.

01:198:452. FORMAL LANGUAGES AND AUTOMATA (3)
Prerequisite: 01:198:344 or permission of instructor.
Finite automata and regular languages; context free languages, pushdown automata and parsing; language hierarchies; Turing machines; decidability and complexity of languages. Applications emphasized throughout.

01:198:476. ADVANCED WEB APPLICATIONS: DESIGN AND IMPLEMENTATION (4)
Prerequisites: 01:198:336, 417.
Comprehensive overview of current web technologies, including design and implementation principles for web-based applications. Basic principles of scalability, security, reliability, and performance. State-of-the-art review of currently available technologies.

CRIMINAL JUSTICE

(See Administration of Justice 012)

CRIMINOLOGY

Administered by the Department of Sociology, Faculty of Arts and Sciences

Criminology Certificate

The Criminology Certificate is an interdisciplinary curriculum for students interested in pursuing careers in criminal justice, law, and offender rehabilitation. The program provides students with theoretical and practical knowledge relevant to work in the criminal justice system. It examines current sociological, psychological, and legal issues in the study of crime and criminal justice.

A Criminology Certificate is awarded to students who complete 24 credits or eight courses including:

1. The following five courses:
   - 01:830:101 General Psychology (3)
   - 01:830:340 Principles of Abnormal Psychology (3)
   - 01:920:101 Introduction to Sociology (3)
   - 01:920:222 Criminology (3)
   - 01:920:306 Race Relations (3)
2. At least one of the following:
   - 01:920:304 Sociology of Deviant Behavior (3)
   - 01:920:307 Sociology of Mental Illness (3)
   - 01:920:349 Law and Society (3)
3. Any two courses listed under Administration of Justice 012.

Only courses completed with a grade of C or better may be counted toward the Criminology Certificate. For complete information, contact the adviser for the Criminology Certificate Program in the Department of Sociology.

Note: The Criminology Certificate is awarded only with or subsequent to the awarding of the baccalaureate degree in an approved major.

DANCE 203, 206

Department of Dance, Mason Gross School of the Arts

See the Mason Gross School of the Arts section for faculty listing and B.F.A. program information.

The Bachelor of Arts major program in dance combines a broad experience in the liberal arts with a specialization in the area of dance. It prepares students to advance beyond the bachelor's degree in performance, teaching, dance criticism, or history.

Major Requirements: B.A. Program

Dance majors in the B.A. program are required to complete all of the following courses listed under 07:203 and 07:206. Majors must take 07:700:101 Introduction to Music. It is recommended that dance majors elect additional courses in the major after consultation with the department faculty adviser. All B.A. majors are required to perform in at least one public performance sponsored by the Department of Dance.

Courses (203)

07:203:115. SEEING DANCE: APPRECIATING THE ART OF HUMAN MOVEMENT (3)
Perception, analysis, and description of theater dance. Diverse dance genre with special emphasis on contemporary cross-cultural syntheses.
Field trips: approximately $75.

07:203:123. MODERN DANCE I (2)
Development of fundamental movement skills and body awareness. Exploration of movement as dance.
Field trip: approximately $20.

07:203:124. MODERN DANCE II (2)
Prerequisite: 07:203:123 or permission of instructor. Dance majors may repeat once for credit.
Continued development of movement skills and techniques, problem solving and improvisation.
Field trip: approximately $20.

07:203:125. MODERN DANCE III (2)
Prerequisite: 07:203:124 or permission of department. Dance majors may repeat for credit.
Practice in intermediate level skills in modern dance technique.

07:203:126. MODERN DANCE IV (BA)
Prerequisite: 07:203:125. The full course may be taken for 4 credits. After successful completion of the full course, the technique portion may be repeated each year with the permission of the instructor for 2 credits.
Continued development of intermediate skills in modern dance technique. Development of fundamental skills in choreography.

07:203:249. BALLET I (2)
The language of ballet as an art form with emphasis upon traditional, academic, technical steps, and vocabulary.
Field trip: approximately $20.

07:203:250. BALLET II (2)
Prerequisite: 07:203:249 or permission of instructor. Dance majors may repeat this course once for credit.
Continued development of technical steps and vocabulary, body alignment, and concepts of ballet aesthetics.
Field trip: approximately $20.

Courses (206)

07:206:126. RHYTHMIC ANALYSIS (2)
Prerequisites: 07:203:123, 124 or permission of instructor.
Analysis of rhythmic structure relative to movement. Sight reading note values, movement dictation, dance, and composition.

07:206:136. DANCE PRODUCTION I (3)
Elements of dance production in relation to lighting, sound, stage sets, costume, and makeup. Theoretical and practical application of the skills necessary to produce and direct a dance concert.

07:206:142. DANCE IMPROVISATION IA (2)
Open only to dance majors.
Advanced experience in dance improvisation including the use of such stimuli as music, dramatic situations, kinetics, movement design, and spatial sensing as potential sources of movement and partner interaction.

07:206:175. ETHNIC DANCE (2)
Open only to dance majors. May be repeated for credit.
Focuses on the study of traditional dance styles of a given culture, their historical development, performance techniques, and terminology. Each term focuses on a specific culture.

07:206:201. ELEMENTARY LABANOTATION (3)
Prerequisites: 07:203:125,126, and 07:206:126; or permission of instructor.
Introduction to the structural analysis of movement based on Labanotation.

07:206:237. DANCE PRODUCTION II (3)
Theoretical and practical application of the skills necessary to produce and direct a dance concert.

07:206:325. KINESIOLOGY FOR DANCERS (3)
Functional human anatomy and the study of the scientific basis of human movement as they relate to dance training.

07:206:361. PRODUCTION STUDY (BA)
To be repeated for a total of 2 credits.
Crew assignments each term in lighting and other areas of dance production.

07:206:402. INTRODUCTION TO LABAN MOVEMENT ANALYSIS (3)
Prerequisites: 07:203:125,126. Open only to seniors.
Notation and description of the dynamics, shape, and spatial forms in movement using Laban Movement Analysis.

07:206:441. DANCE HISTORY—WORLD SURVEY (3)
Open only to juniors and seniors.
Study of dance in diverse cultures and time through film, video, reading, lectures, and directed research. Activity fee for films and field trips.

07:206:442. DANCE HISTORY—TWENTIETH CENTURY (3)
Open only to juniors and seniors.
Twentieth-century dance artists and dance masterpieces in the Western theater tradition. Influences on contemporary concert dance of diverse cultures and artistic and social movements. Activity fees for films and field trips.

DENTISTRY

(See Medicine and Dentistry in this section and also see Health Professions in the Student Life and Services section of this catalog)

DOUGLASS COLLEGE COURSES

(See Arts and Science 090)

EAST ASIAN LANGUAGES AND AREA STUDIES 214

(See also Asian Studies 098, Chinese 165, Japanese 565, Korean 574)

Department of Asian Languages and Cultures, Faculty of Arts and Sciences

Program Director: Ching-I Tu

See Chinese 165, Japanese 565, and Korean 574 for faculty listing. For a list of additional faculty related to East Asian languages and area studies, contact the program director in the department.

Major Requirements

The interdisciplinary major consists of a minimum of 12 credits in one of the East Asian languages, normally Chinese, Japanese, or Korean, beyond the intermediate level (132), and 18 credits of appropriate courses in other disciplines such as anthropology, economics, history, geography, philosophy, political science, sociology, religion, art, or literature of East Asia. These 18 credits of course work must be taken from more than two different disciplines and properly distributed between upper- and lower-level courses; at least 9 credits should be taken at the 300 level or above. For students with a concentration in Chinese, at least one course in literary Chinese is required. Students in the program should consult with the program director for selection of courses and development of a concentration.

All courses must be passed with a grade of C or better to be counted toward the major. For courses acceptable for the area studies component of this degree program, please refer to the listing of courses approved for the minor in Asian studies; see the Asian Studies 098 section of this catalog.

Minor Requirements

An interdisciplinary minor is administered by the Asian studies program. See Asian Studies 098 for details.

Departmental Honors Program

To qualify, a student must have a cumulative grade- point average of 3.0 or better and a grade-point average of 3.4 or better in the major at the end of the junior year. At that time, the student should formally apply to the chairperson for admission to the honors program. In addition to completing all requirements for the major, candidates are required to register for 01:165:497,498 Honors in Chinese or 01:565:497,498 Honors in Japanese, or the equivalent, write an honors paper under the guidance of an assigned faculty member, and take a comprehensive examination at the end of the senior year.

Courses

01:214:241. EAST ASIAN CIVILIZATIONS: TRADITIONAL ERA (3)
Credit not given for both this course and 01:098:241.
Introduction to traditional Chinese, Japanese, and Korean civilizations, including governmental institutions, educational systems, belief systems, language, literature, art, and everyday life.

01:214:242. EAST ASIAN CIVILIZATIONS: MODERN ERA (3)
Credit not given for both this course and 01:098:242.
Introduction to modern Chinese, Japanese, and Korean civilizations, including the impact of modernization, East-West contact, governmental institutions, belief systems, educational systems, language, literature, art, and everyday life.

01:214:338. RELIGIOUS THEMES IN EAST ASIAN LITERATURE (3)
Credit not given for both this course and 01:840:338.
Religious ideas and attitudes as expressed in Indian, Chinese, and Japanese classics.

ECONOMICS 220

Department of Economics, Faculty of Arts and Sciences

Web Site: http://economics.rutgers.edu

Chairperson: Mark R. Killingsworth

Vice Chairperson: Roger W. Klein

Director of Undergraduate Studies: Jeffrey Rubin

Professors:

Robert J. Alexander (Emeritus), B.A., M.A., Ph.D., Columbia
Monroe Berkowitz (Emeritus), A.B., Ohio; M.A., Ph.D., Columbia
Douglas H. Blair, B.A., Swarthmore College; M.A., M. Phil., Ph.D., Yale
Michael D. Bordo, B.A., McGill; M.S., London School of Economics; Ph.D., Chicago
Manoranjan Dutta, B.A., M.A., Calcutta; Ph.D., Pennsylvania

Ira N. Gang, B.A., Johns Hopkins; M.A., Ph.D., Cornell
Gary A. Gigliotti, B.A., Pittsburgh; M.Phil., Ph.D., Columbia
Mark R. Killingsworth, A.B., Michigan; B.Phil., Ph.D., Oxford
Roger W. Klein, A.B., California (Berkeley); Ph.D., Yale
Matityahu Marcus, B.A., CUNY (Brooklyn College); Ph.D., Brown
Richard P. McLean, B.S., Pennsylvania State; M.A., M.S., Ph.D., SUNY (Stony Brook)
Martin K. Perry, A.B., Missouri (Columbia); A.M., Ph.D., Stanford; J.D., Rutgers (Newark)
Hugh T. Rockoff, A.B., Earlham College; M.A., Ph.D., Chicago
Jeffrey Rubin, A.B., Rutgers; Ph.D., Duke
Louise B. Russell, Research Professor, Institute for Health, Health Care Policy and Aging Research; B.A., Michigan; Ph.D., Harvard
Kazuo Sato, M.A., Hokkaido; M.A., Ph.D., Yale
Joseph J. Seneca, B.S., M.A., Ph.D., Pennsylvania
Robert C. Stuart, B.C., British Columbia; M.S., Ph.D., Wisconsin
Shanti S. Tangri (Emeritus), B.S., Punjab (India); M.A., East Punjab University College; Ph.D., California (Berkeley)
Michael K. Taussig (Emeritus), B.A., Colorado; Ph.D., Massachusetts Institute of Technology
Hiroki Tsurumi, B. Comm., Hitotsubashi (Japan); M.A., Saskatchewan; Ph.D., Pennsylvania
Eugene N. White, B.A., Harvard; B.A., Oxford; M.A., Ph.D., Illinois

Associate Professors:

Rosanne Altshuler, B.A., Tufts; Ph.D., Pennsylvania
Roberto Chang, B.S.S., Universidad Catolica Del Peru; Ph.D., Pennsylvania
Jessie C. Hartline, B.S., Maryland; M.B.A., New York; Ph.D., Rutgers
Joseph P. Hughes, A.B., Davidson College; Ph.D., North Carolina
Bruce Mizrach, A.B., M.A., Tufts; Ph.D., Pennsylvania
Thomas J. Prusa, B.A., Georgetown; Ph.D., Stanford
Neil Sheflin, B.A., SUNY (Stony Brook); Ph.D., Rutgers
Barry Sopher, B.A., Ph.D., Iowa
Frank Vella, B.A., Sydney (Australia); M.A., Australian National; Ph.D., Rochester

Assistant Professors:

Colin Campbell, B.A., Columbia; Ph.D., Northwestern
Sewan Chan, B.A., Cambridge (England); M.A., Ph.D., Columbia
Simon Evenett, B.A., Cambridge (England); Ph.D., Yale
Eric J. Friedman, A.B., Princeton; M.A., M.S., Ph.D., California (Berkeley)
Stephanie Schmitt Grohe, B.A., Westfalische Wilhelms-Universitat Munster; M.B.A., CUNY (Baruch College); Ph.D., Chicago
Filippo Occhino, Laurea in Economic and Social Sciences, M.A., Università Commerciale Luigi Bocconi di Milano (Italy); Ph.D., Chicago
Argia M. Sbordone, M.Sc., London School of Economics; Ph.D., Chicago
Hilary Sigman, B.A., Yale; M.Phil., Cambridge; Ph.D., Massachusetts Institute of Technology

Economics is the study of individual and collective decision making given the limited availability of material resources. The economics curriculum is designed to contribute to a liberal arts education by widening a student's understanding of the economic problems that confront individuals and societies and to prepare students for graduate work in a variety of fields. Majors are expected to develop skills that permit critical analysis of important economic problems, and are exposed to a wide variety of economic policy issues.

The curriculum stresses such skills, including gathering and interpreting information, predicting the consequences of specific decisions, evaluating alternative choices, and managing public and private enterprises. Computer applications are a major component of instruction. The economics major provides a sound basis for a variety of professional careers, including graduate study in economics, business administration, management science, law, and public policy. A successful major also is well prepared for employment opportunities that demand strong analytical skills. Students who anticipate business careers may find the options in financial economics and international economics particularly beneficial.

Major Requirements

The foundation of the curriculum in economics consists of 01:220:102, 103, 203, 204, and 322. It also requires one term of statistics (01:960:211 or 285) with a grade of C or better.* Course 01:960:285 is preferred to 211, and, if possible, 01:960:285 should be taken in the term immediately prior to the one in which the student takes 01:220:322. One term of calculus (01:640:135 or equivalent) with a grade of C or better also is required. Second terms of both calculus and statistics are strongly recommended. These seven courses (five in economics, one in statistics, and one in mathematics) plus seven electives within economics (or, under certain options, a limited number of courses from related fields) constitute the major. Engineering students who take 01:220:200 Economics Principles and Problems may use this in place of 01:220:102 and 103, provided they take eight electives instead of seven. Credit is not given for 01:220:200 and for 01:220:102 or 103.

To ensure that students choose their electives from a variety of fields within economics, elective courses are divided into fields, and students are required to choose their electives so that they have completed at least one course from each of four fields. Course numbers are listed by fields of study below.

1. Microeconomic Theory: 01:220:395, 405
2. Decision Science: 01:220:308, 311, 386, 410, 419
3. Quantitative Methods: 01:220:401, 421
4. Mathematical Economics: 01:220:409, 430, 436
5. Macroeconomic Theory: 01:220:301, 412, 416
6. International Economics: 01:220:300, 335, 336, 433
7. Industrial Organization, Regulations, and Industry Studies: 01:220:309, 316, 341, 389, 471
8. Resource Economics: 01:220:332
9. Public Economics: 01:220:330, 340, 348, 360, 363, 369
10. Labor Economics: 01:220:302, 303, 304, 375
11. Financial Economics: 01:220:393, 394, 415
12. Comparative Economic Systems: 01:220:362, 379
13. Regional and National Economics: 01:220:346, 357, 358, 359, 378
14. Economic History: 01:220:305, 343, 344
15. Growth and Development: 01:220:339, 370, 377
16. Economic Thought and Methodology: 01:220:327

For both first-year and transfer students, a maximum of three economics courses taken outside the Department of Economics at Rutgers–New Brunswick may be applied toward the major. Transfer students who wish to apply transfer courses toward the major must first obtain approval from the undergraduate director. Enrolled economics majors who wish to take an economics course outside Rutgers–New Brunswick must have prior approval from the undergraduate director. Some exceptions are made for certain courses offered by the Department of Environmental and Business Economics at Cook College. Students are urged to consult the economics department for further information.

Independent study and general seminars do not constitute a separate field of study. Such courses may be counted toward any designated field or option with departmental approval.

The Department of Economics does not give credit for internships.

* Students who earn a D in either 01:960:211 or 285 may fulfill the statistics requirement by passing a second statistics course (generally, 01:960:212).

To declare a major in economics, a student must have a minimum grade of C in both 01:220:102 Introduction to Microeconomics and 01:220:103 Introduction to Macroeconomics. The student also must attain a minimum grade of C in the calculus course required by the department.

To satisfactorily complete the major, students must have a minimum cumulative grade-point average of 2.0 in the major.

Students who find a particular area of study within economics especially interesting may wish to explore it in some depth. Accordingly, the curriculum offers the following options for focused study within economics:

Comparative Systems and Planning	Labor
Economic Development	Managerial Economics
Economic History	Mathematical Economics
Economic Theory	Monetary Economics
Financial Economics	Public Economics and Policy
Industrial Organization	Quantitative Methods
International Economics	Resource Management
	Urban Economics

Detailed descriptions of these options and all the department's courses and nondepartmental courses approved under these options can be found on the department's web site.

Due to a change in the accounting program, the department no longer has an option in accounting. Students still may take 33:010:272, 452. These courses will count toward the required seven electives.

Minor Requirements

A minor in economics consists of 01:220:102 and 103 and four additional economics (220) courses. At least three courses must be at the 300 level or above. Only one economics course outside the Department of Economics at Rutgers–New Brunswick will be accepted toward the minor. Enrolled students who wish to take the one economics course outside Rutgers–New Brunswick must have prior approval from the undergraduate director. Some exceptions are made for certain courses offered by the Department of Environmental and Business Economics at Cook College. Students should consult the economics department for further information.

Departmental Honors Program

At the end of their junior year, eligible majors (with a cumulative grade-point average of 3.0 overall and 3.4 in economics) are invited to apply for the departmental honors program.

The honors program consists of a total of 6 credits and runs through both terms of the senior year. Each student writes a senior honors thesis under the supervision of a faculty member. The thesis topic is chosen by the student in consultation with his or her supervisor, and with the approval of the department. Topics vary widely, but original investigations of important economic problems are encouraged. Honors students participate in 01:220:493,494 Senior Honors Seminar I,II, a two-term seminar, during their senior year. Each student is expected to present their research findings in the seminar.

Certificate Program

Global Economics Certificate

This certificate program offers an enriched study for students interested in understanding the emerging global economy. The certificate, which is part of the university's Global Studies Associate Program, requires language training, training in related disciplines, intensive work in international economics and economic development, and participation in the activities of the Rutgers Global Program, as well as completion of a major in economics, to provide a broad interdisciplinary view.

The certificate program offers excellent preparation for students planning a career in international business or finance or in international public service, and an excellent base for graduate study in economics, business, or law.

Requirements

1. This program is open only to economics majors.
2. Students must submit a written application to be approved by the economics department's adviser on global studies (who is appointed by the department chair).
3. Students must complete all economics major requirements subject to the following restrictions:
   a. Two courses in international economics (300 and 335, 300 and 336, or 335 and 336).
   b. Two courses with an emphasis on the economic development of other nations, including Economic Development (339), European Economic History (343), Economics of Latin America (346), Economics of India (357), Economics of Japan (358), Economics of Asia (359), Comparative Economic Systems (362), and Economics of the USSR and Russia (378). This list may be revised; students should check with the economics adviser on global studies for the most up-to-date list.
4. The student must complete all of the requirements set up by the Global Program, including:
   a. An international experience (study abroad, work with an international firm or public agency, or some other activity that significantly enriches the classroom experience) approved in advance by the economics adviser on global studies.
   b. A minimum of six 3-credit courses of an international character in the following related departments: anthropology, history, political science, psychology, and sociology. At least three courses must be in one department; all must have a global emphasis and be approved in advance by the economics adviser on global studies.
   c. Demonstrated proficiency in a relevant foreign language, defined as qualifying for a 300-level course in that language.
   d. Participation in extracurricular global programs events.
   e. Participation in an interdisciplinary "exit seminar" for all global programs certificate students.

Courses

01:220:102. INTRODUCTION TO MICROECONOMICS (3)

Pre- or corequisite: 01:640:111, 112 or 115.

The market system and alternative mechanisms for determining prices and allocating resources. Economic analysis of monopoly, cartels, wage and price controls, pollution, and other contemporary problems. The role of government in promoting economic efficiency.

01:220:103. INTRODUCTION TO MACROECONOMICS (3)
Pre- or corequisite: 01:640:111, 112 or 115.
Determinants of aggregate employment and national income; evaluation of government policies to alleviate inflation and unemployment. Money, banking, and monetary policy. International trade and finance and the prospects for world economic development.

01:220:200. ECONOMIC PRINCIPLES AND PROBLEMS (3)
Open only to engineering students. Credit not given for both this course and 01:220:102 and 103. 01:220:200 may be used in place of 01:220:102 and 103 to satisfy the prerequisite for more advanced courses.
Economic principles and their application to current problems.

01:220:203. INTERMEDIATE MICROECONOMIC ANALYSIS (3)
Prerequisites: 01:220:102, 103; 01:640:135 or equivalent.
Households and firms as maximizing agents; implications for demand and supply of goods and productive services in competitive and monopolistic markets; general equilibrium; welfare economics.

01:220:204. INTERMEDIATE MACROECONOMIC ANALYSIS (3)
Prerequisites: 01:220:102, 103; 01:640:135 or equivalent.
Modern and classical theories of income determination, stabilization, and economic growth; emphasis on unemployment and inflation.

01:220:300. INTERNATIONAL ECONOMICS (3)
Prerequisites: 01:220:102, 103. Major credit may be earned for only two of the three courses 01:220:300, 335, 336.
Pure or "real" aspects of international trade, including the basic comparative advantage model, commercial policy (tariffs, quotas, etc.), economic integration, role of international trade in economic development. Monetary aspects of international trade, including international capital movements, foreign exchange market, concept and measurement of balance of payments, alternative means of correcting disequilibrium in the balance of payments, and international monetary arrangements.

01:220:301. MONEY AND BANKING (3)
Prerequisites: 01:220:102,103.
Economic significance of money; structure, history, and present state of the American monetary system; credit, banking, and Federal Reserve; instruments of credit control; FED and treasury policies; monetary reform, monetary theory and policy.

01:220:302. LABOR ECONOMICS (3)
Prerequisites: 01:220:102, 103, 203.
The firm's labor demand, the household's labor supply, and wage determination in competitive and noncompetitive markets. Economics of unions. Human capital, occupational choice, wage structure, and unemployment.

01:220:303. LABOR INSTITUTIONS AND MARKETS (3)
Prerequisites: 01:220:102, 103.
Private and public employee unions, industrial relations, and collective bargaining. Public regulation of labor markets including industrial safety and wage levels.

01:220:304. SPECIAL TOPICS IN LABOR MARKETS (3)
Prerequisites: 01:220:302, 01:960:211 or 285.
Analysis of topics such as hours of work, fertility and population, mobility, job search, and unemployment. Investment in human capital, wage and retirement policies, and occupational training.

01:220:305. AMERICAN ECONOMIC HISTORY (3)
Prerequisites: 01:220:102, 103.
Long-term trends in economic growth and institutions from the colonial period to World War II. Development of transportation and industry. Effects of technological change and immigration. Economics of slavery. Monetary history and government regulation.

01:220:308. INTRODUCTION TO MANAGERIAL ECONOMICS (3)
Prerequisites: 01:220:102, 103.
Application of contemporary economic theory to managerial decisions and to public policy affecting business.

01:220:309. THE CORPORATION IN MODERN SOCIETY (3)
Prerequisites: 01:220:102, 103.
The origin and organization of corporations. Bankruptcy, reorganization, mergers, acquisitions.

01:220:311. METHODS OF COST BENEFIT ANALYSIS (3)
Prerequisites: 01:220:102, 103.
Introduction to theoretical and applied welfare economics. Theories and social welfare; the normative basis for and practical techniques of cost-benefit analysis. Selected applications.

01:220:316. HEALTH ECONOMICS (3)
Prerequisites: 01:220:102 and 103, or permission of instructor. Credit not given for both this course and 10:832:332.
Medical care costs; production of health; demand for health care and insurance; health services personnel; physician and hospital behavior; cost containment; review and evaluation of public programs.

01:220:322. ECONOMETRICS (3)
Prerequisites: 01:220:102, 103; 01:960:211 or 285. Credit not given for both this course and 01:220:326.
Introduction to the application of statistical methods for the estimation, testing, and prediction of economic relationships. Emphasizes ordinary least squares regression and problems in its application. Extensive use of microcomputers. Special topics may include limited dependent variable models, simultaneous equation methods, and time-series methods.

01:220:326. ECONOMETRIC THEORY (3)
Prerequisites: 01:220:102, 103; 01:960:211 or 285; one term of calculus. Credit not given for both this course and 01:220:322.
Introduction to econometric theory and applications. Regression based estimators derived and their statistical properties established. Topics include linear regression model and its extensions in economics, full information maximum likelihood estimators and test procedures, and other nonlinear methods. Computer applications of these methods employed.

01:220:327. HISTORY OF ECONOMIC THOUGHT (3)
Prerequisites: 01:220:102 and 103, or permission of instructor.
Historical examination of the major concepts of economic theory. Covers all major traditions within economic thought, with special emphasis on the school of classical political economy.

01:220:330. URBAN AND REGIONAL ECONOMICS (3)
Prerequisites: 01:220:102, 103.
Application of market analysis, location theory, and public choice theory to urban areas. Analysis of urban problems such as housing, transportation, segregation, zoning, and public safety.

01:220:332. ENVIRONMENTAL ECONOMICS (3)
Prerequisites: 01:220:102, 103. Credit not given for both this course and 11:373:363.
Economic basis of problems of air and water pollution and general environmental quality. Issues relating to externalities and public goods. Economic solutions to problems of environmental quality.

01:220:335. INTERNATIONAL TRADE (3)
Prerequisite: 01:220:203. Major credit may be earned for only two of the three courses 01:220:300, 335, 336.
Theories analyzing the gains from and causes of the international exchange of goods and services. The impact of commercial policy and other government policies on these gains and resource allocation.

01:220:336. INTERNATIONAL BALANCE OF PAYMENTS (3)
Prerequisite: 01:220:204. Major credit may be earned for only two of the three courses 01:220:300, 335, 336.
Theory of the balance of payments and balance-of-payments adjustment. International financial system, foreign exchange market, determinants of the trade balance and capital accounts, and the impact of government financial policies in the open economy.

01:220:339. ECONOMIC DEVELOPMENT (3)
Prerequisites: 01:220:102, 103.
Theories and experience of qualitative and quantitative changes involved in the process of raising living standards in less developed countries.

01:220:340. ECONOMICS OF INCOME INEQUALITY AND DISCRIMINATION (3)
Prerequisites: 01:220:102, 103.
Income distribution in the U.S. and elsewhere; the roles of occupation, education, and discrimination. Government policies concerning inequality, discrimination, and poverty.

01:220:341. INDUSTRIAL ORGANIZATION (3)
Prerequisite: 01:220:203.
Theories of firm and market behavior. Evidence on relationships between structure, conduct, and performance. Includes pricing, profitability, innovation, and advertising.

01:220:343. EUROPEAN ECONOMIC HISTORY (3)
Prerequisites: 01:220:102, 103.
Emergence of the modern economy in Europe from the sixteenth to the twentieth century. Price revolution and mercantilism. Industrial revolution in England and the continent and the formation of international markets. The Great Depression and renewed prosperity.

01:220:344. FINANCIAL AND MONETARY HISTORY OF THE U.S. (3)
Prerequisites: 01:220:102, 103.
Development of financial institutions and money and capital markets. Central banking and the Federal Reserve system. Gold standard and floating exchange rates. Financial panics and economic crises.

01:220:346. ECONOMICS OF LATIN AMERICA (3)
Prerequisites: 01:220:102, 103.
Survey of Latin American economic patterns and problems; specific studies of selected national economies and their relation to the world economy.

01:220:348. ECONOMICS OF SOCIAL WELFARE PROGRAMS (3)
Prerequisites: 01:220:102, 103; or permission of instructor.
Analysis of efficiency and equity effects of government welfare programs including cash assistance and social security. Evaluation of alternative assistance proposals.

01:220:357. ECONOMICS OF INDIA (3)
Prerequisites: 01:220:102, 103.
Examination of Indian economy from independence until today; tools for analyzing Indian economy and other developing economies.

01:220:358. ECONOMICS OF JAPAN (3)
Prerequisites: 01:220:102, 103.
Study of the modernization of the first non-Western industrialized economy.

01:220:359. ECONOMICS OF ASIA (3)
Prerequisites: 01:220:102, 103.
Major Asian economies (excluding Japan) in four units: Asia's newly industrializing economies (Korea, Taiwan, and Hong Kong); Southeast Asia; China and Central Asia; India and South Asia. Focus on Green Revolution in Asia, Asian industrialization and structural change, and the changing pattern of comparative advantage in United States-Asia economic relations.

01:220:360. PUBLIC ECONOMICS (3)
Prerequisites: 01:220:102, 103, 203.
Rationale for the public sector; public expenditure theory; economics of political process; expenditure structure and growth; incidence and incentives of specific taxes; fiscal incidence; stabilization.

01:220:362. COMPARATIVE ECONOMIC SYSTEMS (3)
Prerequisites: 01:220:102, 103, or permission of instructor.
Comparative analysis of differing economic systems with emphasis on plan / market comparisons and the nature of transitions in formerly planned economies.

01:220:363. ECONOMICS OF TAXATION (3)
Prerequisite: 01:220:103.
Structure of U.S. tax system. Effects on the allocation of resources and economic growth; distribution of the burden of taxation across income groups.

01:220:369. STATE AND LOCAL PUBLIC FINANCE (3)
Prerequisites: 01:220:102, 103.
Evolution of federalism; analysis of expenditure and revenue decisions and intergovernmental grants; discussion of stabilizing and distributional aspects of state-local finances; specific state-local fiscal problems.

01:220:370. ECONOMIC GROWTH (3)
Prerequisites: 01:220:102, 103.
Theories, experience, and measurement of quantitative changes in output, employment, price levels, and other economic aggregates in modern developed countries.

01:220:375. WOMEN AND THE ECONOMY (3)
Recommended: 01:220:102, 103; 01:988:301.
Description and analysis of women's economic status. Theories of discrimination against women in the labor market, including neoclassical, institutional, and Marxian. Women's work in the home analyzed from three perspectives: household utility maximization, patriarchy, and a sex-gender system. Application of theories to case studies.

01:220:377. ECONOMICS OF POPULATION (3)
Prerequisites: 01:220:102, 103.
Theoretical and empirical study of the interrelations between population change and economic change in developed as well as less developed countries.

01:220:378. ECONOMIES OF THE USSR AND RUSSIA (3)
Prerequisites: 01:220:102, 103, or permission of instructor.
Analysis of the former Soviet economic system and attempted reforms through Perestroika: the transition to markets in the post-Soviet era in Russia and the Commonwealth of Independent States.

01:220:379. MARXIAN ECONOMICS (3)
Prerequisites: 01:220:102, 103, or permission of instructor.
The method of dialectical materialism; economic interpretation of history; emphasis on Marx's analysis of the laws of capitalist development (value and price, surplus value, accumulation, crisis, etc.); transition from "primitive" to "full" communism.

01:220:386. OPERATIONS RESEARCH I (3)
Prerequisites: 01:220:102, 103; 01:960:211 or 285.
Application of quantitative methods to production management including decision theory, game theory, deterministic inventory theory, queuing, and linear programming.

01:220:389. PUBLIC POLICIES TOWARD BUSINESS (3)
Prerequisites: 01:220:102, 103.
Analysis of major policies affecting competition. Topics include antitrust, traditional public-utility regulation, and newer regulatory alternatives.

01:220:393. FINANCIAL ECONOMICS (3)
Prerequisites: 01:220:203; 01:960:211 or 285.
Analysis of financial decision making; capital budgeting, capital structure, economic forecasting.

01:220:394. ECONOMICS OF CAPITAL MARKETS (3)
Prerequisites: 01:220:204, 393.
Capital markets uncertainty; asset valuation; return on assets; determinants of relative yields. Theories of stock and bond market activity. Innovations in financial instruments.

01:220:395. LAW AND ECONOMICS (3)
Prerequisites: 01:220:102, 103.
Economic rationale and consequences of legal rules. Contracts, compensation, property rights, liability rules, crime, safety, monopoly, discrimination, health care, pollution, public interest law.

01:220:401. ADVANCED ECONOMETRICS (3)
Prerequisites: 01:220:203, 204; 322 or 326.
Applications of econometric methods in economic analysis. Demand and cost analysis, macro models, income distribution, labor participation.

01:220:405. ECONOMICS OF RISK AND UNCERTAINTY (3)
Prerequisites: 01:220:102, 103; 01:640:135 or equivalent; 01:960:211 or 285.
Risk and uncertainty; measurement of risk; attitudes toward risk; theories of risky choice; decision theory; Bayesian decisions; applications to private markets and public regulation.

01:220:409. MATHEMATICAL ECONOMICS (3)
Prerequisites: 01:220:203; one year of calculus.
Mathematical approach to topics in theoretical economics: linear models, nonlinear programming, comparative statics, consumer behavior, theory of the firm, market structure, welfare theory.

01:220:410. OPERATIONS RESEARCH II (3)
Prerequisites: 01:220:386; one year of calculus.
Development and use of advanced techniques of production management, including advanced topics in linear programming, PERT, nonlinear programming, dynamic programming, stochastic inventory theory, Markov analysis and simulation.

01:220:412. MONETARY THEORY AND POLICY (3)
Prerequisite: 01:220:204.
Role of money and the monetary system in determining income, employment, and price level; techniques of monetary policy; relation of monetary and fiscal policy; international policies.

01:220:415. PORTFOLIO THEORY (3)
Prerequisite: 01:220:394.
Selection of a financial portfolio under conditions of uncertainty. Treatment of risk. Case histories of investment fund performance.

01:220:416. GOVERNMENT POLICIES FOR FULL EMPLOYMENT AND GROWTH (3)
Prerequisite: 01:220:204.
Alternative government policies to ensure fulfillment of the national goals of full employment, price stability, satisfactory growth, and balanced international payments.

01:220:419. MANAGERIAL ECONOMICS (3)
Prerequisites: 01:220:203, 386; 01:960:211 or 285.
Application of contemporary economic theory to managerial decisions and to public policy affecting business. Incremental analysis, applications of linear programming to cost minimization and product mix, demand forecasting, pricing problems, and issues of public policy.

01:220:421. ECONOMIC FORECASTING (3)
Prerequisites: 01:220:203, 204; 01:960:211 or 285.
Application of forecasting to private- and public-sector decisions. Emphasis on time-series models with microeconomic and macroeconomic applications and computer exercises.

01:220:430. TOPICS IN ADVANCED ECONOMIC THEORY (3)
Prerequisites: 01:640:135, 136 or equivalent; 01:220:203, 409.
Economic dynamics; variational methods with applications; economics under uncertainty; imperfect information and market structure; social choice, design of incentive-compatible systems; general equilibrium.

01:220:433. ADVANCED TOPICS IN INTERNATIONAL ECONOMICS (3)
Prerequisites: 01:220:335 and 336, or permission of instructor.
Topics may include strategic trade, trade and economic growth, the political economy of trade policy, exchange rate determination, international coordination of macroeconomic policy, empirical issues in international economics, and foreign direct investment.

01:220:436. GAME THEORY AND ECONOMICS (3)
Prerequisites: 01:640:135,136 or equivalent; 01:220:102, 103. Credit not given for both this course and 01:640:355.
Expected utility theory; zero and nonzero sum games; cooperative and noncooperative games; bargaining models; supergames; oligopoly; core market games; strategy-proof systems.

01:220:471. ECONOMICS OF REGULATION (3)
Prerequisite: 01:220:393.
Applied topics in rate-of-return regulation. Emphasis on underlying financial, accounting, and pricing issues in selected utilities industries.

01:220:490,491. INDEPENDENT STUDY AND RESEARCH (3,3)
Open to juniors and seniors by permission of instructor and department.
Specialized research supervised by an individual faculty member.

01:220:493. SENIOR HONORS SEMINAR I (3)
Prerequisites: 01:220:203,204; 01:960:211 or 285.
Selected topics in economics.

01:220:494. SENIOR HONORS SEMINAR II (3)
Prerequisite: 01:220:493.
Selected topics in economics.

01:220:495,496. SEMINAR IN ECONOMICS (3,3)
Open to juniors and seniors by permission of department.
Readings, analysis, and discussion of topics announced in advance each term.

EDUCATION 300

Graduate School of Education

Dean: Louise Cherry Wilkinson

Associate Dean: Paul Elwood

Executive Administrator of Teacher Education Programs: Annell L. Simcoe

Professors:

Gregory Camilli, B.A., Ph.D., Colorado
Kenneth D. Carlson, B.S., M.S., Ed.D., SUNY (Buffalo)
Joseph James Chambliss, B.S., Illinois State Normal; A.M., Alabama; Ph.D., Illinois
Warren D. Crown, B.S., Carnegie Mellon; Ph.D., Chicago
Gordon Darkenwald, B.A., Fordham; M.A., Columbia; M.A., CUNY; Ph.D., Columbia
Richard DeLisi, B.A., SUNY (Buffalo); M.A., Ph.D., Catholic University of America
James M. Giarelli, B.A., Northwestern; M.Ed., Ph.D., Florida
Gerald Goldin, B.A., Harvard; M.A., Ph.D., Princeton
Ivan Z. Holowinsky, B.A., Salzburg; B.Phil., Innsbruck; Ed.M., Ed.D., Temple
Ronald Terry Hyman, A.B., Miami; M.A.T., Vanderbilt; Ed.D., Columbia; J.D., Rutgers
Carolyn J. Maher, B.A., Rutgers (Douglass College); Ed.M., Ed.D., Rutgers
Lesley Mandel Morrow, B.S., Syracuse; M.A., Jersey City State College; Ph.D., Fordham
George J. Pallrand, B.S., Union; M.A., Michigan; Ed.D., Columbia
Douglas A. Penfield, B.S., M.S., SUNY (Albany); Ph.D., California (Berkeley)
Nobuo Shimahara, B.A., Shimane (Japan); Ed.M., Ed.D., Boston

Jeffrey K. Smith, B.A., Princeton; Ph.D., Chicago
Dorothy S. Strickland, New Jersey Professor of Reading; B.S., Newark State (Kean); M.A., Ph.D., New York
Stanley John Vitello, B.A., M.Ed., Temple; Ed.S., George Peabody College for Teachers (Vanderbilt); Ph.D., Connecticut; M.S.L., Yale Law School
Carol Weinstein, A.B., Clark; Ed.M., Ed.D., Harvard

Associate Professors:

Eliane Condon, B.S., Bridgewater State College; M.A.T., Harvard; Ed.D., Columbia
Susan Golbeck, A.B., Clark; M.A., Rochester; Ph.D., Pennsylvania State
Josephine S. Goldsmith-Phillips, B.A., Pennsylvania; Ed.M., Ed.D., Psy.D., Rutgers
Lorraine McCune, B.A., Georgian Court; Ed.M., Ed.D., Rutgers
David J. Muschinske, B.S., M.S., Wisconsin; Ed.D., Boston
Angela O'Donnell, B.Ed., Carysfort; M.S., M.Ed., Ph.D., Texas Christian
Wallis H. Reid, B.A., Oberlin College; M.S., Ph.D., Columbia
Helane Rosenberg, B.F.A., Boston; Ph.D., Florida State
Adam Scrupski, B.S., Ed.M., Ed.D., Rutgers
Annell Simcoe, B.S., M.A., Texas Woman's; Ph.D., Ohio State
Michael W. Smith, B.A., Ph.D., Chicago
Saundra M. Tomlinson-Clarke, B.A., Boston; M.A., Atlanta; Ph.D., Florida State
John Young, B.A., New York; Ed.M., Harvard; M.S., Ph.D., Stanford

Assistant Professors:

Kefyn Catley, B.Sc., University College of Wales; M.S., Western Carolina; Ph.D., Cornell
Clark A. Chinn, B.A., M.A., Kansas; Ph.D., Illinois (Urbana-Champaign)
Judith V. Diamondstone, B.A., California (Santa Cruz); Ed.D., Harvard
Eugenia Etkina, B.S. and M., Ph.D., Moscow State Pedagogical (Russia)
Cindy Hmelo, M.S., Stony Brook; M.S., Ph.D., Vanderbilt
Melanie Kuhn, B.A., Boston College; Ed.M., Harvard Graduate School of Education; M.Phil., Cambridge; Ph.D., Georgia
Catherine Lugg, B.Mus., Pennsylvania; M.Mus., Drake; Ph.D., Pennsylvania State
Sharon Ryan, B.Ed., South Australian College of Advanced Education; M.A., M.Ed., Ed.D., Columbia (Teachers College)
Barbara Turnbull, B.A., M.A., Ph.D., British Columbia

Certification Programs

Certification programs exist in the following teaching areas (K–12): English, foreign language (French, German, Italian, Latin, Russian, Spanish), mathematics, music, science, social studies, and special education. A certification program in early childhood / elementary education (N–8) also is available. Most of these programs are offered directly by the Graduate School of Education (GSE), but some are offered by other units of the university in cooperation with the GSE.

The certification program in music education is a four-year program. The teacher preparation programs sponsored by the GSE (elementary / early childhood, English, foreign language, mathematics, science, social studies, and special education) are five-year programs. In these programs, the baccalaureate degree is awarded by one of the undergraduate liberal arts colleges, and the master's degree is awarded by the GSE and a recommendation is made to the state of New Jersey for a certificate of eligibility with advanced standing as a teacher. Students are admitted to these programs during the second term of the junior year; the study of professional education begins during the junior or senior year and continues with an internship and advanced professional studies in the fifth year. Program graduates are eligible for provisional certification with advanced standing. For permanent certification, graduates must participate in the state induction-year program and successfully teach for one year.

Major Requirements

Individuals preparing for subject area certification must major in the field in which they are planning to teach. Early childhood / elementary education students and special education students major in a liberal arts field.

Program Requirements

Students seeking admission to one of the certification programs should meet with an education adviser to review program requirements during their first year. Information about programs and advisement can be obtained from the Office of Teacher Education, Room 132, Graduate School of Education.

To be admitted, students must demonstrate proficiency in written and oral communication and have completed successfully a college-level mathematics course. Additionally, applicants must have completed successfully 05:300:200 Exploring Teaching as a Profession and its allied field experience. Enrollment in the education programs is competitive. Admission is based upon the cumulative grade-point average, Graduate Record Examination scores, and performance in the introductory education course and related fieldwork. Generally, education programs include course work in educational psychology, social and philosophical foundations of education, and methods of teaching as well as fieldwork and student teaching. All programs also have a required distribution of liberal arts courses. Course work is required in the following general education areas: American history and American studies, art history and music, English and American literature, foreign language, mathematics, philosophy, science, technology, Western history, and non-Western studies. Additionally, demonstration of competence in a foreign language at least equal to that of the fourth college term is required.

A list of the specific courses that may be taken to satisfy each of the general education areas can be obtained from the Office of Teacher Education, Room 132, Graduate School of Education.

Courses

05:300:200. EXPLORING TEACHING AS A PROFESSION (3)
Exploration of teaching as a career. Examines teaching and learning from divergent perspectives and includes issues related to the profession and practice of teaching. Personal, public, and professional perceptions of teachers and teaching addressed. Includes a field experience. Prerequisite for admission to teacher education.

05:300:306. PRINCIPLES OF CLASSROOM LEARNING (3)
Prerequisite: 01:830:101.
Surveys areas of psychology most relevant to education. How children think, learn, and remember; influence of motivation; principles of measurement.

05:300:341. MODERN HIGH SCHOOL MATHEMATICS (3)
Prerequisites: 01:198:111 or equivalent; 01:640:250, 251.
In-depth study and construction of some key ideas in the high school mathematics curriculum. Viewing of mathematics in terms of the ideas built up in the minds of students.

05:300:342. SUPERVISED UNDERGRADUATE TUTORING IN MATHEMATICS (3)
Prerequisites: 01:640:250, 251.
Develop teaching strategies, an interactive style, and an approach to high school mathematics content in a one-on-one tutorial or small group setting. Students work with other undergraduates in lower-level, E-credit mathematics courses.

05:300:350. EDUCATION AND COMPUTERS (3)
Establishes a foundation for using the computer in a variety of educational settings across all subject areas through programming, application programs, computer-based instruction, and social / philosophical issues of computers in education.

05:300:361. SCIENCE: KNOWLEDGE AND LITERACY (3)
Prerequisite: Science course at the 200-level or above.
Examines the emerging role of science education in society. Special attention given to influence of professional societies. Places current trends in science education in a historical perspective that reflects the development of science in the United States.

05:300:383. INTRODUCTION TO SPECIAL EDUCATION (3)
Pre- or corequisite: 01:830:396 or 397.
Overview of the diverse physical, psychological, and social disabilities of special education children.

05:300:401. INDIVIDUAL AND CULTURAL DIVERSITY IN THE CLASSROOM (3)
Prerequisites: 05:300:200; admission to the teacher education program.
Focuses on the range of student diversity in contemporary classrooms, including cultural, linguistic, and academic differences. Emphasizes strategies to enhance academic success, promote interaction, and facilitate the inclusion of diverse students in the regular school setting.

05:300:402. SPECIAL TOPICS IN EDUCATION (3)
Seminar on selected topic of current interest. Topics differ each term. Consult instructor for description of topic under study.

05:300:403. INDEPENDENT STUDY IN EDUCATION (BA)
Independent project in education to be carried out in consultation with appropriate faculty. Arrangements for a project supervisor must be made prior to registering for this course.

05:300:411. LABORATORY IN HUMAN DEVELOPMENT (3)
Prerequisite: 01:830:331.
Examines topics in social, cognitive, and affective development through the study of children and the settings in which they learn and develop. Findings related to current literature in child development and developmental psychology. Fieldwork required.

05:300:412. LEARNING AND TEACHING IN THE EARLY CHILDHOOD CLASSROOM (3)
Prerequisite: Admission to the teacher education program.
Addresses teaching strategies and curricula appropriate for the young child aged three to eight. Emphasizes the role of play in learning and development and instructional strategies to foster cognitive, social, and emotional development. Curriculum planning around integrated, thematically related experiences explored.

05:300:413. PRACTICUM IN EARLY CHILDHOOD/ELEMENTARY EDUCATION I (1.5)
Prerequisite: Admission to the teacher education program. Can be taken before or after 05:300:414. Coordinated with 01:300:412 and 494.
Fieldwork in a local elementary school to observe and participate as a teaching assistant; one full day per week for nine weeks in a pre-kindergarten, kindergarten, or first- through third-grade classroom.

05:300:414. PRACTICUM IN EARLY CHILDHOOD/ELEMENTARY EDUCATION II (1.5)
Prerequisite: Admission to the teacher education program. Can be taken before or after 05:300:413. Coordinated with 01:300:441, 461, 471, and 495.
Fieldwork in a local elementary school to observe and participate as a teaching assistant; one full day per week for nine weeks in a fourth- through eighth-grade classroom.

05:300:421. LANGUAGE AND LINGUISTICS I (3)
Prerequisite: Senior standing.
Examines a variety of grammatical and sociolinguistic descriptions of language and considers the critique they offer of traditional school grammar. Explores the educational and political implications of teaching traditional school grammar in the light of these critiques.

05:300:422. TEACHING LITERATURE: READERS, TEXTS, AND CONTEXTS (3)
Prerequisite: Senior standing.
Examines a variety of theories about what literary reading is and why it should be taught. Develop strategies for introducing, sequencing, and discussing literary texts as well as for integrating the study of literature into the other language arts. Field experience required.

05:300:423. TEACHING WRITING: SOCIAL AND COGNITIVE DIMENSIONS (3)
Prerequisite: 05:300:421.
Examines a variety of perspectives on the nature of the writing process. Considers research and theory on how teachers should teach and respond to writing. Field experience required.

05:300:430. PRINCIPLES OF SECOND/FOREIGN LANGUAGE ACQUISITION (3)
Prerequisites: 05:300:200; admission to the teacher education program.
Introductory course that examines the research and theory on first and second language acquisition related to children, teens, and adults in the United States and abroad.

05:300:431. MATERIALS AND METHODS IN FOREIGN LANGUAGES (3)
Prerequisite: 05:300:200. Open only to students who have been formally admitted to a foreign language teaching program. May count as education credit but not toward the major in a foreign language.
Solutions to classroom problems. Course planning: teaching aims, pedagogical devices, language context, cultural background, selections of text. Fieldwork.

05:300:433. LANGUAGE AND CULTURE (3)
Prerequisites: 05:300:200; admission to the teacher education program.
Relationship of linguistic, cognitive, attitudinal, and behavioral patterns within each culture and how they affect cross-cultural communication and language education.

05:300:441. TEACHING MATHEMATICS IN THE ELEMENTARY SCHOOL (3)
Prerequisite: 05:300:200. Open only to students who have been formally admitted to a teacher education program.
Concrete, manipulative approach to teaching mathematics concepts. Psychology of learning mathematics; the elementary curriculum; effective teaching techniques.

05:300:442. PROBLEM-SOLVING PROCESSES IN MATHEMATICS (3)
Prerequisite: Admission to the teacher education program.
Focuses on understanding one's own mathematical problem-solving processes and how such processes develop in mathematics learners of all ages.

05:300:443. METHODS OF TEACHING SECONDARY SCHOOL MATHEMATICS (3)
Prerequisite: Admission to the teacher education program.
Reviews the status of secondary mathematics teaching in the United States, the reform movement of the 1990s, and current thinking about issues of concern to practicing teachers. Encourages development of personal style and approach to teaching high school mathematics. Topics include instructional planning, assessment, individual differences, cultural and gender differences, and teaching styles.

05:300:444. PRACTICUM IN TEACHING SECONDARY SCHOOL MATHEMATICS (3)
Prerequisite: Admission to the teacher education program. Corequisite: 05:300:443. Students spend two complete mornings in the school each week.
Gives prospective secondary mathematics teachers an opportunity to observe experienced teachers, serve as an aide, work with individuals and small groups, and teach several class sessions in a high school setting.

05:300:461. SCIENCE IN THE ELEMENTARY SCHOOL (3)
Prerequisite: Completion of student's liberal arts college science requirement.
Presents science as an integrated body of knowledge using investigative and inquiry techniques. Thematic or problem-based approach to science teaching.

05:300:462. DEMONSTRATION AND TECHNOLOGY IN SCIENCE TEACHING (3)
Prerequisite: Admission to the teacher education program.
Creating science teaching support materials using resources available over the Internet. For use in creating laboratory, demonstration, and related activities that would complement classroom practice. Involvement in the broad Internet community of interest in science and science teaching.

05:300:471. TEACHING SOCIAL STUDIES IN ELEMENTARY SCHOOL (3)
Prerequisite: Admission to the teacher education program.
Examines strategies and materials for teaching social studies in the elementary school. Focuses on a cluster of teaching models to engage children in the active pursuit of knowledge, skills, and values.

05:300:472. MATERIALS AND METHODS IN SOCIAL STUDIES (3)
Prerequisite: 05:300:200. Open only to students who have been formally admitted to the social studies teaching program.
Study of instructional practices, curricular trends, and teaching materials used in social studies.

05:300:480. MATERIALS AND METHODS IN SPECIAL EDUCATION (3)
Prerequisites: 05:300:200, 383; 01:830:331. Open only to special education students.
Application of learning theory and principles of systematic instruction in the areas of motor learning, oral and written language, mathematics, and social skills. Fieldwork.

05:300:483. RESOURCES FOR INDIVIDUALS WITH DISABILITIES (3)
Open only to students who have been admitted to the special education program.
Resources essential to the handicapped student and the family. Referral procedures and use of resources.

05:300:494. LITERACY DEVELOPMENT IN THE EARLY YEARS (3)
Prerequisites: 05:300:200; admission to the teacher education program.
Examines literacy development from birth to third grade. Varied strategies for literacy development are presented and analyzed using the emergent literacy and integrated language arts approach. Also addresses theories of early literacy development.

05:300:495. LITERACY DEVELOPMENT IN THE ELEMENTARY AND MIDDLE SCHOOL (3)
Prerequisites: 05:300:200; admission to the teacher education program.
Emphasizes integrated language arts approach to literacy learning in grades three through eight. Connections between reading, writing, and oral language addressed. Reviews strategies to integrate literacy learning with instruction in the content areas.

ENGINEERING

All four-year programs in engineering are offered by the School of Engineering. See that school's section for further information.

ENGLISH (English 350, English: Topics 351, English: Literary Theory 353, English: Film Studies 354, English: Composition and Writing 355, English: As a Second Language 356)

Department of English, Faculty of Arts and Sciences

Web Site: http://english.rutgers.edu/dmain.htm

Chairperson: Cheryl A. Wall

Undergraduate Director: Marc Manganaro

Director of Writing Program: Kurt Spellmeyer

Associate Director of Writing Program: Richard E. Miller

Professors:

Louise K. Barnett, B.A., North Carolina; M.A., Ph.D., Bryn Mawr College
John Belton, B.A., Columbia; A.M., Ph.D., Harvard
Wesley Brown, B.A., SUNY (Oswego); M.A., CUNY
Maurice Charney, B.A., Harvard; M.A., Ph.D., Princeton
Susan Crane, B.A., Wisconsin; M.A., Ph.D., California (Berkeley)
Marianne DeKoven, B.A., Radcliffe College; M.A., Ph.D., Stanford
Elin Diamond, B.A., Brandeis; M.A., Ph.D., California (Davis)
William C. Dowling, B.A., Dartmouth; M.A., Ph.D., Harvard
William Galperin, A.B., Chicago; A.M., Ph.D., Brown
Donald B. Gibson, B.A., M.A., Kansas City; Ph.D., Brown
Judith Halberstam, B.A., California (Berkeley); M.A., Ph.D., Minnesota (Minneapolis)
Daniel A. Harris, B.A., M.A., Ph.D., Yale
Myra Jehlen, B.A., CUNY (City College); Ph.D., California (Berkeley)
George L. Levine, B.A., New York; M.A., Ph.D., Minnesota
Bridget G. Lyons, B.A., Radcliffe College; M.A., Oxford; Ph.D., Columbia
John McClure, B.A., Tufts; M.A., Ph.D., Stanford
Michael McKeon, B.A., Chicago; M.A., Ph.D., Columbia
Alicia Ostriker, B.A., Brandeis; M.A., Ph.D., Wisconsin
Barry V. Qualls, B.A., Florida State; M.A., Ph.D., Northwestern
Bruce Robbins, B.A., M.A., Ph.D., Harvard
Carol H. Smith, B.A., Ohio Wesleyan; M.A., Ph.D., Michigan
Cheryl A. Wall, B.A., Howard; Ph.D., Harvard
William A. Walling, A.B., CUNY (Brooklyn College); M.A., Ph.D., New York
Michael Warner, B.A., Oral Roberts; M.A., Wisconsin (Madison); M.A., Ph.D., Johns Hopkins

Associate Professors:

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Marcia Ian, B.A., Wellesley College; M.A., Ph.D., Virginia
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Robert Kusch, B.A., Valparaiso; M.A., Ph.D., Northwestern
Ronald Levao, A.B., Rutgers; M.A., Ph.D., California (Berkeley)
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Larry Scanlon, B.A., Brandeis; M.A., Ph.D., Johns Hopkins
Kurt Spellmeyer, B.A., Virginia; M.A., Ph.D., Washington
William Vesterman, B.A., Amherst College; Ph.D., Rutgers
Andrew Welsh, B.S., M.A., Ph.D., Pittsburgh
Carolyn Stephens Williams, B.A., Wellesley College; M.A., Ph.D., Virginia

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Christine Chism, B.A., Reed College; A.M., Ph.D., Duke
Anne Cotterill, B.A., Sarah Lawrence; B.A., Iceland; M.F.A., Syracuse; Ph.D., Washington
Brad Evans, B.A., Cincinnati; M.A., Ph.D., Chicago
Brent Edwards, B.A., Yale; M.A., Ph.D., Columbia
Virginia W. Jackson, B.A., Cincinnati; M.A., Ph.D., Chicago
Colin Jager, B.A., Calvin College; Ph.D., Michigan
Samira Kawash, A.B., Stanford; M.A., Ph.D., Duke
Stacy S. Klein, B.A., Dartmouth; M.A., Sussex; Ph.D., Ohio State
Richard Koszarski, B.A., Hofstra; M.A., Ph.D., New York
Daphne Lamothe, B.A., Yale; Ph.D., California (Berkeley)

Meredith McGill, B.A., Williams College; M.A., Ph.D., Johns Hopkins
Mary Sheridan-Rabideau, B.A., Notre Dame; M.A., Illinois (Chicago); Ph.D., Illinois (Urbana-Champaign)
Jonah Siegel, B.A., Middlebury College; Ph.D., Columbia

Distinguished Visiting Professor:

Derek Attridge, B.A., Natal; B.A., Ph.D., Clare College (Cambridge)

Lecturers:

Barclay Barrios, B.A., Tulane; M.A., Rutgers
Carol Bork, B.A., Pomona College
Patrick Cesarini, B.A., Amherst; M.A., Rutgers
Michael Cripps, B.A., B.S., Connecticut
Diane DeLauro, B.A., M.A., Eastern Michigan
Dorothy Ann Gioia, B.A., CUNY (Queens College); M.A., Rutgers
Michael Goeller, B.A., M.A., Rutgers
Ann Jurecic, A.B., Bryn Mawr; M.A.T., Brown; Ph.D., Princeton
Anthony Lioi, B.A., Brown; M.A., Rutgers
Katherine Lynes, BA., Lewis and Clark; BA., M.A., Portland State; M.A., Rutgers
Piper Kendrix Williams, B.A., Spelman College; M.A., Rutgers

Instructors:

Liv Cummins, B.S., Skidmore College; M.F.A., New York
Loriann Fell, B.A., M.A., Rutgers
Robert Gill, A.A., St. Charles College; B.A., Passionist Monastic Seminary College; M.A., Seton Hall; L.D.T-C., Kean College; Ed.D., Rutgers
Barbara Hamilton, B.A., Carleton College; M.A., Rutgers
Carole Harris, B.A., Duke; M.A., M.Phil., Ph.D., Yale
Rebecca Hartman, A.B., American
Carole Kley, B.A., Ed.M., Ed.D., Rutgers
Margaret Kim, B.A., Wisconsin (Madison); Ph.D., Harvard
Andrew Mossin, B.A., Hampshire College; M.A., Ph.D., Temple
Carl Nelson, B.A., M.A., Ph.D., Rutgers
Jennifer Novak, B.A., Arkansas; M.A., Pennsylvania State
Jacqueline O'Donoghue, B.A., SUNY (Purchase); M.A., Ph.D., Rutgers
Maureen Riddle, B.A., New York; M.A., Hunter College; Ph.D., Tulane
Marni Bevin Sanft, B.A., Brigham Young; M.A., Duke
Tim Strode, B.S., Cornell; B.A., Louisville; M.A., Rutgers
Ronald Tyson, B.A., CUNY

Student Responsibility to Keep Informed

Each term the English department publishes a handbook for majors that provides a detailed description of all courses to be offered the following term and lists the courses that fulfill each requirement for the major. Before registering for the term, students should consult this handbook, available in the undergraduate office (Murray 104, College Avenue campus), and consult with faculty advisers, whose schedules are posted at the undergraduate office.

Major Requirements

The major consists of a minimum of 36 credits in English above the 100 level, including at least 18 credits at or above the 300 level. All majors must fulfill the following requirements:

1. Both terms of 01:350:219,220 Principles of Literary Study, which should be taken in the sophomore year.
2. Four 300- or 400-level courses from four out of the following five periods:
   a. Medieval
   b. Renaissance
   c. Restoration / eighteenth century
   d. Nineteenth century
   e. Twentieth century and contemporary
3. One course in African-American literature.
4. One course in literary theory.
5. One 400-level seminar.

A course taken to fulfill a period requirement also may be used to fulfill the African-American literature or the seminar requirement, if it is so designated in the departmental handbook; similarly, if so designated, a seminar may be used to meet the literary theory or African-American requirement. However, no course may be used to fulfill more than two requirements.

Courses that may count as credits toward the major are listed under the subject codes 350 (English), 351 (English: Topics), 353 (English: Literary Theory), and 354 (Film Studies). All courses fulfilling period requirements and the African-American requirement are listed under 350; all courses listed under 353 fulfill the literary theory requirement.

A maximum of four English courses taken outside the Department of English at Rutgers–New Brunswick may be applied toward the major. Students who participate in study abroad may apply a total of six courses from outside toward the major. Transfer students who wish to apply transfer courses toward the major first must obtain approval from the undergraduate director. Enrolled English majors who wish to take an English courses outside Rutgers–New Brunswick must have prior approval from the undergraduate director. Students are urged to consult the English department for further information.

Grades of C or better must be earned in all courses used to fulfill the requirements of the major.

Options within the Major

The department offers three special options within the major. Each option requires at least 15 credits in the area of concentration. Please see departmental handbook (available in Murray Hall, Room 104) for details.

Creative Writing. For majors who wish to develop the craft and discipline of writing poetry, fiction, drama, and other forms through a coherent sequence of creative writing and literature courses.

Feminist Studies in English. For majors who wish to concentrate their work within the department's substantial offering of courses devoted to women writers, women and film, women and literature, and feminist criticism.

Film. For majors with a particular interest in the critical and historical analysis of film and its relation to literature.

Minor Requirements

The minor consists of 18 credits in English above the 100 level, including at least 12 credits at or above the 300 level. All minors are required to take at least one 300- or 400-level course designated as medieval, Renaissance, or Restoration / eighteenth century (period a, b, or c, as indicated in the major requirements, above). A maximum of two courses total in creative writing and in film at or above the 200 level is counted toward the minor. Grades of C or better must be earned in all courses used to fulfill the requirement of the minor.

Departmental Honors Program

The honors program in English consists of two phases: a track of honors course work, to be completed by the end of the junior year, and the writing of an honors thesis, to be carried out in the senior year. Transfer students entering as juniors, or other students who can show some special circumstance, may apply for admission directly to the thesis phase (see below).

Phase One: The Honors Track

Entering the Track. The honors track is open to all students who declare as English majors before the end of their

sophomore year, and who have a grade-point average of 3.3 or above. Eligible students normally should apply to the undergraduate office in the second term of their first year or the first term of their sophomore year. They will be assigned an honors adviser with whom they will be expected to meet at least once per term.

Course of Study. Students must take the following courses and fulfill the following requirements by the end of the junior year:

1. At least one Faculty of Arts and Sciences (FAS) honors section of the 200-level surveys of British, American, or African-American literatures.
2. 01:350:219 and 220, as required by the major (strongly recommended for sophomore year).
3. At least one course in literary theory, as required by the major (recommended for junior year).
4. Two additional writing-intensive courses (as designated by the undergraduate office). These may include an additional FAS honors section of any English course, 01:355:201, a seminar, or 01:351:496 Advanced Research Methods.

Phase Two: The Thesis

Admission. All students who have completed the honors track by the end of the junior year and have maintained a B+ average in the major will be admitted automatically to write the thesis. Students who wish to gain admission by application should consult with the undergraduate office in the fall term of their junior year.

Requirements. Students will receive 3 credits each term for independent work on the thesis. The completed thesis will be evaluated by the adviser and a second reader. A grade of B+ or better will be required to earn the honors designation.

Honors in Creative Writing

Procedures and requirements for honors in creative writing are identical to those outlined above, with the following exceptions:

1. In addition to the other requirements, students must take the creative writing option.
2. Students may count one approved creative writing course toward the writing-intensive requirement.

Certificate Programs

Professional Writing Certificate

This program is designed to give students a firm grounding in oral, written, and electronic communication skills so that they are prepared to enter professions that require extensive writing skills. To earn a Professional Writing Certificate, students must complete successfully at least 16 credits in selected courses, including a 1-credit CASE unit or 3-credit internship.

This certificate is administered through the English department. For more information, contact the Assistant Director of Business and Technical Writing at 732/932-9273 or biztech@rci.rutgers.edu.

Technical Writing Certificate

This program is designed to give students with a science or technical background a strong grounding in oral, written, and electronic communication skills. To earn a Technical Writing Certificate, students must complete successfully a major or minor in a scientific or technical field (such as biology, computer science, engineering, or mathematics) and at least 18 credits in selected courses, including a 3-credit internship.

This certificate is administered through the English department. For more information, contact the Assistant Director of Business and Technical Writing at 732/932-9273 or biztech@rci.rutgers.edu.

Required courses (16–19 credits):

Two electives from among the following writing courses (6 credits):

01:355:202	Technical Writing Essentials (3)
01:355:203	Business Writing Essentials (3)
01:355:315	Writing Grant Proposals (3) (may not be counted twice)
01:355:342	Science Writing (3)
01:355:352	Writing as a Naturalist (3)
01:355:355	Writing in the Professions (3)
01:355:365	Technical Editing (3)
01:355:375	Collaborative Writing Practices (3)

One of the following research writing courses (3 credits):

01:355:302	Scientific and Technical Writing (3)
01:355:303	Writing for Business and Professions (3)
01:355:312	Writing for Biology and Natural Science (3)
01:355:315	Writing Grant Proposals (3) (may not be counted twice)
01:355:322	Writing for Engineers (3)

One of the following workshop courses using computers in writing (3 credits):

01:355:402	Advanced Writing Workshop (3)
01:355:415	Information Design (3)
01:355:425	Web Authoring (3)

At least one course in computer science (3–4 credits):

01:198:110	Introduction to Computers and Their Application (3)
01:198:111	Introduction to Computer Science (4)
01:198:170	Computer Applications for Business (3)

At least one writing internship experience (1 or 3 credit for those seeking a Professional Writing Certificate; 3-credit internship for those seeking a Technical Writing Certificate):

01:351:399,400	CASE (1,1)
01:355:395,396	Internship (3,3)

Notice to All Students

Successful completion of 01:355:101 Expository Writing, by course work or exemption, is prerequisite to enrollment in all other English department courses except those at the 100 level. First-year students who have satisfied their basic writing requirement are encouraged to enroll in literature courses at the 200 level. Students can find literature courses at all levels listed under both 350 (English) and 351 (English: Topics). Composition and writing courses are listed under 355; courses in literary theory under 353; film courses under 354; creative writing courses under 351. English as a second language courses are listed under 356. Each term the department makes available in the undergraduate office a handbook describing in detail all courses to be offered the following term. This information also is available at the department's web site, http://english.rutgers.edu/dmain.htm.

Courses (350)

01:350:219,220. PRINCIPLES OF LITERARY STUDY (3,3)
Required of all prospective English majors; should be taken in the sophomore year. Fundamental concepts and techniques of literary interpretation: methods of analyzing language, genre, structure, and cultural contexts in poetry (01:350:219) and prose (01:350:220). Readings selected from a wide range of major English and American authors, including women and members of minorities.

01:350:221. SHAKESPEARE (3)
One-term introduction to Shakespeare, with readings in selected comedies, tragedies, and histories.

01:350:225. BRITISH LITERATURE FROM THE MIDDLE AGES TO1800(3)
Survey of poetry, prose, and drama from the Middle Ages through the eighteenth century.

01:350:226. BRITISH LITERATURE FROM 1800 TO THE PRESENT (3)
Survey of the poetry, prose, and drama from the romantic period to the present.

01:350:227. AMERICAN LITERATURE FROM THE COLONIAL PERIOD TO1860(3)
Survey of poetry, prose, and drama from the colonial period to the Civil War.

01:350:228. AMERICAN LITERATURE FROM 1860 TO THE PRESENT (3)
Survey of poetry, prose, and drama from the Civil War to the present.

01:350:250. BLACK LITERATURE FROM THE COLONIAL PERIOD TO1930(3)
Survey of poetry, prose, and drama from the eighteenth century through the Harlem renaissance.

01:350:251. BLACK LITERATURE FROM 1930 TO THE PRESENT (3)
Survey of poetry, prose, and drama from 1930 to the present.

01:350:301. LITERATURE OF MEDIEVAL COURTS (3)
Concepts of nobility, rule, courtship, and faith in works such as Beowulf, Sir Gawain and the Green Knight, Pearl, and Malory's Morte d'Arthur.

01:350:302. MEDIEVAL LITERATURE OF DISSENT (3)
Traditions of dissent in later medieval England. Texts include Piers Plowman, Lollard writings, macro-plays, the Wakefield cycle, and The Book of Margery Kempe.

01:350:303. RENAISSANCE LITERATURE: THE SIXTEENTH CENTURY (3)
Poetry, plays, and prose from the Henrician to the Elizabethan periods.

01:350:304. RENAISSANCE LITERATURE: THE SEVENTEENTH CENTURY (3)
Poetry, plays, and prose from the Jacobean to Restoration periods.

01:350:305. RESTORATION AND EARLY EIGHTEENTH-CENTURY LITERATURE (3)
Poetry, prose, and drama by Dryden, Rochester, Behn, Pope, Swift, and their contemporaries.

01:350:306. LATER EIGHTEENTH-CENTURY LITERATURE (3)
Poetry, prose, and drama by Johnson, Goldsmith, Smollett, Lennox, Burney, and their contemporaries.

01:350:307. EARLY ROMANTIC LITERATURE (3)
Works of poetry and prose by Austen, Blake, Coleridge, Wordsworth, and their contemporaries.

01:350:308. LATER ROMANTIC LITERATURE (3)
Works of poetry and prose by Keats, P.B. Shelley, M. Shelley, Byron, Hemans, De Quincey, and their contemporaries.

01:350:309. VICTORIAN LITERATURE (3)
Poetry and prose from the 1830s to 1900, by Barrett Browning, Tennyson, Browning, Carlyle, Arnold, Christina Rossetti, the Brontës, Dickens, George Eliot, and Hardy.

01:350:310. LATE VICTORIAN AND EDWARDIAN LITERATURE (3)
Poetry and prose of the transition to modernism by such authors as Pater, Wilde, the Decadents, early Yeats, Hardy, Lawrence, and Woolf.

01:350:311. TWENTIETH-CENTURY LITERATURE I (3)
Writing from 1900 to 1945, including one or more of the following: American, British, other literatures in English.

01:350:312. TWENTIETH-CENTURY LITERATURE II (3)
Writing from 1945 to the end of the century, including one or more of the following: American, British, other literatures in English.

01:350:313. CONTEMPORARY LITERATURE (3)
Writing from the last twenty years, including one or more of the following: American, British, other literatures in English.

01:350:315. COLONIAL AMERICAN LITERATURE (3)
English writing of the New World, from exploration through colonization, on both sides of the Atlantic. Puritanism, the Enlightenment, empire, and the development of nationalism.

01:350:316. ANTEBELLUM AMERICAN LITERATURE (3)
American writing from Romanticism to the Civil War. Works by Irving, Cooper, Bryant, Poe, Emerson, Douglass, Hawthorne, Melville, Stowe, Thoreau, Whitman, Jacobs, and others.

01:350:317. LITERATURE OF AMERICAN REALISM AND NATURALISM (3)
American writing from the Civil War to modernism. Works by Dickinson, Alcott, Twain, James, Howells, Jewett, Chopin, Gilman, Crane, Wharton, Adams, Norris, Dreiser, London, Du Bois.

01:350:318. TWENTIETH-CENTURY AMERICAN LITERATURE I (3)
Writing by American authors from 1900 to 1945.

01:350:319. TWENTIETH-CENTURY AMERICAN LITERATURE II (3)
Writing by American authors from 1945 to the end of the century.

01:350:321. CHAUCER (3)
Selected works of Chaucer, with an emphasis on the Canterbury Tales.

01:350:322. SHAKESPEARE: THE ELIZABETHAN PLAYS (3)
Selected comedies, tragedies, and English history plays written between the beginning of Shakespeare's career and the death of Elizabeth I in 1603.

01:350:323. SHAKESPEARE: THE JACOBEAN PLAYS (3)
Selected comedies, tragedies, and tragicomedies written after the succession of James I in 1603.

01:350:324. MILTON (3)
Paradise Lost, Paradise Regained, Samson Agonistes, the shorter poems, and selected prose.

01:350:325. MILTON AND OTHER EARLY MODERN WRITERS (3)
Selected writings of Milton studied in relation to other sixteenth- or seventeenth-century writers, such as Spenser, Shakespeare, Donne, Marvell, Cavendish, or Dryden.

01:350:328. Atlantic Cultures, 1500–1800 (3)
Credit not given for both this course and 01:506:328.
Encounters between peoples of Europe, Africa, and the Americas from the sixteenth century through the eighteenth. Team-taught, interdisciplinary course with an emphasis on the interpretation of texts and visual images from the era.

01:350:330. Literature and Literacy in Nineteenth-Century English Culture (3)
Texts that define to the English the idea of a popular national literature in the nineteenth century, including writings by social critics, philosophers, and novelists.

01:350:332. Sixteenth-Century Poetry (3)
Forms, styles, and development of poetry from Skelton to Spenser.

01:350:333. Seventeenth-Century Poetry (3)
Forms, styles, and development of poetry from Jonson and Donne to Milton and Marvell.

01:350:334. Restoration and Eighteenth-Century Poetry (3)
Forms, styles, and development of poetry from Dryden, Swift, Pope, Collins, Gray, and others.

01:350:335. Victorian Poetry (3)
Major poetry of Tennyson, Robert Browning, Arnold, the Pre-Raphaelites, Hopkins, early Yeats, and others.

01:350:337. Twentieth-Century Poetry I (3)
Poetry from 1900 to 1945, including one or more of the following: American, British, other literatures in English.

01:350:338. Twentieth-Century Poetry II (3)
Poetry from 1945 to the end of the century, including one or more of the following: American, British, other literatures in English.

01:350:339. Contemporary Poetry (3)
Poetry from the last twenty years, including one or more of the following: American, British, other literatures in English.

01:350:340. Nineteenth-Century American Poetry (3)
Primary focus on Whitman and Dickinson, with additional readings in Freneau, Bryant, Longfellow, Emerson, Poe, Whittier, Holmes, Robinson, Crane, Dunbar.

01:350:343. Drama in the Age of Shakespeare (3)
Early Modern drama, with emphasis on Marlowe, Jonson, Beaumont, Fletcher, Webster, and others.

01:350:344. Restoration and Eighteenth-Century Drama (3)
Comedies, tragedies, and heroic plays by such authors as Dryden, Behn, Wycherly, Etheridge, Congreve, Gay, Goldsmith, and Sheridan.

01:350:346. Twentieth-Century Drama I (3)
Drama from the 1880s to the 1920s in relation to modernism and contemporary social movements. Plays by Ibsen, Strindberg, Chekhov, Wilde, Jarry, Glaspell, and others.

01:350:347. Twentieth-Century Drama II (3)
Expressionism through the Absurd (1920s through 1960s), in artistic and social contexts. Plays by Pirandello, O'Neill, Brecht, Genet, Beckett, Pinter, Williams, Hansberry, and others.

01:350:348. Contemporary Drama (3)
Contemporary drama and experimental performance (1960 through 1990s) in social contexts—postmodernism, race and gender struggle. Texts by Kennedy, Baraka, Churchill, Fornes, Finley, and others.

01:350:349. American Drama (3)
American theatrical traditions from the eighteenth century to the present, with emphasis on such twentieth-century playwrights as O'Neill, Hellman, Williams, Miller, Albee, and Baraka.

01:350:352. Eighteenth-Century Novel (3)
Beginnings of the novel, from Bunyan to Austen, including Manley, Defoe, Heywood, Fielding, Richardson, Lennox, Smollett, and Sterne.

01:350:354. Nineteenth-Century British Fiction (3)
Development of the novel into the major popular literary genre in England. Writers include Scott, Dickens, the Brontës, Thackeray, Gaskell, Eliot, Hardy, and others.

01:350:355. Twentieth-Century Fiction I (3)
Fiction from 1900 to 1945, including one or more of the following: American, British, other literatures in English.

01:350:356. Twentieth-Century Fiction II (3)
Fiction from 1945 to the end of the century, including one or more of the following: American, British, other literatures in English.

01:350:357. Contemporary Fiction (3)
Fiction from the last twenty years, including one or more of the following: American, British, other literatures in English.

01:350:359. Nineteenth-Century American Fiction (3)
Novels, stories, and sketches by Irving, Cooper, Poe, Fern, Stowe, Hawthorne, Melville, Alcott, Twain, James, Wharton, Chesnutt, and others.

01:350:361. Black Narrative (3)
Historical and stylistic range of prose forms; slave narratives, folklore, biography and autobiography, short fiction; social, literary, and cultural criticism; Douglass, Du Bois, Toomer, Hurston, Walker.

01:350:362. Black Poetry (3)
History of Black American poetry, including the influence of oral traditions; poems by such writers as Wheatley, Dunbar, Hughes, and Brooks.

01:350:363. Black Drama (3)
Work of modern Black American playwrights including Hansberry, Baraka, Baldwin, Bullins, Gordone, Fuller, and Shange.

01:350:364. Black Novel (3)
Thematic and structural development of the Black novel as a voice for social and political change including works by Wright, Ellison, Baldwin, Marshall, Walker, and Morrison.

01:350:365. Black Autobiography (3)
Examination of self-representation by major Black autobiographers, including Frederick Douglass, Harriet Jacobs, Solomon Northup, Booker T. Washington, Maya Angelou, and Malcolm X.

01:350:367. Nineteenth-Century Black Literature (3)
Prominent African-American writers of fiction, poetry, autobiography and essays of the nineteenth century, including Frederick Douglass, Harriet Wilson, Pauline Hopkins, Charles Chesnutt, W.E.B. Du Bois.

01:350:368. Harlem Renaissance (3)
Black literature during the 1920s and 1930s in the context of African-American social and cultural history; essays, poems, and novels by such authors as Cullen, Hughes, Hurston, McKay, and Toomer.

01:350:369. Black Writers and the Sixties (3)
Innovations in Black literature of the 1960s in light of the tumultuous social, cultural, and political movements of the decade.

01:350:370. Black Music and Literature (3)
Thematic and structural influences of Black music on American poetry, fiction, and drama; writers may include Sterling Brown, Hughes, Baraka, Cortez, Bambara, Kerouac, Shepard, and August Wilson.

01:350:371. Black Women Writers (3)
Fiction and poetry by African-American women such as Brooks, Hurston, Marshall, Morrison, and Alice Walker; discussion of issues of literary influence and comparable traditions.

01:350:372. Literature of the Black World (3)
Comparative study of writing in English by African-American, Caribbean, and African authors, including Derek Walcott, V.S. Naipaul, Paule Marshall, and Chinua Achebe.

01:350:376. Issues and Problems in Black Literature (3)
Studies in particular themes, questions, forms, and historical issues in Black literature and culture. Sections designed by individual instructors; students should consult departmental announcement.

01:350:378. Twentieth-Century Literature in a Global Context (3)
Credit not given for both this course and 01:195:324.
Twentieth-century writing in English other than British and American.

01:350:381. Medieval and Early Modern Women Writers (3)
Selections from significant women writers of the medieval and early modern period, including Julian of Norwich, Margery Kempe, Aemelia Lanyer, Elizabeth Cary, Lady Mary Wroth, Katherine Philips, and others.

01:350:382. Restoration and Eighteenth-Century Women Writers (3)
Writings by women from Philips, Behn, and Finch to Burney and Austen.

01:350:383. Nineteenth-Century Women Writers (3)
Appearance of women writers as major public voices in British literature. Writers include Wollstonecraft, Austen, Mary Shelley, The Brontës, Gaskell, George Eliot, Christina Rossetti.

01:350:384. Twentieth-Century Women Writers (3)
Twentieth-century writing by women, including one or more of the following: American, British, other literatures in English.

01:350:385. American Women Writers to 1900 (3)
Writing by American women before the turn of the twentieth century, including Bradstreet, Stowe, Alcott, Dickinson, Freeman, Gilman, and Chopin.

01:350:386. Twentieth-Century American Women Writers (3)
Writing by American women of the twentieth century, including Wharton, Cather, Stein, H.D., Hurston, O'Connor, Bishop, and Morrison.

01:350:389. Issues and Problems in Medieval Literature and Culture (3)
Studies in particular themes, questions, forms, and historical issues in medieval literature and culture. Sections designed by individual instructors; students should consult departmental announcement.

01:350:390. Issues and Problems in Renaissance Literature and Culture (3)
Studies in particular themes, questions, forms, and historical issues in Renaissance literature and culture. Sections designed by individual instructors; students should consult departmental announcement.

01:350:391. Issues and Problems in Restoration and Eighteenth-Century Literature and Culture (3)
Studies in particular themes, questions, forms, and historical issues in Restoration and eighteenth-century literature and culture. Sections designed by individual instructors; students should consult departmental announcement.

01:350:392. Issues and Problems in Nineteenth-Century Literature and Culture (3)
Studies in particular themes, questions, forms, and historical issues in nineteenth-century literature and culture. Sections designed by individual instructors; students should consult departmental announcement.

01:350:393. Issues and Problems in Twentieth-Century Literature and Culture (3)
Studies in particular themes, questions, forms, and historical issues in twentieth-century literature and culture. Sections designed by individual instructors; students should consult departmental announcement.

01:350:411. Old English Language and Literature (3)
Extensive study of the English language and an introduction to its literature.

01:350:412. Old English Language and Literature (3)
Prerequisite: 01:350:411.
Beowulf and other masterpieces studied in their original language.

01:350:415. Medieval Romance (3)
Medieval romances and their origins in the British Isles and on the continent, with emphasis on English versions of Arthurian material, especially Sir Gawain and the Green Knight and Malory's Morte d'Arthur.

01:350:420. Seminar: Chaucer (3)
Intensive study of The Canterbury Tales, Troilus and Criseyde, and other selected works.

01:350:422. Seminar: Topics in Medieval Literature and Culture (3)
Intensive study, in a discussion-oriented format, of a specifically defined area of medieval literature and culture. Topics vary according to individual instructors; consult departmental information.

01:350:424. Seminar: Spenser (3)
The Faerie Queene, The Shepherd's Calendar, Amoretti, Epithalamion, and selected minor works.

01:350:426,427. Seminar: Shakespeare (3,3)
Special studies in selected plays and poems. Consult department announcement.

01:350:428. Seminar: Milton (3)
Special studies in Milton's poetry and prose.

01:350:434. Seminar: Topics in Renaissance Literature and Culture (3)
Intensive study, in a discussion-oriented format, of a specifically defined area ofRenaissance literature and culture. Topics vary according to individual instructors; consult departmental information.

01:350:435. Seminar: Topics in Restoration and Eighteenth-Century Literature and Culture (3)
Intensive study, in a discussion-oriented format, of a specifically defined area of eighteenth-century literature and culture. Topics vary according to individual instructors; consult departmental information.

01:350:436. SEMINAR: TOPICS IN NINETEENTH-CENTURY LITERATURE AND CULTURE (3)
Intensive study, in a discussion-oriented format, of a specifically defined area of nineteenth-century literature and culture. Topics vary according to individual instructors; consult departmental information.

01:350:437. SEMINAR: TOPICS IN TWENTIETH-CENTURY LITERATURE AND CULTURE (3)
Intensive study, in a discussion-oriented format, of a specifically defined area of twentieth-century literature and culture. Topics vary according to individual instructors; consult departmental information.

01:350:441. SEMINAR: TOPICS IN AMERICAN LITERATURE AND CULTURE TO 1800 (3)
Intensive study, in a discussion-oriented format, of a specifically defined area of American literature and culture to 1800. Topics vary according to individual instructors; consult departmental information.

01:350:442. SEMINAR: TOPICS IN NINETEENTH-CENTURY AMERICAN LITERATURE AND CULTURE (3)
Intensive study, in a discussion-oriented format, of a specifically defined area of nineteenth-century American literature and culture. Topics vary according to individual instructors; consult departmental information.

01:350:445,446. SEMINAR: TOPICS IN BLACK LITERATURE AND CULTURE (3,3)
Intensive study, in a discussion-oriented format, of a specifically defined area of Black literature and culture. Topics vary according to individual instructors; consult departmental information.

Courses (351)

01:351:201. INTRODUCTION TO LITERATURE (3)
Development of skills in close reading and interpretive writing; texts in various genres. Designed primarily for nonmajors.

01:351:211,212. CREATIVE WRITING (3,3)
Practice in creative writing in various forms (fiction, poetry, drama, essay); critical analysis of students' manuscripts in class and / or individual conferences.

01:351:216. INTRODUCTION TO WORLD LITERATURES IN ENGLISH (3)
Credit not given for both this course and 01:195:216.
Survey of English language literatures, including Asian, African, and Caribbean, in a global context.

01:351:240. INTRODUCTION TO DRAMATIC LITERATURE (3)
Major plays from several periods, chiefly British and American, with some attention to form, theory, and the development of the genre.

01:351:241. INTRODUCTION TO POETRY (3)
Major poems from several periods, chiefly British and American, with some attention to form, theory, and the development of the genre.

01:351:242. INTRODUCTION TO THE NOVEL (3)
Major novels from several periods, chiefly British and American, with some attention to form, theory, and the development of the genre.

01:351:244. INTRODUCTION TO MYTH (3)
Myths of various cultures; their structures and functions in social and especially literary contexts.

01:351:245. INTRODUCTION TO FOLKLORE (3)
Credit not given for both this course and 01:195:245.
Major genres of folklore, including folktale, folk song, and legend, with attention to the methods of collecting and analyzing these materials.

01:351:265. INTRODUCTION TO THE STUDY OF WOMEN WRITERS (3)
Range of literature in English by women writers, analyzed in relation to the impact of authorial gender.

01:351:266. ISSUES AND METHODS IN FEMINIST LITERARY STUDIES (3)
Contemporary debates about gender, class, race, and sexuality through close reading of literary and cultural texts, including poems, novels, film, journalism, and visual images.

01:351:306. CREATIVE WRITING: FORM AND TECHNIQUE IN POETRY (3)
Prerequisite: One 200-level course in creative writing or permission of instructor. Pre- or corequisite: A literature course in poetry.

01:351:307. CREATIVE WRITING: FORM AND TECHNIQUE IN FICTION (3)
Prerequisite: One 200-level course in creative writing or permission of instructor. Pre- or corequisite: A literature course in fiction.

01:351:308. CREATIVE WRITING: FORM AND TECHNIQUE IN DRAMA (3)
Prerequisite: One 200-level course in creative writing or permission of instructor. Pre- or corequisite: A literature course in drama.

01:351:310,311. HISTORY OF THE ENGLISH LANGUAGE (3,3)
Growth and structure of the English language from its origins to the present, with some attention to methods of linguistic description. First term: historical linguistics, Old and Middle English. Second term: English from Caxton to the present, with emphasis on American contributions to the study of the language; social, political, regional, and urban language issues.

01:351:315. BACKGROUNDS OF HOMOEROTIC LITERATURE (3)
Credit not given for both this course and 01:195:326.
Survey of gay and lesbian literature from the Greeks to the 1920s, stressing formal and generic analysis and connections between cultures.

01:351:317. CLASSICAL BACKGROUNDS OF LITERATURE IN ENGLISH (3)
Credit not given for both this course and 01:195:346.
Influence on literature in English of classical Greek and Roman epic, tragedy, comedy, and other literary forms.

01:351:319. BIBLICAL BACKGROUNDS OF LITERATURE IN ENGLISH (3)
Credit not given for both this course and 01:195:349.
Influence of the King James and other versions of the Bible on literature in English.

01:351:320. THE BIBLE AS LITERATURE (3)
The Bible, its literary variety, and the evolution of its text.

01:351:321. STUDIES IN LITERATURE AND SPIRITUALITY (3)
Religious themes in literature, with attention to matters of rhetoric, style, and structure.

01:351:322. LITERARY APPROACHES TO SACRED TEXTS (3)
Credit not given for both this course and 01:195:318.
Literary analysis of the formation and structure of the major texts of several world religions. Attention to style, genre, and cross-cultural interpretation.

01:351:325. THE COMIC (3)
Theory and practice of comedy organized around the topics of satire, farce, nonsense, parody, jokes, and the humor of daily life.

01:351:326. TRAGEDY (3)
Credit not given for both this course and 01:195:391.
Literature and theory of tragedy from the Greeks through Shakespeare to the twentieth century; chiefly plays, supplemented by some poetry and fiction.

01:351:330. THE GOTHIC (3)
Genre of the Gothic from its beginnings in the eighteenth century to the present.

01:351:331. TRAVEL LITERATURE (3)
Readings of works, mainly in English, concerning geographical exploration and speculation; relation to literary and nonliterary genres; attention to imperial dimensions.

01:351:332. MODERN LITERARY FANTASY (3)
Literary conventions and distinctions between the surreal and the unreal, nonsense and the sublime in different forms of modern literary fantasy written in English.

01:351:334. THE SHORT STORY (3)
Wide range of short stories, with a particular focus on formal aspects of the genre.

01:351:335. SCIENCE FICTION (3)
Development of science fiction; works by such authors as Wells, Stapledon, Capek, Clarke, Bradbury, Asimov, Le Guin, and Lessing.

01:351:336. DETECTIVE FICTION (3)
Classic writers of the detective story and novel: Poe, Conan Doyle, Christie, Hammett, and others.

01:351:337. POPULAR CULTURE (3)
Exploration of how popular forms like TV, movies, music video, rap, rock, comics, magazines, and advertising shape meaning and value in contemporary America.

01:351:338. FOLK LITERATURE (3)
Folktale, ballad, and other forms of oral-traditional literature; theories of origin and classification; adaptations of folk materials in literary texts.

01:351:339. SATIRE (3)
Satire's variety of postures and games, across an array of such forms as novel, epigram, film, and cartoon, ranging from the Renaissance to the present.

01:351:341. AUTOBIOGRAPHY (3)
Credit not given for both this course and 01:195:360.
Historical and formal development of autobiography in English, with special attention to theories of identity and narrative.

01:351:342. AMERICAN AUTOBIOGRAPHY (3)
Changing representations of self in narrative form. Readings range from conversion, captivity, and slave narratives, to modern autobiographies in the tradition of Franklin.

01:351:345. IRISH WRITING IN ENGLISH (3)
Works of Irish writers in English from 1800 to the present.

01:351:347. LITERATURE AND PSYCHOLOGY (3)
Exploration of interrelationships of literature and psychoanalysis (from Freud to feminists and contemporary theorists); topics include subjectivity, trauma, gender, intersubjectivity, and identity.

01:351:348. LITERATURE AND SEXUALITY (3)
Themes and assumptions of sexual literature and its basis in sexual fantasy, including gender issues. Reading in major works of sexual literature.

01:351:349. LITERARY AND SCIENTIFIC WRITINGS (3)
Readings in English that explore the impact of science upon literary writing and the literary and discursive dimensions of selected scientific texts.

01:351:350. LITERATURE AND MYTH (3)
Narrative transformations of myth, considering such mythic structures as cosmogony, rebirth, shamanism, and metamorphosis from various theoretical and cultural perspectives.

01:351:355. DRAMA BY WOMEN (3)
Selected plays in English by women writers, with emphasis on the study of forms, conventions, and cultural contexts. Topics vary; consult departmental announcement.

01:351:356. FICTION BY WOMEN (3)
Selected works of fiction in English by women writers, with emphasis on the study of forms, conventions, and cultural contexts. Topics vary; consult departmental announcement.

01:351:357. POETRY BY WOMEN (3)
Selected poetry in English by women writers, with emphasis on the study of forms, conventions, and cultural contexts. Topics vary; consult departmental announcement.

01:351:358. AUTOBIOGRAPHY BY WOMEN (3)
Selected autobiographical writings by women in English. Topics vary; consult departmental announcement.

01:351:359. GENDER AND GENRE (3)
Explores ways by which female and male writers have made use of gendered assumptions about voice, tropes of address, inspiration, and form.

01:351:361. ISSUES AND PROBLEMS IN FEMINIST LITERARY STUDIES (3)
Themes, questions, forms, and historical issues in feminist literary studies. Sections designed by individual instructors; consult departmental announcement.

01:351:365. READINGS IN COLONIAL AND POSTCOLONIAL LITERATURE (3)
Study of literature and criticism that explore facets of Western imperial expansion.

01:351:366. LITERATURES OF MIGRATION, IMMIGRATION, AND DIASPORA (3)
Credit not given for both this course and 01:195:336.
Writings that feature representations of place, community, and identity in relation to national and international movement and displacement.

01:351:369. MINORITY LITERATURES IN ENGLISH (3)
Credit not given for both this course and 01:195:335.
Cross-national and comparative studies of literature, in English, of one or more ethnic, racial, or cultural groups. Topics vary; consult departmental announcement.

01:351:371. LITERATURES IN ENGLISH OTHER THAN BRITISH AND NORTH AMERICAN (3)
Study of selected literary works written in English in countries other than the United Kingdom, Ireland, United States, and Canada. Topics vary; consult departmental announcement.

01:351:375. ETHNIC LITERATURE IN THE U.S. (3)
Selected literary works by Asian-American, Black, Chicano / Chicana, and Native American writers. Topics vary; consult departmental information.

01:351:376. NATIVE AMERICAN LITERATURES IN ENGLISH (3)
Fiction, poetry, and autobiography by such writers as Apes, Momaday, Welch, Silko, and Erdrich. Attention to issues of Native American representation.

01:351:377. Asian-American Literatures in English (3)
Theme or genre based study of selected Asian-American writing in English. Topics chosen by individual instructors; consult departmental announcement.

01:351:378. Chicano/Chicana Literature (3)
Theme or genre based study of selected Chicano / Chicana literature; attention to comparative contexts (Puerto Rican, Cuban, Dominican).

01:351:385. Issues and Problems in Genre (3)
Formal and cultural issues within the development of a particular genre, or in the relation between genres, in literature in English.

01:351:393,394. Independent Study (3,3)
Prerequisite: Permission of department.
Individual work on a topic designed by the student in conference with an instructor who directs the project.

01:351:397. Junior Honors Seminar (3)
Open only to junior English majors in the departmental honors program.
Focus on particular text, theme, or approach in order to develop reading and writing skills using critical and theoretical materials.

01:351:399,400. CASE (1,1)
Not for English major or minor credit. Must be taken in conjunction with designated CASE course in the English department.
One credit community service placement in English.

01:351:405,406. Advanced Creative Writing Workshop (3,3)
Prerequisites: One 300-level course in creative writing and permission of instructor.
Advanced work in creative writing; criticism of manuscripts in individual conferences and / or class.

01:351:435,436. Seminar: Feminist Literary Studies (3,3)
Intensive study, in a discussion-oriented format, of a specifically defined area of feminist literary studies. Topics vary; consult departmental announcement.

01:351:440. Seminar: Topics in Genre (3)
Credit not given for both this course and 01:195:440.
Intensive study, in a discussion-oriented format, of a particular genre (e.g., pastoral, epic, comedy, lyric) or relationship among genres. Topics vary; consult departmental information.

01:351:452,453. Seminar: Special Topics in American Literature (3,3)
Special studies in particular ideas, themes, forms, and historical units in American literature. Sections designed by individual instructors; consult departmental announcement.

01:351:460. Seminar: Topics in Colonial and Postcolonial Literature (3)
Intensive study, in a discussion-oriented format, of a specifically defined area of colonial and postcolonial literature. Topics vary; consult departmental information.

01:351:491,492. Seminar: Special Topics in Literature (3,3)
Special studies in particular ideas, themes, forms, and historical units in literature. Sections designed by individual instructors; consult departmental announcement.

01:351:493,494. Independent Study (3,3)
Prerequisite: Permission of department.
Individual work on a topic designed by the student in conference with an instructor who directs the project.

01:351:495. Independent Study (BA)
Individual work on a topic designed by the student with an instructor who directs the project.

01:351:496. Advanced Research Methods (3)
Open only to junior English majors in the departmental honors program.
Workshop in advanced library skills and the use of secondary scholarship.

01:351:497. Senior Honors Seminar (3)
Open only to senior English majors in the departmental honors program.
Workshop focusing on methodological and theoretical aspects of literary study, with particular emphasis on the senior thesis.

01:351:498,499. Senior Honors Tutorial (3,3)
Meets by arrangement through individual conferences.
Independent research on a topic, selected by the student and approved by the departmental honors committee, executed under the guidance of the student's tutor.

Courses (353)

01:353:230. Readings in Literary Theory (3)
Literary theory through the close reading of texts with common themes; representation of diverse historical periods and theoretical frameworks.

01:353:301. History of Literary Theory I (3)
Literary and rhetorical theory from antiquity to the Enlightenment.

01:353:302. History of Literary Theory II (3)
Selected trends and texts of literary theory from Romanticism to the present.

01:353:310. Language and Meaning (3)
Concept of "meaning" in linguistic and especially "literary" theory.

01:353:315. Deconstruction and Poststructuralist Theory (3)
"Poststructuralism," and its origins in France in the late 1960s; attention to the theoretical writings of Derrida, Barthes, Kristeva, and de Man.

01:353:320. Marxist Literary Theory (3)
Marxist analysis of literature, culture, and society. Attention to dialectical philosophy, the problem of base and superstructure, theories of ideology and fetishism.

01:353:326. Colonial and Postcolonial Theory (3)
Theories of colonial and postcolonial discourse; attention to issues of imperialism, primitivism, creolization, and globalization in fiction, film, and travel narratives.

01:353:330. Cultural Theory in Literary Studies (3)
Approaches to defining what culture is and how to theorize culture in relation to the production and consumption of literary and nonliterary texts.

01:353:340. Feminist Theory in Literary Study (3)
"Woman," "gender," and related concepts as discursive categories deployed in theoretical, literary, philosophical, and popular texts. Attention to historical issues and current debates.

01:353:346. Theories of Gender and Sexuality (3)
History and critique of gender and sexuality as discursive categories. May include nonliterary as well as literary texts and involve various theoretical perspectives.

01:353:350. Psychoanalytic Literary Theory (3)
Impact of psychoanalysis upon theories of literature, language, and interpretation; Freud and beyond; attention to theories of subjectivity, sexuality, textuality, culture.

01:353:360. Literature, Theology, and Theory (3)
Relationships between theological and literary ways of reading texts, including both sacred and secular examples.

01:353:370. THEORIES OF GENRE (3)
Introduction to the ways in which criticism has theorized literature according to genre, form, and kind.

01:353:389,390. ISSUES AND PROBLEMS IN LITERARY THEORY (3,3)
Close investigation of a specifically defined area of literary theory. Topics vary according to individual instructors; consult departmental information.

01:353:491,492. SEMINAR: TOPICS IN LITERARY THEORY (3,3)
Intensive study, in a discussion-oriented format, of a specifically defined area of literary theory. Topics vary according to individual instructors; consult departmental information.

01:353:496,497. SEMINAR: TOPICS IN FEMINIST THEORY (3,3)
Intensive study, in a discussion-oriented format, of a specifically defined area of feminist theory. Topics vary according to individual instructors; consult departmental information.

Courses (354)

01:354:201. INTRODUCTION TO FILM (3)
Film study, with emphasis on basic concepts of film analysis (narrative, editing, mise-en-scéne, sound) and the historical development of cinema as an institution.

01:354:202. INTRODUCTION TO FILM (3)
Film study, with emphasis on commercial cinema as an institution (genres, directors, stars) and on nonnarrative types of film (documentary, experimental).

01:354:210. CLOSE READINGS OF CINEMA (3)
Formal analyses of six or seven individual films; emphasis on visual track, sound track, and scenario-narrative construction.

01:354:308. SCREENWRITING (3)
Nature and theory of the screenplay; practice in writing for the screen, from short scenes to longer projects.

01:354:312. CINEMA AND THE ARTS (3)
Relationship between film and aesthetic movements in literature and the arts, such as expressionism, cubism, futurism, constructivism, and surrealism.

01:354:315. AMERICAN CINEMA I (3)
American film from the silent period to 1940; emphasis on the development of American cinema both as a social institution and a symbolic form.

01:354:316. AMERICAN CINEMA II (3)
American film from 1940 to the present; emphasis on the height of the Hollywood studio and its decline in the late 1950s and 1960s.

01:354:320. WORLD CINEMA I (3)
Credit not given for both this course and 01:195:320.
Developments in French, Italian, British, Russian, and other national cinemas from 1896 to World War II; also examines cross-influences between foreign and American cinema.

01:354:321. WORLD CINEMA II (3)
Credit not given for both this course and 01:195:321.
Developments in French, Italian, British, Russian, Japanese, and other national cinemas after World War II; also examines cross-influences between foreign and American cinema.

01:354:330,331. CRITICAL METHODOLOGY IN FILM (3,3)
Critical methodology, reviewing genre theory, theories of authorship, Marxist, feminist, cultural-materialist, and psychoanalytic criticism as applied to film.

01:354:350,351. MAJOR FILMMAKERS (3,3)
Questions of meaning in film through the work of such major directors as Ford, Renoir, Hawks, Ophuls, Bergman, Mizoguchi, and Hitchcock.

01:354:370. FILM GENRES (3)
Analysis of film genres, such as the western, comedy, horror film, film noir, the musical; theory of genre; history of genre criticism. May cover more than one genre.

01:354:373. THE DOCUMENTARY (3)
History, theory, and practice of documentary film, including ethnographic film, propaganda, newsreel, direct cinema, video verite, social activist film, postmodern documentary, and antidocumentary.

01:354:375. FILM AND SOCIETY (3)
Analysis of films in their sociopolitical contexts, including issues of race, class, and gender; relation between film as artform and the politics of culture.

01:354:385. THEORIES OF WOMEN AND FILM (3)
Basic concepts in feminist film theory; the female voice in cinema; representations of women in classical Hollywood film; films made by women.

01:354:391,392. SPECIAL TOPICS IN FILM STUDIES (3,3)
Intensive study of a particular national cinema, period in film history, studio, or genre. Sections designed by individual instructors; consult departmental announcement.

01:354:420. SEMINAR: FILM THEORY (3)
Major developments in film theory from the silent era to the present; writings on film by Eisenstein, Kracauer, Bazin, Metz, Barthes, and others; practice in using different methods to analyze films.

Courses (355)

01:355:096. WRITING CENTER (E1.5)
At the tutorial centers located on the College Avenue, Kilmer, and Douglass campuses, registered students receive concentrated assistance in specific writing skills. Open to all undergraduates.

01:355:098. COMPOSITION SKILLS (E4.5)
Remedial-level work in writing and reading skills.

01:355:099. READING FOR ENGLISH 100 (E1.5)
Corequisite 01:355:100. By permission only.
Course in reading skills, to be taken in conjunction with 01:355:100, with special emphasis on accuracy, vocabulary, and the recognition of basic expository forms.

01:355:100. BASIC COMPOSITION (3)
Basic writing course for students who need preparation for 01:355:101, leading to increased fluency, competence in standard English, and skills in organization.

01:355:101. EXPOSITORY WRITING I (3)
Development of competence in reading, thinking, and writing through the analysis and composition of expository prose.

01:355:103. EXPOSITION AND ARGUMENT (3)
By departmental placement only. Not open to students who have taken 01:355:101. Credit not given for both this course and 01:355:101.
Intensive expository writing course for first-year students who demonstrate advanced reading and writing skills.

01:355:201. RESEARCH IN THE DISCIPLINES (3)
May not be used for major or minor credit.
Improve writing and research abilities through work in a particular discipline. Courses linked to corequisites in professional programs or university departments.

01:355:202. TECHNICAL WRITING ESSENTIALS (3)
May not be used for major or minor credit.
Training in the skills, purposes, and styles of technical writing. Practice with abstracts, definitions, description, and other common forms.

01:355:203. BUSINESS WRITING ESSENTIALS (3)
May not be used for major or minor credit.
Training in the skills, purposes, and styles of business writing. Practice with letters, memos, short reports, electronic messages, and oral presentations.

01:355:301. COLLEGE WRITING AND RESEARCH (3)
Further development of competence in reading, thinking, and writing through the analysis and composition of expository prose.

01:355:302. SCIENTIFIC AND TECHNICAL WRITING (3)
May not be used for major or minor credit.
Practice in research and writing in scientific and technical settings. Focus on an independent project related to the student's field of specialization.

01:355:303. WRITING FOR BUSINESS AND THE PROFESSIONS (3)
May not be used for major or minor credit.
Practice in management-level research and writing in business and professional settings. Focus on an independent project related to the student's field of specialization.

01:355:312. WRITING FOR BIOLOGY AND NATURAL SCIENCE (3)
May not be used for major or minor credit.
Project-focused course designed to address the needs of students in the biological and natural sciences. Covers grant proposals, research papers, and journal publications.

01:355:315. WRITING GRANT PROPOSALS (3)
May not be used for major or minor credit.
Theory and practice of grant writing to support research, education, or community. Focus on identifying appropriate sources of grant funding, organizing research, and tailoring projects to specific audiences.

01:355:322. WRITING FOR ENGINEERS (3)
May not be used for major or minor credit.
Project-focused course designed to address the needs of students in engineering. Covers project proposals, patent applications, technical reports, and other engineering documents.

01:355:342. SCIENCE WRITING (3)
May not be used for major or minor credit.
Practice in writing about science for general readers and presenting scientific issues or information in the genres common to journals, magazines, newspapers, and the Internet.

01:355:352. WRITING AS A NATURALIST (3)
May not be used for major or minor credit.
Advanced writing course focusing on observing and writing about animals and the natural world.

01:355:355. WRITING IN THE PROFESSIONS (3)
May not be used for major or minor credit.
Specialized writing training for professional, business, scientific, or technical fields.

01:355:365. TECHNICAL EDITING (3)
May not be used for major or minor credit.
Practice editing technical documents for grammar, syntax, organization, style, emphasis, and audience awareness.

01:355:375. COLLABORATIVE WRITING PRACTICES (3)
May not be used for major or minor credit.
Theory and practice of managing collaborative writing in organizations. Students collaborate on group projects involving planning, writing, presentation, and editing tasks.

01:355:395,396. INTERNSHIP (3,3)
Permission of department required; not to be used for major credit.
Application of skills learned in literary studies in professional settings; an appropriately designed academic project resulting in a paper.

01:355:402. ADVANCED WRITING WORKSHOP (3)
Advanced work in expository, scientific, technical, or business writing.

01:355:415. INFORMATION DESIGN (3)
Prerequisite: One of the following: 01:355:201, 302, 303, 312, 322, or 332.
May not be used for major or minor credit.
Project-focused workshop course using specialized writing software to design and produce a portfolio of user-friendly documents for a specific audience and purpose.

01:355:425. WEBAUTHORING (3)
Prerequisite: One of the following: 01:355:201, 302, 303, 312, 322, or 332.
May not be used for major or minor credit.
Project-focused workshop course using specialized software to design, research, generate content for, and publish a web site.

Courses (356)

01:356:096. ACADEMIC SPEECH AND ORAL PRESENTATION LABORATORY (E1.5)
For students with nonnative English-speaking backgrounds.
Addresses spoken English and oral presentations on an individual basis. Includes assessment, tutoring, and access to appropriate technology.

01:356:097. ACADEMIC WRITING LABORATORY (E1.5)
For students with nonnative English-speaking backgrounds.
Addresses academic English writing problems on an individual basis. Includes assessment, tutoring, and access to appropriate technology.

01:356:155. ENGLISH FOR ACADEMIC DISCOURSE I (4)
For students with non-English language backgrounds.
Builds academic writing skills by critical reading, multidraft essay writing, and addressing sentence level vocabulary and grammar issues.

01:356:156. ENGLISH FOR ACADEMIC DISCOURSE II (4)
For students with nonnative English-speaking backgrounds.
Preparation for Basic Composition (100R) by reading academic texts, writing multidraft essays, and addressing various sentence / discourse issues.

ENTOMOLOGY

(See Cook College section)

ENVIRONMENTAL CERTIFICATES

See the Cook College section for information concerning the Environmental Planning Certificate, the Environmental Geomatics Certificate, the Social Strategies for Environmental Protection Certificate, and the International Agriculture / Environment Certificate.

EXERCISE SCIENCE AND SPORT STUDIES 377

Department of Exercise Science and Sport Studies, Faculty of Arts and Sciences

Web Site: http://www.exsci.rutgers.edu

Chairperson: David A. Feigley

Professor:

Neil J. Dougherty, B.S., Ed.M., Rutgers; Ed.D., Temple

Associate Professor:

David A. Feigley, B.A., M.S., Ph.D., Rutgers

Assistant Professors:

Robyn Snyder, B.A., M.S., Pennsylvania State; Ph.D., Maryland
Norman Walensky, B.A., Muhlenberg; M.S., Ph.D., George Washington School of Medicine

Major Requirements

The major in exercise science and sport studies offers options in exercise science and sport management.

To graduate with the exercise science and sport studies major, students must have at least a 2.0 grade-point average from the required courses within their specific option. For students with career interests in other related areas, a general option can be designed with special permission from the department. An interview with the department chair is required prior to admission to the program.

Required core courses for all majors include:

01:198:110 Introduction to Computers and Their Application (3)
01:377:140 Foundations of Exercise Science and Sport Studies (1.5)
01:377:406 Management in Exercise Science and Sport (3)
01:830:101 General Psychology (3)

Exercise Science Option

The exercise science option provides the student with a strong science foundation that emphasizes preparation for further specialized graduate study or direct entrance into a related career. Opportunities include athletic training, biomechanics, exercise physiology, fitness management, medicine, and pre-physical therapy. The following is a list of required courses in addition to core courses:

01:119:101-102 General Biology (4,4)
01:146:356,357 Systems Physiology and Systems Physiology Laboratory (3,1)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:377:213 Functional Human Anatomy (4)
01:377:275 Statistical Approaches to Exercise Science (3)
01:377:303 Neuromechanical Kinesiology (3)
01:377:310 Motor Learning (3)
01:377:324 Movement Experiences for Individuals with Disabilities (3)
01:377:410 Applied Physical Fitness Techniques (4)
01:377:452 Exercise Physiology (3)
01:377:453 Exercise Physiology Laboratory (1)
01:377:490 Internship I (3)
01:377:___ Exercise science and sport studies electives, 3 credits of which must be at the 300 or 400 level (6)
01:640:135 Calculus (4)
01:750:203,205 General Physics and Laboratory (3,1) or 01:750:193 Physics for the Sciences (4) or 01:750:201 Extended Physics (5)
01:750:204,206 General Physics and Laboratory (3,1) or 01:750:194 Physics for the Sciences (4) or 01:750:202 Extended Physics (5)
01:830:101 General Psychology (3)
01:830:340 Principles of Abnormal Psychology (3)

Sport Management Option

The sport management option is designed to meet the needs of the popular and growing phenomena in the management of sport facilities and programs. The following is a list of required courses in addition to core courses:

33:010:272 Introduction to Accounting (3)
04:189:101 Introduction to Communication and Information Systems and Processes (3) or 04:192:313 Message Design for Public Relations and Organization Communication (3) or 04:192:201 Interpersonal Communication Processes (3) or 33:620:300 Principles of Management (3)
04:189:102 Introduction to Media Systems and Processes (3)
04:192:380 Public Speaking (3)
01:220:102 Introduction to Microeconomics (3)
01:220:103 Introduction to Macroeconomics (3)
01:355:101 Expository Writing I (3)
01:355:303 Writing for Business and the Professions (3)
01:377:275 Statistical Approaches to Exercise Science (3)
01:377:301 Sport Psychology (3)
01:377:305 Sport Sociology (3)
01:377:320 Risk Management in Exercise Science and Sport (3)
01:377:323 Sport and the Law (3)
01:377:490 Internship I (3 or 6)
01:377:___ Exercise science electives (3,3)
33:630:301 Principles of Marketing (3)
01:640:115 Precalculus College Mathematics (4) or 01:640:111-112 Precalculus I,II (2,2) or placement into calculus
01:830:373 Organizational and Personnel Psychology (3)
01:920:101 Introduction to Sociology (3)

Internship Program

Students enrolled in the exercise science and sport management options must complete a 3- or 6-credit internship, respectively, during their senior year. The internship provides the students with the opportunity to practice and / or apply knowledge and skills in various professional environments.

Students must satisfy the following criteria to be eligible to enter an internship: (1) complete a minimum of 90 credits with a cumulative grade-point average of at least 2.0, and (2) complete a minimum of 20 credits in the major, with a cumulative grade-point average of at least 2.0 for all required courses listed for the particular option in the major.

Departmental Honors Program

To qualify for departmental honors, a student must have attained, at the end of the junior year, a cumulative grade-point average of at least 3.4 and a grade-point average of at least 3.4 in courses in the major. Preferably by the end of

the junior year, but not later than the first week of the senior year, the student must formally apply to the department chairperson for admittance to the honors program. Accepted candidates must complete an Honors Seminar (01:377:480) during the fall term when, under the guidance of the seminar instructor, an honors research project is designed and developed. During the spring term, each student approved by the instructor must register for 01:377:481 Honors Research in Exercise Science, be assigned to an individual faculty member, and carry out the research project designed in the Honors Seminar. Both terms must be completed successfully to receive departmental honors recognition.

Courses

01:377:140. FOUNDATIONS OF EXERCISE SCIENCE AND SPORT STUDIES (1.5)
Open to all except seniors.
Historical, philosophical, and scientific foundations of the discipline.

01:377:150. PERSPECTIVES OF SPORT (3)
Historical review of sport and physical activities in the U.S. Focuses on problems and issues in sport.

01:377:170. STRENGTH TRAINING THEORY AND APPLICATIONS (1.5)
Open only to majors.
Study of the organization, design, and supervision of strength training programs, with an emphasis on the anatomical and kinesiological aspects of strength training.

01:377:171–179. INDIVIDUAL SPORTS (1.5 EACH)
Skill development, instructional progression, pertinent strategies, and theory.

01:377:180. EXERCISE AND RELAXATION (1.5)
Utilizes the components of fitness with an emphasis on cardiorespiratory endurance and flexibility to achieve fitness. Modalities used for stress reduction include progressive relaxation techniques and humor.

01:377:206. INSTRUCTIONAL DESIGN IN PHYSICAL EDUCATION (3)
Open only to majors.
Practical and theoretical considerations of curriculum content for sports that are inherently noninvasive (e.g., volleyball, softball, and archery) explored with regard to their implications for instructional design.

01:377:207,208. TEACHING AND COACHING INDIVIDUAL AND TEAM SPORTS AND DANCE (3,3)
Lec./lab. Open only to majors.
Techniques of teaching, coaching, and individual acquisition of advanced sport skills.

01:377:209. INDIVIDUAL AND DUAL SPORTS (3)
Open only to majors.
Practical and theoretical considerations of selected curriculum content for individual and dual sports explored with regard to implications for instructional design.

01:377:211,212. AEROBIC FITNESS I,II (2,2)
Individualized programming of aerobic activities based on needs and interests of adult populations; designing aerobic fitness programs for specific populations.

01:377:213. FUNCTIONAL HUMAN ANATOMY (4)
Lec./lab. Prerequisites: 01:119:101, 102 or permission of instructor.
Systemic and regional study of gross structure of the human body emphasizing functional interdependency among anatomical systems. Human cadaver lab.

01:377:215. TECHNIQUES OF ATHLETIC TRAINING (3)
Prerequisite: 01:377:213.
Techniques of athletic training including evaluation, treatment, and rehabilitation of injuries common in athletics.

01:377:217. BEGINNING SWIMMING (2)
Designed for nonswimmers to learn to become safe in and around the water. Includes basic swimming strokes and diving.

01:377:218. EXERCISE AND HEALTH (3)
Effects of chronic exercise on the health and fitness of the human body as well as its preventive role in various disease processes.

01:377:225. CONTEMPORARY HEALTH PROBLEMS (3)
Principles in healthful living. A concept of total health, influence factors, and problems. Includes mental health, family living, consumer education, disease prevention and control.

01:377:226. COACHING THEORY AND TECHNIQUE (3)
Basic philosophical, psychological, and physiological aspects of coaching.

01:377:252. THEORIES, ASSESSMENT, AND PRACTICE OF HEALTHY BEHAVIOR (3)
Assessing personal health risks based on environmental, behavioral, genetic, and social influences. Techniques for identifying strategies and barriers to behavior change and the opportunity to modify a personal health practice.

01:377:275. STATISTICAL APPROACHES TO EXERCISE SCIENCE (3)
Introduction to descriptive and inferential statistics for exercise science.

01:377:301. SPORT PSYCHOLOGY (3)
Prerequisite: 01:830:101 or permission of instructor.
Psychological theories and principles applied to sport. Sport influence on the quality of life at all levels of sport proficiency. Psychological techniques related to performance enhancement.

01:377:303. NEUROMECHANICAL KINESIOLOGY (3)
Prerequisite: 01:377:213. Pre- or corequisite: 01:750:193, 201, or 203.
Neuromechanical basis of kinesiology including the integration of physical principles and neurophysiology in the study of human movement.

01:377:304. EXERCISE AND AGING (3)
Examination of the effects of exercise and chronic activity on the physiological and psychological changes that occur with aging and of the factors to consider when structuring exercise programs for the aged.

01:377:305. SPORT SOCIOLOGY (3)
Prerequisite: 01:830:101 or 01:920:101 or permission of instructor.
Examination of organized sport in modern-day North America. Analysis of sports roles and sport functions. Sport viewed as a major societal institution.

01:377:307,308. TECHNIQUES OF OFFICIATING INDIVIDUAL AND TEAM SPORTS (3,3)
Lec./lab.
Techniques of officiating sports with an intensive study of the rules.

01:377:310. MOTOR LEARNING (3)
Lec./lab. Prerequisites: 01:377:213 and 01:830:101.
Study of the processes that underlie learning and performance of motor skills.

01:377:315. ADVANCED THEORIES AND TECHNIQUES OF ATHLETIC TRAINING (3)
Prerequisite: 01:377:215.
In-depth analysis of athletic injury mechanisms, injury evaluation techniques, use of modalities, and anatomy of the extremities.

01:377:318. ORGANIZATION AND ADMINISTRATION OF COLLEGE RECREATIONAL SPORTS (3)
Philosophical and practical approach to the development and implementation of recreational sports and activities promoted within the confines of an educational institution.

01:377:319. RISK MANAGEMENT FOR HEALTH AND FITNESS PROFESSIONALS (1.5)
Open to majors only. Credit not given for both this course and 01:377:320.
In-depth study of factors essential to the safe delivery of health and fitness programs.

01:377:320. RISK MANAGEMENT IN EXERCISE SCIENCE AND SPORT (3)
In-depth study of factors essential to the safe delivery of exercise programs and sport activities and events.

01:377:321. LIFEGUARD TRAINING (2)
Prerequisites: Ability to swim 500 yards, perform headfirst dive, and display good strokes; knowledge of CPR and first aid.
American Red Cross certification program.

01:377:322. WATER SAFETY INSTRUCTOR TRAINING (2)
Preparation for national certification as an aquatic instructor.

01:377:323. SPORT AND THE LAW (3)
Legal issues affecting sport, recreation, and physical education. Topics include equal opportunity legislation, tort liability, product liability, participant liability, and legal rights of supervisors and participants.

01:377:324. MOVEMENT EXPERIENCES FOR INDIVIDUALS WITH DISABILITIES (3)
Prerequisite: 01:377:213.
Survey of major mental and physical conditions that may require consideration in movement experiences.

01:377:327. FIELD EXPERIENCE FOR INDIVIDUALS WITH DISABILITIES (1)
Pre- or corequisite: 01:377:324.
Apprenticeship in school or voluntary agency dealing with physical education and / or recreational programs for the handicapped.

01:377:342. INDEPENDENT STUDY IN SPORT STUDIES (3)
Open only to juniors and seniors by permission of department.
Supervised individual research or study in the field of sport.

01:377:343,344. WORKSHOP IN EXERCISE SCIENCE (1,1)
Open only to juniors and seniors by permission of department.
Laboratory experience in analyzing and evaluating human movement.

01:377:346. SAFETY EDUCATION AND EMERGENCY CARE (3)
Principles and practices of safety education and accident prevention. Planning and implementing safety programs. Legal aspects of safety programs and emergency care.

01:377:350. BIOMECHANICS (3)
Prerequisites: 01:377:213, 303.
Study of human movement through the application of basic mechanical principles and cinematographic procedures; emphasis on analysis of sport skills from a quantitative perspective.

01:377:352. PREVENTION AND TREATMENT OF ATHLETIC INJURIES (3)
Overview of sports medicine covering regional anatomy and modern methods of diagnosis and treatment, including joint arthroscopy and video analysis of injuries.

01:377:361. INDEPENDENT STUDY IN HEALTH EDUCATION (3)
Open only to junior and senior majors by permission of department.
Supervised individual research or study in the field of health education.

01:377:362. INDEPENDENT STUDY IN EXERCISE SCIENCE (3)
Open only to junior and senior majors by permission of department.
Supervised individual research or study in the field of exercise science.

01:377:380. NUTRITIONAL ASPECTS OF ATHLETIC PERFORMANCE (3)
Prerequisites: 01:119:101-102.
Practical approach to information regarding basic nutrients with emphasis on the needs of athletes during high-intensity training and performance.

01:377:406. MANAGEMENT IN EXERCISE SCIENCE AND SPORT (3)
Open to senior majors or by permission of department.
Concepts of administrative processes, systems, and styles with application to various sport environments. Includes program, facility, fiscal, and personnel management.

01:377:410. APPLIED PHYSICAL FITNESS TECHNIQUES (4)
Lec., lab. Prerequisites: 01:377:213, 452,453.
Application of physiological principles and development of practical skills for fitness evaluation and exercise prescription.

01:377:421. PROFESSIONAL SEMINAR (3)
Open only to seniors majoring in exercise science and sport studies or by permission.
Current trends and research in exercise science and sport studies explored through weekly seminars, review of pertinent literature, and active discussions with professionals.

01:377:424. HUMAN ANATOMY (4)
Lec. 3 hrs., lab. 3 hrs. Prerequisites: 01:119:101-102. Open only to juniors and seniors.
Introduction to the concepts of human gross anatomy. Provides working knowledge of the structure and function of the body. Clinical and surgical applications of anatomy. Laboratory work with skeletal material, anatomical models, films, and roentgenograms.

01:377:440. NEUROANATOMY AND ANTHROPOGENESIS (4)
Lec. 3 hrs., lab. 3 hrs. Prerequisites: 01:119:101-102. Open only to juniors and seniors.
Study of the human nervous system, leading to an appreciation of the mechanism of the brain and spinal cord. Human gross anatomy and the physical anthropology of humankind.

01:377:452. EXERCISE PHYSIOLOGY (3)
Prerequisites: 01:119:101-102, 01:146:356 or permission of instructor.
Selected topics dealing with the physiological responses to exercise stress and the adaptive changes that occur with training.

01:377:453. EXERCISE PHYSIOLOGY LABORATORY (1)
Pre- or corequisite: 01:377:452.
Laboratory to accompany 01:377:452.

01:377:470. THE PSYCHOLOGY OF THE ELITE ATHLETE (3)
Prerequisite: 01:377:301 or 305 or permission of instructor.
Psychological factors that affect high-level sports performance. Unobtrusive research methods capable of assessing elite athletic performance covered in detail.

01:377:480. HONORS SEMINAR IN EXERCISE SCIENCE (3)
Prerequisite: 01:377:275. Open only to seniors in departmental honors program.
Design of an original research project in exercise science complete with a literature survey, problem statement, research hypotheses, experimental design, research procedures, appropriate data analyses, and potential implications.

01:377:481. HONORS RESEARCH IN EXERCISE SCIENCE (3)
Prerequisites: 01:377:480 and departmental permission.
Independent study for seniors who have been accepted into the departmental honors program.

01:377:490. INTERNSHIP I (BA)
Prerequisite: Permission of department and a 2.0 cumulative grade-point average in the major. Open only to majors.
Supervised individual fieldwork in exercise science and sport studies.

01:377:491. INDEPENDENT STUDY (BA)
Prerequisite: Permission of department.
Supervised individual research or study.

01:377:493. INTERNSHIP II (BA)
Prerequisite: 01:377:490.
Directed field experience in the area of specialization.

01:377:496. EKG—USE AND INTERPRETATION (2)
Prerequisite: 01:146:356. Recommended: 01:377:452.
Evaluation of the scientific basis and utility of the EKG and exercise stress test. Information on obtaining and interpreting EKGs.

FILM STUDIES

(See Cinema Studies 175, English 354)

FINANCE 390

(See School of Business–New Brunswick section)

FOOD SCIENCE 400

(See Cook College section)

FOREIGN LANGUAGE PROFICIENCY CERTIFICATES

Several of the foreign language and literature departments (French, German, Hungarian, Italian, and Russian) award a certificate in foreign language proficiency based on demonstrated ability to comprehend, speak, read, and write the foreign language. The usual requirement is a grade of B or better in 6 credits of work taken in courses at or above the 300 level conducted entirely in the foreign language. Individual departments may specify particular courses or examinations to be completed in demonstrating this standard. For further information, consult the appropriate foreign language department.

Note: The foreign language proficiency certificates are awarded only with or subsequent to the awarding of a baccalaureate degree in an approved major.

FRENCH 420

(See also History / French Joint Major 513)

Department of French, Faculty of Arts and Sciences

Web Site: http://french.rutgers.edu

Chairperson: Richard Lockwood

Professors:

Marie Denise Boros-Azzi, B.A., M.A., Ph.D., California (Berkeley)
François Cornilliat, B.A., M.A., Doctorat 3e cycle, Doctorat d'Etat, Paris
Josephine Diamond, B.A., Leeds (England); M.A., Ph.D., Harvard
Uri Eisenzweig, B.A., Tel Aviv; M.A., Doctorat 3e cycle, Paris
Jerry Flieger, B.A., Wisconsin; M.A., Ph.D., California (Berkeley)
Mary Speer, B.A., Duke; M.A., Ph.D., Princeton
Alan Williams, B.A., M.A., Washington; Ph.D., SUNY (Buffalo)

Associate Professors:

Renée Larrier, B.A., Hofstra; M.A., Atlanta; Ph.D., Columbia
Richard Lockwood, B.A., Cornell; M.A., Ph.D., Johns Hopkins
Mary Lewis Shaw, B.A., Arizona; M.A., M.Phil., Ph.D., Columbia
Serge Sobolevitch, B.A., CUNY (Queens College); M.A., Ph.D., Princeton
James B. Swenson, Jr., B.A., Brown; M.A., Ph.D., Yale

Assistant Professors:

Carole Allamand, B.A., M.A., Geneva; M.A., Ph.D., Cornell
Ana Pairet-Viñas, B.A., Paris IV (Sorbonne); Ph.D., Pennsylvania
Lorraine Piroux, B.A., M.A., Paris; M.A., Illinois; Ph.D., Northwestern
Richard Serrano, B.A., Stanford; M.A., Ph.D., California (Berkeley)

Visiting Professors:

Geneviève Fraisse, Research Director, Centre National de la Recherche Scientifique
Claude Mouchard, Professor, French Literature; Paris–VIII
Jacques Rancière, Professor, Philosophy; Paris–VIII

Placement

Students are placed in French courses according to performance on the placement test taken on entering the university as first-year or transfer students.

Major Requirements

The French major consists of 33 credits. Students majoring in French may choose one of three distinct options: French cultural studies, French linguistics, and French literary studies. All French majors are strongly urged to spend at least one term in residence in the French House or in a French-language dormitory and / or to participate in a program of study in a French-speaking country.

A grade-point average of 2.0 in all French courses taken at Rutgers at the 213 level or above is required of all majors.

French Cultural Studies

This option is designed to provide students with a critical knowledge of the culture, civilization, and history of France and Francophone areas. It consists of 33 credits, including 01:420:213, 214, 215 or 217, and 216 or 218, plus 21 credits on the 300 and 400 levels, of which 12 must be on the 400 level, 6 must be in literature, and only 3 may be taken in English. Students entering the program too late to take 01:420:215 or 217, and 216 or 218 must take 6 credits of 300-level literature instead. If approved in writing by a French adviser, students may replace 01:420:213 and / or 214 with 300-level courses. One 300- or 400-level course may be taken, as part of the major requirement, in a discipline such as history, art history, political science, or economics, provided it focuses on French or Francophonic subjects, and is approved in writing by a French adviser. Nine of the required 400-level credits must be taken with French professors in the New Brunswick Faculty of Arts and Sciences. All students must take the senior seminar 01:420:481, usually in the fall of their senior year.

French Linguistics

This option focuses on the study of the nature of the human language faculty and aims at providing an understanding of what it means to "know" a language. While the curriculum

centers on the French language, it acquaints the student with the central questions of modern linguistics and introduces elementary tools of formal syntax, phonology, and morphology. The French linguistics major consists of 33 credits, including 01:420:213, 214, 215 or 217, 216 or 218, 01:615:201 (in the Department of Linguistics), plus 18 credits on the 300 and 400 levels, of which 12 must be on the 400 level, and only 3 may be taken in English. Students entering the program too late to take 01:420:215 or 217, and 216 or 218 must take 6 credits of 300-level literature instead. If approved in writing by a French adviser, students may replace 01:420:213 and / or 214 with 300-level courses. Of the 300- or 400-level credits, at least 12 must be in French linguistics and / or the history of the French language. Of the remaining credits, 3 may be taken in the Department of Linguistics.

French Literary Studies

This option is designed to acquaint students with a wide spectrum of French literature and to provide them with the skills and methodology for the critical analysis of literary texts, history, and theory. It consists of 33 credits, including 01:420:213, 214, 215 or 217, and 216 or 218, plus 21 credits on the 300 and 400 levels, of which 12 must be on the 400 level, only 6 may be nonliterary, and only 3 may be taken in English. Students entering the program too late to take 01:420:215 or 217 and 216 or 218 must take 6 credits of 300-level literature instead. If approved in writing by a French adviser, students may replace 01:420:213 and / or 214 with 300-level courses. One 300- or 400-level course may be taken in another literature department, provided it is approved in writing by a French adviser. Nine of the required 400-level credits must be taken with French professors in the New Brunswick Faculty of Arts and Sciences. All students must take the senior seminar 01:420:480, usually in the fall of their senior year.

Minor Requirements

The French minor consists of a sequence of six 3-credit courses given in French. It must include 01:420:215 (or 217) and 216 (or 218) and three courses at the 300 level or above. Of the 100-level courses, only 01:420:131 or 132 may be counted toward the minor. Students electing to take both 01:420:213 and 214 are exempted from one required 300-level course.

Departmental Honors Program

Students majoring in French may elect to prepare an honors thesis during their senior year. An overall cumulative grade-point average of 3.0, and a grade-point average of 3.4 or better in French is required. Three of the credits earned in the honors program may be counted toward the major requirements. Students in the literary studies option are encouraged to undertake a thesis, selecting a topic in the spring of the junior year. Students select either the comprehensive examination and honors paper option, 01:420:495,496 (6 credits), or a research thesis option, 01:420:497,498 (8 or 12 credits). Other options also are available for interdisciplinary undergraduate research. Interested students are invited to obtain a full program description from the honors committee at the department.

At the introductory level, 01:420:217 and 218 are offered as honors courses to students with strong placement scores or who participate in college honors programs. Also, each term, the department designates an advanced course for honors students.

Teaching Certificate Option

Students intending to seek certification as secondary teachers should obtain information about application requirements from the Graduate School of Education no later than the second year.

Summer Program in Paris

Each summer the Department of French offers the Cours d'Eté in Paris. This program, staffed by faculty from the department and from universities in Paris, offers an opportunity to earn 6 to 8 credits in a native French setting and provides cultural and extracurricular activities to acquaint students more fully with French life. To participate in this program, a student must have at least one year of college-level French or the equivalent. Inquiries should be addressed to the Department of French.

Study Abroad Program in France

Rutgers offers a year-long program of studies at the University of Tours, France. This program, which offers courses in most disciplines, can be very beneficial to prospective French majors and minors, particularly if attended in the sophomore year. The prerequisites for participation in the program differ for sophomore and junior years. Detailed information is available from the department or the Study Abroad Office.

Certificate of Proficiency in French

The department awards a certificate of proficiency in French based on demonstrated ability to comprehend, speak, read, and write French as attested by a grade of B or better in 6 credits of work taken in courses conducted entirely in French at the 300 level or above. Qualified students submit an application at the department office by the end of the fifth week of their last term of residence.

Diploma in French Commerce

This internationally recognized diploma is granted by the Chambre de Commerce de Paris to those successfully completing a special examination offered at Rutgers each May after the final examination period. Details are available from the French department.

Information for Students

Each term, the department makes available in its offices a detailed description of its programs and all courses to be offered the following term. Students are strongly encouraged to consult this information and the departmental advisers.

Program and course information also is available at the department's web site.

Courses in English

01:420:241,242. MAJOR FRENCH WRITERS IN TRANSLATION (3,3)
Landmarks of French literature from the Renaissance to the present. Plays, novels, and essays of such authors as Molière, Voltaire, Rousseau, Balzac, Flaubert, Sartre, and Camus.

01:420:305,306. THE FRENCH FILM IN ENGLISH (3,3)
Credit not given for these courses and 01:420:307,308.
Film as a major expression of French culture; viewing and analysis of films by such directors as Truffaut, Chabrol, Rohmer, Renoir, Clair, and Cocteau. Introduction to methods of criticism.

01:420:313. TWENTIETH-CENTURY FEMINISM: THEORIES OF GENDER (3)
Exploration of twentieth-century French women writers in the social context of feminist theories of gender and the relation of theory to literary practice.

01:420:314. CONTEMPORARY FRENCH CRITICAL THOUGHT (3)
Introduction to contemporary French intellectual trends, with emphasis on the structuralist and poststructuralist movements. Readings of such writers as Barthes, Lévi-Strauss, Derrida, and Lacan.

Courses in French

Prerequisites

French 01:420:215 or 217 and 216 or 218, or 6 credits of literature at the 300 level are prerequisite to all 400-level courses in culture and literature.

01:420:101-102. ELEMENTARY FRENCH (4,4)
Not open for credit to students who have had two or more years of secondary school French.
Functional use of the language in speaking, writing, and reading modern French. Laboratory exercises.

01:420:103,104. ELEMENTARY FRENCH LABORATORY (1,1)
Corequisites: (103) 01:420:101; (104) 01:420:102.
Instructor-guided laboratory practicum based on intensive use of media and designed for the improvement of aural / oral skills. Practice involves use of text-related audio tapes and videotapes, individual and group work, and recordings of student speech for evaluation of pronunciation and fluency.

01:420:105. FRENCH FOR READING KNOWLEDGE (3)
Not open for credit to students who have had two or more years of secondary school French.
Development of reading skills. Texts chosen from the humanities and social studies.

01:420:121. FRENCH FUNDAMENTALS (4)
Prerequisite: Placement test.
Intensive review and practice of the fundamentals of French conversation, reading, and composition. Laboratory exercises.

01:420:131-132. INTERMEDIATE FRENCH (4,4)
Prerequisite: 01:420:102 or placement test.
Development of fluency in written and spoken French. Conversation, composition, and grammar review using short literary texts and audiovisual materials.

01:420:171. FRENCH THEATER WORKSHOP (1.5)
Production of selected scenes in French.

01:420:210. INTENSIVE FRENCH CONVERSATION (3)
Prerequisite: Placement test or 01:420:132 or both. May not be used to satisfy major requirements.
Development of facility and accuracy in oral expression and listening comprehension. Class exercises and discussion, written work, and extensive audio and video laboratory work.

01:420:213. INTENSIVE ADVANCED GRAMMAR (3)
Prerequisite: Placement test or 01:420:132.
Intensive study of the forms and structures of French grammar to complete mastery of foundations for advanced courses. Written work, class drill, laboratory exercises.

01:420:214. COMPOSITION AND STYLISTICS (3)
Prerequisite: 01:420:213.
Study and practice in composition to perfect skills for written French. Analysis and imitation of writing styles and forms; vocabulary development, syntax; frequent written exercises.

01:420:215,216. ASPECTS OF FRENCH LITERATURE (3,3)
Prerequisite: Placement test or 01:420:132. Credit not given for both 01:420:215 and 217; or for both 01:420:216 and 218.
Introduction to French literature focusing on significant themes, genres, and literary movements. Readings of representative authors from the Renaissance to the present.

01:420:217,218. APPROACHES TO FRENCH LITERATURE (3,3)
Prerequisite: Placement test or 01:420:132. Honors. Credit not given for both 01:420:215 and 217; or for both 01:420:216 and 218.
Introduction to French literature through close reading of texts from Renaissance to present; special attention to nature of literary work and to goals and methods of literary analysis.

06:090:275,276. THE FRENCH LANGUAGE EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass House. May not be used to satisfy major requirements. Course may be repeated.
Development of active language skills through formal instruction and the daily experience of foreign language immersion in the varied activities of the Ile de France house.

01:420:299. LANGUAGE HOUSE/DORMITORY RESIDENCE (E3)
Prerequisite: Permission of the college housing authority concerned. Graded as satisfactory or unsatisfactory. Section number identifies the college concerned.
Residence in a French-speaking dormitory section.

01:420:303. ADVANCED FRENCH CONVERSATION (3)
Prerequisite: 01:420:210 or 216. Not open to native speakers or to students returning from junior year in France.
Discussion of topics to develop fluency of speech and command of idioms. Group conversations and debates.

01:420:307,308. THE FRENCH FILM IN FRENCH (3,3)
Credit not given for these courses and 01:420:305,306.
Film as a major expression of French culture; viewing and analysis of films by such directors as Truffaut, Chabrol, Rohmer, Renoir, Clair, and Cocteau. Introduction to methods of criticism.

01:420:310. INTRODUCTION TO FRANCOPHONE LITERATURE (3)
Survey of texts in French from Africa (including Maghreb and Madagascar), the Caribbean, North America, and Southeast Asia.

01:420:315. FRENCH CIVILIZATION FROM THE MIDDLE AGES TO THE REVOLUTION (3)
Analysis of Old Régime foundations of French culture; concentration on interaction and evolution of social and intellectual phenomena.

01:420:316. FRENCH CIVILIZATION FROM THE REVOLUTION TO THE PRESENT (3)
Analysis of development of modern French culture; concentration on interaction and evolution of social and intellectual phenomena.

01:420:317. FRENCH: CULTURE AND COMMUNITY (4)
Special permission required: contact department.
Developed through the university-wide CASE program, this course combines a study of the evolving themes of community and education in French literature with service by teaching of French at community schools.

01:420:319. WOMEN WRITERS FROM 1789 TO THE PRESENT (3)
Analysis and discussion of the cultural contexts, modes of expression, and self-definitions of women writers in modern France from the Revolution of 1789 to the post-1968 revolutions in feminist theory and practice.

01:420:320. THEATER WORKSHOP (3)
Reading, discussion, and production of representative texts from French dramatic literature.

01:420:324. FRENCH COMMERCE (3)
Prerequisites: 01:420:215 or 217; 216 or 218.
Fundamental principles governing commercial organizations in France. Practical business correspondence.

05:300:331. MATERIALS AND METHODS IN FRENCH (3)
Only for students in the French teaching program; others by permission of instructor. May count as education credit but not toward the major in French.
Solutions to classroom problems. Course planning: teaching aims, pedagogical devices, language content, cultural background, selections of text.

01:420:332. FRENCH PHONETICS AND APPLIED LINGUISTICS (3)
Prerequisite: 01:420:132. Not open to first-year students.
French phonetics in theory and practice. A comparative study of English and French sounds. Exercises in transcription and correct pronunciation.

01:420:333. INTRODUCTION TO FRENCH SYNTAX (3)
Prerequisite: 01:615:201 or permission of instructor.
Introduction to the methods and concerns of modern theoretical linguistics and to the practice and theory of syntax through the study of particular problems in the syntax of French.

01:420:335,336. THE FRENCH NOVEL (3,3)
Forms and techniques of the novel from La Princesse de Clèves to the present.

01:420:337. THE FRENCH THEATER (3)
Analysis of dramatic structure and meaning in texts selected from the classical tradition to the theater of the absurd.

01:420:338. FRENCH POETRY (3)
Critical interpretation of French poetry with particular attention to the unique problems of French prosody and poetic theory. Selected texts from the sixteenth century to the twentieth century.

01:420:341,342. ONE FRENCH WRITER (3,3)
Author chosen each term/year dependent on faculty and student interest.
Intensive study of the work of a single author. Analysis of elements such as writer's place in literary or cultural history, critical approaches, the writer's role in a given genre.

01:420:351. LITERATURE IN FRENCH SOCIETY (3)
Exceptional role of literature in French culture, politics, and day-to-day life. Generally studies one topic in a given historical period.

01:420:371,372. TOPICS IN FRENCH CINEMA (3,3)
One course in French cinema, 01:420:305, 306, 307, or 308 recommended.
Topics such as relations between film and other genres (novel, theater); film in relation to cultural history; introduction to critical approaches to film. Consult departmental announcement.

01:420:391,392. TOPICS IN FRENCH/FRANCOPHONE LITERATURE AND CULTURE (3,3)
Special topics selected to meet the interests and needs of the students.

01:420:393,394. TOPICS IN FRENCH LITERATURE AND CULTURE (1.5,1.5)
Special topics selected to meet the interests and needs of the students. Seven-week courses.

01:420:395,396. JUNIOR HONORS SEMINAR (3,3)
Open to students in departmental or college honors programs or by permission of department.
In-depth examination of a problem, topic, or theme in French literature or culture, in order to develop analytic and research skills. Subject announced by department.

01:420:399. SERVICE LEARNING INTERNSHIP (1)
Corequisite: Must be taken in conjunction with a designated CASE (Citizenship and Service Education) course offered in the Department of French.
One-credit community service placement in teaching French.

01:420:401. TRANSLATION (3)
Techniques of translation; study of dictionaries and specialized vocabularies; texts selected from the humanities and the social sciences.

01:420:402. ADVANCED STYLISTICS AND COMPOSITION (3)
Prerequisite: A 300-level French course.
Study of rhetoric through the detailed stylistic analysis of literary texts and the imitation of writing techniques.

01:420:403. HISTORY OF THE FRENCH LANGUAGE (3)
Prerequisites: 01:420:213,214,215 or 217; 216 or 218.
Development of the French language from its origins to the present; suggestions of possible future evolution. Emphasis on phonology, morphology, syntax, and lexicon; consideration of cultural forces influencing linguistic stability or change at crucial points in French history.

01:420:405,406. MODERN FRANCE (3,3)
First term: economic and social background; interpretive analysis of major problems affecting French life; audiovisual materials. Second term: analysis of major trends in French culture and institutions.

01:420:407. ADVANCED FRENCH SYNTAX (3)
Prerequisite: 01:420:333 or equivalent course in linguistics.
Study of advanced problems in French syntax in conjunction with theoretical problems in linguistics.

01:420:409. STUDIES IN CULTURES OF THE FRANCOPHONE WORLD (3)
Analysis of the cultural production (including film, music, visual and performing arts, and literature) of regions in which the French language plays a major role.

01:420:410. SUB-SAHARAN AFRICAN LITERATURE (3)
Study of literature in French by writers in or from Sub-Saharan Africa.

01:420:411. NORTH AFRICAN LITERATURE (3)
Study of literature in French by writers in or from the Maghreb.

01:420:412. CANADIAN LITERATURE (3)
Study of literature in French by writers in or from Québec and other regions of Canada.

01:420:413. AFRICAN AND CARIBBEAN LITERATURE (3)
Study of literature in French by writers in or from the Caribbean (Haiti, Martinique, Guadeloupe, French Guiana).

01:420:415. MEDIEVAL FRENCH LITERATURE (3)
The French Middle Ages: readings in epic, romance, didactic literature, and lyric poetry of the twelfth through the fifteenth centuries; texts usually read in modern French translations.

01:420:416. SIXTEENTH-CENTURY FRENCH LITERATURE (3)
The French Renaissance: tradition and innovation in the writings of such authors as Marot, Rabelais, Marguerite de Navarre, Montaigne, and the poets of the Pléiade.

01:420:421. FRENCH POETRY AND PROSE OF THE SEVENTEENTH CENTURY (3)
Selected works from the major writers representing the aesthetic and intellectual currents of the age.

01:420:422. FRENCH CLASSICAL DRAMA (3)
Major plays of Corneille, Molière, and Racine.

01:420:431,432. THE AGE OF ENLIGHTENMENT (3,3)
Great writers of the eighteenth century, Montesquieu, Voltaire, Diderot, and Rousseau, and their relationship to the social, literary, and intellectual currents of the period.

01:420:441. ROMANTICISM IN FRANCE (3)
French romanticism, its origins, psychology, and development, with readings from Madame de Staël, Hugo, Balzac, Stendhal, and their contemporaries.

01:420:442. FRENCH LITERATURE AND THOUGHT FROM 1848 TO 1894 (3)
Impact of science on French literature, the development of realism and naturalism, the poetry of the Parnassians and the symbolists. Readings from Baudelaire, Flaubert, Zola, and their contemporaries.

01:420:451. TWENTIETH-CENTURY FRENCH DRAMA (3)
French drama from Claudel to Beckett; new concepts in dramatic art. Relations among authors, actors, the public, and the period.

01:420:452. TWENTIETH-CENTURY FRENCH NOVEL (3)
Readings in works by such authors as Proust, Gide, Malraux, Camus, and Sartre; the "nouveau roman." The novel in relation to social, philosophical, and political thought.

01:420:455,456. MAJOR CURRENTS OF FRENCH THOUGHT (3,3)
Critical and formal analysis of literary texts selected to illustrate the development of ideas in France from the Roman de la Rose to the present.

01:420:471,472. ADVANCED TOPICS IN FRENCH CINEMA (3,3)
Two courses in French cinema, 01:420:305, 306, 307, 308, or 371, recommended.
Topics such as detailed studies of issues in film theory, analysis, or history; in-depth study of schools, movements, or specific film makers. Consult departmental announcement.

01:420:480. SENIOR SEMINAR IN FRENCH LITERATURE (3)
Open only to senior majors in French literary studies.
Thorough and probing study of an important theme, topic, or movement within the history of French literature. Subject announced by the department.

01:420:481. SENIOR SEMINAR IN FRENCH CULTURE (3)
Open only to senior majors in French cultural studies.
In-depth examination of a problem or period in French civilization, with a focus on development of interpretive and analytic skills. Subject announced by the department.

01:420:490. ADVANCED TOPICS IN FRENCH AND FRANCOPHONE LINGUISTICS (3)
Prerequisites: 01:420:333, 01:615:201 or permission of instructor.

01:420:491,492. ADVANCED TOPICS IN FRENCH/FRANCOPHONE LITERATURE AND CULTURE (3,3)
Special topics selected to meet the interests and needs of the students.

01:420:493,494. INDEPENDENT STUDY (BA,BA)
Prerequisites: Permission of instructor and departmental chairperson.

01:420:495-496. HONORS PROJECT: FRENCH (3,3)
Prerequisite: Permission of departmental honors committee.
Preparation for written and oral honors examination and honors paper based on research under the direction of the departmental honors committee.

01:420:497-498. HONORS RESEARCH THESIS: FRENCH (4,4 OR 6,6)
Prerequisite: Permission of departmental honors committee. Both terms must be completed to receive credit.
Research thesis and defense under the direction of the departmental honors committee.

GENETICS

(See Life Sciences)

GEOGRAPHY 450

Department of Geography, Faculty of Arts and Sciences

Web Site: http://geography.rutgers.edu

Chairperson: David A. Robinson

Professors:

James K. Mitchell, B.S., Queen's University of Belfast; M.A., M.C.P., Cincinnati; Ph.D., Chicago
Karl F. Nordstrom, A.B., M.S., Ph.D., Rutgers
Joanna Regulska, M.A., Warsaw; Ph.D., Colorado
David A. Robinson, B.Sc., Dickinson; M.S., Ph.D., Columbia
Neil Smith, B.Sc., St. Andrews; Ph.D., Johns Hopkins
Peter O. Wacker, B.A., Montclair State; M.A., Ph.D., Louisiana State

Associate Professors:

Robert M. Hordon, B.A., CUNY (Brooklyn College); M.S., Ph.D., Columbia
Richard Schroeder, B.A., Macalester; M.S., Wisconsin; Ph.D., California (Berkeley)

Assistant Professors:

Robin M. Leichenko, B.S., Wisconsin; M.A., Colorado; M.A., Ph.D., Pennsylvania State
Michael J. Medler, B.S., M.S., Oregon; Ph.D., Arizona
Jasbir Puar, B.A., Rutgers; M.A., York (England); Ph.D., California (Berkeley)
Kevin St. Martin, B.A., M.S., Massachusetts; Ph.D., Clark
Elvin Wyly, B.S., Pennsylvania State; M.A., Ph.D., Minnesota

Assistant Research Professor:

Michelle Goman, B.A., Wales; M.A., Ph.D., California (Berkeley)

Instructor:

Roger Balm, B.Ed., Nottingham (England); M.S., Massachusetts; Ph.D., Rutgers

Geography is the study of the Earth in its relationship to the people that inhabit it. The discipline provides a broad place-centered perspective on the transformation of environments by society and nature. Geography majors receive a liberal arts education that is an appropriate base for further specialized training in academic disciplines that address environmental and international issues or in related professional fields such as planning and public policy, law, and environmental management. Students are provided with specific technical skills in computerized information retrieval, spatial data analysis, cartographic representation, remote sensing, and geographic information systems that are suitable for entry-level employment opportunities.

Major Requirements

A minimum of 39 credits in geography is required, divided among three areas:

General courses (12 credits): 01:450:101, 102, 103, and 470

Methods courses (9 credits): 01:450:330 and any two courses from 01:450:320, 321, 322, 355, and 357

Specialized courses (18 credits): Six additional courses in geography, including one regional geography course (selected from 01:450:332, 334, 335, 336, 338, 341, and 342). At least three of the specialized courses must be at the 300 or 400 level.

There are no formal options, but students are strongly encouraged to select most of their specialized courses from one of three areas of emphasis: environmental systems and global change, environment and society, or urban and international restructuring.

If appropriate, majors are encouraged to substitute independent research projects under faculty supervision (01:450:491,492 or 01:450:495,496) or graduate courses for up to two of the courses in the specialized group.

Minor Requirements

Six courses (18 credits) are required for the minor in geography: 01:450:101, 102, 103, and at least three additional geography courses, two of which must be at the 300 level or above.

Departmental Honors Program

Students with a cumulative grade-point average of 3.0 or better and a grade-point average of 3.4 or better in the major at the end of the junior year may apply for admission to the honors program by writing to the department chairperson no later than the first week of the senior year. Candidates spend two terms preparing an honors paper under the supervision of a designated faculty member and complete an oral examination of the project during the final term of the senior year. In addition to completing all requirements for the geography major, candidates in the departmental honors program must complete either 01:450:495 or 496 (Honors Project: Geography).

Andrew Hill Clark Prize

The most outstanding graduating senior is eligible to receive the Andrew Hill Clark Prize in Geography.

Cartography Certificate

A certificate in cartography is awarded to students who complete 01:450:320, 322, 355, 356, 357, and 321 or 487 with a B or better for each course.

All students, regardless of major, are eligible to participate in the cartography certificate program. The certificate is awarded only with, or subsequent to, the awarding of a baccalaureate degree in an approved major.

Certificate in International Geographic Perspectives

A minimum of 24 credits is required for the Certificate in International Geographic Perspectives. Core courses totaling 15 credits are required: 01:450:102, 103, 205, 262, and 405. A regional course also is required, choosing among the following: 01:450:332, 334, 335, 336, 338, 341, or 342. The final 6 credits may be taken as electives from the following courses: 01:450:211, 222, 240, 311, 361, 363, 491, or 492. All students regardless of major are eligible to participate in this certificate program. The certificate is awarded only with, or subsequent to, the awarding of a baccalaureate degree in an approved major.

Courses

01:450:100. Introduction to Geography (3)
Geographer's view of the earth, including the natural order of the physical environment, human modification of environments, organization of society, and regional studies.

01:450:101. Earth Systems (3)
Systematic introduction to physical processes on Earth; including Earth-Sun relations, weather and climate, the hydrologic cycle, earth materials, and landforms. Emphasis on interrelationships among these phenomena.

01:450:102. Transforming the Global Environment (3)
Introduction to the role of humans as modifiers and transformers of the physical environment. Emphasis on twentieth-century changes and contemporary public issues.

01:450:103. Human Geography: Space, Place, and Location (3)
Introduction to the spatial patterning of human activities and the role of place in human affairs. Population distributions; world cultural patterns; organization of urban and nonurban societies including land use, transportation, and communications. Impacts of global restructuring.

01:450:111. Laboratory in Earth Systems (1)
Lab. 3 hrs. Pre- or corequisite: 01:450:101.
Map construction, collection of raw data, and analysis of environmental variables.

01:450:140. The Greenhouse Effect (3)
Lec. 2 hrs., lab. 1.5 hrs. For nonscience majors; not for major credit in science and engineering. Credit not given for both this course and 01:160:140, 01:556:140, or 01:750:140.
Physical and chemical bases of the "greenhouse effect" and its global impact; biological, climatic, economic, and political. Reducing the emission of "greenhouse" gases; nuclear energy and other alternative energy sources.

01:450:205. World Cultural Regions (3)
Geography of the world's major cultural regions: Europe; Russia and the Newly Independent States; the Americas; East Asia, Australasia, and Oceania; South Asia; the Middle East; and Africa.

01:450:208. Maps and Map Reading (3)
Interpretation of the physical and cultural elements of the earth using topographic maps of various scales.

01:450:211. Conservation and Use of Natural Resources (3)
Evolution of conservation and environmental movements and their roles in affecting the use of soils, water, atmosphere, vegetation, wildlife, minerals, and other natural resources. Problems of renewable and nonrenewable resource management.

01:450:222. Cultural Geography (3)
Systematic introduction to cultural geography. Spatial analyses of peoples, languages, religions, folk and popular culture, and the varying impacts of cultures on environments.

01:450:240. Cities (3)
Spatial organization and functioning of cities in different world regions. Emphasis on societal system factors that influence urban development.

01:450:262. Geographic Background to Current World Affairs (3)
Contemporary global public issues from the perspective of changes in geographical relationships. Examination of major environmental, social, political, and economic trends that involve the restructuring of society and space at a variety of scales.

01:450:270,271. Topics in Geography (1.5,1.5)
Addresses a subject that is most appropriately treated in an abbreviated format. Topics vary from term to term. Specific titles available at time of registration.

01:450:309. ECONOMIC GEOGRAPHY (3)
Pre- or corequisite: 01:450:103 or permission of instructor.
Spatial organization of economic activities; emphasis on economic globalization and urban and regional development.

01:450:311. NATURAL HAZARDS AND DISASTERS (3)
Human dimensions of selected types of extreme natural events (e.g., windstorms, earthquakes, floods, droughts) in developed and developing countries.

01:450:319. QUANTITATIVE METHODS (3)
Descriptive and inferential statistical methods useful in dealing with problems of areal association, spatial interaction, and other phenomena associated with geography.

01:450:320. SPATIAL DATA ANALYSIS (3)
Digital computers in management and analysis of multidimensional data. Introduction to user-oriented packages, including statistical routines, trend surface analysis, and factor analysis.

01:450:321. GEOGRAPHIC INFORMATION SYSTEMS (3)
Use of computers for management, analysis, and communication of spatial data. Geocoding, transformations, storage and representation, spatial statistics, data sources.

01:450:322. REMOTE SENSING (3)
Principles and techniques of satellite remote sensing. Application of satellite sensing to the study of the Earth's land, oceans, and atmosphere.

01:450:323. GEOGRAPHIC INFORMATION SYSTEMS LABORATORY (1)
Corequisite: 01:450:321.
Coordinate systems, geographic data structures, error analysis, polygon overlay, digital elevation models, map comparison. Emphasis on applications.

01:450:330. GEOGRAPHICAL METHODS (3)
Prerequisites: 01:450:101,102,103; or permission of instructor.
Approaches to geographical problem solving. Defining geographical problems; seeking, organizing, and presenting spatial data; report writing.

01:450:331. NEW JERSEY (3)
Physical, historical, urban, and economic geography of the state.

01:450:332. NEWLY INDEPENDENT STATES AND EASTERN EUROPE (3)
Examines social, economic, and political dimensions of the region and the resulting geographical patterns.

01:450:334. WESTERN EUROPE (3)
Introduction to the Western European culture area. Its evolution; the features of the physical environment and their influence on human occupancy; demographic characteristics and diversity; regional development problems; quests for regional autonomy.

01:450:335. CARIBBEAN BORDERLANDS (3)
Regional analysis of basic human and physical differences affecting economic, political, and social conditions in the West Indies, Central America, and Mexico.

01:450:336. LATIN AMERICA (3)
Relative significance of natural and cultural environments in contributing to regional contrasts.

01:450:337. NORTH AMERICA (3)
Spatial distribution of population and economic activity in the U.S. and Canada. The forces stimulating changes in the regional patterns.

01:450:338. AFRICA (3)
Regional associations of tribal peoples and national states; analysis of resource endowment, economic development, and Africa's changing position in the world.

01:450:341. SOUTH ASIA AND THE MIDDLE EAST (3)
Geographic interpretation of the population, economy, and political integration of South Asia and the Middle East.

01:450:342. EAST ASIA (3)
Geographic interpretation of the population, economy, and political integration of the Orient.

01:450:355. PRINCIPLES OF CARTOGRAPHY (4)
Lec. 3 hrs., lab. by arrangement 3.6 hrs.
Theories and techniques of geographic data gathering, analysis, and map preparation. Special attention to problems of thematic map design and preparation.

01:450:356. ADVANCED CARTOGRAPHY (4)
Lec. 3 hrs., lab. by arrangement 3.6 hrs. Prerequisite: 01:450:355 or permission of instructor.
Study of psychophysical factors in map design, including experimenting with surface representation and topography. Photographic materials and methods applicable to graphic reproduction.

01:450:357. SPATIAL DATA REPRESENTATION AND DISPLAY (3)
Development of skills in design, use, and interpretation of computer cartographic systems. Problem solving and applications emphasis.

01:450:361. GENDER GEOGRAPHIES (3)
Links between gender relations and the spatial organization of society. Emphasis on the spatial division of labor, gendered places, women and development, geographies of safety and fear, and gendered political geographies.

01:450:363. GEOGRAPHY OF DEVELOPMENT (3)
Geographical patterns of development in Third World areas and less developed parts of advanced capitalist countries. Emphasis on agrarian and industrial development and the restructuring of relations among different regions.

01:450:370. GLOBAL AND REGIONAL CLIMATE CHANGE (3)
Physical aspects and societal implications of climate change. Means of predicting and detecting change. Impacts on physical and human systems. Climate in the political arena; planning for the future.

01:450:380. MEDICAL GEOGRAPHY (3)
Geographical analysis applied to disease hazards, health status of populations, and health care delivery systems in selected physical and cultural environments.

01:450:402. FIELD GEOGRAPHY (4)
Lec. 1 hr., field trips. Prerequisites: 01:450:101,102,103; or permission of instructor.
Principles of geographic analysis of a local region; the uses of reconnaissance and survey, interviews, existing maps, and ground and aerial photographs in the compilation of information.

01:450:403,404. ADVANCED PHYSICAL GEOGRAPHY (3,3)
Prerequisite: 01:450:101 or permission of instructor.
Problems in the geography of landforms, climate, soils, and vegetation analyzed from the viewpoints of both pure and applied science.

01:450:405. POLITICAL GEOGRAPHY (3)
Basic principles of political geography and the application of these principles to selected areas around the world; causes of the political conflicts and methods used in their resolution.

01:450:406. ADVANCED TOPICS IN ECONOMIC GEOGRAPHY (3)
Prerequisite: 01:450:103 or permission of instructor.
Topics vary: causes and consequences of economic globalization; theories of urban and regional growth and decline; sustainability and sustainable development; industrial location.

01:450:408. PRACTICUM IN DIGITAL IMAGE PROCESSING OF REMOTELY SENSED DATA (1)
Pre- or corequisite: 01:450:322 or permission of instructor.
Applications of aerial photographs and of multispectral and satellite imagery in environmental management.

01:450:411. ADVANCED URBAN GEOGRAPHY (3)
Prerequisite: 01:450:240 or permission of instructor.
Theories of contemporary urban geography and their application to existing urban patterns.

01:450:417. COASTAL GEOMORPHOLOGY (3)
Prerequisite: 01:450:101 or 01:460:101 or permission of instructor.
Processes of erosion and deposition in coastal environments. Process-response models and problem-solving methods in coastal research.

01:450:419. ADVANCED CONSERVATION AND USE OF NATURAL RESOURCES (3)
Prerequisite: 01:450:211 or permission of instructor.
Problems, issues, and conflicts that affect the use of renewable and nonrenewable resources at different geographical scales.

01:450:470. HISTORY AND THEORY OF GEOGRAPHY (3)
Major historical themes, concepts, and theories of geography related to specific geographical changes in the real world; facilitates critical evaluation of the uses of geographic research.

01:450:485,486. INTERNSHIP IN GEOGRAPHY (BA,BA)
Open only to majors.
Application of geography skills in professional employment setting. Individually designed and evaluated experience under supervision of intern adviser.

01:450:487,488. CARTOGRAPHIC PROBLEMS (3,3)
Prerequisite: Permission of chairperson.
Study for students interested in special cartographic problems.

01:450:491,492. GEOGRAPHIC PROBLEMS (3,3)
Prerequisite: Permission of chairperson.
Study for students interested in special geographic problems.

01:450:495,496. HONORS PROJECT: GEOGRAPHY (BA,BA)

GEOLOGICAL SCIENCES 460

Department of Geological Sciences, Faculty of Arts and Sciences

Chairperson: Kenneth G. Miller

Professors:

Gail M. Ashley, B.S., M.S., Massachusetts; Ph.D., British Columbia
Michael J. Carr, A.B., M.A., Ph.D., Dartmouth College
Paul G. Falkowski, B.S., M.A., CUNY (City College); Ph.D., British Columbia
Mark D. Feigenson, B.S., Maryland; M.S., George Washington; M.A., Ph.D., Princeton
Claude T. Herzberg, B.S., Alberta; Ph.D., Edinburgh
Roger H. Hewins, B.Sc., Aberdeen; Ph.D., Toronto
Dennis V. Kent, B.S., CUNY (City College); Ph.D., Columbia
George R. McGhee, Jr., B.S., North Carolina State; M.S., North Carolina; Ph.D., Rochester
Kenneth G. Miller, A.B., Rutgers; Ph.D., Massachusetts Institute of Technology/ Woods Hole Oceanographic Institution
Richard K. Olsson (Emeritus), B.S., M.S., Rutgers; M.A., Ph.D., Princeton
Peter A. Rona, A.B., Brown; Ph.D., Yale
Robert E. Sheridan, B.A., Rutgers; M.A., Ph.D., Columbia
Martha O. Withjack, B.A., Rutgers; M.A., Ph.D., Brown

Associate Professors:

Roy W. Schlische, B.A., Rutgers; M.A., Ph.D., Columbia
Robert M. Sherrell, B.A., Oberlin; Ph.D., Massachusetts Institute of Technology/ Woods Hole Oceanographic Institution

Assistant Professors:

Craig S. Feibel, A.B., Dartmouth; M.S., Iowa State; Ph.D., Utah
Yair Rosenthal, B.Sc., M.Sc., Hebrew; Ph.D., Massachusetts Institute of Technology/Woods Hole Oceanographic Institution
James D. Wright, B.S., Louisiana Tech; M.S., South Carolina; Ph.D., Columbia

Lecturer:

Ying-Fan Reinfelder, B.S., Beijing; M.S., Utah; Ph.D., Utah State

Research Professor:

Marie-Pierre Aubry, B.Sc., Université de Rouen; D.Sc., Université Pierre et Marie Curie (Paris)

Research Assistant Professor:

Michelle Goman, B.A., Wales; M.A., Ph.D., California (Berkeley)

The study of geology includes time invariant processes following the laws of physical science, but it is tempered by the recognition that these processes occur in a complex framework, the result of previous geologic history. The need to understand both history and process makes geology inherently interdisciplinary. To allow maximum interdisciplinary study, the geological sciences major consists of two tracks. The geology track covers the core areas of geological sciences and still allows ample opportunity for students to specialize through additional courses in math and allied sciences. The environmental geology track covers the fundamentals of environmental and geological sciences and thereby provides the best opportunity for students whose interests span both disciplines.

Major Requirements

Geology Track

In addition to the core courses listed below, students are encouraged to take additional courses in geology, mathematics, computer science, statistics, and the physical and biological sciences. Students planning professional careers in geology—including graduate study—should take at least two additional courses in mathematics beyond the requirements listed below and would benefit from a minor in mathematics, physics, chemistry, or biology. A faculty adviser, assigned by the departmental office at the time the student declares the major, recommends elective courses that best suit the student's career options.

Foundation Courses

01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:460:101 Introductory Geology I: Physical (3)
01:460:102 Introductory Geology II: Historical (3)
01:460:103 Introductory Geology Laboratory (1)
01:640:CALC1-CALC2 Calculus (4,4)
01:750:193-194 Physics for the Sciences (4,4) or 01:750:201-202 Extended General Physics (5,5) or 01:750:203-204 General Physics (3,3) and 01:750:205-206 General Physics Laboratory (1,1)

Geological Sciences Core Courses

01:460:301 Mineralogy (4)
01:460:302 Petrology (4)
01:460:303 Paleontology (4)
01:460:307 Structural Geology (4)
01:460:340 Sedimentology (4)

01:460:341 Stratigraphy (4)
01:460:410 Field Geology (3)
01:460:412 Introduction to Geophysics (4)

Environmental Geology Track

The curriculum stresses the interdisciplinary nature of both geological and environmental sciences. Students are encouraged to take additional courses in geology, mathematics, computer science, statistics, and the physical and biological sciences. A faculty adviser—assigned by the departmental office at the time the student declares the major—recommends elective courses that best suit the student's career options.

Foundation Courses

01:119:101-102 General Biology (4,4)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:160:209 Elementary Organic Chemistry (3)
01:460:101 Introductory Geology I: Physical (3)
01:460:103 Introductory Geology Laboratory (1)
01:640:CALC1-CALC2 Calculus (4,4)
01:750:203-204 General Physics (3,3)

Geological and Environmental Sciences Core Courses

11:375:201 Biological Principles of Environmental Science (3)
11:375:202 Chemical Principles of Environmental Science (3)
11:375:203 Physical Principles of Environmental Science (3)
01:460:307 Structural Geology (4)
01:460:330 Sedimentary Geology (4)
01:460:331 Fundamentals of Mineralogy and Petrology (4)
01:460:410 Field Geology (3)
01:460:412 Introduction to Geophysics (4)
01:460:428 Hydrogeology (3)

Minor Requirements

The minor in geological sciences requires completion of 01:460:101 Introductory Geology I: Physical and 01:460:103 Introductory Geology Laboratory plus five additional geology courses, of which at least two must be at the 300 to 400 level. Minors are encouraged to use 01:460:330 and 331 to fulfill 300-level requirements.

Departmental Honors Program

Students may be admitted to candidacy for honors in geological sciences if they make written application to the department chairperson before the fall term of their senior year. To qualify, a student must have a minimum overall cumulative grade-point average of 3.0 and a minimum grade-point average in major courses of 3.4. In addition, the student must have completed all geological sciences core courses except 01:460:410 and 412. Honors students must complete successfully at least two additional 3-credit courses in geology (at the 400 level) and / or in the allied sciences as well as 01:460:495,496 Honors in Geology. In consultation with a faculty adviser, students choose an honors research project for which they write an honors paper and demonstrate their competence in an oral presentation.

Courses

01:460:101. INTRODUCTORY GEOLOGY I: PHYSICAL (3)
Feigenson, Goman, Herzberg, Schlische
Geological concepts, principles, and processes. Chemistry and physics of the earth.

01:460:102. INTRODUCTORY GEOLOGY II: HISTORICAL (3)
Kent, Wright. Pre- or corequisite: 01:460:101. Designed for majors and minors.
Principles and concepts of plate tectonics and reconstructing past geography and environments; history of Earth's climate, environments, biogeochemical cycles, and life through time.

01:460:103. INTRODUCTORY GEOLOGY LABORATORY (1)
Pre- or corequisite: 01:460:101.
Development of geologic concepts and principles through experiments and field observations. Field trip fee required.

01:460:105. HONORS INTRODUCTORY GEOLOGY LABORATORY (2)
Lab. 6 hrs. Pre- or corequisite: 01:460:101.
Fundamentals of physical geology. Field observations and measurements of geologic processes and outcrops.

01:460:201. EARTHQUAKES AND VOLCANOES (3)
Carr
Plate tectonics and the origin of earthquakes and volcanoes: causes, mechanisms, consequences, and effect on man.

01:460:202. ENVIRONMENTAL GEOLOGY (3)
Sugarman
Analyses of issues and case studies related to cleaning up the environment, finding and using resources, predicting and mitigating natural disasters, and understanding global change.

01:460:204. THE WATER PLANET (3)
Rosenthal
Characteristics of water: hydrologic cycle; runoff and erosion; river systems; past and present climates. Environmental impact; resources of water; political and economic aspects of water.

01:460:205. EVOLUTION AND GEOLOGIC TIME (3)
McGhee
Major events in the evolution of life on earth; evolutionary pattern and process through geologic time; relationship of macro- and microevolutionary theory.

01:460:206. DINOSAURS (3)
McGhee
Survey of dinosaurian evolution and diversity. Discovery and collection; reconstruction of anatomy, behavior, physiology, and habitats; origin, evolutionary radiation, and extinction.

01:460:207. NATURAL RESOURCES AND THEIR EXPLOITATION (3)
Feigenson
Geologic setting and origin of natural resources. Location and exploitation of oil and gas, coal, nuclear, geothermal, metallic and nonmetallic deposits.

01:460:208. THE LAST 11,000 YEARS (3)
Burckle
Geologic events since the last ice age. Sea-level changes, volcanism, earthquakes, climatic change, erosional and depositional effects. Ancient record of events, myths.

01:460:209. EXPLORATION OF THE OCEANS (3)
Rona, Sheridan
Geological and geophysical exploration techniques; deep sea drilling; continental shelves; deep ocean basins; plate tectonics; coral reefs; offshore petroleum exploration; marine archaeological discoveries; Monitor, Titanic.

01:460:212. EARTH AND LIFE THROUGH TIME (3)
Wright. Designed for nonmajors.
Relationship between the development of continents and oceans, changes in sedimentary environments, and the evolution of life through time.

01:460:224. GEOLOGY OF THE MOONS AND PLANETS (3)
Hewins
Origin, composition, and evolution of the solar system, meteorites, comets, asteroids, Moon, Mercury, Venus, Mars, Jupiter, Io, Europa, Ganymede, Callisto, Saturn and its satellites, Uranus, and Neptune.

01:460:301. MINERALOGY (4)
Hewins. Lec. 3 hrs., lab. 3 hrs. Prerequisites: 01:160:161-162. Pre- or corequisite: 01:460:103. Credit not given for both this course and 01:460:331.
Introduction to crystallography, optics and crystal chemistry, systematics of rock-forming minerals. Laboratory: crystal chemical calculations, minerals in hand specimen and thin section.

01:460:302. PETROLOGY (4)
Herzberg. Lec. 3 hrs., lab. 3 hrs. Prerequisite: 01:460:301. Credit not given for both this course and 01:460:331.
Description, geological setting, and origin of igneous and metamorphic rocks. Laboratory: hand specimens and thin sections of igneous and metamorphic rocks.

01:460:303. PALEONTOLOGY (4)
McGhee. Lec. 3 hrs., lab. 3 hrs. Prerequisite: 01:460:101.
Principles of paleontology. Classification, relationships, and evolutionary history of invertebrate fossils. Laboratory study of morphology of invertebrates.

01:460:307. STRUCTURAL GEOLOGY (4)
Schlische. Lec. 3 hrs., lab. 3 hrs. Prerequisites: 01:460:101 and CALC2. Pre- or corequisite: 01:460:103.
Geometrical expression of brittle and ductile structures; strain, stress, and rheology; deformation mechanisms; introduction to tectonics and regional structural geology.

01:460:330. SEDIMENTARY GEOLOGY (4)
Feibel. Lec. 3 hrs., lab. 3 hrs. Prerequisite: 01:460:101. Credit not given for both this course and 01:460:340 or 341.
Interpretation of sedimentary rocks; their relation to depositional environment and processes. Analysis of sedimentary sequences in time and space. Principles of correlation.

01:460:331. FUNDAMENTALS OF MINERALOGY AND PETROLOGY (4)
Feigenson. Lec. 3 hrs., lab. 3 hrs. Prerequisite: 01:460:101. Credit not given for both this course and 01:460:301 or 302.
Systematics of rock-forming minerals. Description, geologic setting, and origin of igneous and metamorphic rocks.

01:460:340. SEDIMENTOLOGY (4)
Ashley. Lec. 3 hrs., lab. 3 hrs. Prerequisite: 01:460:101. Pre- or corequisite: 01:460:330. Credit not given for both this course and 01:460:330.
Interpretation of sediments and sedimentary rocks, with emphasis on processes in recent sedimentary environments and their ancient analogs.

01:460:341. STRATIGRAPHY (4)
Miller. Lec. 3 hrs., lab. 3 hrs. Prerequisite: 01:460:340. Credit not given for both this course and 01:460:330.
Analysis of sedimentary rocks of earth's crust; their distribution in time and space; principles of correlation. Seismic interpretation of reflection records.

01:460:355,356. GEOLOGY COLLOQUIUM (1,1)
Lec. and discussions 1 hr. For geological sciences majors and minors only.
Current research in geological sciences.

01:460:394. MICROSTRATIGRAPHIC ANALYSIS IN ARCHAEOLOGY (3)
Feibel. Pre- or corequisite: 01:460:340. Credit not given for both this course and 01:070:394.
Field and laboratory studies of geological context in archaeological sites. Data collection and sampling, sediment analysis, and reporting. Interpretation of depositional and postdepositional features.

01:460:401. INTRODUCTION TO GEOCHEMISTRY (4)
Feigenson. Prerequisite: 01:460:301.
Application of chemical principles and techniques to geologic problems. Geochemical structure of the earth, element distribution, Eh-ph diagrams, and phase-equilibrium diagrams.

01:460:402. ORE DEPOSITS (3)
Feigenson. Prerequisite: 01:460:302.
Geochemistry, mineralogy, and origin of ore deposits. Physical-chemical, ore-forming processes and their relation to geologic environment.

01:460:408. GEOMORPHOLOGY (3)
Ashley. Lec. 3 hrs., field trips. Prerequisite: 01:460:101 or equivalent.
Evolution and classification of landforms and the processes involved in their development.

01:460:410. FIELD GEOLOGY (3)
Schlische. Lec. 1 hr., lab. 6 hrs. Prerequisites: 01:460:302,307, and 341; or permission of instructor.
Methodology of field investigations: pace and compass, plane table, aerial photo and topographic mapping; construction of stratigraphic columns and structural profiles; geophysical surveys.

01:460:411. GEOLOGICAL FIELD METHODS (2)
Schlische. Pre- or corequisites: 01:460:307 and 341. Credit not given for both this course and 01:460:410.
Introduction to geological mapping; surveying methods in geology; construction of profiles, stratigraphic sections and geologic cross-sections; computer applications.

01:460:412. INTRODUCTION TO GEOPHYSICS (4)
Sheridan. Lec. 3 hrs., lab. 3 hrs. Pre- or corequisites: 01:460:101 and 01:750:204, or permission of instructor.
Principles of seismic exploration, refraction, reflection, deep earth seismology, gravity, magnetics, electrical surveys, heat flow. Application of geophysical techniques to the study of the subsurface.

01:460:417. ENVIRONMENTAL GEOCHEMISTRY (3)
Sherrell. Pre- or corequisites: 01:160:162, 01:460:101.
Distribution of elements in the sedimentary environment; behavior of trace metals in sediments and waters.

01:460:418. GEOLOGICAL MODELING (3)
Carr. Pre- or corequisite: 01:460:301 or 303 or 340.
Computer techniques for collection, processing, interpretation, and presentation of geological and geophysical data. Computer-based modeling exercises in geologic and geophysical exploration and environment assessment.

01:460:428. HYDROGEOLOGY (3)
Reinfelder. Prerequisites: 01:460:101; 01:640:136 or 152.
Groundwater flow, Darcy's Law, hydraulic conductivity and permeability, aquifers, storage, recharge, infiltration, and flow nets.

01:460:429. TECTONICS AND REGIONAL STRUCTURAL GEOLOGY (3)
Withjack. Prerequisite: 01:460:307.
Theories of tectonics, regional tectonostratigraphic analysis, development of the earth's Phanerozoic orogens.

01:460:434. GLACIAL AND PERI-GLACIAL GEOLOGY (3)
Ashley. Lec. 3 hrs., field trips. Prerequisite: 01:460:101 or equivalent.
Glaciology and glacial geology; study of erosion and deposition by glaciers; creation of landforms; effect of the glacial period on flora and fauna.

01:460:451. MARINE GEOLOGY (3)
Miller. Prerequisite: 01:460:341.
Structure and oceanographic setting, marine sediments, evolution of ocean basins and margins.

01:460:453. PALEOECOLOGY (3)
McGhee. Prerequisites: 01:460:303 and 341, or permission of instructor.
Evolution in an ecological context: analysis of ancient living systems; evolution of marine ecosystems in geologic time.

01:460:454. MICROPALEONTOLOGY (3)
Studies of foraminifera, calcareous nannoplankton, and siliceous microplankton emphasizing stratigraphic, paleoecologic, and paleoceanographic utility.

01:460:476. HISTORY OF THE EARTH SYSTEM (3)
Falkowski. Pre- or corequisites: any three of 01:119:102, 01:160:162, 01:460:101, 01:750:204, or permission of instructor.
The Earth as an evolving physical / biological system, including physical and biogeochemical processes whose interactions have shaped Earth's environment over geologic time.

01:460:493,494. INDEPENDENT STUDIES IN GEOLOGY (3,3)
Prerequisites: Minimum 3.0 cumulative and geology grade-point averages. Adviser's approval required for registration.
Topic of study chosen in consultation with a faculty adviser.

01:460:495-496. HONORS IN GEOLOGY (3,3)
Both terms must be completed to receive credit. See section on departmental honors program for registration requirements.
Research project chosen in consultation with a faculty adviser.

GERMAN 470

Department of Germanic, Russian, and East European Languages and Literatures, Faculty of Arts and Sciences

Acting Chairperson: Nicholas Rennie

Undergraduate Director: William C. Donahue

Professor:

Marlene Ciklamini, B.A., Rutgers; M.A., Ph.D., Yale

Associate Professors:

Carol Avins, B.A., Pennsylvania; Ph.D., Yale
Hildburg Herbst, B.A., Rhode Island; M.A., Brown; Ph.D., Princeton
Gerald Pirog, B.A., Rutgers; M.Phil., Ph.D., Yale

Assistant Professors:

William C. Donahue, M.A., Middlebury College; Ph.D., Harvard
Fatima Naqvi-Peters, B.A., Dartmouth; M.A., Harvard
Nicholas Rennie, B.A., Princeton; Ph.D., Yale

Part-Time Lecturers:

Svetlana Bogomolny, B.A., Hebrew (Jerusalem); Ed.S., Iowa
Natalya Medvedeva, M.A., Moscow Polygraphic Institute; M.A., Pittsburgh

Major Requirements

The department offers two options for completing the major. The traditional option in language and literature trains students to attain linguistic proficiency and a broad knowledge of German literature and culture. The German studies option also enables students to broaden and deepen their interests in another academic field. Credits with a grade of D are not counted toward the major.

Language and Literature Option

The major comprises ten term courses, as approved by the department, at the 200 level or above and taught in German. At least half of these courses should be in literature, civilization, or film. A minimum of six term courses must be taken at the 300 level or above. Both of the 300-level business courses are accepted for the major. Six of the courses comprising the major must be taught by the Faculty of Arts and Sciences.

German Studies Option

This option can be fulfilled either by taking most courses within the Department of German, or by combining the study of German language and culture with other fields (such as history, art history, religion, philosophy, music), which offer courses with a substantial German content. Twelve 3-credit courses are required, to be distributed in the following manner: seven core courses in German language, culture, and history, plus a coherent set of an additional five courses to be selected from the German studies course list with the approval of the German studies adviser. Course 01:470:275 German Studies Seminar is mandatory.

All German studies majors must complete the equivalent of 01:470:232 Advanced Conversation and Composition II and one course (conducted in German) on contemporary German culture. In most cases, this represents the equivalent of four courses toward the major. In some cases, students may enter the program with advanced language skills; these students, by arrangements with the German studies adviser, then select a corresponding number of credits as German studies electives from the German studies course list. All majors take two courses in German history. Students should contact the undergraduate director to receive a list of preapproved German studies courses; additional courses may be considered toward the major at the discretion of the undergraduate director and the participating department.

Minor Requirements

The minor in German language and literature consists of six courses, as approved by the department, at the 200 level or above and taught in German. For students beginning their college German below the 200 level, one course in intermediate German may be counted toward the minor. At least three of the six courses must be taken at the 300 level or above. Both of the 300-level business courses are accepted for the minor.

Credits in German with a grade of D are not counted toward the minor.

Departmental Honors Program

Language and Literature Option

To be a candidate for graduation with honors, a German major must have and maintain a grade-point average of 3.4 or better in German and a cumulative grade-point average of 3.0 or better. Interested students are encouraged to apply at the department toward the end of their junior year or during the first week of classes in their senior year. A student may receive honors in any of five ways: by completing a senior honors thesis through his or her respective undergraduate college honors program; or by taking 6 credits of 01:470:495,496 (in any of the following credit sequences: 3-3, 6-0, 0-6); or by taking 3 credits of 01:470:495 or 496 and 3 credits of 01:470:491; or by taking 6 credits of approved graduate courses; or by taking any combination of the above courses totaling 6 credits. Whether a candidate graduates with departmental honors depends on his or her total performance in German as measured by the

recommendations of the faculty. More detailed information is available in the office of the chairperson or the undergraduate director.

German Studies Option

Students with an overall grade-point average of 3.0 or better, and 3.4 or better in German studies, will be invited to enroll in the German studies honors courses. Under the supervision of a faculty adviser, honor students will pursue an independent research project that requires the use of German-language source material pertinent to the area of concentration and may earn up to 6 credits toward the German studies major.

Summer Program in Germany

The Department of Germanic, Russian, and East European Languages and Literatures and Global Programs offer a summer program in Constance, Germany. This program, which lasts six weeks and is taught by faculty from Rutgers and the University of Constance, offers an opportunity to earn 6 credits in a German university setting. The program also provides excursions and other extracurricular activities to acquaint participants more fully with the cultural life of Germany, as well as of neighboring Austria, France (Alsace), and Switzerland. Offerings in German include language, literature, and culture courses at the elementary, intermediate, and upper levels. Inquiries should be addressed to the Department of Germanic, Russian, and East European Languages and Literatures or to Global Programs.

Study Abroad Program in Germany

Language and Literature Option

The Faculty of Arts and Sciences offers a program of junior-year studies at the University of Constance in Germany. Under the guidance of a resident director, students attend preliminary four-week intensive language sessions and then, in the course of the academic year, participate fully in the life of the university. Admission is open to majors in all disciplines. A working knowledge of the language (01:470:232 or equivalent) is necessary, since courses are conducted entirely in German. Interested students should apply early in the second term of their sophomore year by contacting the department or the Rutgers Study Abroad Program office in Milledoler Hall, College Avenue campus.

German Studies Option

All majors are strongly encouraged to spend at least one term abroad at a German university, ideally as a participant in the Rutgers program in Constance. Up to 18 credits may be credited toward the major, but no more than 9 credits per term abroad. Actual transfer decisions will be made by the German studies adviser, and students studying in Germany are advised to remain in close contact. The German studies senior honors thesis option must be taken in New Brunswick.

Certificate of Proficiency in German

The department awards a certificate of proficiency in German based on demonstrated ability to comprehend, speak, read, and write German as attested by a grade of B or better in 6 credits of work taken in courses conducted in German at or above the 300 level.

Note: The German certificate is awarded only with, or subsequent to, the awarding of the baccalaureate degree in an approved major.

Diploma in German Commerce

The department is one of the national testing centers for the examination leading to the Wirtschaftsdiplom Deutsch als Fremdsprache, underwritten by the German-American Chamber of Commerce. It is strongly recommended that students wishing to take this examination complete 01:470:313,314 Business German I and II, 01:470:315 Translation Seminar I, as well as 01:470:301,302 German Stylistics.

Goethe Institute's Zertifikat Deutsch

In cooperation with the department, the Goethe Institute (the international cultural agency of the Federal Republic of Germany) administers its examinations for the Zertifikat Deutsch als Fremdsprache each spring.

German House and German Residence Hall

A German House or Deutsches Haus is located on the campus of Douglass College and a German Residence Hall is located on the campus of Rutgers College to facilitate fluency in the spoken language and to help students become acquainted with the culture and customs of Germany amid congenial surroundings. Residents pledge themselves to speak only German while in the German House or German Residence Hall. By participating in a special language and cultural program, residents of Douglass College's German House earn 1.5 graduation credits per term; residents of the German Residence Hall may earn 1.5 E credits per term.

Courses in English

01:470:255. THE FAUST LEGEND THROUGH THE AGES (3)
Relevance of the Faust theme to Western civilization from biblical days to the present, with emphasis on Goethe's Faust.

01:470:261,262. MAJOR GERMAN WRITERS (3,3)
Selected masterpieces of German literature from the Middle Ages to the present.

01:470:275. GERMAN STUDIES SEMINAR (3)
Required for all German studies majors; should be taken in the sophomore or junior year, to be taught in English.
Survey of topics, theoretical approaches, and research methods in German studies. Interdisciplinary examination of twentieth-century German culture.

01:470:349. CONTEMPORARY GERMAN CINEMA (3)
One section taught in German.
New German Cinema as a contemporary mode of artistic expression. Viewing and analysis of films by such outstanding directors as Fassbinder, Herzog, Schloendorff, and Wenders. Emphasis on the "literary" aspects of the German cinema.

01:470:350. THE NAZI PERIOD IN FILM (3)
One section taught in German.
Feature and documentary films dealing with the cultural, historical, and political development of Germany from 1933 to 1945 and its global implications.

01:470:365,366. LITERATURE AND SOCIAL CHANGE FROM NIETZSCHE TO BRECHT (3,3)
Interaction between German literature and society from the unification (1871) and industrialization of Germany to the end of World War II.

01:470:367. SELF AND SOCIETY IN THE POSTWAR GERMAN NOVEL AND SHORT STORY (3)
Major prose writers of Austria, Germany, and Switzerland since the end of World War II.

01:470:368. SELF AND SOCIETY IN THE POSTWAR GERMAN DRAMA (3)
Major playwrights of Austria, Germany, and Switzerland since the end of World War II.

01:470:373. BERTOLT BRECHT, DRAMATIST AND MARXIST (3)
Study of Brecht's Epic (Marxist) Theater and its impact on contemporary dramatic theory and theatrical practice; an introduction to Brecht's poetry of engagement.

01:470:375. NEW SUBJECTIVITY IN LITERATURE AND FILM (3)
Literature and film in the context of political, social, and cultural developments since the late 1960s. Topics include the politics of the personal, reconciliation with the Nazi past, the "death of literature," and the rise of German feminism.

01:470:380. GERMAN-JEWISH LITERATURE AND CULTURE (3)
Special permission required for credit toward major. Credit not given for both this course and 01:500:380.
Survey of German-Jewish culture, eighteenth century to present. Literature in political-historical context, with some attention to music, philosophy, and film.

01:470:381. CULTURAL FOUNDATIONS OF GERMANY (3)
Significant aspects of German civilization from the Age of Charlemagne to the unification of Germany in 1870. Focus on the German contribution to music, the arts, the sciences, philosophy, and literature.

01:470:383. GERMANIC MYTHOLOGY (3)
Myths and religious practices of the migration period and the age of the Vikings. Sources: the Eddas, Christian and pre-Christian documents and texts, archaeological finds, place names, modern folkloristic beliefs.

01:470:385. THE CHANGING IMAGE OF WOMEN IN GERMAN LITERATURE (3)
Selected works of German literature that convey the experience of women cast into socially prescribed roles.

01:470:387,388,389,390. TOPICS IN GERMAN LITERATURE AND CIVILIZATION (1.5,1.5,3,3)

Courses in German

Prerequisites

For courses numbered in the 200 series: any two courses between 01:470:131 and 136, or the permission of the department. For courses numbered in the 300 series: any two of 01:470:231,232,241,242,293,294, or the permission of the department.

Introductory Courses

Beginners or students with less than two years of German in secondary school normally take courses 01:470:101,102, and then 131,132. Students who have had two or more years of German in secondary school and who wish to continue this language are assigned according to their achievement on a placement test. Students who wish to complete the equivalent of 101-102, 131-132 within one year may do so by taking Accelerated Beginning German (111-112; 6 credits per term). Courses 01:470:101,102 and 105,106 are conducted partly in German. All other courses, with the exception of literature, culture, and film courses in English translation, are conducted entirely in German.

01:470:101-102. ELEMENTARY GERMAN (4,4)
Basic skills of listening, speaking, reading, and writing; study of grammar and vocabulary building; supplementary work in the language laboratory.

01:470:105,106. GERMAN FOR READING KNOWLEDGE (3,3)
Not open for credit to students who have had two or more years of secondary school German. Does not satisfy prerequisite for 01:470:131 or 132.
Development of reading skills for students who wish to acquire a basic competence in the language for research purposes. Texts chosen from the humanities, the natural sciences, and the social sciences.

01:470:107-108. ELEMENTARY GERMAN IN GERMANY (3,3)
Offered only as part of the Summer Program in Germany. Credit not given for these courses and 01:470:101-102.
Development of basic skills in speaking, understanding, reading, and writing. Utilization of Lake Constance region and its culture as resource material. Excursions.

01:470:111-112. ACCELERATED BEGINNING GERMAN (6,6)
Four meetings per week for 6 credits.
Accelerated development of reading, writing oral, and oral skills; preparation for the Zertifikat Deutsch and 200-level courses within one year.

01:470:121-122. GERMAN IN REVIEW (3,3)
Not open to students who have taken 01:470:102.
Intermediate reinforcement course. Practice in speaking, reading, and writing German; extensive grammar review; cultural topics.

01:470:131-132. INTERMEDIATE GERMAN (3,3)
Prerequisite: 01:470:102 or placement test.
Emphasis on conversation and composition, based on everyday situations, aspects of culture, and contemporary German short stories; review of major grammatical points.

01:470:135,136. GERMAN CONVERSATION AND COMPOSITION (3,3)
Offered only as part of the summer program in Germany.
Intermediate language course emphasizing both colloquial and literary German. Utilization of the Lake Constance region and its culture as resource material. Excursions.

01:470:211,212. GERMAN CONVERSATION AND CULTURE (3,3)
Proficiency-oriented with strong emphasis on speaking skills. Extensive use of audiovisual material and guided conversation practice; texts and discussion topics relating to everyday life, current events, and contemporary issues in the German-speaking community.

01:470:215,216. INTRODUCTION TO TRANSLATING (3,3)
Treatment of significant aspects of language transfer, both theoretical and practical, with focus on texts from the sciences and humanities.

01:470:231-232. ADVANCED CONVERSATION AND COMPOSITION (3,3)
Reading and discussion of advanced text material based on contemporary German culture. Intensive practice in word formation, sentence structure, and expository writing.

01:470:241,242. INTRODUCTION TO GERMAN LITERATURE (3,3)
Critical appreciation of German literature through the study of selections of prose fiction, drama, and poetry, and the culture of the periods in which they were written.

06:090:281,282. THE GERMAN LANGUAGE EXPERIENCE (P/NC 1.5, P/NC 1.5)
Limited to and required of residents of the Douglass College German House. May not be used in satisfaction of major requirements. Course may be repeated.
Development of active language skills through formal instruction and the daily experience of foreign language immersion in the varied activities of the house.

01:470:293,294. INDEPENDENT STUDY IN GERMAN (3,3)
Offered only as part of the summer program in Germany. Prerequisite: Permission of the director of the summer program in Germany.
For students wishing to pursue an individualized project in German language, literature, or civilization under the guidance of a member of the department.

01:470:299. LANGUAGE DORMITORY RESIDENCE (E3)
Prerequisite: Permission of the college housing authority. Graded as satisfactory or unsatisfactory.
Residence in the German section of the foreign language dormitory on the College Avenue campus for students interested in the language and culture of German-speaking countries.

01:470:301,302. GERMAN STYLISTICS (3,3)
Fine points of grammar. Analysis of various modes of expression. Study of writing techniques. Written assignments to practice specific styles, especially expository and argumentative.

01:470:313. BUSINESS GERMAN I (3)
Prerequisite: 01:470:232 or equivalent.
Development of effective communication models with emphasis on the terminology of economics. Treatment of basic principles governing commercial organizations in the German-speaking countries.

01:470:314. BUSINESS GERMAN II (3)
Prerequisite: 01:470:313 or permission of instructor.
Continuation of 01:470:313 with emphasis on the terminology of international commerce and the development of specialized language skills for diverse business situations. Contrastive treatment of cultural factors affecting German-American trade relations.

05:300:320. MATERIALS AND METHODS IN GERMAN (3)
Only for students in the German teaching program; others by permission of instructor. May count as education credit but not toward the major in German.
Practical solutions to classroom problems; course planning: teaching aims, pedagogical devices, language content, cultural background, selection of texts.

01:470:321. FUNDAMENTALS OF LITERARY ANALYSIS (3)
Introduction to textual categories, literary terminology, and methodological problems through the analysis and interpretation of representative works of literature.

01:470:323. MASTERS OF GERMAN POETRY (3)
Readings from such poets as Walther von der Vogelweide, Gryphius, Klopstock, Goethe, Schiller, the romantics, Heine, George, Hofmannsthal, Rilke, Benn, and Brecht.

01:470:324. MASTERS OF GERMAN DRAMA (3)
Study of the drama through readings from such playwrights as Lessing, Goethe, Schiller, Kleist, Grillparzer, Büchner, Hebbel, Hauptmann, Kaiser, Brecht, and Dürrenmatt.

01:470:325. THE SHORT NARRATIVE: SIXTEENTH CENTURY TO TWENTIETH CENTURY (3)
Studies in short genres of German prose such as the anecdote, farce, fable, novella, and short story.

01:470:326. THE GERMAN FAIRY TALE AND FOLK TRADITION (3)
Studies in the German fairy tale, legend, and folk song; principal characteristics and cultural contexts.

01:470:331. GERMAN LITERATURE OF THE MIDDLE AGES (3)
The first "Golden Age" of German literature (1175–1225) in modern adaptation. Readings from such epics as the Nibelungenlied, Tristan, and Parzival, as well as the poetry of the minnesingers.

01:470:332. GERMAN LITERATURE OF THE RENAISSANCE, REFORMATION, AND BAROQUE (3)
German literature from about 1400 to 1700, with emphasis on the following writers: Hutten, Luther, Hans Sachs, Fischart, Opitz, Gryphius, and Grimmelshausen.

01:470:333. GERMAN LITERATURE OF THE ENLIGHTENMENT, ROCOCO, AND STORM AND STRESS (3)
Major authors of the eighteenth century, including Klopstock, Lessing, Herder, the early Goethe, and Schiller.

01:470:335. GOETHE: LIFE AND WORKS (3)
Close reading of Goethe's works against the cultural, historical, and political background of his time. Selected poems, plays, and prose.

01:470:337. SCHILLER: LIFE AND WORKS (3)
Close reading of Schiller's works against the cultural, historical, and political background of his time. Selected poems, plays, and prose.

01:470:341. GERMAN CIVILIZATION I: FIFTH THROUGH FIFTEENTH CENTURIES (3)
Cultural foundations of the German-speaking areas of central Europe from the fall of Rome to the waning of the Middle Ages. Readings from historical, didactic, and poetic documents, supplemented by slides and recorded music.

01:470:342. GERMAN CIVILIZATION II: SIXTEENTH THROUGH EIGHTEENTH CENTURIES (3)
Cultural foundations of the Holy Roman Empire of the German Nation from the age of Luther to the Napoleonic era. Readings from historical, didactic, and poetic documents, supplemented by slides and recorded music.

01:470:343. GERMAN CULTURE TODAY (3)
Contemporary cultural, social, and political life in German-speaking countries with emphasis on the daily experience. Audiovisuals, guest lectures, field trips, and contact with resource persons.

01:470:345,346. GERMAN LITERATURE AND CIVILIZATION (3,3)
Offered only as part of the summer program in Germany.
Interpretation and analysis of major works of German literature as cultural phenomena, with special reference to the art monuments of the Lake Constance region. Field trips to key sites in Austria, France (Alsace), Germany, and Switzerland.

01:470:349. CONTEMPORARY GERMAN CINEMA (3)
One section taught in German.
See description under Courses in English.

01:470:350. THE NAZI PERIOD IN FILM (3)
One section taught in German.
See description under Courses in English.

01:470:385,386. JUNIOR YEAR IN GERMANY (BA,BA)

01:470:391,392. TOPICS IN GERMAN LITERATURE AND CIVILIZATION (3,3)

01:470:393,394. INDEPENDENT STUDY IN GERMAN (1-3,1-3)
Prerequisites: Permission of instructor and departmental chairperson.
For students of exceptional promise wishing to pursue an individualized project in German literature, civilization, or language under the guidance of a member of the department.

01:470:395,396. GERMAN TEACHING APPRENTICESHIP (3,3)
Prerequisite: Permission of instructor.
Development of various projects relevant to language teaching, e.g., preparing new teaching devices, conducting conversational groups, and tutoring.

01:470:431. GERMAN LITERATURE OF THE NINETEENTH CENTURY: ROMANTICISM (3)
Romantic period from Wackenroder to Eichendorff (1790–1850), including Tieck, Novalis, Hoffmann, A.W. and F. Schlegel, Hölderlin, Kleist, and Brentano. Readings of theoretical and poetic texts.

01:470:432. GERMAN LITERATURE OF THE NINETEENTH CENTURY: REALISM (3)
Study of realistic literature from its beginnings (Hebbel, Grillparzer, Heine, Büchner, Junges Deutschland, and Vormärz) to the end of the century (Fontane, Raabe, Hauptmann). Readings of theoretical and poetic texts.

01:470:435. GERMAN LITERATURE OF THE TWENTIETH CENTURY BEFORE 1945 (3)
Major literary movements and figures from the turn of the century to the end of World War II, including naturalism (Hauptmann), impressionism (Schnitzler), symbolism (Rilke), expressionism (Kaiser, Trakl), neo-factualism (Zuckmayer), the outsiders (Wedekind, Hesse, Kafka), and the anti-Nazi writers in exile (Mann, Brecht).

01:470:436. GERMAN LITERATURE OF THE TWENTIETH CENTURY AFTER 1945 (3)
Literary trends and currents from the end of World War II to the present: the "literature of the ruins" (Borchert, Böll); documentary theater (Weiss, Hochhuth); Brecht's Epic Theater and East Germany; major novelists (Böll, Frisch, Grass, Wolf) and playwrights (Dürrenmatt, Handke).

01:470:441. GERMAN CIVILIZATION III: THE NINETEENTH CENTURY (3)
Cultural foundations of Germany from the abolition of the First Reich by Napoleon in 1806 to the end of the Second Reich in 1918. Readings from historical, didactic, and poetic documents, supplemented by slides and recorded music.

01:470:442. GERMAN CIVILIZATION IV: THE TWENTIETH CENTURY (3)
Cultural foundations of Germany from the end of World War I to the present. Readings from historical, didactic, and poetic documents, supplemented by slides and recorded music.

01:470:444. MASTERS OF GERMAN SATIRE (3)
Satirical features and strategies in literary and visual texts from late medieval carnival plays to postmodern cabaret.

01:470:450. READING WOMEN'S LIVES: TWENTIETH-CENTURY NARRATIVES (3)
Prerequisite: A 300-level course in German or permission of instructor.
Twentieth-century women's literature and film; historical retrospective and methodological introduction prepare for treatment of preeminent postwar texts.

01:470:460. VOICES OF A CENTURY: TWENTIETH-CENTURY AUTOBIOGRAPHY AND CULTURE (3)
Prerequisite: A 300-level course in German or permission of instructor.
Masterpieces of twentieth-century autobiography read in a social, political, and philosophical context.

01:470:491,492. SENIOR SEMINAR IN GERMAN LITERATURE (3,3)
Analysis and interpretation of selected works of German literature with emphasis on various literary genres; discussions, oral and written reports.

01:470:493,494. INDEPENDENT STUDY IN GERMAN (3,3)
Prerequisites: Permission of instructor and departmental chairperson.
For students of exceptional promise wishing to pursue an individualized project in German literature or civilization under the guidance of a member of the department.

01:470:495,496. SENIOR HONORS IN GERMAN (3-6,3-6)
Independent research on a topic selected by the senior and approved by a departmental honors committee; carried out under the guidance of a member of the department.

GERONTOLOGY (See Aging 018)

GREEK 490 (See Classics)

GREEK, MODERN GREEK STUDIES 489

Faculty of Arts and Sciences
Undergraduate Director: Antonia Tripolitis

Minor in Modern Greek

Students must complete six courses (18 credits). Three courses (9 credits) must be at the 300 level or above. The following courses are required for and count toward the minor: 01:489:201,202 or the equivalent.

An additional four courses, three at the 300 level or above, from the following:

01:489:205	Byzantium: The Imperial Age (3)
01:489:207	Byzantium: The Last Centuries (3)
01:489:241	Masterpieces in Modern Greek Literature (3)
01:489:305,306	Introduction to Modern Greek Literature (3,3)
01:489:312	Greek Christianity (3)
01:489:347	The Life and Works of Odysseus Elytis (3)
01:489:351	The Iconoclastic Controversy: Causes and Effects (726–843 C.E.) (3)
01:489:358	Odysseus: From Homer to Kazantzakis (3)
01:489:380	Special Topics in Modern Greek Studies (3)
01:489:381	Modern Greek Politics and Society (3)
01:489:382	Genesis of Modern Greece 1450–1830 (3)
01:489:383	The Life and Works of Nikos Kazantzakis (1885–1957) (3)

Courses in Greek

01:489:101,102. FIRST YEAR MODERN GREEK (4,4)
Fundamentals of the language with exercises in speaking, reading, and writing.

01:489:201,202. SECOND YEAR MODERN GREEK (4,4)
Prerequisite: 01:489:102 or permission of the discipline adviser.
Development of language skills, emphasis on speaking, translation drills, and grammar.

01:489:305,306. INTRODUCTION TO MODERN GREEK LITERATURE (3,3)
Prerequisite: 01:489:202 or permission of the discipline adviser.
Introduction to modern Greek literature from the medieval times to the present. Selections from the works of Kornaros to Ritsos.

01:489:493,494. INDEPENDENT STUDY IN MODERN GREEK (3,3)
Prerequisite: Permission of the discipline adviser.

Courses in English

01:489:205. BYZANTIUM: THE IMPERIAL AGE (3)
Credit not given for both this course and 01:510:205.
Development of the medieval Greek state and its civilization, seventh through thirteenth centuries. Key themes of history and culture (political theory, theology, literature, art). Relations with the Slavs, Arabs, Turks, and the West.

01:489:207. BYZANTIUM: THE LAST CENTURIES (3)
Credit not given for both this course and 01:510:207.
Development of Byzantine society and culture from the Latin crisis (1204–1261) through the Turkish conquest (1453), including the Byzantine impact on West European, Slavic, and Ottoman cultures.

01:489:241. MASTERPIECES IN MODERN GREEK LITERATURE (3)
Credit not given for both this course and 01:195:241. In translation.
Readings and discussions of representative works from the Erotokritos of Vitzentos Kornaros to the contemporary works of Giannis Ritsos.

01:489:312. GREEK CHRISTIANITY (3)
Credit not given for both this course and 01:840:312.
Eastern church tradition from the second through the eighth centuries; theological controversies and the development of liturgy, monasticism, and mysticism.

01:489:347. THE LIFE AND WORKS OF ODYSSEUS ELYTIS (3)
Credit not given for both this course and 01:195:347.
Examination of the works of Odysseus Elytis; the writers and artists who influenced his work.

01:489:351. THE ICONOCLASTIC CONTROVERSY: CAUSES AND EFFECTS (726–843 C.E.) (3)
Study of the Iconoclastic Controversy (726–843 C.E.), its causes and importance in the development of modern Greek religion and culture.

01:489:358. ODYSSEUS: FROM HOMER TO KAZANTZAKIS (3)
Credit not given for both this course and 01:195:358. Taught in English.
Examination of the Homeric figure of Odysseus: his reincarnation and transformation in Modern Greek.

01:489:380. SPECIAL TOPICS: MODERN GREEK STUDIES (3)
In Greek or in translation.
Variable content. Special studies emphasizing particular historical ideas and themes, prominent literary figures and forms, as well as important political and social events that have contributed to the shaping of modern Greek society. Designed by individual instructors.

01:489:381. MODERN GREEK POLITICS AND SOCIETY (3)
Examination of the domestic and international forces that have shaped the political, social, institutional, and economic development of Greece in the post–World War II era.

01:489:382. GENESIS OF MODERN GREECE: 1450–1830 (3)
Credit not given for both this course and 01:510:382.
Political, social, religious, cultural, and intellectual experience of Greeks under Ottoman rule, 1450–1830, culminating in national independence.

01:489:383. THE LIFE AND WORKS OF NIKOS KAZANTZAKIS (1885–1957) (3)
Pre- or corequisite: 01:489:241 or permission of the instructor. In translation.
Credit not given for both this course and 01:195:383.
Works of Nikos Kazantzakis (1885–1957) and the Eastern and Western ideas that influenced him: Homer, Henri Bergson, Nietzsche, Freud, and Buddhist philosophy.

HINDI 505

(See also Asian Studies 098)

Department of Asian Languages and Cultures

Courses

01:505:101,102. ELEMENTARY HINDI (4,4)
Introduction to sound, grammar, and writing system of Hindi; practice and exercises in speaking, reading, and writing.

HISTORY (General/Comparative History 506, African, Asian, and Latin American History 508, European History 510, American History 512)

Department of History, Faculty of Arts and Sciences

Web Site: http://history.rutgers.edu

Chairperson: Deborah G. White

Undergraduate Director: Steven F. Lawson

Professors:

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Samuel L. Baily, A.B., Harvard; A.M., Columbia; Ph.D., Pennsylvania
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Lora Dee Garrison, A.B., Fullerton College; Ph.D., California (Irvine)
Michael Gasster, B.S.S., CUNY (City College); A.M., Columbia; Ph.D., Washington
William Gillette, B.S.F.S., Georgetown; A.M., Columbia; Ph.D., Princeton
John Gillis, A.B., Amherst College; M.A., Ph.D., Stanford
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David L. Lewis, B.A., Fisk; M.A., Columbia; Ph.D., London School of Economics and Political Science
James Livingston, B.A., M.A., Ph.D., Northern Illinois
Phyllis Mack, A.B., Barnard College; A.M., San Francisco State; Ph.D., Cornell
Karl F. Morrison, B.A., Mississippi; M.A., Ph.D., Cornell
William L. O'Neill, A.B., Michigan; A.M., Ph.D., California (Berkeley)
David Oshinsky, B.S., M.A., Cornell; Ph.D., Brandeis
James W. Reed, B.A., Louisiana State; A.M., Ph.D., Harvard
Thomas Slaughter, B.A., M.A., Maryland; M.A., Ph.D., Princeton
Bonnie G. Smith, A.B., Smith College; Ph.D., Rochester
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Donald T. Roden, B.A., M.A., Ph.D., Wisconsin
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Assistant Professors:

Juliana Barr, B.A., Texas (Austin); M.A., Ph.D., Wisconsin
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Dina Le Gall, B.A., Tel Aviv; M.A., Ph.D., Princeton
Jennifer Morgan, B.A., Oberlin; M.A., Ph.D., Duke

Nancy Sinkoff, A.B., Harvard; M.A., Ph.D., Columbia
Gail Triner, B.A., Michigan; M.A., Maryland; Ph.D., Columbia
Carmen Whalen, B.A., Hampshire College; M.A., Ph.D., Rutgers

The study of history provides students with a perspective on events that have shaped the contemporary world. The Department of History offers an array of two hundred course offerings and many research opportunities. The courses are designed to (1) teach the student the important skills of critical reading, logical analysis, and effective essay writing, and (2) provide the student with an understanding of the historical context in which contemporary men and women have developed.

Students should begin with introductory-level courses (100), proceed to the upper-level courses that are at the center of the history major (300), and finally to the advanced courses (400), which usually require significant research. First-year students may not take 300- or 400- level courses without departmental approval.

The history major is designed to expose students to the histories of various civilizations over time and place. However, it also affords specialization in one area, time, or theme (e.g., African history, medieval Europe, or women in history) to interested students, in consultation with departmental advisers.

For additional information, visit the department's web site.

Major Requirements

History majors must complete eleven, one-term, 3-credit courses in history with a grade of C or better in each course, (1.5 credit minicourses do not count), according to the following program:

1. Four 100-level courses from among the following, no more than two of which are in the global history sequence:
   Global history: 01:506:110, 111, 112, 113, 114
   European history: 01:510:101,102
   U.S. history: 01:512:103,104
2. Seven 200- through 400-level courses, at least five of which must be at the 300- or 400-level, including a History Seminar. History Seminar, either 01:506:401 or 402, is required of all majors and normally taken in the junior year.
3. Of the eleven total courses, at least two must be in each of the three following areas:
   Global, African, Asian, Latin American, or Native American history (01:506:110-114 and all subject 508 courses)
   European history (510)
   United States history (512)
4. At least one course in the history of premodern civilization.

In consultation with an adviser, 100-level courses may be replaced by more advanced courses.

Ancient History and Classics Option

The ancient history and classics option in the history major requires fifteen 3-credit courses (of which at least three must be history department courses and at least three must be classics department courses), apportioned as follows:

1. At least two courses in ancient languages (at least two languages: Latin, Greek, and / or other ancient languages offered at the university, e.g., Sanskrit and Hebrew), with at least one of the courses at the 200 level or above. Advanced placement can substitute for either or both of the courses, if at the appropriate level. Suggested courses are 01:490:207 Golden Age Greek Prose and 01:580:203 Intermediate Latin Prose.
2. Three ancient history or classics survey courses at the 200 level, from among:
   01:190:205 Greek Civilization
   01:190:206 Roman Civilization
   01:508:200 Ancient Near East
   01:510:201 Ancient Greece
   01:510:202 Ancient Rome
   01:510:205 Byzantium: The Imperial Age
   01:510:207 Byzantium: The Last Centuries
   In consultation with an adviser, appropriate higher-level courses, or courses from other departments, may be substituted for any of the 200-level courses mentioned above.
3. Six ancient history or classics lecture courses at the 300 level, from among:
   01:190:320 Women in Antiquity
   01:190:322 Greek Political Philosophy
   01:190:350 Greek Social Institutions
   01:190:372 Cities of the Classical World
   01:490:306 From Athens to Alexandria
   01:490:391 Readings in Greek Prose (historical topic / author)
   01:510:301 Early Greece
   01:510:302 Classical Greece
   01:510:303 Hellenistic World
   01:510:304 Roman Republic
   01:510:306 Roman Empire
   01:510:307 Roman World in Late Antiquity
   01:510:308 Ancient Cultural and Intellectual History
   01:510:403 Ancient Warfare and Diplomacy
   01:580:325 The History of Livy
   01:580:329 Tacitus
4. One ancient history or classics course at the 300 or 400 level focusing on research and writing such as:
   01:490:391 Readings in Greek Prose (historical readings)
   01:506:401,402 History Seminar (ancient topic)
   01:506:471,472 Research in History (ancient topic)
   01:580:369,370 The Seminar in Latin (historical readings)
   college honors or departmental project (appropriate topic)
5. Three additional courses in history, classics, Latin, or Greek (in any combination, but no more than two of them at the 100 level).

Minor Requirements

General History Minor

The minor in history consists of six 3-credit courses, passed with a grade of C or better, including three courses at the 300 to 400 level.

Teacher Certification

History majors interested in receiving teacher certification (K–12) should contact advisers in the Department of History and in the Graduate School of Education in their first year or as soon as possible thereafter.

Departmental Honors Program

The departmental honors program enables students to pursue their individual interests in history and helps prepare them for future research work or graduate study. Qualified seniors take two terms of special honors seminars and work with a faculty adviser on a major research paper. Interested students should read the program description available at the history department and discuss their plans thoroughly and well in advance with a faculty adviser. Approval of the research program by a faculty sponsor who serves as director is required for admission to the program.

Courses (506)

01:506:100. INDEPENDENT STUDY: HONORS (BA)
By invitation of the college honors program.
Represents the additional credit to honors sections of 100-level courses.

01:506:105. HONORS COLLOQUIUM (3)
By permission of the department. Open to students in college honors.
Study of a contemporary social issue from the perspective of the discipline of history. Specific title available at time of registration through the Faculty of Arts and Sciences honors programs.

01:506:110. AGE OF EUROPEAN GLOBAL EXPANSION (3)
Traces the rise of Europe to global dominance beginning with early explorers and empire builders, and focusing on Europe's impact on Africa, Asia, and the Americas.

01:506:111. WORLD HISTORY IN THE TWENTIETH CENTURY (3)
Focus on an era dominated by violence and unprecedented change. The world wars, Marxist revolutions, fascist movements, and third-world struggles culminating in Vietnam.

01:506:112. PATTERNS IN CIVILIZATION: LOVE (3)
Love and its literary expression in Japan and Europe since the Middle Ages. Comparative analysis of culture and society, political and economic transformations, religion.

01:506:113. PATTERNS IN CIVILIZATION: DEATH (3)
Individual and societal responses to death in Japan, Europe, and the United States. Comparative analysis of culture and society, political and economic transformation, religion.

01:506:114. WORLD CIVILIZATIONS: EUROPE, AFRICA, AND AMERICA (3)
Family, economy, government, and religion in major civilizations of West Africa, Europe, and North America. Interaction of these three geographical areas through the slave trade, colonialism, and the movement of ideas and culture.

01:506:203. HISTORIES OF THE PACIFIC (3)
Survey of Pacific island peoples and cultures from early navigators and settlers to the colonial and postcolonial eras of the nineteenth and twentieth centuries.

01:506:205. PARIS/TOKYO: 1700–PRESENT (3)
Comparative study of French and Japanese culture from 1700 to the present, drawing on literary and visual representations from both traditions.

01:506:211. WOMEN IN EUROPE AND THE AMERICAS UNTIL 1800 (3)
Credit not given for both this course and 01:988:211.
Survey of women's roles in Western society and culture—covering Europe and the New World up to about 1800.

01:506:212. WOMEN IN EUROPE AND THE UNITED STATES SINCE 1800 (3)
Credit not given for both this course and 01:988:212.
Survey of women's roles in Western society and culture covering the nineteenth and twentieth centuries.

01:506:221. HISTORY OF EXPLORATION (3)
Exploring expeditions from Columbus to the moon flights. Experiences of explorers; political, economic, and cultural motives for exploration; effects of exploration on society and on views of the world.

01:506:231. REVOLUTION (3)
Comparative examination of political revolutions from the seventeenth century to the present.

01:506:241. FILM AND HISTORY (3)
Presentation of films relating to history and culture, combined with readings and discussions of standard history accounts.

01:506:251. HISTORY OF SCIENCE AND SOCIETY (3)
Science and its social context from 1500 to the present. Development of ideas; interaction with philosophy, religion, and art; science as a profession.

01:506:253. HISTORY OF TECHNOLOGY AND SOCIETY (3)
Impact of new production, transportation, communication, and consumer technologies on society from the industrial revolution (mid-1700s) to the present.

01:506:271. JEWISH SOCIETY AND CULTURE I: FROM ANTIQUITY TO MIDDLE AGES (3)
Credit not given for both this course and 01:563:201.
Social, economic, religious, and political experiences of the Jewish people from the Biblical world of the ancient Near East until the Middle Ages.

01:506:272. JEWISH SOCIETY AND CULTURE II: THE MODERN EXPERIENCE (3)
Credit not given for both this course and 01:563:202.
Jewish life from the breakdown of traditional society in Europe in the 1700s until the rise of the modern state of Israel in the twentieth century.

01:506:281,282. TOPICS IN HISTORY (1.5,1.5)
Seven-week courses; may be taken consecutively or separately. Not for major credit.
Topics vary. Specific titles available at time of registration.

01:506:291,292. TOPICS IN HISTORY (1.5,1.5)
Seven-week courses; may be taken consecutively or separately. Not for major credit.
Topics vary. Specific titles available at time of registration.

01:506:313. WOMEN AND SOCIAL MOVEMENTS TO 1945 (3)
Credit not given for both this course and 01:988:371.
In-depth analysis of different ways women have organized for change. Focus on three or four case studies using cross-cultural perspectives to illustrate various themes of gender and collective action by women.

01:506:314. WOMEN AND SOCIAL MOVEMENTS SINCE 1945 (3)
Credit not given for both this course and 01:988:372.
Twentieth-century autonomous women's movements, emphasizing the second wave of feminism from cross-cultural perspectives. Selected case studies to illustrate themes of gender and collective action.

01:506:321. DISEASE IN HISTORY (3)
Human disease on a global scale from the Paleolithic period to the present, with emphasis on infectious disease and diet.

01:506:328. ATLANTIC CULTURES 1500–1800 (3)
Credit not given for both this course and 01:350:328.
Encounters between peoples of Europe, Africa, and the Americas from the sixteenth through the eighteenth centuries. Team-taught, interdisciplinary course with an emphasis on the interpretation of texts and visual images from the era.

01:506:331. THE FAMILY IN HISTORY (3)
Political, social, economic, geographic, and cultural factors; historical transformations of major family types.

01:506:341. HISTORY OF CONTEMPORARY THOUGHT (3)
Ideas and ideologies in Europe and America since 1945. Movements such as Neo-Freudianism, the New Marxism, and structuralism. History of the modern consciousness.

01:506:356. ONLY YESTERDAY: THE WORLD OF THE 1980S (3)
Global history of the 1980s. Reagan revolutions; Gorbachev and the end of the cold war; China; crises in the Middle East.

01:506:361. HISTORY OF SOCIALISM AND COMMUNISM (3)
History of movements for socialism and communism, their diverse development on the world scene and impact on modern history.

01:506:363. IMPERIALISM (3)
Causes of colonial expansion by European powers, Russia, Japan, and the U.S.; the nature of colonial empires; the impact of imperialism on Africa and Asia.

01:506:364. COLONIALISM TO GLOBALISM (3)
Differences and similarities of the major European encounters with non-Europeans in modern history.

01:506:365. THE EMERGENCE OF THE THIRD WORLD (3)
Decolonization with emphasis on intellectual responses and political resistance to Western domination. Struggles to build viable postcolonial states and societies in Asia and Africa.

01:506:366. ASIA AND AFRICA IN THE POSTCOLONIAL ERA (3)
Focuses on the history of Sub-Saharan Africa, India, China, and the Islamic world since 1945. Emphasis of political, cultural, and social developments.

01:506:367. PROTEST AND REVOLUTION (3)
Violent and nonviolent forms of social protest in the industrial age, ranging from banditry to revolution and from passive resistance to guerilla warfare.

01:506:373. HISTORY OF JEWISH WOMEN (3)
Credit not given for both this course and 01:563:373 or 01:988:373.
Jewish women's history; examines the religious, social, intellectual, and cultural environments of Jewish women from the biblical period through the twentieth century.

01:506:375. JEWISH IMMIGRANT EXPERIENCE (3)
Credit not given for both this course and 01:563:375.
Modern Jewish immigrant experience, focusing on European and Middle Eastern communities resettled in America, Israel, and Europe.

01:506:391,392. HISTORICAL STUDIES (3,3)
Separate sections focusing on different topics at different times and in different areas. Specific titles available at time of registration.

01:506:393. ADVANCED TOPICS IN THE HISTORY OF WOMEN (3)
Credit not given for both this course and 01:988:393.
Advanced course on specialized topic in the history of women.

01:506:401,402. HISTORY SEMINAR (3,3)
Introduction to skills and techniques of historical research, including writing a research paper based on primary sources. Specific topics of sections available at time of registration.

01:506:405. HISTORY WORKSHOP (3)
Study of history as a discipline. Small-group discussion of historiographic questions and a paper on a selected topic.

01:506:411. GREAT HISTORIANS AND THE STUDY OF HISTORY (3)
Introduction to the history of historical writing designed to give the student a critical knowledge of the writings of major historians.

01:506:413. THE HISTORIAN AND THE COMPUTER (3)
Through research on a specific topic, development of the intellectual and methodological skills necessary for quantitative research in history and for compilation, computerization, and analysis of data.

01:506:415. ORAL HISTORY: TECHNIQUE AND FIELDWORK (3)
Problems, theories, methods of conducting field interviews, transcribing, editing, and analyzing oral sources. Students document New Jersey families; ethnic communities; labor, business, religious, and political groups.

01:506:424. READING AND WRITING ABOUT NATURE (3)
Prerequisite: Permission of instructor.
Exploration of political, philosophical, fictional, visual texts on relationship between humans and nature in Anglo-North America, late-sixteenth century to present.

01:506:451. PUBLIC HISTORY INTERNSHIP (3)
Open only to junior and senior history majors.
Professional, supervised work for historical society, site, archives, museum, legislative office, or equivalent; 112 hours required. Faculty coordinator evaluates student's paper / product and agency's assessment.

01:506:452. GENERAL HISTORY INTERNSHIP (3)
Open only to junior and senior history majors.
Professional, supervised work for historical society, site, archives, museum, legislative office, or equivalent; 112 hours required. Faculty coordinator evaluates student's paper / product and agency's assessment.

01:506:471,472. RESEARCH IN HISTORY (3,3)
Not open to honors candidates.
One term independent study projects.

01:506:473,474. READINGS IN HISTORY (3,3)
Independent readings under supervision of a member of the department.

01:506:489. PREGRADUATE COLLOQUIUM (3)
Prerequisite: Permission of department adviser prior to registration.
Critical reading of a number of historical masterpieces.

01:506:495-496. HONORS PROGRAM IN HISTORY (BA,BA)
Both terms must be completed to receive degree credit.
Focus on writing of a major research paper working with an individual professor. A seminar guides through stages of writing using short papers as the vehicle for the exploration; outlines, rough drafts, etc.

Courses (508)

01:508:200. ANCIENT NEAR EAST (3)
Credit not given for both this course and 01:563:200.
Origins and development of the societies of Mesopotamia, Egypt, Asia Minor, and Palestine, through the period of the Persian Empire.

01:508:204. ISLAMIC CIVILIZATION (3)
Credit not given for both this course and 01:014:205.
Survey of Islamic societies from seventh-century Arabia to modern times. Religious, political, military, social, economic, and cultural institutions and organizational patterns.

01:508:210. THE ARMENIAN EXPERIENCE IN WORLD HISTORY (3)
Examination of 3,000 years of Armenian history, detailing major developments affecting the formation of Armenian culture.

01:508:220. ANCIENT AFRICA (3)
Precolonial African societies and kingdoms: family life, cities, Islam, growth and decline of states, impact of the slave trade, African culture in the Americas.

01:508:222. MODERN AFRICA (3)
Nineteenth- and twentieth-century Africa: resistance and accommodation to colonialism, impact of Christianity, African workers and new elites, changing roles of women, nationalism, revolution.

01:508:240. CLASSICAL ASIA (3)
Introduction to the three great civilizations of Asia: India, China, and Japan. Emphasis on traditional family life, art, literature, and the spread of Buddhism.

01:508:242. MODERN EAST ASIA (3)
Development of China and Japan in the nineteenth and twentieth centuries: the response to Western imperialism; the rise of Chinese communism and Japanese fascism.

01:508:244. CHINA AND THE UNITED STATES (3)
History of contacts between the two peoples since 1784. Concentrates on period from 1941 to present. Includes all aspects of cultural, economic, and political relations.

01:508:260. COLONIAL LATIN AMERICA (3)
Study of formation of culture and society in Latin America through intermingling and merger of Native Americans, Iberians, and Africans.

01:508:262. MODERN LATIN AMERICA (3)
Introductory survey of Latin America from Columbus to Castro with major emphasis on the political history (authoritarian, populist, and revolutionary movements) of the nineteenth and twentieth centuries.

01:508:264. LATIN AMERICA AND THE UNITED STATES (3)
(Formerly 01:512:358)
Survey of the relations between the U.S. and Latin American nations from the 1780s to the present.

01:508:270. THE CARIBBEAN (3)
Credit not given for both this course and 01:836:229.
Introductory survey of Caribbean history emphasizing the common aspects (foreign intervention, slavery, primary export economies) of the culturally diversified countries of the area.

01:508:280. NATIVE AMERICAN HISTORY I (3)
Environmental, socioeconomic, and religious structures of the Incas, Mayas, Aztecs, and North American Indians.

01:508:291,292. TOPICS IN HISTORY (1.5,1.5)
Seven-week courses; may be taken consecutively or separately.
Not for major credit.
Topics vary. Specific titles available at time of registration.

01:508:300. THE ARAB-ISRAELI CONFLICT (3)
Credit not given for both this course and 01:563:300.
Evolution of the Arab-Israeli conflict over the past century. Emphasis on conflict's origins, dynamics, and complexities rather than on prescriptions for solution.

01:508:301. OTTOMAN EMPIRE (3)
Political, socioeconomic, and cultural history of the Ottoman Empire, 1300–1900, from frontier principality, to world empire, to post-suleymanic crisis and change.

01:508:302. THE CLASSICAL AGE OF ISLAM (3)
Rise and expansion of Islam and formation of Islamic civilization in the Middle East from 600 to the demise of the Abbasid Caliphate ca. 1250.

01:508:305. THE MODERN MIDDLE EAST (3)
Shaping of Middle Eastern politics and society since 1800 out of the Islamic / Ottoman legacies and under the impact of modernity and Western encroachment.

01:508:307. WOMEN AND SOCIETY IN THE ISLAMIC MIDDLE EAST (3)
Credit not given for both this course and 01:988:308.
History of women and gender relations in the Islamic Middle East: origins of gender inequalities, women's functioning within society, reality versus literary depictions, recent transformations.

01:508:310. ISRAELI CULTURE (3)
Credit not given for both this course and 01:563:310 or 01:685:310.
Formation of modern Israeli culture since the beginning of Zionist immigration to Palestine; its historical, social, literary, and artistic expressions.

01:508:316. ISRAELI WOMEN: HISTORICAL AND LITERARY PERSPECTIVES (3)
Credit not given for both this course and 01:563:316 or 01:988:316.
Impact of socialism, nationalism, ethnicity, religion, and feminism on Israeli women's roles within the family, labor force, army, kibbutz, and politics.

01:508:320. HISTORY OF SOUTHERN AFRICA (3)
Precolonial African societies and kingdoms, family life, religion, European colonialism, and African nationalist and revolutionary movements. Emphasis on South Africa, apartheid, and the freedom struggle.

01:508:322. WEST AFRICA (3)
Politics in past and present states, rise of new social and economic groups, various reactions to the West during precolonial and colonial eras.

01:508:324. AFRICANS IN THE AMERICAS (3)
Africans in the Americas. Latin America, the Anglophone and Francophone Caribbean, and the United States. Focus on the African background, slavery, and race relations.

01:508:340. LATE IMPERIAL CHINESE CULTURE AND SOCIETY (3)
Chinese history from the sixteenth to the nineteenth centuries. Focus on power, gender, and ethnicity in a comparative framework of analysis.

01:508:342. CHINA, 1800 TO THE PRESENT (3)
Continuity and change in Chinese society, politics, culture, international relations, and the economy. Industrialization, rural life, nationalism, socialism, the party-state, gender issues, democracy movements.

01:508:344. CHINA'S SOCIALIST REVOLUTION (3)
History of socialism and revolution in China, emphasizing rise of Chinese Communist Party, its victory in 1949, and post-1949 People's Republic of China.

01:508:346. WOMEN IN CHINESE HISTORY (3)
Credit not given for both this course and 01:988:348.
Dual focus: women and womanhood in history; Chinese history through women's eyes. From imperial times to present day.

01:508:350. TRADITIONAL JAPAN (3)
Survey of Japanese political and intellectual history from its mythological origins to the late feudal institutions of the 1700s.

01:508:352. JAPAN'S RISE TO WORLD POWER (3)
Japan's emergence from 1800 to present. The path to industrialization, military expansion, and postwar recovery. Emphasis on changing lifestyles depicted in literature and film.

01:508:360. THE HISTORY OF BRAZIL (3)
Social, economic, and political developments of the Colonial Period, the Independence Movement, the Empire, the First Republic, the era of Getulio Vargas, and the Second Republic.

01:508:362. MEXICO (3)
Surveys Mexican history from pre-Columbian times to the present with special emphasis on the twentieth century and the Mexican Revolution.

01:508:365. REVOLUTION IN LATIN AMERICA (3)
(Formerly 01:508:460)
Compares and contrasts the causes and effects of major revolutionary movements in twentieth-century Latin America: Mexico, Bolivia, Cuba, and Central America.

01:508:368. LATIN AMERICAN SOCIAL HISTORY (3)
(Formerly 01:508:462)
Credit not given both for this course and 01:836:462.
Impact of economic development, immigration, and urbanization on lower- and middle-class life in the nineteenth and twentieth centuries through literary and anthropological as well as historical sources.

01:508:369. GENDER IN LATIN AMERICAN HISTORY (3)
Study of the position of men and women in Latin American society from pre-European times to the present.

01:508:370. THE HISTORY OF CUBA (3)
Credit not given for both this course and 01:836:390.
Study of Cuba from pre-Columbian times to the present day. Deals with the long battle for freedom during the nineteenth and twentieth centuries.

01:508:371. HISTORY OF PUERTO RICO (3)
Credit not given for both this course and 01:836:371.
Examination from pre-Columbian to present times. Focus on Spanish colonial policy, slavery and land tenure systems, emergence of national identity, U.S. invasion and rapid economic changes, and population control and migration.

01:508:372. HISTORY OF THE DOMINICAN REPUBLIC (3)
Credit not given for both this course and 01:836:372.
From French invasion of Hispaniola to present. Role in Spanish Empire, U.S. control in transition to sugar economy, Trujillismo, U.S. invasion in 1965, and impact of migration on society.

01:508:374. COMPARATIVE SLAVERY IN THE CARIBBEAN (3)
Credit not given for both this course and 01:836:300.
Analysis of different institutions of slavery in the Caribbean and the rise of the plantation societies. Investigating the effects on Europe and the eastern hemisphere and its legacy.

01:508:380. NATIVE AMERICAN HISTORY II (3)
Confrontation and interaction of native and European civilizations from the conquest to the present.

01:508:391,392. HISTORICAL STUDIES (3,3)
Separate sections focusing on different topics at different times and in different areas. Specific titles available at time of registration.

01:508:420. AFRICAN LABOR HISTORY (3)
Credit not given for both this course and 01:014:367.
African labor history: precolonial labor mobilization, control and resistance; working-class formation; the labor process and worker consciousness.

01:508:422. AFRICAN CULTURAL HISTORY (3)
Changes in family life, sex roles, rural and urban communities, religion, education, and art and literature during the nineteenth and twentieth centuries. Primarily sub-Saharan Africa.

01:508:442. CHINA'S FOREIGN RELATIONS (3)
China's role in international affairs during the transition from the "unequal treaties system" to Soviet-bloc membership to participation in the international community.

01:508:450. SOCIETY AND CULTURE IN JAPAN (3)
Topical approach to traditional Japanese history. Focus on social institutions, the courtly and martial arts, and the endurance of traditional values in postindustrial Japan.

01:508:464. LATIN AMERICAN INTELLECTUAL HISTORY (3)
Latin American thought with discussion of changing intellectual trends within the context of the main currents of Latin American history.

01:508:466. SOCIOECONOMIC HISTORY OF LATIN AMERICA (3)
Credit not given for both this course and 01:836:399.
Analysis of the capitalist mode of production in Latin America. Class struggles and state structures in the historical formation of Latin American societies.

01:508:468. ISSUES IN AFRICAN-BRAZILIAN HISTORY (3)
Open to juniors and seniors only. Credit not given for both this course and 01:014:410 or 01:590:410.
Overview of history of largest African diaspora community in the world. Critical analysis of major issues in African-Atlantic diaspora studies. Selected readings in literature, oral history, African-Brazilian movement documents, and iconography.

Courses (510)

01:510:101. DEVELOPMENT OF EUROPE I (3)
Introductory survey of European history from ancient times to the early modern period. Introduction to historical interpretation and historical inquiry.

01:510:102. DEVELOPMENT OF EUROPE II (3)
Introductory survey of European history from the early modern period to the present. Introduction to historical interpretation and historical inquiry.

01:510:201. ANCIENT GREECE (3)
Civilization of the eastern Mediterranean world in ancient times, with emphasis on the origins of Western civilization and the Greek contribution to Western culture.

01:510:202. ANCIENT ROME (3)
The Roman Republic and the Empire, with emphasis on the rise and decline of a Mediterranean world civilization under Roman leadership.

01:510:205. BYZANTIUM: THE IMPERIAL AGE (3)
Development of the medieval Greek state and its civilization, seventh through thirteenth centuries. Key themes of history and culture (political theory, theology, literature, art). Relations with the Slavs, Arabs, Turks, and the West.

01:510:207. BYZANTIUM: THE LAST CENTURIES (3)
Development of Byzantine society and culture from the Latin crisis (1204–1261) through the Turkish conquest (1453), including the Byzantine impact on West European, Slavic, and Ottoman cultures.

01:510:209. EMERGENCE OF MEDIEVAL EUROPE, 400–1150 (3)
Credit not given for both this course and 01:667:281.
Europe from the fall of Rome through the Dark Ages and into the feudal age—the era of Charlemagne, the Vikings, and the Crusades.

01:510:211. HARVEST OF THE MIDDLE AGES, 1150–1520 (3)
Credit not given for both this course and 01:667:282.
From feudalism to the Protestant Reformation, with emphasis on social and economic developments. Religious, political, institutional, and cultural changes.

01:510:213. THE CRUSADES (3)
Ideology of the crusades, eleventh to sixteenth centuries; experience of crusaders as colonists; and impact of crusades on European society, culture, and thought.

01:510:214. EUROPEAN INTELLECTUAL TRADITION (3)
Examination of great texts in European intellectual tradition from the Old Testament to Dante's Divine Comedy.

01:510:245. THE ARTS OF POWER: RITUAL, MYTH, AND PROPAGANDA (3)
Investigates how paintings, movies, poems, and ceremonies have been manipulated to bolster the political authority of rulers, including Louis XIV, Lincoln, Hitler, and Elizabeth II.

01:510:253. HISTORY OF WITCHCRAFT AND MAGIC (3)
Credit not given for both this course and 01:988:253.
Witchcraft in relation to the history of religion, the phenomena of crime, deviance, and demographic change, and the history of women in Europe and America.

01:510:261. HISTORY OF THE HOLOCAUST (3)
Credit not given for both this course and 01:563:261.
Development of anti-Semitism in modern European history culminating in the "Final Solution"; special emphasis on Jewish responses and resistance.

01:510:271. RUSSIA AND THE WEST (3)
Formation of traditional Russian society in isolation from the West; the impact of the West on Russia from Peter the Great to the present.

01:510:291,292. TOPICS IN HISTORY (1.5,1.5)
Seven-week courses; may be taken consecutively or separately.
Not for major credit.
Topics vary. Specific titles available at time of registration.

01:510:301. EARLY GREECE (3)
History of the Greek world from Minoan Crete through the Persian War. Readings (in translation) range from Homer through Herodotus.

01:510:302. CLASSICAL GREECE (3)
Greek history from the Persian War to the Macedonian conquest of Greece. Readings (in translation) from Thucydides, Xenophon, Demosthenes, Plutarch, and others.

01:510:303. HELLENISTIC WORLD (3)
Expansion and development of Greek culture from Alexander through the successor kingdoms in Greece, Egypt, Syria-Palestine, and Asia Minor.

01:510:304. ROMAN REPUBLIC (3)
Political and social development of the Roman Republic to the Augustan period with emphasis on the first century B.C.

01:510:306. ROMAN EMPIRE (3)
Political, social, and intellectual developments of the imperial period until the age of Constantine, with emphasis on the first two centuries A.D.

01:510:307. THE ROMAN WORLD IN LATE ANTIQUITY (3)
Development of the Roman state and society from the late third through early seventh centuries. The transformation of the late classical world, and the origins of Byzantium and the medieval West.

01:510:308. ANCIENT CULTURAL AND INTELLECTUAL HISTORY (3)
Aspects of cultural, religious, and intellectual developments in the classical world.

01:510:309. A HISTORY OF WESTERN MORALS: ANTIQUITY AND MIDDLE AGES (3)
Examines the formative period of moral ideas in Western civilization in ancient Greek, Roman, and Hebrew societies, then traces the evolution of those ideas through the Middle Ages.

01:510:313. RENAISSANCE IN THE MIDDLE AGES (3)
Transmission and appropriation of classical culture in the patristic age; Irish, Carolingian, twelfth-century, and early Italian Renaissance; social and political bases of these movements.

01:510:315. REFORM AND DISSENT IN THE MIDDLE AGES (3)
Christian unity and its implementation, church structure, canon law, monastic reform, conciliar movement, academic and popular heresy, church-state relations, with emphasis on Italy and Germany.

01:510:317. THE RENAISSANCE (3)
Integrated, interdisciplinary study of the age of the Renaissance in Italy and northern Europe from 1300 to 1550.

01:510:318. ERA OF WORLD WAR I (3)
(Formerly 01:510:417)
Causes, course, and consequences of World War I in the light of political, social, and military forces.

01:510:319. THE AGE OF REFORMATION, 1500–1648 (3)
The Protestant and Catholic reformations and their significance for European society.

01:510:320. WOMEN IN ANTIQUITY (3)
Credit not given for both this course and 01:190:320.
Women in the ancient societies of Greece and Rome. Their roles and images in the social, legal, political, domestic, philosophical, and artistic spheres examined using primary sources.

01:510:321. THE AGE OF ENLIGHTENMENT (3)
Eighteenth-century European philosophy and philosophers examined within their historical contexts. The role of ideas in movements for social, moral, and political change.

01:510:323. AGE OF ABSOLUTISM AND REVOLUTION, 1648–1815 (3)
Survey of principal developments in Europe from 1648–1815; consolidation of sovereign states; critiques of absolutism and growth of parliamentary power; revolutionary crisis; commercial transformation; the impact of enlightenment.

01:510:325. NINETEENTH-CENTURY EUROPE (3)
Examination of the formative period of modern Europe, including the industrial and democratic revolutions, nationalism, imperialism, and the crises culminating in World War I.

01:510:327. TWENTIETH-CENTURY EUROPE (3)
Major economic and social forces shaping life in twentieth-century Europe, and efforts of major social groups to cope with and shape these forces.

01:510:331. FRANCE 100–1000 (3)
Interaction between Greco-Roman civilization and "barbarians''—Germanic peoples, Vikings, Slavs, Magyars, Saracens—with respect to institutions, law, language, customs, art, intellectual activity.

01:510:333. FRANCE, OLD REGIME, AND REVOLUTION (3)
French history from Louis XIV to the fall of Napoleon. The absolutist state and the impact of revolution, stressing the interplay of political, social, cultural, and economic history.

01:510:335. MODERN FRANCE (3)
History of France from the fall of Napoleon to the present, with particular emphasis on the relation of political developments to social, intellectual, and economic change.

01:510:337. MEDIEVAL KINGS AND QUEENS (3)
Rulership in theory and practice, from Germanic chieftains to divine-right monarchs, with attention to royal rivals, myths and rituals, marriage, and gender.

01:510:338. ENGLAND IN THE MIDDLE AGES (3)
Political development of England from William the Conqueror to the War of the Roses.

01:510:343. THE POLITICAL HISTORY OF ENGLAND, 1485–1789: CENTURIES OF REVOLUTION? (3)
Explores the political, religious, and intellectual history of early modern England. Topics include: the reformation, the state, political culture, revolutions of the seventeenth century.

01:510:344. THE SOCIAL HISTORY OF ENGLAND, 1580–1780: THE FIRST MODERN SOCIETY? (3)
Explores the socioeconomic and cultural history of early modern England. Topics include: popular culture; religion; sex and gender; urbanization; rise of consumerism, industrialism, capitalism.

01:510:345. ENGLISH CONSTITUTIONAL HISTORY TO 1688 (3)
Developments of English governments to 1688, with emphasis on those institutions and political and legal ideas that form the background for American constitutional development.

01:510:346. THE ENGLISH REVOLUTION, 1640–1660 (3)
Explores the most tumultuous period in English history. Topics include: causes and revolution, the civil war, regicide and republicanism, radical politics and religion, Oliver Cromwell.

01:510:349. MODERN BRITAIN (3)
Developments since the eighteenth century that have shaped the character of contemporary Britain, including parliamentary democracy, industrialization, rise and fall of empire, and cultural change.

01:510:351. MEDIEVAL ITALY 476–1300 (3)
The Italian peninsula from the fall of the empire in the west to the age of the communes: social, political, and religious history.

01:510:354. HISTORY OF ITALY'S PEOPLE (3)
Topical approach. Etruscans to present. Emphasis on culture, geography, religion, philosophy, family structures, agricultural systems, urban development, and universities.

01:510:355. NATIONALISM AND FASCISM IN ITALY (3)
Nineteenth- and twentieth-century Italy. Emphasizes economic, political, and social-cultural changes.

01:510:361. HISTORY OF GERMANY TO 1914 (3)
History of Germany from the Reformation to World War I, emphasizing absolutism, militarism, unification, the rise of nationalism, and anti-Semitism.

01:510:363. HISTORY OF GERMANY SINCE 1914 (3)
Analysis of the collapse of imperial Germany, the failure of democracy in the Weimar Republic, Hitler's Third Reich, the Holocaust, and restructuring of Germany since 1945.

01:510:371. RUSSIA FROM THE VIKINGS TO PETER THE GREAT (3)
Slavic, Scandinavian, Byzantine, and Mongol contributions to traditional Russian culture; development of the autocratic state and its relations with the church, nobility, townspeople, and peasantry.

01:510:373. STATE AND SOCIETY IN IMPERIAL RUSSIA (3)
Autocratic government as a dynamic force in the eighteenth century and a conservative one in the nineteenth in the face of intellectual and socioeconomic development.

01:510:375. REVOLUTIONARY RUSSIA AND THE SOVIET UNION (3)
Crisis of the old regime; revolution; building socialism in an underdeveloped country; Stalin's terror; expansion and the cold war; the post-Stalin attempts at reform; the breakup of the Soviet Union.

01:510:381. THE MAKING OF MODERN EASTERN EUROPE (3)
Historical background and development of nationalist movements and independent states among Poles, Czechs, Slovaks, Hungarians, Croats, Serbs, Romanians, Albanians, and Greeks to 1919.

01:510:382. GENESIS OF MODERN GREECE: 1450–1830 (3)
Political, social, religious, cultural, and intellectual experiences of Greeks under Ottoman rule, 1450–1830, culminating in national independence.

01:510:383. NATIONALISM AND SOCIALISM IN EASTERN EUROPE (3)
Creation of nation-states after World War I. The problems of underdevelopment, national minorities, and international tensions. The solutions offered by nationalist, fascist, and communist regimes. The formation, experiences, and breakup of the Soviet Bloc.

01:510:385. THE HISTORY OF EAST EUROPEAN JEWRY (3)
Credit not given for both this course and 01:563:385.
Economic, legal, and political conditions of Jewish life from the sixteenth century to World War II. Forms of Jewish response: autonomism, messianism, Hasidism, emigration, and socialism.

01:510:386. HISTORY OF ZIONISM (3)
Credit not given for both this course and 01:563:343.
Messianism, forerunners of Zionism; ideology of Zionism; pioneer movements; the Yishuv and its institutions. The state of Israel: its structure and inner and outer life.

01:510:387. DEVELOPMENT OF THE MARXIST-LENINIST SYSTEM (3)
Ideological background of Marxist-Leninist systems; evolution of Soviet system from Lenin to Gorbachev; disintegration of Soviet system since Gorbachev. Establishment of Marxist-Leninist systems in Eastern Europe and their evolution from Stalin to Brezhnev and dissolution under Gorbachev; special attention to Yugoslav dissidence under Tito; origins and evolution of Chinese Marxist-Leninist system after 1949, including Great Cultural Revolution and reforms under Deng Xiao-Ping; origin and development of Cuban Marxist-Leninist system.

01:510:390. JEWISH MEMORY (3)
Credit not given for both this course and 01:563:390.
Course explores various forms of Jewish memory shaped in response to major events, including myths, holidays, monuments, pilgrimages, testimonies, museums, literature, and film.

01:510:391,392. HISTORICAL STUDIES (3,3)
Separate sections focusing on different topics at different times and in different areas. Specific titles available at time of registration.

01:510:403. ANCIENT WARFARE AND DIPLOMACY (3)
International politics and military history in the Greek and Roman world. Readings include ancient sources (in translation) and modern interpretations.

01:510:407. ROME IN THE AGE OF AUGUSTUS (3)
Examination of the career of Augustus and the developments in the Roman world during this period. Treatment of the problems of change and continuity through revival and innovation in political, social, and intellectual spheres with emphases on growth of imperial system and on the literary works and social legislation.

01:510:409. THE CRUSADES AND THE HOLY LAND (3)
The crusading movement—eleventh through thirteenth centuries, focusing on the migration of Europeans to the Holy Land and their interaction with eastern Mediterranean peoples there.

01:510:419. EUROPE IN THE CONTEMPORARY WORLD (3)
Europe from 1930s to present, focusing on European responses to challenges of American power, Soviet revolution, and anticolonial movements.

01:510:421. HISTORY OF THE LEGAL PROFESSION (3)
Professionalization of legal training and practice; establishment of law schools; classic cases illustrative of changing roles of lawyers, judges, and lay people in trial law.

01:510:425. INTELLECTUAL HISTORY OF EARLY MODERN EUROPE (3)
Study of major currents of thought (religious, scientific, political, and social) from the end of the Middle Ages to the eighteenth century.

01:510:427. INTELLECTUAL HISTORY OF MODERN EUROPE (3)
Study of major currents of thought (religious, political, social, and economic) from the eighteenth century to World War II.

01:510:431. ORIGINS OF CAPITALIST SOCIETY (3)
History of the origins and developments of life and consciousness characteristic of capitalist societies since the beginnings of the industrial age.

01:510:441. THE SOCIAL HISTORY OF MEDIEVAL ENGLAND (3)
Concentrates on the interaction between individual and society in medieval England with special emphasis on the life experiences of the common people.

01:510:445. THE INDUSTRIAL REVOLUTION (3)
Origins and consequences of the industrial revolution in modern Europe. The effect of industry on the fabric of society.

Courses (512)

01:512:103. DEVELOPMENT OF THE UNITED STATES I (3)
Political, economic, and social history of the U.S. from colonial times to the Civil War.

01:512:104. DEVELOPMENT OF THE UNITED STATES II (3)
Political, economic, and social history of the U.S. from the Civil War to the present.

01:512:107. GATEWAY TO DEVELOPMENT OF THE UNITED STATES I (4)
Registration through college dean.
United States history to 1877, with weekly recitation section.

01:512:108. GATEWAY TO DEVELOPMENT OF THE UNITED STATES II (4)
Registration through college dean.
United States history since 1877, with weekly recitation section.

01:512:121. HEALTH AND ENVIRONMENT IN AMERICA (3)
Changing manner in which Americans perceived and responded to health-related problems involving both the individual and the physical and social environment from the seventeenth to the twentieth century.

01:512:140. INTRODUCTION TO AMERICAN CULTURES (1.5)
Credit not given for both this course and 01:014:140. Credit may not be used to satisfy major or minor requirements.
Historical, social, and political factors that distinguish the diverse cultures that comprise America today.

01:512:202. CRIME AND PUNISHMENT IN AMERICA: 1607 TO THE PRESENT (3)
Changing definitions of criminal deviance; perspectives of victim, accused, and enforcers; theory of punishment; social banditry, frontier and urban crime, reform movements, and vigilantism.

01:512:220. YOUR FAMILY IN HISTORY (3)
American history from the perspective of a student's own family or ethnic group. Impact of social, cultural, economic, and religious changes on the family.

01:512:236. EDISON AND HIS ERA (3)
Work of Thomas Edison as a vehicle for understanding the transformation of the American economy and culture from 1880–1930.

01:512:240. WORLD WAR I (3)
Study of the causes, course, and consequences of World War I, with particular emphasis on American culture and foreign policy within Western civilization.

01:512:242. WORLD WAR II (3)
Study of the causes, course, and aftermath of World War II, with particular emphasis on the place of American culture and foreign policy within world politics.

01:512:266. HISTORY OF THE BLACK AMERICAN (3)
Survey of the history of the Black American from the colonial era to the present. Includes such topics as slavery, the Reconstruction Era, the Washington-DuBois controversy, the Harlem Renaissance, and the Civil Rights movements.

01:512:278. POPULAR MUSIC IN AMERICAN HISTORY (3)
Popular music examined within the broader social and cultural context of America's past. Significant historical changes in musical expression.

01:512:282. SPORT IN HISTORY (3)
Role of sport in ancient and preindustrial societies; modernization of sport following the industrial revolution; social functions and aesthetics of sport; women in sport; sport in contemporary society.

01:512:291,292. TOPICS IN HISTORY (1.5,1.5)
Seven-week courses; may be taken consecutively or separately. Not for major credit.
Topics vary. Specific titles available at time of registration.

01:512:300. HISTORY OF COLONIAL AMERICA (3)
From the Age of Discovery through the American Revolution, with particular emphasis on political, economic, and social history.

01:512:301. THE AMERICAN REVOLUTION (3)
Coming of the American Revolution seen in its world setting; various interpretations of the causes; ideological, constitutional, social, economic, political, diplomatic, and military perspectives.

01:512:302. THE UNITED STATES: THE YOUNG REPUBLIC (3)
Examination of the principal political, economic, and social forces that were responsible for the development of the new nation.

01:512:303. AMERICAN CIVIL WAR AND RECONSTRUCTION, 1848–1880 (3)
Analysis of major forces 1848 to 1880. Emphasis on the more immediate background to the war; how the war began; how it was fought; why Reconstruction developed and collapsed.

01:512:304. THE FORGING OF MODERN AMERICA, 1880–1920 (3)
Political reform movements against the background of industrial development, urbanization, and immigration in the U.S. from 1880 to 1920.

01:512:305. UNITED STATES HISTORY, 1914–1945 (3)
U.S. history from World War I through World War II, emphasizing major themes in U.S. politics, society, culture, and diplomacy.

01:512:306. UNITED STATES HISTORY, 1945 TO THE PRESENT (3)
U.S. history emphasizing the cold war, McCarthyism, and the major political, social, and economic trends of the 1960s and the 1970s.

01:512:310. HISTORY OF AMERICAN POLITICS (3)
Conduct of politics in the U.S., including the origin and development of political parties, characteristic forms of political behavior, and relationship of parties to democratic government.

01:512:312. AMERICAN SOCIAL HISTORY (3)
Patterns of family and community organization and experience; the effects of mobility and population growth; the development of social structure from the colonial period to the present.

01:512:314. THE CITY IN AMERICAN HISTORY (3)
Urbanization from the colonial city to the twentieth-century metropolis; urban population, institutions, problems, and planning; urbanism in American culture.

01:512:315. FAMOUS TRIALS IN MODERN AMERICA (3)
Civil liberties and civil rights trials in twentieth-century America: Abrams, Sacco and Vanzetti, Scopes, Scottsboro, Leopold and Loeb, Rosenbergs, Hiss, Roe v. Wade.

01:512:316. RADICALISM IN AMERICA (3)
Ideas of the outstanding radicals in American history (eighteenth century to the present), the areas of discontent, and an analysis of the response of the American community.

01:512:320. AMERICAN FRONTIER HISTORY (3)
Mythology, theory, and reality of the frontier in American social, cultural, and environmental development from discovery to the present.

01:512:323,324. HISTORY OF THE NORTH AMERICAN ENVIRONMENT (3,3)
Comparative study of the interplay of culture, society, and environment in Canadian, U.S., and Mexican history.

01:512:326. TECHNOLOGY AND SOCIETY IN AMERICA (3)
History of the relationship of technology to American industry and the impact of changing production technology on workers. Influence of new technologies on social, economic, and political structure.

01:512:328. SCIENCE IN AMERICAN CULTURE (3)
Place of science in U.S. history. Science and exploration, war, the economy, and social problems; growth of research and educational institutions; popular science and antiscience.

01:512:330. AMERICAN ECONOMIC GROWTH TO 1860 (3)
Main currents and major factors in American economic growth, welfare, and decision making to the 1860s. Critical evaluation and interpretation of economic issues.

01:512:332. AMERICAN ECONOMIC GROWTH SINCE 1860 (3)
Main currents and major factors in American economic growth, welfare, and decision making, 1860 to the present. Critical evaluation and interpretation of economic issues.

01:512:335. HISTORY ON FILM (3)
Examination of films that interpret the American past and engage major historical issues.

01:512:345. AMERICAN JEWISH HISTORY AND CULTURE (3)
Credit not given for both this course and 01:563:345.
History of the Jews in the New World, beginning in the middle of the seventeenth century, and then focusing on the United States, until the present.

01:512:347. WAR, PEACE, AND THE MILITARY OF THE U.S. TO 1877 (3)
Survey of American attitudes toward and developments in regard to war, peace, and the military from colonial times through the Civil War and the end of Reconstruction.

01:512:348. WAR, PEACE, AND THE MILITARY OF THE U.S. SINCE 1877 (3)
Survey of American attitudes toward and developments in regard to war, peace, and the military from modernization of the army and navy beginning in the late nineteenth century through the Spanish-American War, two world wars, the Korean and Vietnam wars, to the present military situation.

01:512:350. FROM COLONIES TO EMPIRE: AMERICAN FOREIGN RELATIONS TO 1898 (3)
American foreign relations from the colonists' conflicts with Native Americans to the Spanish-American War. Territorial expansion, diplomatic principles, economic expansion, rise of the "New Empire."

01:512:352. AMERICAN FOREIGN POLICY SINCE 1898 (3)
American foreign relations from the Spanish-American War to the end of the Cold War. Imperialism, Wilsonian interventionism, World War II, Cold War, detente.

01:512:354. HISTORY OF THE COLD WAR (3)
Soviet-American relations since World War I; global conflict in the post-World War II period; the ideological context in the underdeveloped world.

01:512:355. AMERICA'S RISE TO GLOBAL POWER (3)
Technology as the key source of U.S. identity and projection of power and culture overseas. Focus on the interaction of U.S. and Asian and African societies.

01:512:356. THE THIRTY YEARS' WAR: AMERICA IN VIETNAM (3)
Examination of the causes and effects of the war in Vietnam with special emphasis on the U.S. and its role.

01:512:359. BLACKS AND JEWS IN AMERICAN HISTORY (3)
Credit not given for both this course and 01:014:359 or 01:563:359.
Explores the history of blacks and Jews in America with an eye on three centuries of cooperation and conflict.

01:512:361. HISTORY OF THE SOUTH (3)
Development of southern society from the settlements of Virginia to the present. Aspects of life in the South that distinguish this region from others in the U.S.

01:512:364. HISTORY OF BLACKS IN URBAN AMERICA (3)
Explores aspects of black urban life from the early years of the nation to the present. Migration. Examination of contemporary black urban America.

01:512:366. HISTORY OF RACE AND SEX IN AMERICA (3)
Credit not given for both this course and 01:014:366.
Examines how race and gender have independently and jointly determined life chances throughout American history.

01:512:367. LYNCHING, RIOTS: RACIAL VIOLENCE BETWEEN BLACKS AND WHITES 1619 TO THE PRESENT (3)
Racial violence and black history in the United States from the colonial era to the present. Slave rebellion, race relations, and both white and black attitudes concerning racial violence.

01:512:368. HISTORY OF CIVIL RIGHTS: 1900–1980 (3)
Politico-economic, demographic, cultural, and legal forces generating and shaping the struggle for racial justice in the U.S. from the beginning of the twentieth century.

01:512:370. HISTORY OF AMERICAN THOUGHT TO 1850 (3)
Principal ideas about humanity, God, nature, and society in American history from Puritan America to 1850.

01:512:372. HISTORY OF AMERICAN THOUGHT SINCE 1850 (3)
Principal ideas about humanity, God, nature, and society in American history from 1850 to present.

01:512:374. CULTURAL HISTORY OF THE UNITED STATES: TWENTIETH CENTURY (3)
Nature of American culture by study of folk, popular, and elite cultural products, verbal and nonverbal, in a world of mass production and consumption.

01:512:376. AMERICAN CULTURE IN THE 1950S (3)
Survey of major cultural and political developments of the 1950s. Growth of advertising, consumerism, television, popular music, the "Ike Age," McCarthy; perceptions of race, sex.

01:512:377. THE 1960S (3)
Examines the political culture of the 1960s, centering on conflicts between the forces of order, consensus, and containment, and the social forces of protest, resistance, and liberation.

01:512:378. AFRICAN-AMERICAN HISTORY TO 1877 (3)
African-American history from Africa and the slave trade through Reconstruction.

01:512:379. AFRICAN-AMERICAN HISTORY, 1877 TO PRESENT (3)
African-American history from defeat of Reconstruction to present.

01:512:380. WOMEN IN AMERICAN HISTORY I (3)
Credit not given for both this course and 01:988:380.
Changing status of women from settlement to Reconstruction, including the study of work, family, religion, sexuality, organizations, and feminism.

01:512:381. WOMEN IN AMERICAN HISTORY II (3)
Changing status of women from Reconstruction to the present, including the study of work, family, religion, sexuality, organizations, and feminism.

01:512:391,392. HISTORICAL STUDIES (3,3)
Separate sections focusing on different topics at different times and in different areas. Specific titles available at time of registration.

01:512:395. THE ELECTRIC CENTURY (3)
Shaping of American social and cultural life in the twentieth century by electrical, electronic, communications, and computer technologies.

01:512:400. HISTORY OF AMERICAN POLITICS (3)
Conduct of politics in the U.S., including the origin and development of political parties, characteristic forms of political behavior, and relationship of parties to democratic government.

01:512:402. AMERICAN CONSTITUTIONAL HISTORY (3)
Study of the role constitutional interpretation has played in American history. Special emphasis on Supreme Court decisions. The Constitution examined in historical context.

01:512:404. THE SUPREME COURT IN AMERICAN HISTORY (3)
Overview of the Court's role in American history.

01:512:406. INTRODUCTION TO AMERICAN LEGAL HISTORY (3)
Origin, function, and development of the law in Western civilization, particularly in the U.S.

01:512:410. NEW JERSEY HISTORY (3)
New Jersey from its proprietorial beginnings to the present. Emphasis on those factors that have been most influential in determining the character of the state today.

01:512:416. ETHNICITY IN AMERICAN HISTORY (3)
Immigration and ethnicity from colonial times to the present: the migration process, adjustment, cultural persistence, and the changing meaning and manifestations of ethnicity in American society. The rise of the political machine, political reform, ethnic politics, social class and local politics, and changes in governmental structure.

01:512:432. HISTORY OF BUSINESS IN AMERICA (3)
Historical view of the growth and change of business institutions in the U.S. from the colonial era to the present.

01:512:434. INDUSTRIALIZATION AND THE AMERICAN WORKER (3)
Impact of industrialization on the work force of the U.S. Economic pressures, technological developments, and ethnic subcultures as related to the social history of the working class.

01:512:438. ORAL HISTORY FIELDWORK (3)
Problems, theories, methods of conducting field interviews, transcribing, editing, and analyzing oral sources. Students document New Jersey families; ethnic communities; labor, business, religious, and political groups.

HISTORY/FRENCH JOINT MAJOR 513

The joint major is an integrated program consisting of 45 credits of interdisciplinary study in the history, literature, culture, and language of France and French-speaking regions. The program is administered jointly by the history and French departments, and students should obtain advising and program approval from the undergraduate director in either department.

Major Requirements

The required 45 credits are distributed as follows:

1. 18 credits in courses offered by the Department of History:
   - 6 credits in French history (01:510:331, 333, 335, or others by approval)
   - 12 credits in either French history or related subjects, including non-European Francophone cultures. (Related courses in history include 01:510:101, 102, 321, 323, 325, 327, 343, 363, 407, 427, 445; 01:508:322, 422. Other courses may be added with approval of an adviser.)
2. 24 credits in courses offered by the Department of French:
   - 9 credits of French language courses. A student may count only one of 01:420:131, 132, 210, and may not count 01:420:101, 102, 105, or 121.
   - 6 credits as follows: 01:420:215 (or 217) and 216 (or 218). (These courses have a prerequisite of 200-level placement or successful completion of 01:420:132.)
   - 9 credits on the 300 and 400 levels, at least 3 of which must be on the 400 level.
3. 3 credits from a senior seminar jointly offered by history and French (taught in English, with supplemental materials in French).

With appropriate written approval, a student may count toward the major one college or Faculty of Arts and Sciences honors seminar on an appropriate history / French topic, or one course given outside the history and French departments on a topic directly related to history / French. (For example, 01:082:351, "Art in France," or a seminar on "Paris / Tokyo—1700 to present.")

Of the required eight upper-level courses, at least four must be taken with New Brunswick faculty.

Honors Program

History / French majors with a cumulative grade-point average of 3.0, and a grade-point average of 3.4 in history and French courses, are encouraged to choose and carry out an independent project of advanced study on a topic that interests them, for 6 credits, of which 3 count toward the major. Interested juniors may obtain further information from the departments and should consult an adviser.

Secondary Teaching Certificate

A secondary teaching certificate is available to students who complete the major and a fifth year in the teaching education department. Consult the Office of Teacher Education, Graduate School of Education, no later than the start of the junior year.

Study Abroad

History / French majors are urged to increase their knowledge of French through study abroad. Students who have completed French 01:420:213, 215, and 216 are eligible for study in Rutgers' program in Tours as sophomores or juniors. The French department offers courses from the 131 to 400 level through its seven-week summer program in Paris.

Eligibility for Departmental Activities

Program majors are eligible to compete for nomination by the French department as "assistant d'anglais" (subsidized program to teach English in French schools for a year), to live in the French House at Douglass or the French floor on the College Avenue campus, and for membership in the Phi Sigma Iota honorary society. A variety of special programs, opportunities, and events also are available through the history department, which will provide information at its offices.

Information may be found at the history department's web site, http://history.rutgers.edu, or at the French department's web site, http://french.rutgers.edu.

HISTORY/POLITICAL SCIENCE JOINT MAJOR 514

Major Requirements

The joint major is an integrated program consisting of 45 credits from the combined disciplines and not less than 21 credits from each. At least 27 of the 45 credits must be at the 300 level or above. In political science, at least 12 of the credits must be at the 300 to 400 level. The student must take one term of History Seminar (01:506:401 or 402), or Research in History (01:506:471 or 472), or Honors in History (01:506:495 and 496) in the senior year. All courses must be completed with a grade of C or better.

The history component of the joint major requires the following:

1. At least one course in each of the following three areas:
   - Global, African, Asian, Latin American, or Native American history (01:506:110-114 and all subject 508 courses)
   - European history (510)
   - United States history (512)
2. At least one course in the history of a premodern civilization.
3. Three courses must be at the 300 and / or 400 levels.

Each student's program in the joint major must be approved by an adviser in the history department.

HUNGARIAN 535

(See also Russian, Central and East European Studies 861)

Department of Germanic, Russian, and East European Languages and Literatures, Faculty of Arts and Sciences

Web site: http://seell.rutgers.edu

Minor Requirements

A minor in Hungarian consists of six courses of 3 or more credits each beyond 01:535:102 or 121. Required courses are 01:535:201, 202 (unless placed at a higher level through proficiency examination), and 259. Additionally, at least three courses at the 300 level or above must be completed successfully.

For additional information, visit the department's web site.

Certificate of Proficiency in Hungarian

The department awards a certificate of proficiency upon the awarding of a baccalaureate degree to students who can demonstrate an ability to comprehend, speak, read, and write Hungarian as attested by grades of B or better in 6 credits of work completed in courses conducted in Hungarian at or above the 300 level.

Courses in English

01:535:259. HUNGARIAN LITERATURE AND CIVILIZATION (3)
Survey of the history of Hungarian literature and culture, including the fine arts.

01:535:260. HUNGARIAN CULTURE TODAY (3)
Survey of contemporary cultural, social, and political life in Hungary with emphasis on developments after World War II and the Revolution of 1956.

01:535:360. SPECIAL TOPICS IN HUNGARIAN STUDIES (3)
Credit not given for both this course and 01:861:360. No knowledge of Hungarian necessary. Content varies from term to term.
With permission of program director, course can be taken repeatedly if content is different.

01:535:460. ADVANCED TOPICS IN HUNGARIAN STUDIES (3)
Credit not given for both this course and 01:861:460. No knowledge of Hungarian necessary. Content varies from term to term.
With permission of program director, course can be taken repeatedly if content is different.

Courses in Hungarian

Introductory Courses

Beginners, or students with less than two years of Hungarian in secondary school, normally take 01:535:101,102. Students who have had two or more years of Hungarian in secondary school normally take 01:535:201,202. Students from homes in which Hungarian is spoken but who have not had academic training in the language normally take 01:535:121 before taking 01:535:201,202. Native speakers of Hungarian with academic training in the language must receive departmental permission before enrolling in any course.

01:535:101,102. ELEMENTARY HUNGARIAN (4,4)
Basic course emphasizing the four basic skills of listening, speaking, reading, and writing.

01:535:121. INTENSIVE ELEMENTARY HUNGARIAN (4)
Intensive review of grammar, reading, writing, and vocabulary building together with development of communicative skills.

01:535:201,202. INTERMEDIATE HUNGARIAN (4,4)
Prerequisite: 01:535:102 or 121 or equivalent.
Continued development of language skills in Hungarian.

01:535:301. CONVERSATION (3)
Prerequisite: 01:535:202 or equivalent.
Designed to develop fluency in spoken Hungarian. Emphasis on listening, speaking, and interpretation skills.

01:535:305. HUNGARIAN LANGUAGE LAB (1)
Pre- or corequisite: 01:535:259 or 301.
Instructor-guided laboratory practicum based on intensive use of media and designed for the improvement of aural / oral skills. Practice involves the use of text-related and other audio and video material, individual and group work, and recording of student speech for evaluation of pronunciation and fluency.

01:535:321. POETRY (3)
Prerequisite: 01:535:202 or equivalent.
Readings in the history of Hungarian literature. Emphasis on selected poets who led to the development of Hungarian literary consciousness.

01:535:355. TRANSLATION (3)
Prerequisite: 01:535:202 or equivalent.
Translation of advanced-level texts from Hungarian into English. Vocabulary building, linguistic and stylistic problems, contrastive analysis with texts selected from various genres, including the media.

01:535:490. SEMINAR (3)
Prerequisite: Permission of instructor.
Specific problems of Hungarian literature and language. Content varies from term to term. Paper required.

01:535:493,494. INDEPENDENT STUDY (3,3)
Prerequisites: Permission of department and instructor.
Independent reading under supervision of a member of the department.

INDIVIDUALIZED MAJOR

Faculty of Arts and Sciences

Students who wish to pursue individualized majors in the liberal arts and sciences other than those regularly available through the Faculty of Arts and Sciences (FAS) may make application in writing to Dr. Godfrey Roberts, associate dean for undergraduate education. To be considered for approval, applications must include a statement describing the student's educational objectives, a proposed program of courses, and the signatures of three faculty sponsors from at least two different departments. Two of the three faculty sponsors must be members of FAS, and one must agree to serve as major adviser.

An individualized major must consist of at least 36 credits; ordinarily, at least two-thirds of these credits must be taken in FAS courses; three-quarters must be at the 300 level or above; and at least one course must be taken as an independent study in the senior year under the direction of the faculty adviser, for the purpose of integrating the work comprising the major.

Students proposing individualized majors should notify the college dean of that intention and obtain the signature of the college dean on the proposal as verification of notification.

Application forms for the individualized major can be obtained in the offices of the college deans.

Note: Satisfactory completion of this major leads to a Bachelor of Arts degree.

INTERDISCIPLINARY STUDIES, FAS 556

Faculty of Arts and Sciences

For more information about these courses, contact the Office of the Dean of the Faculty of Arts and Sciences.

Courses

01:556:101. STUDIES IN BIOMEDICAL SCIENCES (3)
Lec. 2 hrs., lab. 3 hrs. Open only to students in the biomedical careers program. Prerequisites: One year of college, including one term of college biology or chemistry, and one term of college math. Enrollment by permission only. Offered only during summer term.
Lectures and laboratory in microbiology including basic morphology, physiology, and genetics of bacteria and viruses, with an introduction to human pathogens. Experience in a clinical department and participation in biomedical research and seminars.

01:556:140. THE GREENHOUSE EFFECT (3)
Lec. 2 hrs., lab. 1.5 hrs. For nonscience majors; not for major credit in science and engineering. Credit not given for both this course and 01:160:140 or 01:450:140 or 01:750:140.
Physical and chemical basis of the "greenhouse effect" and its global impact: biological, climatic, economic, and political. Reducing the emission of "greenhouse" gases; nuclear energy and other alternative energy sources.

01:556:201. STUDIES IN BIOMEDICAL SCIENCES (3)
Lec. 2 hrs., lab. 3 hrs. Open only to students in the biomedical careers program. Prerequisites: Two years of college; two terms of college chemistry; two terms in one of the following areas: college biology, organic chemistry, or physics. Enrollment by permission only. Offered only during summer term.
Introductory biochemistry emphasizing major classes of biomolecules, intermediary metabolism, and gene expression. Selected laboratory projects in bacterial physiology and molecular biology. Instruction in organic chemistry also available where needed. Research / clinical seminars required.

01:556:220. INTRODUCTION TO SCIENCE, TECHNOLOGY, AND SOCIETY (3)
Prerequisite: See program director for details.
Development of sciences and technologies; shifting relations with economics, politics, religion, and philosophy; ways of understanding contemporary public issues.

01:556:301. INDEPENDENT STUDY IN BIOMEDICAL SCIENCES (3)
Lec. 1 hr., lab. 6 hrs. Open only to students in the biomedical careers program. Prerequisites: Three years of college; two terms of college chemistry; two terms of college biology; one term of college calculus; four terms of advanced courses in science, math, statistics, or computer science. Enrollment by permission only. Offered only during summer term.
Lectures and student seminars in experimental genetics; MCAT preparation; required participation in research / clinical seminars; independent research projects with biomedical scientists, culminating in formal student presentations at a public symposium.

01:556:404. TOPICS IN SCIENCE, TECHNOLOGY, AND SOCIETY (1)
Prerequisite: Completion of all other science, technology, and society minor requirements or permission of the program director or a program adviser. Open only to students in the science, technology, and society minor.
Discussion and reading about selected topics in science, technology, and society. Enables students to integrate the variety of perspectives acquired while completing the minor.

01:556:415. COMPUTER-AIDED ANALYSIS IN LANGUAGE AND LITERATURE (3)
Lec. 3 hrs., lab. 1 hr. Prerequisite: 01:198:110 or higher-level computer science course or permission of instructor.
Computer analysis of natural languages using prepackaged and student-created programs; presentation / application of methods of language and literary analysis made available by use of computer.

01:556:493,494. INDEPENDENT STUDY (3,3)
By permission.

01:556:499. FAS DEAN'S HONOR SEMINAR (3)
Prerequisite: Enrollment in a College Honors Program. Selection for admission is competitive.
Interdisciplinary honors seminar offered by a distinguished faculty member.

ITALIAN 560

Department of Italian, Faculty of Arts and Sciences

Chairperson: Laura S. White

Professors:

Franco Ferrucci, Dottore in Lettere, Pavia
Guido A. Guarino (Emeritus), B.S., A.M., Ph.D., Columbia
Umberto C. Mariani, M.A., New York; Dottore in Lettere, Pavia
David R. Marsh, B.A., Yale; M.A., Ph.D., Harvard
Laura S. White, Dottore in Lettere, Trieste; Ph.D., California (Los Angeles)

Assistant Professors:

Andrea Baldi, Dottore in Lettere, Firenze; Ph.D., California (Los Angeles)
Alessandro Vettori, Dottore in Lettere, Firenze; Ph.D., Yale

Major Requirements

The major consists of ten courses in Italian approved by the department and numbered above 200.

Minor Requirements

The minor in Italian requires six courses in Italian beginning with 01:560:131; at least three of these courses must be at the 300 level or higher. The student's program must be approved by the departmental adviser.

Introductory Courses

Students who already have studied Italian and wish to continue that language are assigned according to their achievement on a placement test. Except for the courses listed under Courses in English, all courses are conducted in Italian.

Certificate of Proficiency in Italian

The Department of Italian awards a certificate of proficiency based on demonstrated ability to comprehend, speak, read, and write Italian as attested by a grade of B or better in 6 credits of work, conducted entirely in Italian, at or above the 300 level.

Note: The Italian certificate is awarded only with or subsequent to the awarding of the baccalaureate degree in an approved major.

Departmental Honors Program

To qualify, a student must have a cumulative grade-point average of 3.0 or better and a grade-point average of 3.4 or better in Italian at the end of the junior year. At that time, the student should apply formally to the chairperson. Candidates for honors must (1) do special reading and write an honors paper in consultation with an assigned director (01:560:495,496 Honors in Italian), and (2) be examined on the honors project by a faculty honors committee.

Summer Program in Italy

Each summer the Department of Italian offers a program in Urbino, Italy, that lasts six weeks and offers an opportunity to earn 6 to 8 credits in an Italian university setting. It also provides excursions and other extracurricular activities to acquaint students more fully with life in Italy. Offerings typically include 01:560:101,102; 131,132; 321,322; 491,492; and a course in literature. Inquiries should be addressed to the Department of Italian.

Study Abroad Program in Italy

Since 1971, Rutgers has offered a program of junior-year studies at the University of Florence, Italy. Competence in oral and written Italian is required. Under the guidance of a Rutgers University resident director, students attend a preliminary six-week intensive language and culture session. Following that, they attend courses at the University of Florence. Students also are able to spend the spring term in Florence as part of the Rutgers' Study Abroad Program. (See Study Abroad.) Interested students should apply early in the second term of the sophomore year by contacting the Study Abroad office at Rutgers, The State University of New Jersey, 102 College Avenue, New Brunswick, NJ 08901-8543.

Courses in English

01:560:231,232. ITALIAN CULTURE (3,3)
First term: Italy's historical, social, and cultural evolution; achievements and contributions to Western civilization. Second term: social and political reality of present-day Italy; achievements and major problems.

01:560:241,242. MASTERPIECES OF ITALIAN LITERATURE (3,3)
Readings and discussion of representative works: from Dante to Machiavelli in the first term and from Galileo to contemporary writers in the second.

01:560:253. MAJOR WORKS OF THE ITALIAN RENAISSANCE (3)
Historical overview of Italian Renaissance civilization in Florence and other major centers; significant works of representative writers, composers, and artists.

01:560:254. MODERN ITALIAN LITERARY MASTERPIECES (3)
Comparative study of selected narrative, lyrical, and dramatic works of modern Italy.

01:560:255. THE ITALIAN SHORT STORY (3)
Exemplary masterpieces of Italian short-story writing from the early collections to the classics of the Renaissance and the modern and contemporary masters of the art.

01:560:304. INTRODUCTION TO ITALIAN LINGUISTICS (3)
History of the Italian language and its position within the Romance languages; problems of the description of modern Italian; linguistic materials.

01:560:315. DANTE AND MEDIEVAL CULTURE (3)
Credit not given for both this course and 01:195:315.
Dante's work in historical perspective: the theological antecedents, the memory of the classical writers, and the new profane literary experience.

01:560:331,332. DANTE IN TRANSLATION (3,3)
Critical study of Dante in translation: the Divine Comedy and other works in their medieval context.

01:560:335,336. ITALIAN OPERA (3,3)
Italian opera and its cultural milieu from its origin to the present. Libretti and related literature, recordings, and possible attendance at performances.

01:560:339,340. THE ITALIAN-AMERICAN EXPERIENCE (3,3)
Literature of the struggle for survival, adaptation, and success of Italians in the U.S.; their search for identity; their impact on the development of American life and culture.

01:560:345,346. THE ITALIAN CINEMA (3,3)
Development of cinema in Italy; its rebirth after World War II and the achievements of the major directors: Visconti, Rossellini, De Sica, Fellini, Antonioni, and others.

01:560:349,350. ITALIAN CINEMA AND LITERATURE (3,3)
May not be used in satisfaction of major requirements. Credit not given for both these courses and 01:560:347,348.
Development of Italian cinema from neorealism to today (Visconti, Fellini, Wertmuller, and others) and the literature that inspired it and was influenced by it.

01:560:356. WOMEN IN ITALIAN LITERATURE AND SOCIETY (3)
Women in the cultural and social milieu of both historical and present-day Italy as portrayed in works of literature and art as well as by today's mass media.

01:560:443. CONTEMPORARY MAN'S SEARCH FOR IDENTITY, DIGNITY, AND JUSTICE: THE DRAMA OF PIRANDELLO AND BETTI (3)
Discussion of several of the authors' most mature and brilliant plays illustrating contemporary man's feeling of confusion, alienation, and outrage, and his eternally unsatisfied search for identity and dignity.

01:560:446. CONTEMPORARY ITALIAN LITERATURE IN TRANSLATION (3)
Study of selected writers illustrating the main currents of twentieth-century Italian literature: Pirandello, Montale, Moravia, Pavese, Betti, and others.

Courses in Italian

Prerequisite

Italian 01:560:132 or permission of the department is a prerequisite for all courses in this section at the 300 level or above.

01:560:101,102. ELEMENTARY ITALIAN (4,4)
Not open for credit to students who have had two or more years of secondary school Italian.
Speaking, reading, writing; oral-aural and written exercises.

01:560:103. INTENSIVE ELEMENTARY ITALIAN (8)
Not open for credit to students who have had two or more years of secondary school Italian or 01:560:101,102.
Speaking, reading, and writing; oral-aural and written exercises.

01:560:105,106. ITALIAN FOR READING KNOWLEDGE (3,3)
Does not satisfy prerequisite for 01:560:131.
Development of reading skills. Texts chosen from the humanities and social sciences.

01:560:107,108. ELEMENTARY ITALIAN LABORATORY (1,1)
Corequisites: 01:560:101 (for 107); 01:560:102 (for 108).
Instructor-guided laboratory practicum based on intensive use of media and designed for the improvement of aural / oral skills.

01:560:121. ITALIAN REVIEW (4)
Prerequisite: Placement test in Italian. Not open to students who have taken 01:560:101,102.
Intensive review and practice of Italian grammar, reading, and writing.

01:560:123,124. CONVERSATION (3,3)
Not open to students who have taken 300-level courses.
For students enrolled in Intermediate Italian and others who wish to develop fluency in speaking.

01:560:131,132. INTERMEDIATE ITALIAN (4,4)
Prerequisite: 01:560:102 or equivalent.
Development of fluency and accuracy in speech and composition; current reading materials.

01:560:136. INTENSIVE INTERMEDIATE ITALIAN (8)
Prerequisite: 01:560:102 or equivalent. Not open for credit to students who have taken 01:560:131,132.

01:560:250. ITALIAN COMPOSITION AND STYLISTICS (3)
Pre- or corequisite: Intermediate Italian (01:560:132) or permission of department.
Study and practice in composition to improve skills for written Italian. Analysis and imitation of writing styles and forms; vocabulary development, syntax; frequent written exercises.

01:560:261,262. MASTERPIECES OF ITALIAN LITERATURE (3,3)
Prerequisite: 01:560:132.
Introduction to Italian literature: from Dante to Machiavelli in the first term and from Galileo to the moderns in the second.

06:090:283,284. THE ITALIAN LANGUAGE EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass House. May not be used in satisfaction of major requirements. Course may be repeated.
Development of active language skills through formal instruction and the daily experience of foreign language immersion in the varied activities of the house.

01:560:299. LANGUAGE DORMITORY RESIDENCE (E3)
Prerequisite: Permission of the college housing authority.
Residence in the Italian section of the language dormitory for students interested in the language and culture of Italy. Graded as satisfactory or unsatisfactory.

01:560:305,306. ADVANCED LANGUAGE AND INTRODUCTION TO LITERATURE (3,3)
Refinement of speaking and writing ability. Study of advanced grammar. Introduction to the study of Italian literature.

01:560:317,318. ITALIAN CULTURE TODAY (1.5,1.5)
Contemporary cultural, social, and political life in Italy with emphasis on daily experience. Field trips.

01:560:321,322. ADVANCED CONVERSATION: CIVILIZATION (3,3)
Development of conversational ability through discussion of significant historical, social, and cultural movements in Italy.

01:560:341,342. ITALIAN LITERATURE OF THE NINETEENTH CENTURY (3,3)
Neoclassicism, romanticism, and verismo. Readings from Foscolo, Manzoni, Leopardi, Carducci, Pascoli, Verga, D'Annunzio, and others.

01:560:347,348. ITALIAN CINEMA AND LITERATURE (3,3)
Comparative study of selected films and their literary sources and counterparts.

01:560:351,352. ITALIAN LITERATURE OF THE TWENTIETH CENTURY (3,3)
Particular attention to the contemporary period. Readings from Pirandello, Saba, Ungaretti, Montale, Quasimodo, Silone, Pavese, Moravia, Vittorini, and others.

01:560:360. PRACTICAL COMMERCIAL ITALIAN (3)
Pre- or corequisite: Any 300-level course in Italian.
Study of Italian commercial organizations in Italy. Practice in business correspondence. Comparison of financial and commercial terms in English and Italian.

01:959:383,384. JUNIOR YEAR IN ITALY (BA,BA)

01:560:393,394. INDEPENDENT STUDY IN ITALIAN (3,3)
Independent study and guided research on a topic selected by the student and approved by a faculty member. Individual conferences.

01:560:401,402. ITALIAN LITERATURE OF THE THIRTEENTH AND FOURTEENTH CENTURIES (3,3)
Intensive study of the most important representatives of the Sicilian and Tuscan schools, with particular attention to the Dolce Stil Novo and the works of Dante.

01:560:409,410. ITALIAN WOMEN WRITERS IN THE NINETEENTH AND TWENTIETH CENTURIES (3,3)
Explores the foremost issues concerning women's writing in the Italian context. Analysis of the historically specific sense of difference in women's literature.

01:560:415,416. DANTE (3,3)
Critical study of Dante's Divine Comedy and other works in their medieval context.

01:560:421,422. ITALIAN LITERATURE OF THE RENAISSANCE (3,3)
Italian writers most relevant to the development of the humanistic viewpoint and representative of the creative achievements of the Renaissance: Petrarca, Boccaccio, Poliziano, Machiavelli, Ariosto, Michelangelo, and others.

01:560:431,432. ITALIAN LITERATURE OF THE SEVENTEENTH AND EIGHTEENTH CENTURIES (3,3)
Readings from the works of Campanella, Marino, Galileo, Goldoni, Alfieri, Parini, and others.

01:560:491,492. TOPICS IN ITALIAN LITERATURE (3,3)
Directed independent study of a topic selected in consultation with the instructor.

01:560:495,496. HONORS IN ITALIAN (3,3)
Special readings and honors paper prepared under the direction of the departmental honors committee.

JAPANESE 565

(See also Asian Studies 098 and East Asian Languages and Area Studies 214)

Department of Asian Languages and Cultures, Faculty of Arts and Sciences

Program Adviser: Senko Maynard

Professor:

Senko Maynard, B.A., Tokyo Gaikokugo Daigaku (Tokyo University of Foreign Studies); M.A., Illinois (Chicago Circle); Ph.D., Northwestern

Associate Professor:

Paul Schalow, B.A., Hampshire College; M.A., Ph.D., Harvard

Assistant Professor:

Indra Levy, B.A., Columbia College; M.A., M.Ph., Ph.D., Columbia

An interdisciplinary major with a concentration on Japan is available through the program in East Asian Languages and Area Studies 214.

Minor in Japanese

A minor in Japanese consists of six courses in Japanese beyond the elementary level. Of the six, at least three courses must be at the 300 level or above. Courses taught in English generally are not counted toward the minor requirement.

Courses in English

01:565:241. JAPANESE LITERATURE IN TRANSLATION (3)
Selected poetry and fiction from 700 to 1885. Major concerns of the Japanese literary tradition and ideas and images of man, love, nature, and time that have continued to influence Japanese culture.

01:565:242. MODERN JAPANESE LITERATURE IN TRANSLATION (3)
Japanese literature from 1885 to the present. The influence of Western cultural ideals on modern Japanese literature. Emphasis on the novel as a literary form. Readings from Kawabata, Sõseki, Mishima, Akutagawa, and Tanizaki.

01:565:250. LANGUAGE AND SOCIETY IN JAPAN (3)
How language and society interact in contemporary Japan. Sociolinguistic methods applied to various issues: honorific / humble forms, language and gender, conversation strategies.

01:565:315. JAPANESE LITERATURE AND THE ATOMIC BOMB (3)
The atomic bomb in Japanese poetry, fiction, art, and film. Emphasis on problems of memory and representation of the bombings at Hiroshima and Nagasaki.

01:565:317. LOVE, HONOR, AND SUICIDE IN JAPANESE LITERATURE (3)
Credit not given for both this course and 01:195:332.
Suicide as a theme in Japanese literature from the eighth century to the present, with comparisons to the theme of suicide in Western literature. Selected texts from Western literature read to gain a comparative perspective. Films shown as well.

01:565:350. JAPANESE FILM (3)
Japanese film in its cultural and historic context and as a Japanese art form. Viewing and analysis of films by Kurosawa, Mizoguchi, Ozu, and others.

01:565:360. JAPANESE WOMEN WRITERS (3)
Fiction and poetry by Japanese women from the ninth century to the present. Focus on women's early role in inventing and shaping literary genres, and the reemergence of a feminine tradition in the twentieth century.

01:565:370. COMMUNITY AND DIFFERENCE IN JAPANESE LITERATURE AND FILM (3)
Charting and analyzing twentieth-century filmic and literary portrayals of what is "foreign" and "Japanese." Racialism, ethnicity, sexuality, and gender in the Japanese arts.

01:565:483. FROM TEXT TO IMAGE IN JAPANESE ART (3)
Credit not given for both this course and 01:082:483.
Explores the profound influence of classical literature on the arts of Japan, especially painting. Analysis of the historical and literary meaning of the literary works; investigation of the fusion of text and image.

Courses in Japanese

01:565:101,102. ELEMENTARY JAPANESE (4,4)
Introduction to grammar and writing systems; practice in speaking, reading, and writing.

01:565:103. INTRODUCTION TO JAPANESE WRITING (3)
Corequisite: 01:565:101.
History, types, and styles of Japanese writing systems: hiragana, katakana, and kanji. Pen and brush (calligraphy) practices. Some basic creative writing.

01:565:104. SPEAKING ELEMENTARY JAPANESE (3)
Prerequisite: 01:565:101.
Elementary speaking and communicating skills based on limited vocabulary and grammar. Conversational phrases and idiomatic expressions associated with various social situations and interpersonal relationships.

01:565:131,132. INTERMEDIATE JAPANESE (4,4)
Prerequisite: 01:565:102 or equivalent.
Study of grammar, development of fluency in speaking; practice in reading and composition.

01:565:213-214. JAPANESE CONVERSATION AND CULTURE (3,3)
Prerequisite: 01:565:132 or permission of instructor.
Develops speaking skills; guided conversation practice, vocabulary building, oral reports. Texts and discussion topics relating to Japanese everyday life, language, culture, and society.

01:565:301,302. ADVANCED JAPANESE (3,3)
Prerequisite: 01:565:132 or permission of instructor.
Refinement of reading, writing, speaking, and listening skills. Advanced grammar and extensive vocabulary. Reading written text from various genres.

01:565:303,304. ADVANCED JAPANESE FOR BUSINESS (3,3)
Prerequisite: 01:565:132 or permission of department.
Principles of interpersonal communication in Japanese business and international negotiation. Specialized vocabulary, social skills, and business correspondence. Reading and discussion of business, culture, and society.

01:565:313,314. ADVANCED JAPANESE CONVERSATION AND CONTEMPORARY ISSUES (3,3)
Prerequisite: 01:565:302 or 304 or permission of department.
Development of conversational skills and strategies. Class discussion, oral presentation, and debate based on cultural / social materials taken from books, journals, newspapers, and audio and videotapes.

01:565:325. ADVANCED JAPANESE GRAMMAR AND RHETORIC (3)
Prerequisite: 01:565:301 or permission of instructor.
Analysis and study of complex sentence structures, rhetorical strategies and principles, paragraph and text structures of a variety of genres. Reading assignments to appreciate different styles of written Japanese—essays, narrative, newspaper text, etc.

01:565:401,402. ADVANCED READINGS IN JAPANESE (3,3)
Prerequisite: 01:565:302 or permission of instructor.
Selected readings from modern Japanese. Materials from literature, humanities, and social sciences. Discussion and some writing exercises.

01:565:411. READINGS IN CLASSICAL JAPANESE: BUNGO (3)
Prerequisite: 01:565:301 or permission of instructor.
Introduction to classical literary Japanese. Study of verbal and adjectival suffixes and particles through sample sentences. Selected readings in classical prose. Some translation exercises.

01:565:470. SEMINAR IN JAPANESE LANGUAGE AND LITERATURE (3)
Prerequisite: 01:565:402 or permission of instructor.
Readings and research on topics in Japanese language and literature.

01:565:495,496. INDEPENDENT STUDY (3,3)
Prerequisites: Permission of instructor and department.
Independent reading under supervision of a member of the department.

01:565:497,498. HONORS IN JAPANESE (6,6)
Both terms must be completed to receive credit.

JEWISH STUDIES 563

Department of Jewish Studies, Faculty of Arts and Sciences

Web Site: http://jewishstudies.rutgers.edu

Chairperson: Yael Zerubavel, History; Ph.D., Pennsylvania

Professors:

Myron J. Aronoff, Political Science and Anthropology; Ph.D., California (Los Angeles)
Matthew Baigell, Art History; Ph.D., Pennsylvania
Maurice Elias, Psychology; Ph.D., Connecticut
Ziva Galili, History; Ph.D., Columbia
Daniel A. Harris, English; Ph.D., Yale
Curt Leviant, Ph.D., Rutgers
Phyllis Mack, History; Ph.D., Cornell
Alicia Ostriker, English; Ph.D., Wisconsin
Chaim I. Waxman, Sociology; Ph.D., New School for Social Research

Associate Professors:

Leslie E. Fishbein, American Studies; Ph.D., Harvard
Judith Gerson, Sociology; Ph.D., Cornell
Morris Moskowitz, Ph.D., Brandeis
Barbara Reed, Journalism; Ph.D., Ohio

Assistant Professors:

William Donahue, German; Ph.D., Harvard
Dina LeGall, History; Ph.D., Princeton
Nancy Sinkoff, History; Ph.D., Columbia

Part-Time Faculty:

Lily Levy, M.Sc., Tel Aviv
Akiva Roth, Jewish Studies; Ed.D. candidate, Rutgers
Orly Moshenberg, M.A., Rutgers

Affiliated Faculty:

Steven Friedell, Rutgers' School of Law–Camden; J.D., Michigan

The Department of Jewish Studies offers a comprehensive examination of all aspects of Jewish experience from an interdisciplinary perspective. The department addresses the historical, social, cultural, religious, and political life of Jews in the modern period and throughout the ages. Jewish studies courses are open to all students.

Jewish studies offers a combination of courses that it originates and cross-listed courses that originate in other departments and are counted toward the Jewish studies

major or minor. Credit is not given for both a Jewish studies course (01:563:___) and its corresponding cross-listed course.

For further information about the Department of Jewish Studies, contact the office of the Allen and Joan Bildner Center for the Study of Jewish Life, Rutgers, The State University of New Jersey, 12 College Avenue, New Brunswick, NJ 08901-1282, 732/932-2033, or send email to csjl@rci.rutgers.edu. Information also is posted on the department's web site.

Major Requirements

Jewish studies majors must complete twelve 3-credit courses in Jewish studies with a grade of C or better in each course. Out of the twelve courses, six 3-credit courses must be at the 300 level or above. The major requirements include:

1. 01:563:201 Jewish Society and Culture I: From Antiquity to the Middle Ages (3)
   01:563:202 Jewish Society and Culture II: The Modern Experience (3)
2. Two courses in Jewish languages or literature in the original language according to placement (6-8). Students who place above the intermediate level in a Jewish language must take two literature courses in the original language.
3. 01:563:464 Jewish Studies Seminar (3), normally taken the second term of the junior year.
4. Seven courses, of which at least four must be in one of the areas of concentration (see 1–5, below). At least two of the seven courses must be outside the selected area of concentration (21). For the Jewish literature area of concentration, two courses in Jewish language must be above the elementary level. At least four courses must be in literature, at least two of which must be in the original language. Students who place above the intermediate level in a Jewish language will be required to take a total of four literature courses in the original language.

Language Courses

01:563:101,102 Elementary Modern Hebrew (4,4)
01:563:103,104 Elementary Modern Yiddish (4,4)
01:563:131,132 Intermediate Modern Hebrew (4,4)
01:563:133,134 Intermediate Modern Yiddish (4,4)
01:563:215,216 Introduction to Hebrew Style and Literature (3,3)

Areas of Concentration

1. Jewish History and Society

01:506:200 (563:200) Ancient Near East (3)
01:506:373 (563:373) History of Jewish Women (3)
01:506:375 (563:375) Jewish Immigrant Experience (3)
01:508:300 (563:300) The Arab–Israeli Conflict (3)
01:508:316 (563:316) Israeli Women: Historical and Literary Perspectives (3)
01:510:261 (563:261) History of the Holocaust (3)
01:510:385 (563:385) The History of Eastern European Jewry (3)
01:510:386 (563:343) History of Zionism (3)
01:512:359 (563:359) Blacks and Jews in American History (3)
01:563:345 (512:345) American Jewish History and Culture (3)
01:563:390 (510:390) Jewish Memory (3)
01:790:351 (563:351) Contemporary Politics in the Middle East (3)
01:790:352 (563:352) Israeli Politics (3)
01:920:408 (563:408) Sociology of American Jewish Religious Movements (3)

2. Jewish Literature

Literature in the Original Language

01:563:315 Talmud and Jewish Law (3)
01:563:369,370 Hebrew Fables and Adventures (3,3)
01:563:371,372 Hebrew Tales and Poetry (3,3)
01:563:431,432 The Hebrew Pentateuch (3,3)
01:563:433,434 Biblical Literature (3,3)
01:563:437,438 Talmudic Literature (3,3)
01:563:471,472 Studies in Hebrew Literature (3,3)
01:563:481 Agnon's Themes and Variations (3)
01:563:484 Modern Israeli Literature (3)

Literature in Translation

01:050:332 (563:332) The American Jewish Experience in Literature (3)
01:563:241,242 Post-Biblical Jewish Literature and Tradition (3,3)
01:563:243,244 Modern Jewish Literature (3,3)
01:563:254 Hasidic Tales (3)
01:563:301 Jewish Laughter, Jewish Ghosts (3)
01:563:320 The Hebrew Bible: Heroes and Values (3)
01:563:360 The Jewish Experience in Life and Story (3)
01:563:365,366 Holocaust Literature in Translation (3,3)
01:563:367 American Jewish Writers of the Twentieth Century (3)
01:685:480 (563:480) Modern Middle Eastern Literature in Translation (3)

3. Jewish Culture

01:050:332 (563:332) The American Jewish Experience in Literature (3)
01:082:383 (563:383) Modern Jewish Art (3)
01:195:393 (563:393) Israeli Theater and Film (3)
01:470:380 (563:380) German Jewish Culture from the Enlightenment to the Present (3)
01:563:225 Jewish Music (3)
01:563:226 History of Jewish Art (3)
01:563:254 Hasidic Tales (3)
01:563:301 Jewish Laughter, Jewish Ghosts (3)
01:563:304 Jewish Cinema and Fiction (3)
01:563:310 (508:310) Israeli Culture (3)
01:563:345 (512:345) American Jewish History and Culture (3)
01:563:360 The Jewish Experience in Life and Story (3)
01:563:367 American Jewish Writers of the Twentieth Century (3)
01:563:375 Jewish Immigrant Experience (3)
01:563:390 (510:390) Jewish Memory (3)

4. Religion and Thought

01:351:321 (563:321) Literature and Spirituality (3)
01:563:241,242 Post-Biblical Jewish Literature and Tradition (3,3)
01:563:254 Hasidic Tales (3)
01:563:315 Talmud and Jewish Law (3)

01:563:431,432 The Hebrew Pentateuch (3,3)
01:563:433,434 Biblical Literature (3,3)
01:563:437,438 Talmudic Literature (3,3)
01:730:311 (563:311) Classical Jewish Philosophy (3)
01:730:312 (563:312) Modern Jewish Philosophy (3)
01:730:404 (563:404) Spinoza (3)
01:920:408 (563:408) Sociology of American Jewish Religious Movements (3)

5. Israel Studies

01:195:393 (563:393) Israeli Theater and Film (3)
01:506:375 (563:375) Jewish Immigrant Experience (3)
01:508:300 (563:300) The Arab-Israeli Conflict (3)
01:508:316 (563:316) Israeli Women: Historical and Literary Perspectives (3)
01:510:386 (563:343) History of Zionism (3)
01:563:310 (508:310) Israeli Culture (3)
01:563:481 Agnon's Themes and Variations (in Hebrew) (3)
01:563:484 Modern Israeli Literature (in Hebrew) (3)
01:685:480 (563:480) Modern Middle Eastern Literature in Translation (3)
01:790:351 (563:351) Contemporary Politics in the Middle East (3)
01:790:352 (563:352) Israeli Politics (3)

Minor Requirements

The minor in Jewish studies consists of six 3-credit courses (18 credits), including the two Jewish studies core courses—01:563:201 Jewish Society and Culture I: From Antiquity to the Middle Ages (3) and 01:563:202 Jewish Society and Culture II: The Modern Experience (3). Of the four remaining courses, three must be at the 300 level or above. Elementary- and intermediate-level language courses may not be counted toward the minor. A grade of C or better is required in all courses that count toward the minor.

Departmental Honors Program

Jewish studies majors may apply for admission to the Jewish studies honors program at the end of their junior year. To be considered, students must have a cumulative grade-point average of 3.0 or better, and 3.4 or better in Jewish studies courses. The honors program offers qualified students the opportunity to pursue a research project in depth for the entire senior year under the supervision of a faculty adviser. Approval of the honors project is required for admission to the honors program. Honor students enroll in 01:563:496 and 01:563:497 Jewish studies honors courses, and upon the completion of their honors project must pass an oral examination given by the program.

Jewish Languages

Students are required to take two courses of language or literature in either Hebrew or Yiddish. All students entering the department are required to take a language placement test. Students who place out of the elementary level will take intermediate language or literature courses depending on their placement, or may choose to study another Jewish language. Please note special language requirements in the Jewish literature area of concentration.

Courses

Core Courses

01:563:201. JEWISH SOCIETY AND CULTURE I: FROM ANTIQUITY TO THE MIDDLE AGES (3)
Credit not given for both this course and 01:506:271.
Examines the social, economic, religious, and political experiences of the Jewish people, from the Biblical world of the ancient Near East until the Middle Ages.

01:563:202. JEWISH SOCIETY AND CULTURE II: THE MODERN EXPERIENCE (3)
Credit not given for both this course and 01:506:272.
Examination of Jewish life from the breakdown of traditional society in Europe in the 1700s until the rise of the modern state of Israel in the twentieth century.

01:563:464. JEWISH STUDIES SEMINAR (3)
Prerequisite: 01:563:201 or 202 or permission of instructor. Credit not given for both this course and 01:506:464.
Explores a major theme in Jewish studies and allows students to pursue their own research project, culminating in a paper.

Courses in Hebrew

01:563:101,102. ELEMENTARY MODERN HEBREW (4,4)
Prerequisite: Placement test to determine level of language competence. Not open for credit to students who have had two or more years of secondary school Hebrew. Credit not given for both this course and 01:685:101,102.
Speaking, reading, and writing; oral-aural and written exercises.

01:563:131,132. INTERMEDIATE MODERN HEBREW (4,4)
Prerequisite: 01:563:102 or placement test. Credit not given for both courses and 01:685:131,132.
Development of language skills; selected readings.

01:563:215,216. INTRODUCTION TO HEBREW STYLE AND LITERATURE (3,3)
Prerequisite: 01:563:132 or placement test.
Intensive study of selected masterpieces aiming to develop a critical approach to literature through class discussions and written compositions.

01:563:315. TALMUD AND JEWISH LAW (3)
Examines selections of original materials from the Talmud, codes, and responsa literature concerning several topics.

01:563:369,370. HEBREW FABLES AND ADVENTURES (3,3)
Prerequisite: 01:563:216 or placement test.
Fables, adventures, and Jewish Arthurian knights.

01:563:371,372. HEBREW TALES AND POETRY (3,3)
Prerequisite: 01:563:216 or placement test. Credit not given for both courses and 01:685:371,372.
Medieval Hebrew classics from the Midrash to Yehuda Halevi.

01:563:431,432. THE HEBREW PENTATEUCH (3,3)
Prerequisite: 01:563:216 or placement test.
Study of selected portions of the Pentateuch; comparing the original Hebrew with English translations and utilizing classical and modern commentaries.

01:563:433,434. BIBLICAL LITERATURE (3,3)
Prerequisite: 01:563:216 or placement test.
Study of selective narrative portions from the Prophets, Psalms, and other Biblical writings; comparing Hebrew and English texts and utilizing classical and modern commentaries.

01:563:437,438. TALMUDIC LITERATURE (3,3)
Prerequisite: 01:563:216 or placement test.
Study of selected portions of the Mishnah, Midrash, and Talmud; comparing Hebrew / Aramaic and English texts and utilizing classical and modern commentaries.

01:563:471,472. STUDIES IN HEBREW LITERATURE (3,3)
Prerequisite: 01:563:216 or placement test. Credit not given for both courses and 01:685:471,472.
Readings and discussions of selected stories, plays, essays, and poetry.

01:563:481. AGNON'S THEMES AND VARIATIONS (3)
Prerequisite: 01:563:216 or placement test.
The Hebrew Nobel laureate's folk stories and symbolic tales: a study of style and sources.

01:563:484. MODERN ISRAELI LITERATURE (3)
Prerequisite: 01:563:216 or placement test. Credit not given for both this course and 01:685:484.
Modern Israeli writers view their land and society.

Courses in Yiddish

01:563:103,104. ELEMENTARY MODERN YIDDISH (4,4)
Not open for credit to students who have had two or more years of secondary school Yiddish or equivalent.
Speaking, reading, and writing; oral-aural and written exercises.

01:563:133,134. INTERMEDIATE MODERN YIDDISH (4,4)
Prerequisite: 01:563:104 or placement test.
Practice in oral and written composition and selected readings in Yiddish prose and poetry.

Courses in English

01:563:225. JEWISH MUSIC (3)
Introduction to biblical cantillation, medieval Jewish music, liturgical and Hasidic melodies, Yiddish folk songs, and the music of modern Israel.

01:563:226. HISTORY OF JEWISH ART (3)
Synagogue frescoes and architecture, medieval illuminations, Jewish ritual art, and Israeli art.

01:563:241,242. POST-BIBLICAL JEWISH LITERATURE AND TRADITION (3,3)
Stories, legends, letters, wills, travelogs, history, and prayers that reflect the post-Biblical Jewish experience throughout the centuries.

01:563:243,244. MODERN JEWISH LITERATURE (3,3)
Works of great Jewish writers from Russia, Germany, France, Italy, and America, from late nineteenth century to date, in translation.

01:563:254. HASIDIC TALES (3)
Legends and stories; a study of the ideals and values of the Ba'al Shem Tov and other Hasidic masters from the eighteenth century to the present.

01:563:301. JEWISH LAUGHTER, JEWISH GHOSTS (3)
The comic as an artform in stories by Jewish writers in various languages; the supernatural in the Jewish folk tradition.

01:563:304. JEWISH CINEMA AND FICTION (3)
Comparative study of Jewish themes in Yiddish, Israeli, American, and European films (with English subtitles) and their literary sources; discussions and readings in English.

01:563:310. ISRAELI CULTURE (3)
Credit not given for both this course and 01:508:310 or 01:685:310.
Formation of modern Israeli culture since the beginning of Zionist immigration to Palestine; its historical, social, literary, and artistic expressions.

01:563:320. THE HEBREW BIBLE: HEROES AND VALUES (3)
Study of selected narrative and prophetic portions of the Bible in English, with special attention to protagonists and biblical law and ethics.

01:563:345. AMERICAN JEWISH HISTORY AND CULTURE (3)
Credit not given for both this course and 01:512:345.
History of the Jews in the New World, beginning in the middle of the seventeenth century, and then focusing on the United States until the present.

01:563:360. THE JEWISH EXPERIENCE IN LIFE AND STORY (3)
Study of the Jewish life cycle, customs, and traditions through literary texts from the Bible to contemporary Jewish writers.

01:563:365,366. HOLOCAUST LITERATURE IN TRANSLATION (3,3)
Interpretation of works dealing with the Holocaust by leading Hebrew, Yiddish, and European writers. Appropriate films used.

01:563:367. AMERICAN JEWISH WRITERS OF THE TWENTIETH CENTURY (3)
Cultural, literary, attitudinal aspects of American Jewish fiction: Abe Cahan, Henry Roth, Daniel Fuchs, Saul Bellow, Bernard Malamud, and others.

01:563:381,382. TOPICS IN JEWISH STUDIES (1.5,1.5)
Seven-week courses; may be taken consecutively or separately.
Topics vary. Specific titles available at registration.

01:563:390. JEWISH MEMORY (3)
Credit not given for both this course and 01:510:390.
Explores various forms of Jewish memory shaped in response to major events, including myths, holidays, monuments, pilgrimages, testimonies, museums, literature, and film.

01:563:395,396. TOPICS IN JEWISH STUDIES (3,3)
Selected themes in Jewish studies. Topics announced when course offered.

01:563:482,483. ADVANCED TOPICS IN JEWISH STUDIES (1.5,1.5)
Seven-week courses; may be taken consecutively or separately.
Highly specialized advanced courses open to both undergraduate and graduate students. Specific titles available at registration.

01:563:490. STUDIES IN JEWISH HISTORY (3)
In-depth study of selected issues and problems in Jewish history and culture.

01:563:491,492. INDEPENDENT STUDY AND RESEARCH (3,3)
Individual reading research project under the guidance of a Jewish studies faculty member on a topic of interest to the student. Final written report required.

01:563:496,497. SENIOR HONORS (3,3)
Prerequisite: Permission of department director.
Independent research project under supervision of a faculty member, culminating in an honors thesis that must be approved by the program.

Student Awards and Scholarships

Leonard and Adele Blumberg Student Award
Andrew Feinerman Memorial Scholarship Fund
Louis Fishman Memorial Student Support Fund
Betty and Julius Gillman Memorial Student Support Fund
Sandra and Stephen M. Greenberg Student Award
Gertrude and Jacob Henoch Memorial Student Support Fund
Rudolph and Mary Solomon Klein Undergraduate Scholarship
Norma U. and David M. Levitt Student Award
Bernice and Milton I. Luxemburg Student Award Fund
Maurice Meyer III and Irma Meyer Endowed Student Support Fund

Harold and Betty Perl Endowed Scholarship
Reitman Family Student Award Fund
Baruch S. and Pearl W. Seidman Scholarship Fund

JOURNALISM AND MEDIA STUDIES 567

(See the School of Communication, Information and Library Studies section)

JUNIOR YEAR ABROAD

(See Study Abroad 959)

KOREAN 574

(See also Asian Studies 098, East Asian Languages and Area Studies 214)

Department of Asian Languages and Cultures, Faculty of Arts and Sciences

Associate Professor:

Young-mee Yu Cho, B.A., Seoul National; Ph.D., Stanford

An interdisciplinary major with a concentration on Korea is available through the program in East Asian Languages and Area Studies 214.

Minor Requirements

The minor in Korean requires six language courses in Korean beyond the elementary level, of which at least three courses must be at the 300 level or above. Currently available courses that count for the minor are : 01:574:131,132 Intermediate Korean; 01:574:301,302 Advanced Korean; 01:574:401,402 Advanced Readings in Korean; and 01:574:495,496 Independent Study in Korean.

Course in English

01:574:210. INTRODUCTION TO KOREAN CULTURE (3)
Survey of Korean culture and society in a historical context. Exploration into the connection between language and culture. Examination of modern Korean novels and their social and historical relevances.

Courses in Korean

01:574:101,102. ELEMENTARY KOREAN (4,4)
Introduction to sound, grammar, and writing system of modern Korean; practice and exercises in speaking, reading, and writing.

01:574:131,132. INTERMEDIATE KOREAN (4,4)
Prerequisite: 01:574:102 or equivalent.
Development of oral proficiency, practice in reading comprehension, composition, study of grammar, and vocabulary building.

01:574:301,302. ADVANCED KOREAN (3,3)
Prerequisite: 01:574:132 or equivalent.
Study of advanced vocabulary and grammar through reading texts in various styles. Practice in composition and refinement of oral proficiency.

01:574:401,402. ADVANCED READINGS IN KOREAN (3,3)
Pre- or corequisite: 01:574:302 or equivalent.
Selected readings from modern Korean materials, including fiction, essays, newspapers, and journal articles. Discussion and some writing exercises.

01:574:495,496. INDEPENDENT STUDY IN KOREAN (3,3)
Prerequisites: Permission of instructor and department.
Independent reading under supervision of a member of the department.

LABOR STUDIES 575

Department of Labor Studies and Employment Relations, School of Management and Labor Relations

Directors: Adrienne Eaton and David Bensman

Dean: Barbara Lee

Professors:

Joseph Blasi, B.S., Pittsburgh; Ed.D., Harvard
John F. Burton, Jr., B.S., Cornell; LL.B., Ph.D., Michigan
Dorothy Sue Cobble, B.A., California (Berkeley); M.A., San Francisco State; Ph.D., Stanford
Charles Heckscher, B.A., M.A., Ph.D., Harvard
Paula B. Voos, B.A., Whitman; M.A., Portland State; Ph.D., Harvard

Associate Professors:

David Bensman, B.A., Chicago; Ph.D., Columbia
Adrienne Eaton, B.A., Michigan; M.A., Ohio State; Ph.D., Wisconsin
Wells Keddie, B.A., Stanford; M.A., Ph.D., Claremont Graduate School
Jeffrey H. Keefe, B.A., Villanova; Ph.D., Cornell

Assistant Professors:

Saul Rubinstein, B.A., Swarthmore College; Ed.M., Harvard; Ph.D., Massachusetts Institute of Technology
Lisa Schur, B.A., Harvard; J.D., Northeastern; Ph.D., California (Berkeley)
Ryan Smith, B.A., Pennsylvania; M.S., Wisconsin; Ph.D., California (Los Angeles)

The undergraduate labor studies program aims to provide students with an opportunity to learn more about the nature of work, the problems of working people, and what workers have done, both individually and collectively, to address those problems. Its introductory courses offer anyone interested in the world of work (or likely to have a job) the opportunities to develop a realistic view of the dominant institutions, practices, and values of the workforce and to think about how the work world can change to meet the challenge of the next century. Intermediate courses enable students to acquire a range of specific competencies useful to employment, labor relations, and human resource specialists. They also allow students to participate in a series of cultural and disciplinary dialogues providing alternative perspectives on work and the wider society. Advanced courses provide students majoring in labor studies with an opportunity to consolidate what they have learned about the nature of work through more in-depth study of a particular topic or topics through either independent work or the senior seminar. Labor studies majors are eligible to apply for a five-year Bachelor of Arts / Master of Labor and Industrial Relations degree program.

Major Requirements

The major consists of 36 credits in labor studies. In place of 6 of these credits, students may substitute related courses from other programs. (A list of these courses is available from the department.) The following courses are required:

37:575:101 Introduction to Labor Studies and Employment Relations; 37:575:395 Perspectives on Labor Studies and Employment Relations; one advanced course taken in the senior year, chosen from 37:575:450, 490, 494, 495, 496, 497, 498, or 499.

Minor Requirements

The minor consists of 18 credits in labor studies and must include 37:575:101 Introduction to Labor Studies and Employment Relations.

Departmental Honors Program

To qualify, a student must have completed 18 credits in labor studies. The student also must have attained a cumulative grade-point average of 3.0 or better and a grade-point average of 3.4 or better in the major at the end of the junior year. At that time, the student should formally apply to the chairperson. Candidates who are accepted are required to complete a research project under the direction of a faculty member, culminating in a written honors paper, and are examined orally on their project by a faculty honors committee.

Courses

37:575:100. Introduction to Labor Studies and Employment Relations (3)
Credit not given for both this course and 37:575:101.
Work, workers, and organizations that represent employees; class, race, gender, and work; legal, labor market, and human resource issues.

37:575:101. Introduction to Labor Studies and Employment Relations (4)
Credit not given for both this course and 37:575:100.
Same as 100 but with special emphasis on skill development through role-playing.

37:575:201,202. Development of the Labor Movement (3,3)
Each of these courses may be taken separately in any order, or together during the same term.
Two-term overview of the history, philosophy, structure, and activities of trade unions and other worker organizations and their impact on the American economic, political, and social fabric.

37:575:301. Comparative Labor Movements (3)
Introduction to the study of unionism as a worldwide phenomenon, with emphasis upon the similarities and differences between the American labor movement and foreign labor movements; the major problems confronting unions in selected European, Asian, Latin American, and African nations.

37:575:302. Comparative Social and Labor Legislation (3)
Comparative study of social and labor legislation in foreign countries. Emphasis on the content of labor laws, their administration, the economic and social conditions that promoted them, the economy of nations, and effects of the laws on the relationship of labor and industry.

37:575:303. Black Workers in American Society (3)
Examination of the historical relationships between black workers and the American labor movement; analysis of problems facing black workers at the workplace.

37:575:305. Theories of the Labor Movement (3)
Various theories that influenced the development of labor unions; focus on the works of Marx, Lenin, Commons, Perlman, Gompers, Sorel, and the Webbs.

37:575:307. Latino Workers in the U.S. (3)
Role of Latino workers in U.S. society and the U.S. economy; impact of the new migration on the U.S. labor market and social policy.

37:575:308. Dynamics of Work and Work Organizations (3)
Examination of the social dynamics of economic institutions and their corresponding work relations; corporate organization and trade union structure; selected problems of technological change and industrialization; human relations in industry and the changing bases of managerial authority.

37:575:309. Working Women in American Society (3)
Focus on the contemporary experience of working women, including an exploration of current legal strategies and social policies created to address their concerns.

37:575:312. Conflict and Conflict Resolution in the Workplace (3)
How people resolve work-related grievances: bargaining, grievance procedures, mediation, arbitration, demonstrations, strikes, and industrial violence. Examines union and nonunion workplaces.

37:575:313. Technological Change and the World of Work (3)
Application of computer and microchip technologies coupled with enormous range and flexibility of developing telecommunication systems and their effect on workers, labor unions, industry, and labor-management relations.

37:575:314. Collective Bargaining (3)
Comprehensive study of the development of collective bargaining; the nature and scope of contracts; the changing character of collective bargaining processes through negotiation, legislation, the courts, and arbitration; the substantive issues in bargaining including the implications for public policy.

37:575:315. Protective Labor Legislation (3)
Analysis of legislation designed to protect working and living standards of American workers and its implementation by government agencies. Examination of pensions, occupational safety and health, fair employment practices, social security, and unemployment insurance.

37:575:319. Trade Union Structure and Administration (3)
Structure, government, and internal administration of national unions, confederations of unions, and regional and local unions in the U.S. Discussion of problems of union democracy.

37:575:322. American Labor Unions in Politics (3)
Role of the labor movement in the political process from the New Deal to the present, including an analysis of its ideology, its legislative agenda, its political action, and its impact on public policy.

37:575:325. Economics of the Employment Relationship (3)
Fundamentals of labor economics presented. Economic dimensions of public policies and human resource administration.

37:575:328. International Labor Organizations and the American Worker (3)
Study of international labor organizations and their impact on American workers, labor unions, and such issues as multinational corporations, occupational safety and health, social security, and human rights.

37:575:335. Women and the Labor Movement (3)
Relation between women and unions, historically and in the present; how unions can and have addressed issues such as pay equity, equal opportunity, sexual and racial harassment, organizing women workers, and moving women into union leadership.

37:575:338. OCCUPATIONAL SAFETY AND HEALTH (3)
Federal and state regulatory laws and enforcement, the basic issues involved in safety and health at the workplace, and worker, union, and employer response to the issues.

37:575:340. AMERICAN LABOR LAW (3)
Examination of the present legal arrangements governing the conduct of labor relations in the U.S.; historical development and impact of common law, legislative statutes, and court decisions on the growth of the labor movement.

37:575:350. PUBLIC SECTOR COLLECTIVE BARGAINING (3)
Study of employer-employee relations in the public sector; federal executive orders and state and municipal legislation regulating public employers and employee organizations; procedures for bargaining unit certification, representation, and recognition; dispute resolution techniques.

37:575:355. CURRENT LABOR PROBLEMS (3)
Selected number of labor issues that have particular relevance in contemporary society.

37:575:360. UNION ORGANIZING (3)
Introduction to and critical analysis of union-organizing strategies and tactics.

37:575:361. LABOR AND CORPORATE RESTRUCTURING (3)
Study of how management efforts to decentralize organizational structures and reduce employment levels affect industrial relations, work and workers, skill levels and training needs, and productivity and the macroeconomy.

37:575:362. THE WORK-EDUCATION CONNECTION (3)
What do workers need to know to be prepared for the jobs being generated by the global economy? How do the American secondary- and higher-education systems prepare workers for changing jobs?

37:575:363. TRADE UNIONS AND WORLD ECONOMY (3)
Changes in the global economy and their effects on the living standards and bargaining power of American workers and their unions. Alternative strategies for dealing with globalization.

37:575:364. DIVERSITY IN THE WORKPLACE (3)
Focuses on how the increasing demographic diversity of American workplaces affects social relations, cultural dynamics, and organizational effectiveness.

37:575:395. PERSPECTIVES ON LABOR STUDIES (3)
Open only to labor studies majors who have completed at least 15 credits of labor studies course work.
In-depth study of the classic works on the nature of labor, the relationship of work to other social functions, and the relationship between workers and management.

37:575:401. RESEARCH METHODS IN LABOR STUDIES (3)
Nature and sources of labor statistics; alternative research methods used in the study of labor problems.

37:575:407. WORKERS' MOVEMENT IN NEW JERSEY (3)
Examination of workers' movements at state and local levels in New Jersey, using library resources, interviews, participant observations, and movement archives. Research results document the development of the New Jersey labor movement.

37:575:450. SENIOR SEMINAR IN LABOR STUDIES (3)
Open only to labor studies majors who have completed at least 21 credits of labor studies course work.
In-depth study of a labor studies topic. Intensive reading and discussion designed to integrate student experiences in the labor studies major.

37:575:490. INTERNSHIP IN LABOR EDUCATION (BA)
Prerequisite: Permission of instructor.
Students work under the supervision of individual faculty members and other experienced labor educators to develop and / or teach courses and workshops.

37:575:491,492,493. TOPICS IN LABOR STUDIES (3,3,3)
In-depth examination of particular topics concerning work organization, worker problems, or worker organizations.

37:575:494,495. INDEPENDENT STUDY AND RESEARCH (BA,BA)
Prerequisite: Permission of instructor.
Individual reading and research project under the guidance of a labor studies faculty member on a topic of interest to the student.

37:575:496,497. INTERNSHIP IN LABOR STUDIES (BA,BA)
Prerequisite: Permission of instructor.
Students work as staff members in a labor union or labor-related organization (public or private), in an industrial relations unit in private industry, or as employees in a position that permits observation of and participation in a labor union at the grass-roots level. Allows students to apply conceptual knowledge learned in the classroom to actual situations and to acquire new skills and knowledge.

37:575:498,499. HONORS IN LABOR STUDIES (BA,BA)
Prerequisite: Permission of department. Open only to honors students.
Individual research and reading project under the guidance of a member of the department.

LATIN 580 (See Classics)

LATIN AMERICAN STUDIES 590

Department of Spanish and Portuguese, Faculty of Arts and Sciences

Web Site: http://www.rci.rutgers.edu/~rulas

Director: Tomás Eloy Martínez, Spanish and Portuguese; Ph.D. (Honoris Causa), John F. Kennedy (Buenos Aires), Universidad Nacional de Tucumán (Argentina)

Academic Director: Marcy Schwartz, Spanish and Portuguese; Ph.D., Johns Hopkins

Affiliated Faculty:

Robert J. Alexander, Economics (Emeritus); Ph.D., Columbia
Anne Freire Ashbaugh, Associate Dean, Livingston College; Ph.D., Duquesne
Samuel L. Baily, History; Ph.D., Pennsylvania
Herman L. Bennett, History; Ph.D., Duke
César Braga-Pinto, Spanish and Portuguese; Ph.D., California (Berkeley)
Mary Lee Bretz, Spanish and Portuguese; Ph.D., Maryland
Kim D. Butler, Africana Studies; Ph.D., Johns Hopkins
Pedro A. Cabán, Puerto Rican and Hispanic Caribbean Studies; Ph.D., Columbia
José Camacho, Spanish and Portuguese, Linguistics; Ph.D., Southern California
Frank Dauster, Spanish and Portuguese (Emeritus); Ph.D., Yale
Nancy G. Diaz, Spanish (Newark); Ph.D., Rutgers
Peter Guarnaccia, Human Ecology; Ph.D., Connecticut
Robert R. Kaufman, Political Science; Ph.D., Harvard
Lawrence La Fountain-Stokes, Spanish and Portuguese, Puerto Rican and Hispanic Caribbean Studies; Ph.D., Columbia
Elpidio Laguna-Díaz, Classical and Modern Languages (Newark); Ph.D., CUNY (Graduate Center)
Jorge Marcone, Spanish and Portuguese; Ph.D., Texas
Luis Martínez-Fernández, Puerto Rican and Hispanic Caribbean Studies; Ph.D., Duke
Yolanda Martínez-San Miguel, Spanish and Portuguese; Ph.D., California (Berkeley)
Gabriela Mora, Spanish and Portuguese (Emerita); Ph.D., Smith
Carlos Raúl Narváez, Spanish and Portuguese; Ph.D., Columbia
Isabel Nazario, Center for Latino Arts and Culture; M.F.A., CUNY (Queens College)
Margaret H. Persin, Spanish and Portuguese; Ph.D., Indiana
Asela Rodríguez de Laguna, Classical and Modern Languages (Newark); Ph.D., Illinois

Phillip Rothwell, Spanish and Portuguese, Linguistics; Ph.D., Cambridge
Susana Rotker, Spanish and Portuguese; Ph.D., Maryland
Thomas Rudel, Human Ecology; Ph.D., Yale
Liliana Sanchez, Spanish and Portuguese, Linguistics; Ph.D., Southern California
Marcy Schwartz, Spanish and Portuguese; Ph.D., Johns Hopkins
Benigno Sifuentes-Jáuregui, Spanish and Portuguese; Ph.D., Yale
Adolfo Snaidas, Spanish and Portuguese; Ph.D., Rutgers
Thomas M. Stephens, Spanish and Portuguese; Ph.D., Michigan
Camilla Stevens, Spanish and Portuguese; Ph.D., Kansas
Gail Triner-Besosa, History; Ph.D., Columbia
Lourdes Vázquez, Latin America, Africa, and Anthropology Librarian; M.A., New York
Olga J. Wagenheim, History (Newark); Ph.D., Rutgers
Silvio Waisbord, Communications; Ph.D., California (San Diego)
Mark Wasserman, History; Ph.D., Chicago
Carmen T. Whalen, Puerto Rican and Hispanic Caribbean Studies; Ph.D., Rutgers
Eugene N. White, Economics; Ph.D., Illinois

The program in Latin American studies of the Department of Spanish and Portuguese is dedicated to academic preparation in the areas of literature, political science, social sciences, history, art, and economics. In these domains, the program encourages consideration of philosophies through which Latin America and the United States can maintain a two-way dialogue that contributes to the mutual enrichment of each. Issues of importance include diversity among Latin American countries, the resurgence of violence, and other themes of interest to future intellectuals, politicians, economists, academicians, and specialists in the humanities.

Major Requirements

The interdisciplinary major in Latin American studies consists of 36 credits, of which 18 credits must be at the 300 level or above, completed with a grade of C or better. The program's core course is 01:590:201 Introduction to Latin American Civilization and Culture. There are four other required courses: 01:508:262 Modern Latin America, 01:836:301 Hispanic Communities in the United States, 01:790:312 Change in Latin America, and 01:590:401 or 402 Seminar in Latin American Studies. Majors must take a minimum of 6 credits from each of the following three areas: history, social sciences, and Spanish-American or Brazilian literature not in translation. Majors also must demonstrate language proficiency in Spanish equivalent to 01:940:325 or above and in Portuguese equivalent to 01:810:201 or 203 or above; majors may substitute proficiency in French equivalent to 01:420:213 for that of Portuguese with the permission of the program director. Course selections for the major must be approved by the program director or a program adviser.

Minor Requirements

The interdisciplinary minor in Latin American studies consists of 18 credits, of which 9 must be at the 300 level or above, completed with a grade of C or better. The required courses are 01:590:201 Introduction to Latin American Civilization and Culture, 01:508:262 Modern Latin America, 01:836:301 Hispanic Communities in the United States, and 01:790:312 Change in Latin America. The minor must include at least 6 credits from two of the following three areas: history, social sciences, and Spanish-American or Brazilian literature not in translation. Minors also must demonstrate language proficiency in Spanish equivalent to 01:940:325 or above or in Portuguese equivalent to 01:810:201 or 203 or above. Course selections for the minor must be approved by the program director or a program adviser.

Departmental Honors Program

To be eligible for honors work, students must have a cumulative grade-point average of 3.25 or higher and an average of 3.5 or higher in Latin American studies courses. Students are admitted to the departmental honors program by recommendation of a faculty adviser and permission of the director. Students must write an honors thesis. Departmental honors also are awarded to those students maintaining a grade-point average of 3.5 in the major and who complete the requirements for the Henry Rutgers Honors Thesis, the Mabel Smith Douglass Honors Project, the Paul Robeson Project, or the University College Honors Program. Interested students are encouraged to apply at the department toward the end of their junior year. More detailed information is available in the departmental office.

For additional information about the program, consult the department's web site.

Courses

01:590:201. INTRODUCTION TO LATIN AMERICAN CIVILIZATION AND CULTURE (3)
Survey of Latin American culture from the colonial period to the present day. Consideration of chronicles of the Indies, documents on independence and nation formation, and canonical texts of modern literature and thought.

01:590:393. ARCHITECTURE AND SOCIETY IN LATIN AMERICA (3)
Prerequisites: 01:082:105,106 or 276 or 391,392 or permission of instructor. Credit not given for both this course and 01:082:393.
Architecture in Latin America after the Conquest; emphasis on urban development from the Laws of the Indies to Brasilia in social and historical contexts.

01:590:401,402. SEMINAR IN LATIN AMERICAN STUDIES (3,3)
Credit not given for both these courses and 01:940:403,404.
Correlation of studies through analysis of particular problems or periods in Latin American civilization. Reading, reports, discussions.

01:590:410. AFRICAN-BRAZILIAN HISTORY (3)
Credit not given for both this course and 01:014:410.
Overview of history of largest African diaspora community in the world. Encourages critical analysis of major issues in African-Atlantic diaspora studies. Principal scholarship supplemented with selected readings in literature, oral history, African-Brazilian movement documents, and iconography.

01:590:460. RACE, CLASS, AND ETHNICITY IN LATIN AMERICA (3)
Prerequisite: One term of 01:940:300-level of Spanish literature or permission of department. Credit not given for both this course and 01:940:460.
Investigation of racioethnic conflicts and racial formation and renegotiation in Latin America through literary and nonliterary sources. Consideration of class, racism, miscegenation, marginalization, and ethnonymy.

01:590:497,498. HONORS IN LATIN AMERICAN STUDIES (BA,BA)
Prerequisites: 01:940:394 or equivalent, and permission of Latin American Studies Program Committee. Open only to seniors.
Preparation for comprehensive examination in Latin American studies and research paper prepared under direction of honors committee.

01:590:499. READINGS IN LATIN AMERICAN STUDIES (3)
Prerequisites: Permission of Latin American Studies Program Committee and instructor. May not be taken for more than one term.
Independent readings under faculty supervision. Project must be one not already treated in a formal course.

LAW

Since law schools do not require that any special undergraduate curriculum be followed, no one program can be described as the best preparation for law school. Students should seek a broad foundation in the liberal arts. Many students preparing for law school choose majors in political science, history, English, modern languages, philosophy, or programs in mathematics and the sciences. In selecting a course of study, students should consult a prelaw adviser at their college.

LIFE SCIENCES

The following majors are available in the Division of Life Sciences:

Biological Sciences 119
Cell Biology and Neuroscience 146
Genetics and Microbiology 447
Molecular Biology and Biochemistry 694

Students interested in the life sciences also may consider related tracks within major programs offered by the Department of Chemistry (biological option), the Department of Exercise Science and Sport Studies, and the Department of Psychology (specialization in behavioral neuroscience).

Division of Life Sciences, Faculty of Arts and Sciences

Web Site: http://lifesci.rutgers.edu

Dean: Kenneth J. Breslauer

Director, Office of Undergraduate Instruction: Jamshid Rabii

Chairperson, Department of Cell Biology and Neuroscience: Richard E. Triemer

Chairperson, Department of Genetics: Jay A. Tischfield

Chairperson, Department of Molecular Biology and Biochemistry: Stephen Anderson

The Division of Life Sciences coordinates, fosters, and integrates the instructional and research activities of a broad range of faculty with interests in the biological sciences. The principal units of the division include three departments: Cell Biology and Neuroscience, Genetics, and Molecular Biology and Biochemistry, as well as two sections, the biological chemistry section of the Department of Chemistry, and the biopsychology and behavioral neuroscience section of the Department of Psychology. The division's primary goal is to provide a high caliber of interdisciplinary teaching and research in the life sciences as it trains the next generation of teachers and researchers.

Instruction in the life sciences has undergone enormous changes over the past ten to fifteen years. These changes reflect the intellectual revolution of the last two decades, as well as technical advances that have expanded greatly the tools available to life scientists. Today, students majoring in the life sciences at Rutgers–New Brunswick experience an exciting atmosphere of learning that exposes them to the concepts and methods of these intellectual and technological advances. The students have open to them a plethora of learning avenues, ranging from thought-provoking lecture presentations to original and cutting-edge research opportunities in state-of-the-art laboratories. A first-class faculty, modern laboratory equipment, and powerful computers used in teaching reflect the division's commitment to provide its students with the best learning environment.

The division offers a wide spectrum of majors for students interested in the life sciences. These options range from a division-based major in biological sciences, designed to provide a general life sciences education, to department-based majors in cell biology and neuroscience, genetics and microbiology, and molecular biology and biochemistry, aimed at providing specialized training, with a strong emphasis on research. Graduates of the division will be highly competitive for a range of postbaccalaureate opportunities, including graduate education and research, health-professions training, and biomedical and biotechnological research positions, as well as teaching careers in the sciences.

The first two years of the student's tenure at Rutgers is expected to revolve around the life sciences core curriculum, a series of basic offerings designed to provide the general background required for pursuing upper-division courses in any of the individual majors. Regardless of the major chosen, students are encouraged to participate in independent study within a research laboratory in order to take advantage of the rich expertise of the many life sciences faculty in New Brunswick. The division also has a highly developed advising system, with many faculty advisers available to work with individual students in their selection of courses and completion of their major requirements.

Students may not major in more than one of the following majors in the Division of Life Sciences: Biological Sciences (119), Cell Biology and Neuroscience (146), Genetics and Microbiology (447), or Molecular Biology and Biochemistry (694). Furthermore, students majoring in one of these four majors may not minor in Biological Sciences (119).

For additional information and announcements about the Division of Life Sciences, please visit the division's web site.

Life Sciences Core Curriculum

The life sciences core curriculum is a set of courses required for all majors in the division of life sciences listed here. The core includes a series of introductory- and intermediate-level courses in the physical and life sciences forming a foundation of knowledge necessary to understand modern biology and to prepare for the more advanced courses required for each major. Following are core courses:

1. 01:119:101-102 General Biology (4,4)
2. 01:160:161-162 General Chemistry (4,4) or 01:160:163-164 Honors General Chemistry (4,4)
3. 01:160:171 Introduction to Experimentation (1)
4. 01:160:307-308 Organic Chemistry (4,4) or 01:160:315-316 Principles of Organic Chemistry (4,4)
5. 01:160:311 Organic Chemistry Laboratory (2)
6. 01:447:380 Genetics (4)
7. 01:640:135,138 Calculus for the Biological Sciences (4,4) or 01:640:151-152 Calculus for Mathematical and Physical Sciences (4,4)
8. 01:750:203-204 General Physics (3,3)*
9. 01:750:205-206 General Physics Laboratory (1,1)*

* 01:750:193-194 (4,4) may be substituted for 203-204 (3,3) plus 205-206 (1,1).

Biological Sciences 119

Director: Jamshid Rabii

Associate Director: Lenore Neigeborn

Lecturers:

Frank H. Deis, B.A., Rice; Ph.D., Medical College of Virginia
Martha B. Haviland, B.A., Rutgers; M.S., A.M., Ph.D., Michigan
Diana W. Martin, B.S., Florida Atlantic; M.S., Florida; Ph.D., Texas (Austin)
Lenore Neigeborn, B.A., Johns Hopkins; Ph.D., Columbia
Martha W. Rancourt, B.S., Maine; Ph.D., Rutgers
Joanne Siu Stolen, B.S., Michigan; M.S., Seton Hall; Ph.D., Rutgers
Gregg Transue, B.S., Pennsylvania State; M.S., Ph.D., Rutgers
Anthony J. Uzwiak, B.A., Ph.D., Rutgers

Entry Requirements of the Major

Students wishing to major in biological sciences must have completed two terms of general biology, including laboratory, with a grade of C or better in each course (or have the permission of the department). No more than two courses with a grade of D may be used to fulfill the requirements of the major.

Major Requirements

The program in biological sciences, administered through the Division of Life Sciences Office of Undergraduate Instruction, is intended to provide a broad and comprehensive training in modern biology. This course of study is recommended for those who wish to study biology as part of their liberal arts education, preparing them for a career in one of the health professions, graduate studies in biology, a teaching career in secondary schools (courses in education also are required), as well as employment in various areas of the life sciences. If a student wishes to concentrate his or her studies in a specific area of biology, he or she should consider a major offered by one of the departments in the Division of Life Sciences or in Cook College. Faculty advisers are available to assist each student with course selection and program requirements.

A minimum of 20 credits of course work from among general biology, genetics, and life sciences electives must be completed in residence. In other words, no more than 16 credits in this part of the major requirements may be transferred from any institution outside of Rutgers–New Brunswick. This rule is intended to assure that students receiving degrees from Rutgers–New Brunswick have taken a minimum number of courses in their major with New Brunswick faculty. Please keep in mind that although a course may transfer from another institution into one of the Rutgers–New Brunswick colleges, it will not necessarily be accepted toward the major in biological sciences. Therefore, transfer courses must be evaluated and accepted by the Advising Office of the Office of Undergraduate Instruction in order to count toward the major.

The course requirements for the biological sciences major are divided into two sections, the life sciences core courses and the life sciences electives.

Required Life Sciences Core Courses (47 credits)

01:119:101-102 General Biology (4,4)
01:160:161-162 (4,4) or 01:160:163-164 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:160:307-308 or 01:160:315-316 Organic Chemistry (4,4)
01:160:311 Organic Chemistry Laboratory (2)
01:447:380 Genetics (4)
01:640:135,138 *(4,4) or 01:640:151-152 Calculus (4,4)
01:750:203-204 General Physics (3,3)†
01:750:205-206 General Physics Laboratory (1,1)†

Life Sciences Electives (24 credits)

It is highly recommended that students meet with life sciences advisers when planning their elective courses. It is important that the courses taken complement each other as much as possible and are not merely a collection of unrelated topics.

The electives must include at least three laboratory courses, only one of which may be satisfied by independent study or research work. General biology laboratory and "library research" do not qualify for this requirement. A minimum of six courses (18 credits) must be at the 300 or 400 level, including at least three separate laboratory courses or three courses with a laboratory component. The laboratory associated with genetics (382 or equivalent), if taken, may be used to satisfy one of the three laboratory requirements.

No course at the 100 level may be used to satisfy the life sciences elective requirements. A maximum of 6 credits of independent study / research / honors research may be used toward the 24 elective credits. Please keep in mind that a minimum grade-point average of 2.8 is required to enroll in an independent study / research course in biological sciences. Independent study / research courses can satisfy only one of the three laboratory requirements, regardless of number of credits. Courses taken on a pass / fail basis may not be used to satisfy requirements for the major in biological sciences.

The elective courses must include at least one course each from the Cell Biology and Neuroscience 146, Genetics and Microbiology 447, Molecular Biology and Biochemistry 694, and Natural Resource Management 704 subject areas. A list of approved courses in subject areas in addition to those in the Division of Life Sciences (Biological Sciences 119, Cell Biology and Neuroscience 146, Genetics and Microbiology 447, and Molecular Biology and Biochemistry 694) will be published by the Advising Office of the Office of Undergraduate Instruction. It is recommended strongly that students consult this list prior to registering for their courses. Generally, acceptable courses have a year of general biology as a prerequisite; however, there are exceptions. Notably, several courses in the biochemistry area are exempted from this prerequisite. It is imperative for students to consult the published list and / or meet with an adviser. Cooperative education credits may not be used to satisfy requirements for the major in biological sciences, unless prior approval has been obtained from the Office of Undergraduate Instruction.

Minor Requirements

The minor requires six courses of at least 3 credits each in life sciences subjects, including General Biology. No other course at the 100 level may be used to satisfy the minor. Three of the six required courses must be taken at Rutgers–New Brunswick. A maximum of 3 credits of research in a life sciences subject may be used toward the minor. A minimum of three courses at the 300 level or above is required. Only life sciences courses acceptable for the biological

* With permission, 01:640:138 (4) may be substituted by 01:960:379 Basic Probability and Statistics (3) or 401 Basic Statistics for Research (3).
† 01:750:193-194 may be substituted for 203-204 (3,3) plus 205-206 (1,1).

sciences major may be used for the minor. Courses in chemistry, mathematics, or physics do not count toward the minor. A grade-point average of 2.0 or better in courses credited toward the minor is required.

Independent Study and Research in Biology

A minimum cumulative grade-point average of 2.8 is required for a student to register for an independent study / research course in biological sciences. A maximum of 6 credits of laboratory-based independent study, research, or honors projects may be used to fulfill the elective credits requirement in biology. The independent study / research form, available from the Advising Office of the Office of Undergraduate Instruction, must be completed and signed by the professor in whose laboratory the student will study, prior to initiating the research project. A special permission number from the Advising Office of the Office of Undergraduate Instruction is necessary for registration. Students may not earn academic credit for laboratory projects for which they are being paid.

Rutgers/University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School Bachelor's/Medical Degree Program (B.A./M.D.)

Specially selected students may pursue a bachelor's degree and a medical degree in an eight-year articulated program. The first and second years of college are included in the eight years. Applicants must be in their fourth term at Rutgers and must have completed 40 credits with a minimum cumulative grade-point average of 3.2 by the end of the third term. By the end of the fourth term, applicants must have completed, or be in the process of completing, the following: two terms each of general biology, general chemistry, and organic chemistry, and one term each of English and college-level mathematics. Two terms of physics, and an additional term of English, must be completed by the end of the third year. Performance on advanced placement exams and in transfer courses usually are not considered in evaluating candidates for admission. Applicants with advanced-placement biology credits must have completed at least one biology course at Rutgers–New Brunswick. Applicants from the Newark and Camden campuses, if admitted, are required to transfer to a college on the New Brunswick campus.

Successful applicants initially are given provisional admission into the program and are permitted to take at least one medical school course per term. A second review of the student's credentials is made by the medical school during the fourth year to ascertain that the student has maintained adequate academic and nonacademic qualities appropriate for retention in the medical school. It is expected that students earn grades of A or B (Honors or High Pass) in courses taken at both universities. Contact the Advising Office of the Office of Undergraduate Instruction for additional requirements and information.

Students enrolled in the articulated program may choose any major available to them at Rutgers–New Brunswick. Those students who wish to pursue a major other than the biological sciences, must discuss their plans with the appropriate department in order to establish the requirements they need to complete for their major. Except as stipulated below, students enrolled in the articulated program with a major in biological sciences are expected to fulfill all requirements of the major.

The following University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School (UMDNJ–RWJMS) courses may be used to fulfill requirements of the major in the biological sciences: cell biology and histology, gross anatomy, microbiology and immunology, physiology, biochemistry, and neural sciences. No more than 4 credits per laboratory course and 3 credits per nonlaboratory course may be used toward the bachelor's degree. Additional credits may not be used as elective credits toward the Rutgers baccalaureate degree.

A student may not receive biological sciences credits for UMDNJ–RWJMS Cell Biology and Histology and Rutgers Animal Histology (01:146:322); UMDNJ–RWJMS Gross Anatomy and Rutgers Human Anatomy (01:377:424); UMDNJ–RWJMS microbiology and immunology and Rutgers General Microbiology (01:447:390), Rutgers Pathogenic Microbiology (01:447:392) and Immunology (01:146:474); UMDNJ–RWJMS Physiology and Rutgers Systems Physiology (01:146:356,357); UMDNJ–RWJMS Neural Science and Rutgers Advanced Neurobiology (01:146:445, 447); UMDNJ–RWJMS Biochemistry and Rutgers Introductory Biochemistry and Molecular Biology (01:694:301), and General Biochemistry (11:115:403-404); and UMDNJ–RWJMS Human Genetics and Rutgers Topics in Human Genetics (01:447:481).

A student enrolled in the articulated program with a major in the biological sciences is required to take Rutgers General Biology (01:119:101-102), Rutgers Genetics (01:447:380), and three additional Rutgers biology electives (3- or 4-credit courses) at the 300 to 400 level. The additional Rutgers requirements for the major may be fulfilled by Rutgers and / or UMDNJ–RWJMS courses indicated above. UMDNJ–RWJMS biomedical laboratory courses may be used to satisfy the laboratory requirement of the Rutgers major in the biological sciences. B.A. / M.D. students who wish to minor in the biological sciences must take a Rutgers biology course at the 300 or 400 level in addition to the UMDNJ–RWJMS courses indicated above.

Departmental Honors Program

To qualify, a student must have a cumulative grade-point average of 3.0 or better and an average of 3.4 or better in courses credited toward the biological sciences major at the end of the junior year. At that time, the student should apply formally to the Advising Office of the Office of Undergraduate Instruction. Accepted students are expected to complete at least 6 credits in an independent research project, resulting in a thesis, and to pass an oral examination before a faculty committee in the general field of the student's program of emphasis. If the research is done in a laboratory outside of Rutgers–New Brunswick, the examination committee must include at least one individual from the Rutgers–New Brunswick faculty.

Honors students must register either for an honors course sequence in life sciences or for a course sequence in a college honors program. These decisions should be discussed with an adviser. An approval form available in the advising office, must be completed.

Courses

With the exception of 01:119:101-102 General Biology, courses numbered at the 100 level may not be used for major credit.

01:119:098. FOUNDATIONS FOR BIOLOGICAL SCIENCE (E2)
Preparation for college-level general biology.
Selected topics in general biology: introduction to cellular organization, metabolism, genetics, reproduction, and organ systems. Development of analytical reasoning and science-oriented study techniques.

01:119:100. CONCEPTS IN BIOLOGY (4)
Lec./rec. 3 hrs., lab. 3 hrs.
One-term course covering major biological principles and developing laboratory and problem-solving skills.

01:119:101-102. GENERAL BIOLOGY (4,4)
Lec./rec. 3 hrs., lab. 3 hrs. Pre- or corequisites: 01:350:101; 01:640:111,112, or 115. Designed for science majors.
Broad principles of cell biology, genetics, and evolution; physiology, ecology, and population dynamics of plant and animal systems.

01:119:103. PRINCIPLES OF BIOLOGY (4)
Lec. 3 hrs., lab. 3 hrs. Designed for students who must take a one-term laboratory course in introductory biology to meet major requirements. Credit not given for both this course and 01:119:101-102. Not for life sciences major credit.
Selected topics in general biology, including cell structure, genetics, plant and animal diversity, basic plant and animal biology, ecology, and evolution.

01:119:104. OUTREACH IN BIOLOGY (1)
Pre- or corequisites: Must be enrolled in second term of 01:119:102 or have taken this course during the spring term or Summer Session of the previous year. Student must have received a grade of C or better in 01:119:101-102. By special permission.
Service-learning component of General Biology. Students organize and integrate material learned in 01:119:101-102 and practice communicating their knowledge to the seventh- or eighth-grade science classes at a local school.

01:119:109,110. RECITATION IN BIOLOGY (1,1)
Corequisite for 109 is 01:119:101; corequisite for 110 is 01:119:102. Courses 109 and 110 are corequisites for 01:119:127-128. For students needing additional background.
Discussion of the basic methods and principles.

01:119:111,112. READING IN GENERAL BIOLOGY (1,1)
Corequisite for 111 is 01:119:101; corequisite for 112 is 01:119:102.
Discussion and reading providing extensive and advanced coverage of selected topics.

01:119:127-128. ANATOMY AND PHYSIOLOGY: HEALTH SCIENCES (4,4)
Lec. 3 hrs., lab. 3 hrs. Corequisites: 01:119:109,110. For nursing, medical technology, physical therapy, and other professional students.
Structure and function of human organ systems. Some microanatomy and biochemical aspects of physiology included.

01:119:131. MICROBIOLOGY FOR THE HEALTH SCIENCES (3)
Lec. 3 hrs. Not open to students who have taken 01:119:133 or 01:447:390. For nursing and other professional students.
Introduction to microbes with emphasis on the nature and behavior of microorganisms, the interrelationships between microbes and the human host in health and disease, and the principles of prevention and control of infectious disease.

01:119:132. MICROBIOLOGY FOR THE HEALTH SCIENCES LABORATORY (1)
Lab. 3 hrs. Pre- or corequisite: 01:119:131.
Laboratory to accompany 01:119:131.

01:119:133. INTRODUCTION TO MICROORGANISMS (3)
Lec. 3 hrs. Not open to students who have taken 01:119:131 or 01:447:390.
Morphology, physiology, and identification of microorganisms; distribution of microorganisms and their beneficial and detrimental effects on humans and the environment.

01:119:134. INTRODUCTION TO THE PRACTICE OF MICROBIOLOGY (1)
Lab. 3 hrs. Pre- or corequisite: 01:119:133.
Application of basic principles to the study of microorganisms; the theoretical and practical aspects of experimentation.

01:119:140. THE DNA REVOLUTION (3)
(Formerly 01:115:100)
Not open to students in a life sciences or related major.
Introduction to the molecular basis of life and the biotechnological revolution. How this information is used in medicine and agriculture.

01:119:148. MOVING BODIES: THE BIOLOGY OF MOVEMENT (3)
Credit not given for both this course and 01:119:100, 101-102, 103, or 127-128. Not for life sciences major credit.
Considers fundamental processes that allow humans and other animals to move, including structural basis (bones and muscles), control (brain and nervous system), conversion of food into energy (digestion and nutrition), movement of food and oxygen to muscles (circulation), and some common and familiar injuries and illnesses and their treatments.

01:119:150. BIOLOGY, SOCIETY, AND BIOMEDICAL ISSUES (3)
Not open to students in a life sciences or related major.
Discussion of current topics and issues in human health and medicine, from a biological perspective.

01:119:152. BIOMEDICAL ISSUES OF AIDS (3)
Fundamentals of infectious disease, immunology, and virology as they apply to the HIV disease. The impact of this epidemic examined in a variety of psychological and social arenas.

01:119:154. GENETICS, LAW, AND SOCIAL POLICY (3)
Prerequisite: Sophomore standing. Not open to students in a life sciences or related major.
Principles of human and behavior genetics and their legal, ethical, and social implications. Topics include: genetic screening, counseling, and engineering; reproductive regulation; human behavior genetics.

01:119:160. BIOLOGY, SOCIETY, AND ECOLOGICAL ISSUES (3)
Not open to students in a life sciences or related major.
Ecological and evolutionary ideas affecting space ecology; population increase, food supply, air and water pollution, war, and nuclear energy.

01:119:170. PLANTS AND PEOPLE (3)
Credit not given for both this course and 11:776:170. Not open to students in a life sciences or related major.
Influence of plants on the economic, social, and cultural history of man, especially as sources of food, shelter, clothing, drugs, and industrial raw materials. Current problems of agriculture, plant industry, medicine, and conservation.

01:119:171. DRUGS AND PLANT HALLUCINOGENS (3)
Not open to students in a life sciences or related major.
Biological basis for the effects of drugs on the brain and body.

01:119:182. HUMAN SEXUALITY (3)
Not open to students in a life sciences or related major.
Anatomical and physiological bases of human sexuality; biological and cultural aspects of sexual differentiation and psychosexual development, contraception, venereal disease, and sexual lifestyles.

01:119:195. BRAIN, MIND, AND BEHAVIOR (3)
Open to students in a college honors program. Not open to students in a life sciences or related major.
Honors course discussing the interrelationship between the brain, the mind, and behavior.

01:119:197. MICROBES AND PEOPLE IN A RAPIDLY CHANGING WORLD (3)

Open to students in a college honors program. Not open to students in a life sciences or related major.

How microbes have changed and will change the course of human history. Discussion of emerging and reemerging infectious diseases as major issues to be faced by humanity in the new millennium. Lectures, student presentations, and roundtable discussions.

01:119:201-202. INDEPENDENT STUDY IN BIOLOGY (1-3,1-3)

Prerequisites: Permission of the Office of Undergraduate Instruction; cumulative grade-point average of 2.8 or better. May not be used to fulfill a laboratory requirement.

Independent study under the direction of a member of the faculty. Written report required.

01:119:307-308. RESEARCH IN BIOLOGY (1-3,1-3)

Prerequisites: Permission of the Office of Undergraduate Instruction; cumulative grade-point average of 2.8 or better. Open only to juniors and seniors majoring in biological sciences.

Laboratory / field research on original problem under the direction of a member of the faculty. Written report required.

01:119:406-407. RESEARCH IN BIOLOGY (1-4,1-4)

Prerequisites: Permission of the Office of Undergraduate Instruction; cumulative grade-point average of 2.8 or better. Open only to seniors majoring in biological sciences.

Laboratory / field research on original problem under the direction of a member of the faculty. Written report is required.

01:119:408-409. HONORS IN BIOLOGY (3-6,3-6)

Prerequisite: Permission of the Office of Undergraduate Instruction. Open only to seniors majoring in biological sciences who meet the requirements for departmental honors.

Laboratory / field research on original problem under the direction of a member of the faculty. Written thesis, oral presentation, and defense are required.

Cell Biology and Neuroscience 146

Department of Cell Biology and Neuroscience, Faculty of Arts and Sciences

Chairperson: Richard E. Triemer

Professors:

Bruce Babiarz, B.A., SUNY (Oswego); M.A., Miami (Ohio); Ph.D., Cincinnati
Joanna Burger, B.S., SUNY (Albany); M.S., Cornell; Ph.D., Minnesota
David T. Denhardt, B.A., Swarthmore; Ph.D., California Institute of Technology
Emmet A. Dennis, B.S., Cuttington College (Liberia); M.A., Indiana; Ph.D., Connecticut
Francine B. Essien, A.B., Temple; Ph.D., Yeshiva (Einstein College of Medicine)
A. Farmanfarmaian (Emeritus), B.A., Reed College; M.A., Ph.D., Stanford
Martin Grumet, B.S., Cooper Union; Ph.D., Johns Hopkins
Nathan H. Hart, B.A., Clark; M.A., Ph.D., Harvard
Robert B. Herman, A.B., M.A., M.S., New York; Ph.D., Rutgers
Arnold G. Hyndman, A.B., Princeton; Ph.D., California (Los Angeles)
W. Robert Jenkins (Emeritus), B.S., College of William and Mary; M.S., Virginia; Ph.D., Maryland
Alice Y.-C. Liu, B.S., Chinese University of Hong Kong; Ph.D., Mount Sinai School of Medicine
Charles E. Martin, B.S., Illinois; Ph.D., Florida
Gary F. Merrill, B.S., Weber State; Ph.D., Michigan State
Charles H. Page, B.S., Allegheny College; M.S., Ph.D., Illinois
Jamshid Rabii, A.B., California (Berkeley); Ph.D., California (San Francisco)
Richard E. Triemer, B.A., Bloomfield College; Ph.D., North Carolina
Aurea C. Vasconcelos, B.S., Puerto Rico; M.S., George Washington; Ph.D., Chicago
Wise Young, B.A., Reed; Ph.D., Iowa; M.D., Stanford
Edward J. Zambraski, B.S.E., Cortland State; Ph.D., Iowa

Associate Professors:

Morad A. Abou-Sabe, B.S., Alexandria (Egypt); M.S., California (Berkeley); Ph.D., Pittsburgh
Sidney Auerbach, B.A., Oberlin College; Ph.D., Wisconsin
Bill D. Davis, B.S., M.S., Kansas State Teachers College; Ph.D., Purdue
Robin L. Davis, B.S., Pennsylvania State; M.A., San Diego State; Ph.D., Stanford
Dunne Fong, B.S., Massachusetts; M.A., Ph.D., Princeton
Mark R. Plummer, B.S., Cornell; Ph.D., Stanford
Kathleen M. Scott, B.A., Brown; Ph.D., Yale

Assistant Professors:

Lori R. Covey, B.S., California (Riverside); Ph.D., Columbia
Bonnie Firestein-Miller, B.S., Michigan; M.S., Ph.D., California (San Diego)
Shu-Chan Hsu, B.S., Ph.D., British Columbia
Megerditch Kiledjian, B.A., Rutgers; Ph.D., Pennsylvania
Joe W. Ramos, B.A., Ph.D., Virginia

Lecturer:

Martha W. Rancourt, B.S., Maine; Ph.D., Rutgers

The Department of Cell Biology and Neuroscience offers a course of study that provides fundamental and comprehensive training in the areas of cell biology and neuroscience. The major objective of this program is to prepare students for graduate studies in cell biology and neuroscience; entry into professional schools in medicine, dentistry, or other health-related fields; or employment in industrial and pharmaceutical companies.

Entry Requirements of the Major

The major in the Department of Cell Biology and Neuroscience is open to students beyond their first year who have received grades of C or better in courses taken toward the major, except by special permission of the departmental chairperson. A grade of C or better in courses credited toward the major is required for graduation.

Major Requirements

The program of study offers two tracks from which students can select, depending upon particular interests and career goals: Option A (general track) and Option B (honors research track). Normally, each student would select a track in consultation with a departmental adviser in the term that the major is declared. A number of core courses are required of all students in the cell biology and neuroscience major, regardless of the chosen option.

Required Core Courses (59 credits)

01:119:101-102 General Biology (4,4)*
01:146:245 Fundamentals of Neurobiology (3)
01:146:270 Fundamentals of Cell and Developmental Biology (3)
01:160:161-162 or 01:160:163-164 General Chemistry (4,4)*
01:160:171 Introduction to Experimentation (1)*
01:160:307-308 or 01:160:315-316 Organic Chemistry (4,4)*
01:160:311 Organic Chemistry Laboratory (2)*
01:447:380 Genetics (4)*
01:640:135,138† or 01:640:151-152 Calculus (4,4)*
01:694:407-408 Molecular Biology and Biochemistry (3,3) or one course in biochemistry (3) plus one course in molecular biology (3)
01:750:203-204 General Physics (3,3)* ‡
01:750:205-206 General Physics Laboratory (1,1)* ‡

* Life sciences core course.
† 01:640:138 may be substituted by 01:960:379 Basic Probability and Statistics (3) or 401 Basic Statistics for Research (3).
‡ 01:750:193-194 (4,4) may be substituted for 203-204 (3,3) plus 205-206 (1,1).

Options

Option A (General Track; 13 credits)

This area of concentration is for students who, upon graduation, seek immediate employment or plan to attend professional schools in health-related fields. In addition to the required core courses, students must take the following courses:

01:146:445 Advanced Neurobiology I (3) or 01:146:447 Advanced Neurobiology II (3)
01:146:470 Advanced Cell Biology (3) or 01:146:472 Advanced Developmental Biology (3)
Two elective courses in the life sciences area, at the 300-400 level, one of which must have an associated laboratory (7 or more credits). These electives must be selected in consultation with a faculty adviser.

Option B (Honors Research Track; 18 credits)

This area of concentration is for students who, upon graduation, plan to attend graduate school in cell biology or neuroscience or plan to attend professional schools in health-related fields. A student must qualify for admission into the honors research track. See departmental honors program for student qualifications. In addition to the required core courses, students must complete the requirements in Group 1 (either 1A or 1B) and in Group 2:

Group 1A:
01:146:445 Advanced Neurobiology I (3) or 01:146:447 Advanced Neurobiology II (3)
01:146:446 Advanced Neurobiology Laboratory I (3) or 01:146:448 Advanced Neurobiology Laboratory II (3)

Group 1B:
01:146:470 Advanced Cell Biology (3) or 01:146:472 Advanced Developmental Biology (3)
01:146:471 Advanced Cell Biology Laboratory (3) or 01:146:473 Advanced Developmental Biology Laboratory (3)

Group 2:
01:146:405 Honors Seminar (3)
01:146:408-409 Honors Research (3,3)
One elective course in the life sciences area, at the 300 to 400 level (3 or more credits). This elective must be selected in consultation with a faculty adviser.

Departmental Honors Program

Honors in cell biology and neuroscience are awarded to students who have completed successfully the honors research track. To qualify for the honors research track (option B), a student must have attained a minimum cumulative grade-point average of 3.0 and a grade-point average of 3.5 or better in courses required for the major. The student should apply formally to the department for acceptance into the honors program by the end of the first term of the junior year.

Courses

01:146:245. FUNDAMENTALS OF NEUROBIOLOGY (3)
(Formerly 01:119:245)
Prerequisites: 01:119:101-102.
Introduction to the biology of the nervous system. Topics covered include nerve cell signaling, sensory and motor systems, and higher brain processes.

01:146:270. FUNDAMENTALS OF CELL AND DEVELOPMENTAL BIOLOGY (3)
Prerequisites: 01:119:101-102. Credit not given for both this course and 01:119:370 or 378 or 460.
Principles of cell biology. Structure, function, and macromolecular organization of cellular organelles.

01:146:302. COMPUTERS IN BIOLOGY (3)
(Formerly 01:119:302)
Prerequisites: 01:119:101-102; 01:160:161-162; and 01:640:135, 138.
Application of the computer in analysis of biological data. Includes programming techniques and simulations of biochemical, physiological, genetic, ecological, medical, and evolutionary phenomena.

01:146:312. HUMAN PRENATAL DEVELOPMENT (3)
Prerequisites: 01:119:101-102.
Morphological, physiological, and biochemical phenomena in human embryonic and fetal development. Human birth defects and manipulation of gametes and embryos.

01:146:322. ANIMAL HISTOLOGY (4)
(Formerly 01:119:322)
Lec. 3 hrs., lab. 3 hrs. Prerequisites: 01:119:101-102.
Structure of the tissues and organs of the animal body.

01:146:327. PARASITOLOGY (4)
(Formerly 01:119:327)
Lec. 3 hrs., lab. 3 hrs. Prerequisites: 01:119:101-102. Credit not given for both this course and 01:146:328.
Cell biology, epidemiology, pathogenesis, and diagnosis of protozoan and metazoan parasites and arthropods of importance in medical, veterinary, and wildlife diseases.

01:146:328. HUMAN PARASITOLOGY (3)
(Formerly 01:119:328)
Lec. 3 hrs. Prerequisites: 01:119:101-102. Credit not given for both this course and 01:146:327.
Discussion of the cell biology, epidemiology, pathogenesis, and clinical manifestations of human parasitic diseases.

01:146:329. HUMAN PARASITOLOGY LABORATORY (1)
(Formerly 01:119:329)
Lab. 3 hrs. Pre- or corequisite: 01:146:328. Credit not given for both this course and 01:146:327.
Laboratory to accompany 01:146:328.

01:146:356. SYSTEMS PHYSIOLOGY (3)
(Formerly 01:119:356)
Prerequisites: 01:119:101-102 and 01:160:161-162, 171.
Comprehensive study of the principal organ systems of laboratory animals and man.

01:146:357. SYSTEMS PHYSIOLOGY LABORATORY (1)
(Formerly 01:119:357)
Lab. 3 hrs. Pre- or corequisite: 01:146:356.
Laboratory to accompany 01:146:356.

01:146:405. HONORS SEMINAR (3)
Prerequisite: Permission of department. Open only to senior honors students.
Development of communication and written skills needed by professionals in cell biology and neuroscience. Oral reports, written papers, and discussion of topics of current interest in the field.

01:146:406-407. RESEARCH IN CELL BIOLOGY AND NEUROSCIENCE (1-4,1-4)
Prerequisite: Permission of instructor. Open only to students majoring in cell biology and neuroscience.
Research under the direction of a member of the departmental faculty. Written report required.

01:146:408-409. HONORS RESEARCH (3-6,3-6)
Prerequisite: Permission of department. Open only to senior honors students.
Research project under the direction of a departmental faculty member. Written report and oral presentation required.

01:146:445. ADVANCED NEUROBIOLOGY I (3)
(Formerly 01:119:445)
Prerequisite: 01:146:245.
Advanced concepts in neurobiology focusing on cellular and molecular aspects of neuronal signaling, including ion channel gating, sensory transduction, and transmission across chemical and electrical synapses.

01:146:446. ADVANCED NEUROBIOLOGY LABORATORY I (3)
(Formerly 01:119:448)
Prerequisites: 01:146:445 and permission of instructor.
Advanced laboratory methods in neurobiology. Electrophysiological and immunochemical techniques to explore the structural and functional features of nerve cells.

01:146:447. ADVANCED NEUROBIOLOGY II (3)
Prerequisite: 01:146:245.
Advanced concepts in neurobiology focusing on systems-level approaches to neurotransmission, development, and regeneration.

01:146:448. ADVANCED NEUROBIOLOGY LABORATORY II (3)
Prerequisites: 01:146:447 and permission of instructor.

01:146:450. ENDOCRINOLOGY (3)
(Formerly 01:119:450)
Prerequisites: 01:119:101-102. Recommended: Courses in physiology and organic chemistry. Open to juniors and seniors only. Credit not given for both this course and 11:067:450.
Endocrinology and neuroendocrinology of animals, including man. The structure and function of the endocrine glands, including the hypothalamus, and the biosynthesis and chemistry of hormones.

01:146:464. TOPICS IN CELL BIOLOGY AND NEUROSCIENCE (1-3)
Prerequisites: 01:146:245 and 270.
Directed readings and discussion of selected topics in cell biology and neuroscience.

01:146:470. ADVANCED CELL BIOLOGY (3)
Prerequisite: 01:146:270. Credit not given for both this course and 01:119:370 or 378 or 01:146:370.
Advanced concepts of cell biology focusing on the molecular organization of cells, including internal membranes and synthesis of macromolecules, the cell nucleus, the cell cycle, cytoskeleton, cell-cell adhesion and the extracellular matrix, and signal transduction.

01:146:471. ADVANCED CELL BIOLOGY LABORATORY (3)
Prerequisites: 01:146:470 and permission of instructor.
Advanced laboratory methods in cell biology. Emphasis on light and electron microscopy, imaging, immunochemical techniques, tissue culture, and methods of identifying and separating macromolecules.

01:146:472. ADVANCED DEVELOPMENTAL BIOLOGY (3)
Prerequisite: 01:146:270.
Molecular biology of early development, morphogenesis, organogenesis, tissue interactions, and genetic control of cellular differentiation.

01:146:473. ADVANCED DEVELOPMENTAL BIOLOGY LABORATORY (3)
Prerequisites: 01:146:472 and permission of instructor.
Advanced laboratory methods in developmental biology. Designed to introduce students to techniques of obtaining and handling gametes and experimental manipulation of embryos. Focus on sea urchin, frog, zebrafish, and chick.

01:146:474. IMMUNOLOGY (3)
(Formerly 01:119:474)
Prerequisites: 01:119:101-102 and 01:447:380. Recommended: 01:447:390.
Fundamental principles of immunology with emphasis on antibody formation, immunoglobulin molecules and genes, hypersensitivity reactions, and the cellular basis for the immune response.

01:146:475. LABORATORY IN IMMUNOLOGY (1)
(Formerly 01:119:475)
Pre- or corequisite: 01:146:474.
Biochemical and molecular analysis of immune cell function. Application of immunological techniques to the examination of normal and diseased states.

01:146:478. MOLECULAR BIOLOGY (3)
(Formerly 01:119:478)
Prerequisites: 01:160:307-308. For juniors and seniors only.
Structure and function of macromolecules, recombinant DNA technology, and study of genes and their regulation at the molecular and cellular levels.

Genetics 447

Department of Genetics, Faculty of Arts and Sciences

Chairperson: Jay A. Tischfield

Professors:

Emanuel B. Hey III, B.A., Colgate; Ph.D., SUNY (Stony Brook)
Pal Maliga, Ph.D., Jozsef Attila, Szeged (Budapest)
Howard C. Passmore, A.B., Franklin and Marshall College; Ph.D., Michigan
Amrik S. Sahota, B.S., Bath (U.K.); M.S., Loughborough (U.K.); Ph.D., London (U.K.)
William H. Sofer, B.S., Brooklyn College; Ph.D., Miami
Jay A. Tischfield, B.S., CUNY (Brooklyn); M.Ph., Ph.D., Yale

Associate Professors:

David E. Axelrod, B.S., Chicago; Ph.D., Tennessee
Linda M. Brzustowicz, A.B., Harvard (Radcliffe); M.D., Columbia
Douglas Fugman, B.S., Ph.D., Cincinnati
Tara C. Matise, B.S., Cornell; M.S., Ph.D., Pittsburgh
Terry R. McGuire, B.S., Ohio State; Ph.D., Illinois
Lee D. Simon, B.A., Wesleyan; M.S., Ph.D., Rochester
Navin K. Sinha, B.S., M.S., Patna (India); Ph.D., Minnesota
Ann C. St. John, B.S., Pennsylvania State; M.S., Ph.D., Wisconsin (Madison)

Assistant Professors:

Xuemi Chen, B.Sc., Beijing; Ph.D., Cornell
Kim S. McKim, B.S., Simon Fraser; Ph.D., British Columbia
Christopher G. Rongo, B.A., California (San Diego); Ph.D., Massachusetts Institute of Technology
Konstantin V. Severinov, M.Sc., Moscow State; Ph.D., Russian Academy of Sciences
Andrew W. Singson, B.S., California (Davis); Ph.D., California (San Diego)
David A. Toke, B.S., M.S., Ph.D., Rutgers

Lecturers:

Martha B. Haviland, B.A., Rutgers; M.S., A.M., Ph.D., Michigan
Joanne Siu Stolen, B.S., Michigan; M.S., Seton Hall; Ph.D., Rutgers

The Department of Genetics offers an undergraduate major in genetics and microbiology, with separate options (tracks) in genetics and in microbiology. In recent years the two disciplines have come to interact strongly with one another and to form part of the conceptual center of many areas of pure and applied biology, including biomedical research, biotechnology, ecology, and agriculture. Students in the departmental major have the opportunity to participate in research and to learn how discoveries in science are made. Courses cover a wide range of topics, from molecular genetics to genomics and bacterial physiology. These courses of study prepare students for careers in biological research, biotechnology, and the health professions.

Entry Requirements of the Major

Students wishing to major in this department must have been enrolled at Rutgers for at least one term and have earned a C or better in introductory biology, general chemistry, and calculus (or have permission from the department chair). A grade of C or better in courses credited toward the major is required for graduation.

Major Requirements

The department offers three options (tracks). Students interested in any of the departmental options will be required to take 01:447:315 Introduction to Research in Genetics and Microbiology. The aim of the course is to introduce students to both the theory and practice of research, so that they may be prepared to conduct a research project in molecular genetics, microbiology, or genomics.

Required Core Courses (58 credits)

01:119:101-102 General Biology (4,4) *
01:160:161-162 or 01:160:163-164 General Chemistry (4,4) *
01:160:171 Introduction to Experimentation (1) *
01:160:307-308 or 01:160:315-316 Organic Chemistry (4,4) *
01:160:311 Organic Chemistry Laboratory (2) *
01:447:315 Introduction to Research in Genetics and Microbiology (3)
01:447:380 Genetics (4) *
01:447:403,404 Seminar in Genetics and Microbiology (1,1)
01:640:151-152 Calculus for Mathematical and Physical Sciences (4,4) *
01:694:407-408 Molecular Biology and Biochemistry (3,3) †
01:750:203-204 General Physics (3,3) *‡‡
01:750:205-206 General Physics Laboratory (1,1) *‡‡

Option A (Genetics Laboratory Research Track; 18 credits)

01:447:406-407 Research in Genetics and Microbiology (3-6,3-6) or 01:447:408-409 Honors in Genetics and Microbiology (6,6) ‡

A minimum of 12 credits is required in research courses. In addition, students must take at least two electives (3 or more credits each) from the list of electives below.

Option B (Genetics Nonlaboratory Research Track; 18 credits)

01:447:302 Computers in Biology (3)
01:447:382 Genetics Laboratory (1)
01:447:403,404 Seminar in Genetics and Microbiology (1,1)
01:447:489,490 Literature Research in Genetics and Microbiology (3,3)

In addition, students must take at least two electives (3 or more credits each) from the list of electives below.

Option C (Microbiology Track; 17 credits)

01:447:390 General Microbiology (4)
01:447:403,404 Seminar in Genetics and Microbiology (1,1)

In addition, students must take at least three electives (3 or more credits each) from the list of electives below, including at least two laboratory courses.

Elective Courses

In addition to the undergraduate courses listed below, highly qualified students will be encouraged to choose courses, in consultation with departmental advisers, from Graduate School–New Brunswick offerings.

11:126:413 Plant Molecular Biology (3)
11:126:427 Methods in Recombinant DNA Technology (4)
11:126:481 Molecular Genetics (3)
11:126:482 Molecular Genetics Laboratory (2)
01:146:270 Fundamentals of Cell and Developmental Biology (3)
01:146:327 Parasitology (4) **
01:146:328 Human Parasitology (3) **
01:146:470 Advanced Cell Biology (3) **
01:146:474 Immunology (3) **
01:146:475 Immunology Laboratory (1) **
01:160:341,342 Physical Chemistry (3,3)
01:160:437 Physical Chemistry of Biological Systems (3)
01:447:245 Introduction to Cancer (3)
01:447:382 Genetics Laboratory (1) ††
01:447:384 Behavioral and Neural Genetics (3)
01:447:390 General Microbiology (4) ††
01:447:392 Pathogenic Microbiology (3)
01:447:394 Applied Microbiology (4)
01:447:406-407 Research in Genetics and Microbiology (3-6,3-6) ††
01:447:408-409 Honors in Genetics and Microbiology (6,6) ††
01:447:480 Topics in Molecular Genetics (3)
01:447:481 Topics in Human Genetics (3)
01:447:486 Evolutionary Genetics (3)
01:447:489,490 Literature Research in Genetics and Microbiology (3,3)
01:447:491 Microbial Ecology (4)
01:447:495 Cancer (3)
01:447:498 Bacterial Physiology (3)
01:694:492 Molecular Biology of Gene Regulation and Development (3)

Departmental Honors Program

To qualify, a student must have, by the end of the junior year, a cumulative grade-point average of 3.0 or better and an average of 3.4 or better in courses credited toward one of the departmental majors. At that time the student should apply formally to the department. Accepted students are expected to complete at least 6 credits in an independent research project, resulting in a thesis, and to pass an oral examination before a faculty committee in the general field of the student's program of emphasis. If the research is done in a laboratory outside of Rutgers–New Brunswick, the examination committee must include at least one individual from the Rutgers–New Brunswick faculty.

Honors students must register either for an honors course sequence in genetics and microbiology or for a course sequence in a college honors program. These decisions should be discussed with an adviser. An approval form is available in the departmental office.

Courses

01:447:201-202. INDEPENDENT STUDY IN GENETICS AND MICROBIOLOGY (3,3)

Prerequisites: Permission of department; cumulative grade-point average of 2.8 or better. May not be used to fulfill a laboratory requirement.

Independent study under the direction of a member of the departmental faculty. Written report is required.

* Life sciences core course.
† Microbiology majors may substitute 11:115:301 (3) or 01:694:301 (3)
‡ A grade-point average of 3.5 in courses required for the major is a prerequisite for this course.
** Electives for microbiology track only.
†† Credit for a required course may not be applied as an elective.
‡‡ 01:750:193-194 (4,4) may be substituted for 203-204 (3,3) plus 205-206 (1,1).

01:447:245. INTRODUCTION TO CANCER (3)
(Formerly 01:119:495)
Prerequisites: 01:119:101-102.
Introduction to the biological and medical aspects of malignancy.

01:447:302. COMPUTERS IN BIOLOGY (3)
(Formerly 01:119:302)
Prerequisites: 01:119:101-102; 01:160:161-162; and 01:640:135, 138.
Application of the computer in analysis of biological data. Includes programming techniques and simulations of biochemical, physiological, genetic, ecological, medical, and evolutionary phenomena.

01:447:307-308. RESEARCH IN GENETICS AND MICROBIOLOGY (1-3,1-3)
Prerequisites: 01:447:380, permission of department, and cumulative grade-point average of 2.8 or better.
Laboratory research on original problem under the direction of a professor.

01:447:315. INTRODUCTION TO RESEARCH IN GENETICS AND MICROBIOLOGY (3)
Prerequisites: 01:160:307-308 or 315-316. Pre- or corequisite: 01:447:380. Open only to genetics and microbiology majors.
Basic principles and methods of research with microbial model systems used in the analysis and manipulation of genes, followed by a research project in molecular genetics.

01:447:380. GENETICS (4)
(Formerly 01:119:380)
Lec. 3 hrs., rec. 1 hr. Prerequisites: 01:119:101-102 and 01:160:161-162, 171. Credit not given for both this course and 11:776:305.
Introduction to the mechanisms of heredity and evolution. Mechanisms of Mendelian inheritance, meiosis, recombination, gene mutation and mapping, and an introduction to modern biochemical, molecular, and population genetics.

01:447:382. GENETICS LABORATORY (1)
(Formerly 01:119:382)
Lab. 3 hrs. Pre- or corequisite: 01:447:380.
Laboratory to accompany 01:447:380.

01:447:384. BEHAVIORAL AND NEURAL GENETICS (3)
Prerequisites: 01:146:245 and 01:447:380.
Influence of genetics on the nervous system and behavior of various organisms. Overview of field including experimental analysis of behavior, development of the nervous system, and sensory systems. Emphasis on reading and interpreting original research.

01:447:390. GENERAL MICROBIOLOGY (4)
(Formerly 01:119:390)
Lec. 3 hrs., lab. 3 hrs. Prerequisites: 01:119:101-102; 01:160:161-162, 171, and 307.
Basic principles of microbiology. An introduction to the physiology, morphology, pathogenicity, and genetics of groups of microorganisms and their applications.

01:447:392. PATHOGENIC MICROBIOLOGY (3)
(Formerly 01:119:392)
Prerequisite 01:119:131 or 133 or 01:447:390.
Host / parasite interactions in diseases caused by microorganisms, including pathogenicity, virulence, and immunity. Principles of infection, transmission, and disease control also discussed.

01:447:394. APPLIED MICROBIOLOGY (4)
(Formerly 01:119:394)
Lec. 3 hrs., lab. 3 hrs. Prerequisite: 01:447:390 or equivalent. Credit not given for both this course and 11:126:302.
Microorganisms in foods; their application in industry, agriculture, environment, and medicine. Physical and chemical factors of growth and control in relation to industrial and natural processes.

01:447:398. ELECTRON MICROSCOPY (3)
Pre- or corequisites: 01:119:102, 01:750:203-204; permission of instructor (limited enrollment).
Theory, practice, and application of transmission electron microscopy and scanning electron microscopy; emphasis on material relevant to genetics.

01:447:403,404. SEMINAR IN GENETICS AND MICROBIOLOGY (1,1)
Open only to senior majors.
Results of ongoing research in genetics and microbiology presented by invited academic and industrial scientists.

01:447:406-407. RESEARCH IN GENETICS AND MICROBIOLOGY (3-6,3-6)
Prerequisites: 01:447:315, permission of department, and cumulative grade-point average of 2.8 or better. Open only to seniors majoring in genetics or microbiology.
Research project in the laboratory of a faculty member. Student research plans and results presented in 01:447:403,404.

01:447:408-409. HONORS IN GENETICS AND MICROBIOLOGY (6,6)
Prerequisite: Permission of department. Open only to seniors majoring in genetics or microbiology who meet the requirements for the departmental honors program.
Laboratory research on original problem under the direction of a professor. Written thesis, oral presentation, and defense required.

01:447:480. TOPICS IN MOLECULAR GENETICS (3)
(Formerly 01:119:480)
Prerequisite: 01:447:380.
Current research topics in microbial and molecular genetics. Lectures, discussions, and critical analysis of journal articles.

01:447:481. TOPICS IN HUMAN GENETICS (3)
(Formerly 01:119:481)
Prerequisite: 01:447:380.
Genetic aspects of human health and disease. Topics include birth defects, immunogenetics, cytogenetics, metabolic disorders, pattern of inheritance, and genetic counseling.

01:447:486. EVOLUTIONARY GENETICS (3)
Prerequisite: 01:447:380.
Principles of evolution as revealed in DNA sequences. The effects of natural selection, genetic drift, and speciation on DNA, and the inference of histories from comparative DNA sequence data.

01:447:489,490. LITERATURE RESEARCH IN GENETICS AND MICROBIOLOGY (3,3)
Pre- or corequisites: 01:447:380 and 403.
Literature or computer research projects on a selected subject under the direction of a faculty member. Students write a thesis and present it in 01:447:403,404.

01:447:491. MICROBIAL ECOLOGY AND DIVERSITY (4)
(Formerly 01:119:491)
Lec./rec. 3 hrs., lab. 3 hrs. Prerequisite: 01:447:390. Credit not given for both this course and 11:126:495.
Genetic diversity: the genetic diversity of microorganisms in the environment—how it is measured and what it means; genomics of environmental microbes. Metabolic diversity: modes of microbial metabolism in the environment; geochemical cycling. Ecosystem diversity: microbial interactions; life of microbes in terrestrial, aquatic, and atmospheric environments.

01:447:495. CANCER (3)
(Formerly 01:119:495)
Prerequisite: 01:447:380.
Biological and medical aspects of malignancy. Oncogenic viruses, environmental chemical carcinogens, cell growth regulation, tumor immunology, genetics of cancer.

01:447:498. BACTERIAL PHYSIOLOGY (3)
(Formerly 01:119:498)
Prerequisites: 01:160:307-308, 311; 01:447:390; or permission of instructor.
Bacterial biochemistry with emphasis on integration of metabolic pathways at the level of gene expression and enzymatic activity.

Molecular Biology and Biochemistry 694

Department of Molecular Biology and Biochemistry, Faculty of Arts and Sciences

Web Site: http://www.rci.rutgers.edu/~molbio/

Chairperson: Stephen Anderson

Professors:

Fumio Matsumura, B.A., Tokyo; Ph.D., Nagoya (Japan)
Gaetano T. Montelione, B.S., M.A., Ph.D., Cornell
Robert A. Niederman, B.S., M.S., Connecticut; D.V.M., Ph.D., Illinois
Ruth Steward, B.S., Ph.D., Basel (Switzerland)
Eileen P. White, B.S., Rensselaer Polytechnic Institute; Ph.D., SUNY (Stony Brook)

Associate Professors:

Stephen Anderson, A.B., Ph.D., Harvard
Steven J. Brill, B.S., Maryland; Ph.D., SUNY (Stony Brook)
Monica Driscoll, A.B., Rutgers; Ph.D., Harvard
Isaac Edery, B.S., Ph.D., McGill
Abram Gabriel, B.A., Harvard; M.D., M.P.H., Johns Hopkins
Richard W. Padgett, B.S., Ph.D., North Carolina
Andrew K. Vershon, B.A., Bennington; Ph.D., Massachusetts Institute of Technology

Assistant Professors:

Samuel I. Gunderson, B.S., Ph.D., Wisconsin
Kenneth D. Irvine, B.A., Williams College; Ph.D., Stanford
Garth Patterson, B.A., Northwestern; Ph.D., Oregon
Shigeko Yamashiro, B.S., Saint Paul; Ph.D., Nagoya (Japan)

Lecturer:

Frank H. Deis, B.A., Rice; Ph.D., Medical College of Virginia

The Department of Molecular Biology and Biochemistry offers a course of study in which traditional and modern biochemistry is integrated with studies in molecular biology. In addition, as described below, students are required to carry out undergraduate research work, and three research options in molecular biology and biochemistry are offered to majors. This course of study prepares students for graduate studies in molecular biology and biochemistry and related fields, entry into professional schools in medicine or other health professions, or employment in industries (e.g., biotechnology, pharmaceuticals) in which molecular biology and biochemistry skills are in demand.

Entry Requirements of the Major

The molecular biology and biochemistry major is open to students beyond their first year who have received grades of C or better in courses taken toward the major, except by special permission of the department chairperson. A grade of C or better in all courses credited toward the major is required for graduation.

Major Requirements

A core of courses is required for completion of the major in molecular biology and biochemistry. Students supplement the core with additional required and elective courses in one of three options. All students are required to write a senior thesis or honors thesis and present a seminar.

Required Core Courses (68 credits)

01:119:101-102 General Biology (4,4) *
01:160:161-162 or 01:160:163-164 General Chemistry (4,4)*
01:160:171 Introduction to Experimentation (1) *
01:160:309 Organic Chemistry Laboratory (2) (recommended) or 01:160:311 Organic Chemistry Laboratory (2) (acceptable) *
01:160:315-316 Principles of Organic Chemistry (4,4) (recommended) * or 01:160:307-308 Organic Chemistry (4,4) (acceptable) *
01:160:341-342 Physical Chemistry: Biochemical Systems (3,3) or 01:160:323-324 Physical Chemistry (3,3)
01:447:380 Genetics (4) *
01:640:151-152 Calculus for Mathematical and Physical Sciences (4,4) *
01:640:251 Multivariable Calculus (4)
01:694:315 Introduction to Molecular Biology and Biochemistry Research (3)
01:694:407,408 Molecular Biology and Biochemistry (3,3)
01:694:483,484 Seminar in Molecular Biology and Biochemistry (1,1)
01:750:203-204 General Physics (3,3) *†
01:750:205-206 General Physics Laboratory (1,1) *†

Options

The Department of Molecular Biology and Biochemistry offers two laboratory research options (laboratory option one and laboratory option two), as well as a nonlaboratory research option (nonlaboratory option). In all cases, students must take 01:694:315 Introduction to Molecular Biology and Biochemistry Research and 01:694:483,484 Seminar in Molecular Biology and Biochemistry. Course 01:694:315 is generally meant for junior students in the major, but sufficiently qualified sophomores may take the course, depending on available space, with the permission of the instructor.

Laboratory Option One (15 credits)

01:694:381,382 Undergraduate Laboratory Research (3-6,3-6)
01:694:481,482 Advanced Undergraduate Laboratory Research (3-6,3-6) or some form of "honors" laboratory research (6,6)

A minimum of 12 credits is required in research courses. Students are encouraged strongly to register for more than the minimum whenever possible. Students must take at least one approved elective to satisfy the requirements of this option.

Laboratory Option Two (12 credits)

01:694:381,382 Undergraduate Laboratory Research (3-6,3-6) or 01:694:481,482 Advanced Undergraduate Laboratory Research (3-6,3-6) or some form of "honors" laboratory research (6,6)

A minimum of 6 credits is required in research courses. Students are encouraged strongly to register for more than the minimum whenever possible. Students must take at least two approved electives to satisfy the requirements of this option. Note that students applying for honors must complete 6 credits of honors course work per term for two terms.

Nonlaboratory Option (12 credits)

01:694:489,490 Literature Research in Molecular Biology and Biochemistry (3,3)

Students must take at least two approved electives to satisfy the requirements of this option. Students taking this option may not apply for departmental honors.

* Life sciences core course.
† 01:750:193-194 (4,4) may be substituted for 203-204 (3,3) plus 205-206 (1,1).

Electives

Students are required to take one or more electives approved by their departmental faculty advisers. Because the list of approved electives is changing, students should discuss their elective options directly with their departmental faculty advisers. A list of currently approved electives can be found at the Department of Molecular Biology and Biochemistry web site.

In addition to the undergraduate courses listed, advanced students are encouraged to choose electives from the Graduate School–New Brunswick.

Departmental Honors Program

To qualify, a student must have attained, at the end of the junior year, a cumulative grade-point average of at least 3.0 and a grade-point average of 3.4 or better in courses required for the major. Exceptional students not meeting these criteria but wishing to apply for honors research may petition the department chairperson at the beginning of their senior year. Students accepted to the program are expected to complete two terms (6 credits per term) of honors course work. A written honors thesis, as well as an oral thesis presentation, are required. Students enrolled in 01:694:495,496 Honors Laboratory Research or any of the various college honors programs are eligible to receive departmental honors at the time of graduation.

Courses

01:694:281,282. SOPHOMORE LABORATORY RESEARCH (1-6,1-6)
Credits in this course cannot be used toward the required research credits for laboratory option.
Research project in the laboratory of a faculty member. Written report of research carried out during each term required.

01:694:301. INTRODUCTORY BIOCHEMISTRY AND MOLECULAR BIOLOGY (3)
(Formerly 01:115:301)
Prerequisites: 01:160:209 or 307-308. Not for students majoring in molecular biology and biochemistry.
Chemistry and metabolism of proteins, carbohydrates, lipids, nucleic acids, and other biologically important compounds.

01:694:313. INTRODUCTORY BIOCHEMISTRY LABORATORY (1)
(Formerly 01:115:313)
Lab. 3 hrs. Pre- or corequisite: 01:694:301. Not for students majoring in molecular biology and biochemistry.
Techniques used in research, clinical, and food laboratories, including tests of biological materials, methods of separation, and determination of enzyme activities.

01:694:315. INTRODUCTION TO MOLECULAR BIOLOGY AND BIOCHEMISTRY RESEARCH (3)
(Formerly 01:115:315)
Pre- or corequisites: 01:119:101-102; 01:160:307-308 or 315-316.
Basic principles and methods of research, followed by a research project: structural analyses of molecular clones from eukaryotic cDNA libraries. Description of research opportunities at the university available to undergraduates.

01:694:381,382. UNDERGRADUATE LABORATORY RESEARCH (3-6,3-6)
(Formerly 01:115:381,382)
Research project in the laboratory of a faculty member. Written report of research carried out during each term required.

01:694:407-408. MOLECULAR BIOLOGY AND BIOCHEMISTRY (3,3)
Pre- or corequisites: 01:160:307-308 or 315-316.
Disciplines of biochemistry and molecular biology as interlocking and mutually complementary fields of study. First term: protein structure and function, structure of DNA, RNA, lipids, membranes and carbohydrates, catalysis of biochemical reactions, intermediary metabolism, oxidative phosphorylation, recombinant DNA approaches, DNA replication, repair and recombination, mobile genetic elements. Second term: transcription and gene regulation, RNA splicing, translation, viral gene expression, membrane transport, lipid metabolism, signal transduction, photosynthesis, protein secretion, targeting and turnover, nitrogen, amino acid and nucleotide metabolism.

01:694:411. MOLECULAR PATHWAYS AND SIGNAL TRANSDUCTION (3)
(Formerly 01:115:411)
Prerequisites: 01:694:407-408.
Lectures and discussion of current research areas of advanced molecular and structural biology: transcription, posttranscriptional regulation, cell cycle, neurobiology, protein folding, macromolecular recognition, molecular virology.

01:694:481,482. ADVANCED UNDERGRADUATE LABORATORY RESEARCH (3-6,3-6)
(Formerly 01:115:481,482)
Pre- or corequisites: 01:694:315, 407-408, and 483,484.
Research project in the laboratory of a faculty member. Written report of research carried out during the fall term required; senior thesis required in the spring term. Oral presentation of student research presented in 01:694:483,484.

01:694:483,484. SEMINAR IN MOLECULAR BIOLOGY AND BIOCHEMISTRY (1,1)
(Formerly 01:115:483,484)
Pre- or corequisites: 01:694:315, 381,382, and 407-408; or 481,482, 489,490, or 495,496.
Oral presentation of student's own research results and the research interests of the laboratory with which the student is associated. Discussion of career options in the fall, and a required poster session of student research in the spring. Thesis required.

01:694:489,490. LITERATURE RESEARCH IN MOLECULAR BIOLOGY AND BIOCHEMISTRY (3,3)
(Formerly 01:115:489,490)
Prerequisites: 01:694:315, 407-408, and 483,484.
Literature research projects on a selected subject under the direction of a faculty member. Students write a thesis and present their research results in 01:694:483,484.

01:694:492. MOLECULAR BIOLOGY OF GENE REGULATION AND DEVELOPMENT (3)
Prerequisite: 01:447:482 or 01:694:407.
Advanced molecular studies of modern eukaryotic genetic and developmental issues. Experimental approaches focusing on current research questions, including control of gene expression in yeast, Drosophila and C. elegans developmental genetics, and molecular biology of cancer and oncogenesis.

01:694:495,496. HONORS LABORATORY RESEARCH (6,6)
(Formerly 01:115:495,496)
Pre- or corequisites: 01:694:315, 407-408, and 483,484.
Honors research project in the laboratory of a faculty member. Oral presentation of student research presented in 01:694:483,484. Honors thesis required.

LINGUISTICS 615

Department of Linguistics, Faculty of Arts and Sciences

Web Site: http://equinox.rutgers.edu

Chairperson: Akinbiyi Akinlabi

Professors:

Mark Baker, B.S., Ph.D., Massachusetts Institute of Technology
Jane Grimshaw, B.A., University College (London); Ph.D., Massachusetts
Alan Prince, B.A., McGill (Montreal); Ph.D., Massachusetts Institute of Technology
Kenneth Safir, B.A., Massachusetts; Ph.D., Massachusetts Institute of Technology

Associate Professors:

Akinbiyi Akinlabi, B.A., M.A., Ph.D., Ibadan (Nigeria)
Maria Bittner, B.A., M.A., Oxford; Ph.D., Texas
José Camacho, M.A., Ph.D., Southern California
Veneeta Dayal, B.A., M.A., Delhi (India); Ph.D., Cornell
Viviane Déprez, Licence, Strasbourg (France); M.A., Syracuse; Ph.D., Massachusetts Institute of Technology
Roger Schwarzschild, A.B., Columbia; Ph.D., Massachusetts

Assistant Professors:

Bruce Tesar, M.A., Ph.D., Colorado
Hubert Truckenbrodt, M.A., Tübingen (Germany); Ph.D., Massachusetts Institute of Technology

Linguists in Other Departments:

Ernest Dunn, African Studies; Ph.D., Michigan State
Jerry Fodor, Philosophy; Ph.D., Princeton
Carl Kirschner, Spanish; Ph.D., Massachusetts
Ernest LePore, Philosophy; Ph.D., Minnesota
Robert Matthews, Philosophy; Ph.D., Cornell
Senko Maynard, East Asian, Linguistics; Ph.D., Northwestern
Thomas Stephens, Spanish and Portuguese; Ph.D., Michigan
Suzanne Stevenson, Computer Science; Ph.D., Maryland
Stephen Stich, Philosophy; Ph.D., Princeton
Matthew Stone, Computer Science; Ph.D., Pennsylvania
Karin Stromswold, Psychology; Ph.D., Massachusetts Institute of Technology

Major Requirements

A major in linguistics consists of ten courses of 3 credits each, distributed as follows: (1) the four core courses: 01:615:201, 305, 315, and 325, (2) three additional courses at the 300 level or above in linguistics (615), and (3) three courses at the 300 level or above in linguistics (615) or chosen from the list of approved courses below. Grades of C or better must be earned in all course work that is to be applied to the major.

Minor Requirements

A minor in linguistics consists of six courses of 3 credits each, distributed as follows: 01:615:201; any two courses from among 01:615:305, 315, and 325; two additional courses at the 300 level or above in linguistics (615); and one additional course at the 300 level or above in linguistics (615) or chosen from the approved courses listed below. Grades of C or better must be earned in all course work that is to be applied to the minor.

Approved Courses

Advanced courses in other disciplines appropriate for satisfaction of major or minor requirements include the following:

01:013:301 African Linguistics (3)
01:070:312 Language and Social Diversity (3)
01:070:313 Culture, Language, and Cognition (3)
01:165:325 Advanced Chinese Grammar (3)
01:190:421 Indo-European Origins of the Classical Languages (3)
01:198:452 Formal Languages and Automata (3)
01:350:411,412 Old English Language and Literature (3,3)
01:351:310,311 History of the English Language (3,3)
01:420:332 French Phonetics and Applied Linguistics (3)
01:420:333 Introduction to French Syntax (3)
01:420:403 History of the French Language (3)
01:420:407 Advanced French Syntax (3)
01:420:490 Advanced Topics in French and Francophone Linguistics (3)
01:560:304 Introduction to Italian Linguistics (3)
01:565:325 Advanced Japanese Grammar and Rhetoric (3)
01:730:315 Applied Symbolic Logic (3)
01:730:420 Philosophy of Language (3)
01:830:351 Psychology of Language I (3)
01:830:352 Computational Psycholinguistics (3)
01:830:353 Language Acquisition (3)
01:860:351,352 Structure of the Russian Language (3,3)
01:860:451 Introduction to Slavic Linguistics (3)
01:860:452 Seminar in Slavic Linguistics (3)
01:940:362 Spanish Phonetics and Phonology (3)
01:940:363 Hispanic Bilingualism (3)
01:940:364 Structure of Modern Spanish (3)
01:940:417 History of the Spanish Language (3)
01:940:419 Hispanic Dialectology (3)

Other courses, including courses offered through the Graduate School–New Brunswick, may be selected in consultation with the director of the linguistics program.

Departmental Honors Program

Students wishing to participate in the honors program in the senior year must make written application to the departmental major adviser no later than May 15 of the junior year. To be considered, a student must have a cumulative grade-point average of 3.0 or better and a grade-point average of 3.4 or better in courses counting toward the linguistics major. Students selected to participate in the program enroll in 01:615:495,496 and spend two terms researching and writing an honors thesis under the supervision of a faculty member from the linguistics department. After the thesis is submitted, an oral examination on the thesis is given by a committee consisting of the student's honors program supervisor and two other linguistics department faculty members selected with the approval of the major adviser. On the basis of the committee's report on the thesis and the examination, the department determines whether the student is to be recommended for departmental honors.

Certificate Program

The certificate in Romance linguistics is an interdisciplinary curriculum designed for students in any major who wish to gain expertise in the structure of the Romance languages, which are historically derived from Latin and are currently spoken across Europe and the Americas. The program provides a grounding in linguistic theory coordinated with the study of the structure, history, and / or social context of French, Italian, Latin, and Spanish.

Requirements

The Romance linguistics certificate requires the completion of seven courses (21 credits) with a grade of C or better in each course, chosen with appropriate distribution from the course list below. In addition, students must demonstrate knowledge of at least two Romance languages by the completion of the program.

Course Requirements

1. 01:615:201 Introduction to Linguistic Theory (3)
2. 01:615:340 Romance Linguistics (3)
3 One course from among:
   - 01:615:305 Syntax (3)
   - 01:615:315 Phonology (3)
   - 01:615:325 Semantics (3)
4. Four courses from among:
   - 01:190:421 Indo-European Origins of the Classical Languages (3)
   - 01:420:332 French Phonetics and Applied Linguistics (3)
   - 01:420:333 Introduction to French Syntax (3)
   - 01:420:403 History of the French Language (3)
   - 01:420:407 Advanced French Syntax (3)
   - 01:560:304 Introduction to Italian Linguistics (3)
   - 01:940:362 Spanish Phonetics and Phonology (3)
   - 01:940:363 Hispanic Bilingualism (3)
   - 01:940:364 Structure of Modern Spanish (3)
   - 01:940:417 History of the Spanish Language (3)
   - 01:940:419 Spanish Dialectology (3)

Other Requirements

Knowledge of two Romance languages must be established either by completing at least one course at the 200 level or higher in each language with a grade of C or better, or by placement in the 200 level or higher (proof required). For the purpose of this certificate, the Romance languages are considered to be Latin, Catalan, French, Provençal / Occitan, Italian, Portuguese / Galician, Romanian, any Rhaeto-Romance variety, Spanish / Castilian, or Sardinian. Certificate students who are native speakers of Romance varieties for which there is no placement test or no course available at Rutgers–New Brunswick may submit other proof of their language abilities for validation by a certificate adviser.

Candidates must have their program approved by a Romance linguistics certificate adviser, who is appointed by the chair of the Department of Linguistics. Majors from any field are welcome to enroll in the certificate program. Substitutions for the above courses may be made only with the approval of a certificate adviser.

Candidates for the certificate are encouraged to study abroad, with either the Rutgers Study Abroad programs in France, Italy, Mexico, Spain, among others, or another accredited university program. Courses taken abroad may be offered in substitution for those in the above course list; their suitability must be evaluated by a certificate adviser on a case-by-case basis. Candidates will be required to show documentation (catalog / brochure description, syllabus, texts, exams, etc.) of the type and content of the course being evaluated. Senior candidates who take a seminar or pursue an honors thesis project that relates to Romance linguistics may, with permission of the certificate adviser, offer one such course as a substitute for one of those required above.

Most upper-level courses have prerequisites, and in the language departments, these prerequisite courses are typically taught in the target language.

Courses

01:615:101. INTRODUCTION TO THE STUDY OF LANGUAGE (3)
Open to first-year students. May not be used for major credit.
Wide-ranging examination of human language as a social, cultural, cognitive, historical, and formal phenomenon.

01:615:201. INTRODUCTION TO LINGUISTIC THEORY (3)
Open to first-year students. Required for majors.
Structural properties of human language as illuminated by modern linguistic theory. Sentence-structure, sound-patterns, word-form, aspects of meaning. Principles of Universal Grammar.

01:615:305. SYNTAX (3)
Prerequisite: 01:615:201.
Structure of phrases and sentences in natural language. Universal Grammar and interlinguistic variation. X-bar theory. Case, NP- and Wh-movement, anaphora, binding, government. Lexical representation. Logical form.

01:615:315. PHONOLOGY (3)
Prerequisite: 01:615:201.
Sound structure of language. Phonetic underpinnings, phonological representation, rule-systems, constraint interaction. Syllable structure; feature geometry; vowel harmony; stress, accent, and tone.

01:615:325. SEMANTICS (3)
Prerequisite: 01:615:201.
Meaning in natural language. Construction of the meaning of the whole from the meaning of the parts. Syntactic structure and semantic interpretation. Model-theoretic semantics.

01:615:330. HISTORICAL LINGUISTICS (3)
Prerequisite: 01:615:201.
Change of language structure through time. Methods of reconstructing dead languages. Syntactic and phonological rule-systems as locus of change. Language families; the deep reconstruction controversy.

01:615:340. ROMANCE LINGUISTICS (3)
Prerequisite: 01:615:201.
Comparison of principal syntactic and phonological structures of French, Spanish, Italian, and other Romance languages. Stress patterns, vowel and consonant shifts. Pro-drop, inflection, inversion. Contrast with English.

01:615:350. LANGUAGE AND CONTEXT (3)
Prerequisite: 01:615:201.
Linguistic structure above the sentence level, relating language to context of use. Speech acts, conversational maxims, presupposition and implicature, deixis.

01:615:360. THEORIES OF LANGUAGE (3)
Prerequisite: 01:615:201.
Major twentieth-century approaches to scientific investigation of language. Impact of linguistic theory on psychology, philosophy, literary theory, and anthropology.

01:615:411. MORPHOLOGY (3)
Prerequisite: 01:615:305, 315, or 325.
Structure of words in natural language. Word-formation and syntax. Effects of word-structure on sound-patterning. Inflection, derivation, compounding, headedness, scope of affixes.

01:615:421. LANGUAGE TYPOLOGY (3)
Prerequisites: 01:615:201, 305.
Similarities and differences between grammatical systems, with focus on syntax. Role of principled variation in Universal Grammar. Overt and nonovert movement, pro-drop, case marking, anaphora. Markedness.

01:615:431. INVESTIGATIONS INTO AN UNFAMILIAR LANGUAGE (3)
Prerequisites: 01:615:201; 01:615:305, 315, or 325.
Study of the linguistic structure of an unfamiliar language, based on in-class work with a native-speaker consultant.

01:615:441. LINGUISTICS AND COGNITIVE SCIENCE (3)
Prerequisites: 01:615:201; 01:615:305, 315, or 325.
Linguistic theory and the human mind / brain. Acquisition and processing of natural language. Parsing. Formal learning. Language deficits. Symbolic and connectionist approaches to language.

01:615:451. PHONETICS (3)
Prerequisite: 01:615:305, 315, or 325.
Articulatory mechanisms of speech. Physical characteristics of speech sounds; interpretation of spectrograms. Description and transcription of the sounds of the world's languages.

01:615:471. SELECTED TOPICS IN LINGUISTICS (3)
Prerequisite: 01:615:201; 01:615:305, 315, or 325.
Study of selected areas in linguistics.

01:615:493,494. INDEPENDENT STUDY (3,3)
Prerequisites: Permission of major adviser and instructor.
Independent research carried out under supervision of linguistics faculty member.

01:615:495,496. HONORS IN LINGUISTICS (3,3)
Prerequisites: Senior status; permission of major adviser and instructor.
Supervised research and writing of an honors thesis.

LIVINGSTON COLLEGE COURSES

(See Arts and Science 090)

MANAGEMENT 620

(See School of Business–New Brunswick section)

MARINE SCIENCES 628

Department of Marine and Coastal Sciences / Cook College

Chairperson: Gary L. Taghon

Undergraduate Director: Judith P. Grassle

Professors:

Kenneth W. Able, B.S., Marian; Ph.D., William and Mary
John Dighton, B.Sc., London Polytechnic; M.Sc., Durham; Ph.D., Queen Elizabeth (London)
Paul G. Falkowski, B.S., M.A., CUNY (City College); Ph.D., British Columbia
Susan E. Ford, B.A., Rutgers; Ph.D., Duke
Scott M. Glenn, B.S., Rochester; Sc.D., Massachusetts Institute of Technology/ Woods Hole Oceanographic Institution
J. Frederick Grassle, B.S., Yale; Ph.D., Duke
Judith P. Grassle, B.S., Queensland; Ph.D., Duke
Dale B. Haidvogel, B.S., Massachusetts Institute of Technology; Ph.D., Massachusetts Institute of Technology/Woods Hole Oceanographic Institution
Zbigniew Kolber, M.S., Ph.D., Technical University of Wroclaw (Poland)
Richard A. Lutz, B.A., Virginia; Ph.D., Maine
James R. Miller, B.S., Massachusetts Institute of Technology; M.A., Ph.D., Maryland
Karl F. Nordstrom, B.A., M.S., Ph.D., Rutgers
Eric N. Powell, B.S., Washington; M.S., Ph.D., North Carolina
Norbert P. Psuty, B.S., Wayne State; M.S., Miami (Ohio); Ph.D., Louisiana State
Clare E. Reimers, B.A., Virginia; M.S., Ph.D., Oregon State
Peter A. Rona, B.A., Brown; M.S., Ph.D., Yale
Sybil P. Seitzinger, B.S., Boston; Ph.D., Rhode Island

Associate Professors:

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Monica Mazurek, B.S., Ph.D., California (Los Angeles)
Robert M. Sherrell, B.A., Oberlin; Ph.D., Massachusetts Institute of Technology/ Woods Hole Oceanographic Institution
Gary L. Taghon, B.S., Purdue; M.S., Ph.D., Washington

Assistant Professors:

Jennifer A. Francis, B.A., San Jose State; Ph.D., Washington
Yuan Gao, B.S., M.S., Nan Kai (China); Ph.D., Rhode Island
Maxim Y. Gorbunov, M.S., Ph.D., Moscow State (Russia)
Ximing Guo, B.S., Qingdao Ocean (China); M.S., Ph.D., Washington
Mohamed Iskandarani, B.S., Beirut; M.S., Ph.D., Cornell
Lee J. Kerkhof, B.S., California (Berkeley); Ph.D., California (San Diego/Scripps)
Yair Rosenthal, B.Sc., M.S., Hebrew (Israel); Ph.D., Massachusetts Institute of Technology/Woods Hole Oceanographic Institution
Oscar M. Schofield, B.A., Ph.D., California (Santa Barbara)

Marine science is the study of the marine environment and its interactions with the earth, the biosphere, and the atmosphere. It is therefore an interdisciplinary science requiring a knowledge of the principles of physics, geology and geophysics, mathematics, chemistry, and biology. A major in marine sciences provides students with a broad curriculum in the sciences, which shows how the different scientific disciplines can be brought to bear on understanding marine processes, and managing ocean resources wisely. The major prepares a student for many future paths: further study in graduate school in oceanography or in one of the basic disciplines; employment in one of the many applied marine science or environmental fields; a career in environmental management in the civil service; or teaching in secondary schools.

The marine sciences courses emphasize improvement of oral and written communication skills, and facility in accessing, reading, and understanding the current primary literature in marine sciences. Many of the courses include hands-on, experiential learning in the laboratory or in the field. Students also are required to have 3 credits of experience-based education, by completing at least one term or summer of supervised, independent research.

Entry to the major requires a grade-point average of at least 2.0 in the basic, required mathematics and science courses (i.e., Calculus I and II, General Biology I and II, General Chemistry I and II, General Physics I and II) completed by the time of declaration. This is a credit-intensive major, and students are advised to contact the undergraduate director during their second term.

The curriculum includes the following options: Option A, Marine Biology / Biological Oceanography; Option B, Marine Chemistry; Option C, Marine Geology; and Option D, Physical Oceanography. The required core courses are listed below.

Required Core Courses (33–34 credits)

01:119:101-102	General Biology (4,4)
01:160:161-162	General Chemistry (4,4) or 01:160:163-164 Honors General Chemistry (4,4)
01:160:171	Introduction to Experimentation (1)
01:198:221	Numerical Problems and Computer Programming (4) or 14:440:127 Introduction to Computers for Engineers (3) or an equivalent

01:628:200 Marine Sciences (4)
01:628:364 Oceanographic Methods and Data Analysis (3)
01:628:497,498 Special Problems in Marine Sciences (BA,BA) or an equivalent experience in independent research, which includes both oral and written presentation of the scientific results (3 credits). Ethical issues in marine sciences are addressed within the framework of this experience.
01:960:401 Basic Statistics for Research (3)

Options

Option A, Marine Biology/Biological Oceanography. This option prepares students for professional opportunities or graduate study in oceanography or the biological sciences. Concentrations within this option permit students to focus their studies at different levels of organization; e.g., at the molecular, cellular, organismic, community, or ecosystem level. Students fulfilling the requirements for this major option also may fulfill the requirements for a major in the biological sciences or natural resource management (see the Cook College chapter), depending on their choice of electives.

In addition to the core courses, the following courses are required.

Required Courses (39–44)

01:146:356-357 Systems Physiology and Systems Physiology Laboratory (3,1) or 01:447:498 Bacterial Physiology (3) or 11:704:360 Animal Physiological Ecology (3) or 11:776:382 Plant Physiology (4)
01:160:307-308 Organic Chemistry (4,4) or 01:160:315-316 Principles of Organic Chemistry (4,4) or 01:160:209 Elementary Organic Chemistry (3) and 01:115:301,313 Introductory Biochemistry and Introductory Biochemistry Laboratory (3,1)
01:447:380 Genetics (4) or 11:776:305 Plant Genetics (4)
01:447:390 General Microbiology (4) or 11:628:321 Ichthyology (4) or 01:628:418 Marine Microbiology (4) or 11:704:323 Ornithology (4) or 11:704:324 Invertebrate Zoology (4) or 11:704:325 Vertebrate Zoology (4) or 11:770:402 Mycology: Fungi in the Environment (3)
01:460:476 History of the Earth System (3) or 11:704:240 Behavioral Biology (4) or 11:704:484 Evolution (3)
01:628:462 Biological Oceanography (4)
01:628:472 Chemical Oceanography (4) or 01:628:451 Physical Oceanography (3)
11:704:351 Principles of Applied Ecology (4)
01:750:193-194 Physics for the Sciences (4,4) or 01:750:203-204 General Physics (3,3) and 01:750:205-206 General Physics Laboratory (1,1)

Option B, Marine Chemistry. This option prepares students for professional opportunities or graduate study in oceanography or chemistry. Students fulfilling the requirement for this major option can fulfill the requirements for a major in chemistry with 6.5 additional credits of specific chemistry courses and 3 additional credits in mathematics.

Required Courses (43–47)

01:160:251 Quantitative Chemistry Laboratory (2.5)
01:160:307-308 Organic Chemistry (4,4) or 01:160:315-316 Principles of Organic Chemistry (4,4)
01:160:311 Organic Chemistry Laboratory (2)
01:160:323-324 Physical Chemistry (3,3) or 01:160:341-342 Physical Chemistry: Biochemical Systems (3,3)
01:160:329 Experimental Physical Chemistry (2.5)
01:160:348 Instrumental Analysis (3)
01:628:451 Physical Oceanography (3) or 01:628:462 Biological Oceanography (4)
01:628:472 Chemical Oceanography (4)
01:640:251 Multivariable Calculus (4)
01:750:201-202 Extended General Physics (5,5) or 01:750:203-204 General Physics (3,3) or 01:750:271,272,273 Honors Physics (3,3,3)
01:750:205-206 General Physics Laboratory (1,1) or 01:750:275,276 Honors Physics Laboratory (1,1)
01:750:271,272,273 Honors Physics (3,3,3)

Option C, Marine Geology. This option prepares students for graduate study in oceanography, geology, environmental science or an allied field, and for employment directly following the B.S. Students fulfilling the requirements for this major option can fulfill the requirements for a geology major by taking three additional courses in geology: 01:460:303 Paleontology, 01:460:307 Structural Geology, and 01:460:310 Field Geology.

Required Courses (34–35)

01:460:101 Introductory Geology (3)
01:460:103 Introductory Geology Laboratory (1)
01:460:301 Mineralogy (4)
01:460:302 Petrology (4)
01:460:312 Introduction to Geophysics (4)
01:460:340 Sedimentology (4)
01:460:341 Stratigraphy (4)
01:460:451 Marine Geology (3)
and
Two of the following courses:
01:628:451 Physical Oceanography (3)
01:628:462 Biological Oceanography (4)
01:628:472 Chemical Oceanography (4)
01:750:193-194 Physics for the Sciences (4,4) or 01:750:203-204 General Physics (3,3) and 01:750:205-206 General Physics Laboratory (1,1)

Option D, Physical Oceanography. This option prepares students for graduate study in physical oceanography, meteorology, fluid dynamics, or a related field; for employment within environmental agencies or consulting firms; and for technical positions within marine sciences.

Required Courses (44–48)

01:198:323 Numerical Analysis and Computing (4)
14:440:127 Introduction to Computers for Engineers (3)
01:628:451 Physical Oceanography (3)
01:628:462 Biological Oceanography (4) or 01:628:472 Chemical Oceanography (4)
01:640:244 Differential Equations for Engineering and Physics (4) or 01:640:252 Elementary Differential Equations (3)
01:640:250 Introductory Linear Algebra (3)

01:640:251 Multivariable Calculus (4)
01:640:421 Advanced Calculus for Engineers (3)
14:650:312 Fluid Mechanics (3)
11:670:323 Thermodynamics of the Atmosphere (3)
11:670:324 Dynamics of the Oceans and Atmosphere (3)
01:750:201-202 Extended General Physics (5,5) or 01:750:203-204 General Physics (3,3) or 01:750:271,272,273 Honors Physics (3,3,3)
01:750:205-206 General Physics Laboratory (1,1) or 01:750:275,276 Honors Physics Laboratory (1,1)

Minor Requirements (18 credits)

A minor in marine sciences is offered for students who wish to show that their studies have included a focus on some aspect of marine science. Two terms of biology, calculus, chemistry, physics, and an introductory geology course are recommended and / or required for many of the courses in the program.

Required Courses (5–7)

01:628:200 Marine Sciences (4)
11:628:300-310 Topics in Marine Sciences (1-3)

Electives (11–13)

11:015:401 Colloquium: Earth Systems Science (3)
01:119:431 Marine Animal Ecology (3)
01:119:432 Marine Animal Ecology Laboratory (1)
11:374:308 Human Ecology of Maritime Regions (3)
11:375:445 Problems in Aquatic Environments (3)
01:450:417 Coastal Geomorphology (3)
01:460:209 Exploration of the Oceans (3)
01:460:303 Paleontology (4)
01:460:330 Sedimentary Geology (4)
01:460:340 Sedimentology (4)
01:460:341 Stratigraphy (4)
01:460:451 Marine Geology (3)
01:460:476 History of the Earth System (3)
11:628:300-310 Topics in Marine Sciences (1-3)
11:628:321 Ichthyology (4)
11:628:352 Ocean, Coastal and Estuarine Circulation (3)
01:628:364 Oceanographic Methods and Data Analysis (3)
11:628:401 Science in Shoreline Management (3)
11:628:404 Fungi and Ecosystems (3)
01:628:418 Marine Microbiology (4)
01:628:451 Physical Oceanography (3)
01:628:462 Biological Oceanography (4)
01:628:472 Chemical Oceanography (4)
01:628:497,498 Special Problems in Marine Sciences (BA,BA)
11:670:323 Thermodynamics of the Atmosphere (3)
11:670:324 Dynamics of the Oceans and Atmosphere (3)
11:670:458 Air-Sea Interactions (3)
11:704:324 Invertebrate Zoology (4)
11:704:370 Ecosystems, Ecology, and Global Change (3)
11:704:406 Fishery Science (3)
11:704:407 Research Methods in Fishery Science (3)
11:704:421 Wetland Ecology (3)

Topics (11:628:__)

11:628:300 Geology and Biology of Hydrothermal Vents (1)
11:628:301 Marine Conservation (1)
11:628:302 Fish Behavior (3)
11:628:303 Oceanographic Scientific Inquiry (3)
11:628:304 Ice Life Laboratory (3)
11:628:305 Field Course—Coral Reefs (3)
11:628:306 Marine Geochemistry (1)
11:628:307 Aquaculture (3)
11:628:308 Marine Biogeochemistry (2)
11:628:309 Shark Studio (1)
11:628:310 Identification of Marine Invertebrates (2)

MARKETING 630

(See School of Business–New Brunswick section)

MATHEMATICS 640

Department of Mathematics, Faculty of Arts and Sciences

Web Site: http://www.math.rutgers.edu/

Chairperson: Richard Falk

Director of Undergraduate Program: Daniel Ocone

Director of Precalculus Instruction: Lewis Hirsch

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José Barros-Neto, M.S., Ph.D., São Paulo (Brazil)
Michael Beals, B.S., M.S., Chicago; Ph.D., Princeton
József Beck, Ph.D., Hungarian Academy of Sciences
Adi Ben-Israel, RUTCOR; M.S., Technion; Ph.D., Northwestern
Haim Brezis, Doctorat, Paris
Felix Browder, S.B., Massachusetts Institute of Technology; Ph.D., Princeton
Richard T. Bumby, S.B., Massachusetts Institute of Technology; A.M., Ph.D., Princeton
Terence Butler, S.B., Massachusetts Institute of Technology; A.M., Harvard; Ph.D., Indiana
Sagun Chanillo, Indian Institute of Technology; Ph.D., Purdue
Gregory Cherlin, B.A., M.A., Ph.D., Yale
Václav Chvátal, Computer Science; Ph.D., Waterloo
Amy Cohen, A.B., Harvard; Ph.D., California (Berkeley)
Bernard Coleman, Mechanics and Material Science; Ph.D., Yale
William Duke, B.S., New Mexico; M.S., Ph.D., New York
Richard Falk, B.S., Brown; M.S., Ph.D., Cornell
Steven C. Ferry, B.S., Michigan State; M.S., Ph.D., Michigan
Israel Gelfand, Ph.D., Moscow
Simon Gindikin, M.A., Ph.D., Moscow (Russia)
Gerald Goldin, Ph.D., Princeton
Sheldon Goldstein, B.S., M.A., Ph.D., Yeshiva
Roe Goodman, B.S., Florida Southern College; Ph.D., Massachusetts Institute of Technology
Ronald Graham, University Professor; Ph.D., California (Berkeley)
Richard Gundy, Statistics; Ph.D., Chicago
András Hajnal, M.S., Eötvös Loránd (Hungary); Ph.D., Bolyai Institute (Hungary)
Peter Hammer, Director, RUTCOR; Ph.D., Bucharest
Henryk Iwaniec, Ph.D., Warsaw
Jeffry Kahn, B.S., Rensselaer Polytechnic Institute; Ph.D., Ohio State
Friedrich Knop, Dipl., Erlangen-Nürnberg; Dr.Phil., Basel (Switzerland)
János Komlós, Ph.D., Eötvös (Budapest)
Antoni A. Kosinski, M.A., Ph.D., Warsaw
Martin D. Kruskal, B.S., Chicago; M.S., Ph.D., New York
Peter S. Landweber, B.A., Iowa; M.A., Ph.D., Harvard
Joel L. Lebowitz, B.S., CUNY (Brooklyn College); M.S., Ph.D., Syracuse
James Lepowsky, A.B., Harvard; Ph.D., Massachusetts Institute of Technology
Norman J. Levitt, A.B., Harvard; A.M., Ph.D., Princeton
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Richard Lyons, A.B., Harvard; Ph.D., Chicago

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Avraham Soffer, B.Sc., M.Sc., Ph.D., Tel Aviv
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Norman Zabusky, Mechanical and Aerospace Engineering; Ph.D., California Institute of Technology

Associate Professors:

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Ludmil Katzarkov, M.S., Moscow; Ph.D., Pennsylvania
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Ovidiu Costin, B.S., M.S., Bucharest; Ph.D., Rutgers
W. Ethan Duckworth, B.A., Rice; Ph.D., Oregon
Henry Eng, A.B., Columbia
Michael Kiessling, Doctor of Nat. Sci., Privatdozent, Diplomphysiker, RUHR, Bochum (Germany)
Carlo Lancellotti, M.S.Eng., Ph.D., Virginia; Ph.D., Dott. Fis. (Milan)
Matthew Leingang, B.A., Chicago; A.M., Ph.D., Harvard
Amelia Taylor, B.A., St. Olaf; M.S., Purdue; Ph.D., Kansas
Christopher Woodward, A.B., Harvard; Ph.D., Massachusetts Institute of Technology

Major Requirements

The Department of Mathematics annually publishes a Brochure for Math Majors, which contains detailed information about the math major program; copies of this brochure may be obtained at the department offices and on the web.

The requirements for a math major are as follows:

1. Three terms of calculus (01:640:151, 152, and 251, or equivalent), Introductory Linear Algebra (01:640:250), and Elementary Differential Equations (01:640:252). Courses 01:640:250, 251, and 252 must be passed with grades of C or better. Majors normally should take both 01:640:250 and 251 in the first term of their sophomore year.
2. 01:198:111 Introduction to Computer Science with a grade of C or better. (14:330:227 Electrical Engineering may be substituted for 01:198:111.) It is recommended strongly that this course be completed by the end of the second term of the sophomore year.
3. The completion of all the requirements in one of the mathematics major options listed below. (Students must notify the mathematics department in writing if they are not following the standard mathematics major option. Courses in other departments may not be substituted.)

Option A, Standard Mathematics (Curriculum Code 640). In addition to the requirements above, to complete the standard mathematics major a student must pass eight 300- to 400-level mathematics courses, excluding 01:640:491,492. All but one of these courses (curriculum code 640) must be passed with a grade of C or better. At least four of the upper-level courses used to complete the major must be taken at Rutgers-New Brunswick, including one of 01:640:311, 312, 411, 412, and one of 01:640:350, 351, 352, 451, 452. An appropriate Rutgers graduate mathematics course may be substituted for the required analysis and/or algebra course, with departmental approval.

Recommended are probability (01:640:477), statistics (01:640:481), a course in mathematical modeling (01:640:321, 338, or 424), and a course in discrete mathematics (01:640:338, 354, 428, or 454). Also recommended is a two-term sequence of mathematically oriented courses in some other discipline; a list of suggested courses can be found in the Brochure for Math Majors.

Option B, Mathematics for Prospective Teachers. New Jersey certification as a mathematics teacher is available to students who complete the Graduate School of Education's five-year Mathematics Teacher Certification Program. For such students, the eight courses required at the 300 to 400 level for the mathematics major must include 01:640:300, 311 or 411, 351 or 451, 435, 477, and an applied mathematics course, in addition to the courses required for certification. Students interested in teacher certification should contact the mathematics department or the Graduate School of Education as early in the undergraduate career as possible to obtain advice and further information.

Option C, Computer-Oriented Mathematics. Replace the eight courses at the 300 to 400 level with six mathematics courses at the 300 to 400 level, including 01:640:311 or 411, 350 or 351 or 451, 373, 477, and either 374 or 454 (but excluding 01:640:491,492); and four computer science courses, including 01:198:112, 211, 344, and one elective from the following: 01:198:314, 416, 424, 425, 436, and 452. Prerequisites for some computer science courses may be satisfied by appropriate math courses. Students should consult the head computer science adviser. (This option is not available to students who are majoring in both mathematics and computer science.)

Biomathematics Interdisciplinary Major
(Curriculum Code 122)

The major in biomathematics requires 56–57 credits distributed as follows: biology, 23–24 credits; mathematics, 27 credits; and cognate fields, 6 credits. Students must earn a minimum grade-point average of 2.0 in courses credited toward the major. See Brochure for Math Majors.

1. 01:119:101-102 General Biology or equivalent (4,4)
2. 01:640:135, 152 Calculus I,II (4,4)
3. 01:640:250 Introductory Linear Algebra (3)
4. 01:640:251,252 Intermediate calculus courses (4,3)
5. 01:640:338 Mathematical Models in the Social and Biological Sciences (3)
6. 01:640:373 Numerical Analysis (3)
7. 01:640:477 Mathematical Theory of Probability (3)
8. 01:447:380, 382 Genetics (3,1)
9. 01:119:330,331 General Ecology and General Ecology Laboratory or equivalent (3,1)
10. 01:119:400 Quantitative Biology (3)
11. physiology elective (4–5)
12. 01:960:401 Basic Statistics for Research (3) or 01:640:481 Mathematical Theory of Statistics (3)
13. science elective (3) (nonmath)

Statistics-Mathematics Interdisciplinary Major
(Curriculum Code 961)

See Statistics 960.

Grade Requirements for Mathematics Majors

To be admitted to the mathematics major program, a student normally must have completed three terms of calculus with a grade of C or better in each course. To continue as a mathematics major, a student must make satisfactory progress toward completing the program. Satisfactory progress for a full-time student normally means passing at least one mathematics course at an appropriate level each term with a grade of C or better. To complete the mathematics major program, or any of the options, a student must receive grades of C or better in 01:640:250, 251, and 252 and in all but one of the further mathematics courses. A student also must receive grades of C or better in the courses in other departments (e.g., computer science) used to fulfill the requirements of the program.

Minor Requirements

A minor in mathematics consists of three terms of calculus (ordinarily 01:640:151-152, 251), linear algebra (01:640:250), and four additional 3-credit courses chosen from 01:640:252 and 300- or 400-level courses in the Department of Mathematics (excluding 01:640:491,492). Grades of C or better are required in 01:640:250 and 251; at most, one D is permitted in the four courses beyond 01:640:251.

Departmental Honors Programs

Eligible first-year students and sophomores may take 01:640:192, 291, and 292, which are honors courses in second-, third-, and fourth-term calculus, respectively. Entry into these courses is determined by the department and is based on the student's previous performance in mathematics. The department occasionally offers honors sections of other courses.

To be a candidate for graduation with departmental honors, a mathematics major must maintain a cumulative grade-point average of 3.4 or better in mathematics courses and an overall cumulative grade-point average of at least 3.0, and must complete successfully two courses that are either approved independent study courses, approved graduate courses, or approved sections of 300- or 400-level courses, or approved project. A student who would like to have a course count toward the two-course honors requirement must apply at the department office no later than the first week of classes of the term during which he or she takes the course. The determination of whether a candidate graduates with departmental honors depends on the student's total performance in mathematics (including the written exposition of mathematical ideas). A more detailed description of the honors program can be obtained at the departmental offices or on the web.

Before Taking Mathematics Courses

Entering first-year students and most transfer students are required to take the mathematics placement test before registering for any mathematics course at Rutgers–New Brunswick. Students will be informed by their college of the times for taking the test.

Courses

The following abbreviations are used in the course listing.

1. CALC1 indicates that the prerequisite is any one of 01:640:135, 151, 153, or 191.
2. CALC2 indicates that the prerequisite is any one of 01:640:136, 138, 152, 154, or 192.
3. CALC3 indicates that the prerequisite is any one of 01:640:251 or 291.
4. CALC4 indicates that the prerequisite is any one of 01:640:244, 252, or 292.
5. CR1 indicates that students may not receive credit for more than one of the first-term calculus courses 01:640:135, 151, 153, or 191.
6. CR2 indicates that students may not receive credit for more than one of the courses including second-term topics 01:640:136, 138, 152, 154, or 192.
7. CR3 indicates that students may not receive credit for more than one of the courses including third-term topics 01:640:251 or 291.
8. CR4 indicates that students may not receive credit for more than one of the fourth-term courses 01:640:244, 252, or 292.

01:640:011. PRECALCULUS I WORKSHOP (E2)
Corequisite: 01:640:111.
Workshop to accompany 01:640:111.

01:640:012. PRECALCULUS II WORKSHOP (E2)
Corequisite: 01:640:112.
Workshop to accompany 01:640:112.

01:640:025. ELEMENTARY ALGEBRA (E3)
Operations with polynomials, rational and square root expressions, exponents, solving linear and quadratic equations, basic applications and graphing.

01:640:026. INTERMEDIATE ALGEBRA (E3)
Prerequisite: 01:640:025 or appropriate performance on the placement test in mathematics.
Absolute value equations and inequalities, radical expressions, rational exponents, quadratic equations and inequalities, introduction to functions, and topics in analytic geometry.

01:640:027. ELEMENTS OF ALGEBRA (E3)
Prerequisite: Acceptable performance on placement test and permission of department. Not for students preparing for calculus.
Review of fundamentals of elementary and intermediate algebra. Exponents, polynomials, solution of linear and quadratic equations. Focus on mathematical translation of verbal statements.

01:640:103. TOPICS IN MATHEMATICS FOR THE LIBERAL ARTS (3)
An elementary course for liberal arts majors. Prerequisite: 01:640:026 or 027 or appropriate performance on the placement test in mathematics. May not be used as an elective for the math major or minor.
Topics emphasizing fundamental ideas of mathematics, selected from set theory, mathematical logic, game theory, number theory, algebra, and geometry.

01:640:104. ELEMENTARY COMBINATORICS AND PROBABILITY (3)
An elementary course for liberal arts majors. Prerequisite: 01:640:026 or appropriate performance on the placement test in mathematics. May not be used as an elective for the math major or minor.
Introduction to the basic concepts of combinatorial mathematics, probability, and statistics.

01:640:105. INTRODUCTION TO LINEAR MATHEMATICS (3)
An elementary course for liberal arts majors. Prerequisite: 01:640:026 or appropriate performance on the placement test in mathematics. May not be used as an elective for the math major or minor.
Systems of linear equations, matrices, linear algebra, and linear programming.

01:640:111-112. PRECALCULUS I,II (2,2)
Prerequisite: 01:640:026 or appropriate performance on the placement test in mathematics. Corequisites: 01:640:011 for 111; 01:640:012 for 112. These two courses cover the same material as 01:640:115, but at a slower pace. Students may not receive more than 4 normal credits for any combination of 01:640:111-112 and 115.
Math 111: algebraic expressions, algebraic equations, inequalities, functions, and graphing. Math 112: Exponential, logarithmic, and trigonometric functions.

01:640:115. PRECALCULUS COLLEGE MATHEMATICS (4)
Prerequisite: 01:640:026 or appropriate performance on the placement test in mathematics. Students may not receive more than 4 normal credits for any combination of 01:640:111-112 and 115. Students who feel unprepared for this course (who have not had math for several years or whose mathematical background is weak) should consider taking 01:640:111-112, which covers the same material as 115 but at a slower pace and begins with an extensive review of intermediate algebra.
Algebraic expressions, algebraic equations, inequalities, functions, graphing. Exponential, logarithmic, and trigonometric functions.

01:640:131. CALCULUS I PRACTICUM (1)
Corequisite: 01:640:135.
Application of algorithms studied in 01:640:135 to problems.

01:640:132. CALCULUS II PRACTICUM (1)
Corequisite: 01:640:136.
Application of algorithms studied in 01:640:136 to problems.

01:640:135-136. CALCULUS I,II (4,4)
For liberal arts majors. Prerequisite for 135: 01:640:112 or 115 or appropriate performance on the placement test in mathematics. Prerequisite for 136: CALC1. Credit restrictions: CR1, CR2.
Math 135: Analytic geometry, differential calculus with applications, logarithmic and exponential functions, introduction to the integral. Math 136: Techniques and application of the integral, polar coordinates, and series.

01:640:138. CALCULUS II FOR THE BIOLOGICAL SCIENCES (4)
For biological sciences majors. Prerequisite: CALC1. Credit restrictions: CR2.
Techniques of integration, elementary differential equations and their applications to biological sciences, and an introduction to linear algebra.

01:640:151-152. CALCULUS FOR MATHEMATICAL AND PHYSICAL SCIENCES (4,4)
For mathematics, physics, computer science, statistics, chemistry, or engineering majors. Prerequisite for 151: 01:640:112 or 115 or appropriate performance on the placement test in mathematics. Prerequisite for 152: CALC1. Credit restrictions: CR1, CR2.
Same topics as 01:640:135-136, with additional theory and numerical applications.

01:640:153-154. INTENSIVE CALCULUS I,II (6,6)
For students satisfying the prerequisites for first-term calculus who are invited by the department. Credit restrictions: CR1, CR2.
Math 153: Intensive study of analytic geometry, differential calculus of elementary functions, applications, and introductory integral calculus with emphasis on the analysis and solution of problems and on mathematical exposition. Math 154: Intensive study, techniques of integration, polar coordinates, and series, with emphasis on solution of problems and on mathematical exposition.

01:640:157. CALCULUS I FOR MATHEMATICAL AND PHYSICAL SCIENCES PRACTICUM (1)
Corequisite: 01:640:151.
Application of algorithms studied in 01:640:151 to problems.

01:640:158. CALCULUS II FOR MATHEMATICAL AND PHYSICAL SCIENCES PRACTICUM (1)
Corequisite: 01:640:152.
Application of algorithms studied in 01:640:152 to problems.

01:640:171. HONORS INTRODUCTION TO DISCRETE MATH (4)
Prerequisite: Permission of department.
Introduction to the principal elementary problems, methods, and proof techniques of discrete mathematics.

01:640:191-192. HONORS CALCULUS I,II (4,4)
For students with a serious interest in mathematics. Credit restrictions: CR1, CR2. Grades of B or better are required to continue in the honors sequence.
These courses cover the same material as 01:640:135-136 but in a more thorough and demanding fashion.

01:640:195, 196. FIRST-YEAR SEMINAR I,II (1,1)
Prerequisite: Permission of department. Corequisite: Enrollment in a calculus course.
Discussion of selected topics in mathematics.

01:640:244. DIFFERENTIAL EQUATIONS FOR ENGINEERING AND PHYSICS (4)
Prerequisite: CALC3. Credit restriction: CR4.
First- and second-order ordinary differential equations; introduction to linear algebra and to systems of ordinary differential equations.

01:640:250. INTRODUCTORY LINEAR ALGEBRA (3)
Prerequisite: CALC2.
Systems of linear equations, Gaussian elimination, matrices and determinants, vectors in two- and three-dimensional Euclidean space, vector spaces, introduction to eigenvalues and eigenvectors. Possible additional topics: systems of linear inequalities and systems of differential equations.

01:640:251. MULTIVARIABLE CALCULUS (4)
Prerequisite: CALC2. Credit restriction: CR3.
Analytic geometry of three dimensions, partial derivatives, optimization techniques, multiple integrals, vectors in Euclidean space, and vector analysis.

01:640:252. ELEMENTARY DIFFERENTIAL EQUATIONS (3)
Prerequisites: 01:640:250 and CALC3. Credit restriction: CR4.
First- and second-order ordinary differential equations; systems of ordinary differential equations.

01:640:291-292. HONORS CALCULUS III,IV (4,4)
Prerequisites: 01:640:191-192 or permission of department. Prerequisite for 292: 01:640:250. Credit restrictions: CR3, CR4. Grades of B or better are required to continue in the honors sequence.
Covers the same material as 01:640:251 and 252 in a more thorough and demanding fashion.

01:640:293. HONORS MATHEMATICS FOR THE PHYSICAL SCIENCES I (4)
Prerequisites: CALC3 and 01:750:227 or 272, or permission of the department. Primarily for students majoring in the physical sciences or engineering. Credit not given for this course and 01:640:244, 250, and 252.
Selected topics from linear algebra and ordinary differential equations with illustrations of their use in the physical sciences and engineering.

01:640:300. INTRODUCTION TO MATHEMATICAL REASONING (3)
Prerequisite: CALC2 or permission of department.
Fundamental abstract concepts common to all branches of mathematics. Special emphasis placed on ability to understand and construct rigorous proofs.

01:640:311. ADVANCED CALCULUS I (4)
Prerequisite: CALC4.
Introduction to language and fundamental concepts of analysis. The real numbers, sequences, limits, continuity, differentiation in one variable.

01:640:312. ADVANCED CALCULUS II (3)
Prerequisite: 01:640:311.
Series of numbers and functions, integration of functions of one variable, pointwise and uniform convergence, differential calculus in several variables, implicit and inverse function theorems.

01:640:321. INTRODUCTION TO APPLIED MATHEMATICS (3)
Prerequisite: CALC4.
Mathematical models of mechanical vibrations, population dynamics, and traffic flow, involving ordinary differential equations and nonlinear first-order partial differential equations.

01:640:338. MATHEMATICAL MODELS IN THE SOCIAL AND BIOLOGICAL SCIENCES (3)
Prerequisites: 01:640:250 and 477, or equivalent experience with probability and matrices; and one term of calculus; or permission of instructor.
Survey of mathematical models chosen from such areas as economics, ecology, genetics, environmental science, sociology, and psychology. Models dealing with traffic flow, communications, energy, air pollution, currency transfer, ecosystems, inheritance, populations, bargaining, decision making, etc. Models use graphs, signed graphs, Markov chains, n-person games, and differential equations.

01:640:350. LINEAR ALGEBRA (3)
Prerequisites: CALC4 and 01:640:250.
Continuation of 01:640:250. Abstract vector spaces and linear transformations, inner product spaces, diagonalization, and canonical forms. Possible additional topics: systems of ordinary differential equations and numerical techniques.

01:640:351-352. INTRODUCTION TO ABSTRACT ALGEBRA I,II (4,3)
Prerequisites: CALC3 and 01:640:250.
Abstract algebraic systems, including groups, rings, fields, polynomials, and some Galois theory.

01:640:354. LINEAR OPTIMIZATION (3)
Prerequisite: 01:640:250.
Linear programming problems, the simplex method, duality theory, sensitivity analysis, introduction to integer programming, the transportation problem, network flows, and other applications.

01:640:355. GAME THEORY (3)
Prerequisite: 01:640:354. Credit not given for both this course and 01:220:436.
Introduction to two-person and n-person game theory, with applications to economics, politics, strategic studies, and other areas. Pure and mixed strategies, the minimax theorem, cooperative and noncooperative games, and bargaining models.

01:640:356. THEORY OF NUMBERS (3)
Prerequisite: CALC3.
Properties of the natural numbers, congruences, diophantine equations, and elementary arithmetical functions.

01:640:357. TOPICS IN APPLIED ALGEBRA (3)
Prerequisites: CALC3 and 01:640:250.
Material relevant for various applications. Topics chosen from: finite machines, languages, coding theory, Boolean algebras, graph theory, group-theoretic counting arguments, algebraic computational complexity.

01:640:361. FOUNDATIONS OF MATHEMATICS (3)
Prerequisite: CALC3.
Introduction to concepts and tools used in abstract mathematics. Emphasis on writing of proofs. Elementary logic and set theory, formal axiom systems, transfinite numbers, the real number system, and the foundations of mathematics.

01:640:373-374. NUMERICAL ANALYSIS I,II (3,3)
Prerequisites: CALC4 and familiarity with a computer language. Credit not given for both these courses and 01:198:323,324.
Analysis of numerical methods for the solution of linear and nonlinear equations, approximation of functions, numerical differentiation and integration, and the numerical solution of initial and boundary value problems for ordinary differential equations.

01:640:393. HONORS MATHEMATICS FOR THE PHYSICAL SCIENCES II (4)
Prerequisites: 01:640:293, or 250 and 252, or permission of the department. Primarily for students majoring in the physical sciences or engineering. Credit not given for this course and 01:640:403, 421, and 423.
The important partial differential equations of mathematical physics and an introduction to the theory of functions of a complex variable.

01:640:395. STUDIES IN MATHEMATICS (3)
Topics vary from term to term. Details available at time of registration.

01:640:403. INTRODUCTORY THEORY OF FUNCTIONS OF A COMPLEX VARIABLE (3)
Prerequisite: CALC4.
First course in the theory of a complex variable. Cauchy's integral theorem and its applications. Taylor and Laurent expansions, singularities, conformal mapping.

01:640:411-412. MATHEMATICAL ANALYSIS I,II (3,3)
Prerequisites: Permission of the department and the instructor. For students preparing for graduate study in the mathematical sciences.
Rigorous analysis of the differential and integral calculus of one and several variables.

01:640:421. ADVANCED CALCULUS FOR ENGINEERING (3)
Primarily for mechanical engineering majors. Prerequisite: CALC4. Credit not given for both this course and 01:640:423.
Laplace transforms, numerical solution of ordinary differential equations, Fourier series, and separation of variables method applied to the linear partial differential equations of mathematical physics (heat, wave, and Laplace's equation).

01:640:423. ELEMENTARY PARTIAL DIFFERENTIAL EQUATIONS (3)
Prerequisite: CALC4. Credit not given for both this course and 01:640:421.
Linear partial differential equations of mathematical physics (heat, wave, and Laplace's equation), separation of variables, Fourier series.

01:640:424. STOCHASTIC MODELS IN OPERATIONS RESEARCH (3)
Prerequisites: CALC4 and 01:640:250 and 477.
Introduction to stochastic processes and their applications to problems in operations research: Poisson processes, birth-death processes, exponential models, continuous-time Markov chains, queuing theory, computer simulation of queuing models, and related topics in operations research.

01:640:426. TOPICS IN APPLIED MATHEMATICS (3)
Prerequisite: 01:640:421 or 423.
Topics selected from: integral transforms, calculus of variations, integral equations, Green's functions; applications to mathematical physics.

01:640:428. GRAPH THEORY (3)
Prerequisites: CALC3 and 01:640:250.
Colorability, connectedness, tournaments, eulerian and hamiltonian paths, orientability, and other topics from the theory of finite linear graphs, with an emphasis on applications chosen from social, biological, computer science, and physical problems.

01:640:429. INDUSTRY-ORIENTED MATHEMATICS: CASE STUDIES (3)
Prerequisites: Announced each year (including one or more of the following: CALC4, 01:640:250, 373, 477, 481); proficiency in computer programming.
Introduces students to an actual industrial problem requiring mathematical techniques (including computer science and statistics) for its solution. Problem presented by an industry representative, who also discusses methodology; instructor covers relevant mathematical topics. Students expected to participate actively in discussion, research, bibliography search, and computer programming (if appropriate), and to prepare a detailed report describing the problem, approach, and conclusions.

01:640:432. INTRODUCTION TO DIFFERENTIAL GEOMETRY (3)
Prerequisite: 01:640:311.
Investigation of the properties of curves and surfaces using methods of analysis.

01:640:435. GEOMETRY (3)
Prerequisites: CALC3 and 01:640:250.
Various geometries, including projective and non-Euclidean geometries, and geometric axiom systems.

01:640:436. HISTORY OF MATHEMATICS (3)
Prerequisites: 01:640:250,251; recommended to be taken after Geometry (01:640:435).
Selected topics from the history of mathematics including number systems; Euclidean geometry; the development of algebra in India, Arabia, and the West; and calculus.

01:640:441-442. INTRODUCTORY TOPOLOGY I,II (3,3)
Prerequisite: CALC4.
Math 441: Introduction to topology with emphasis on the foundations of analysis; Euclidean spaces, metric spaces, topological spaces and their properties; applications to analysis.
Math 442: Basic concepts of algebraic topology, including the fundamental group, plane curves, homotopy, and a brief introduction to homology.

01:640:451-452. ABSTRACT ALGEBRA I,II (3,3)
Prerequisites: Permission of the department and the instructor. For students preparing for graduate study in the mathematical sciences.
Rigorous study of abstract algebraic systems including groups, rings, and fields.

01:640:453. THEORY OF LINEAR OPTIMIZATION (3)
Prerequisite: 01:640:250. Credit not given for both this course and 01:640:354 or 01:711:453.
Emphasis on the theory of linear optimization. Topics include convex sets, polyhedra, Farkas lemma, canonical forms, simplex algorithm, duality theory, revised simplex method, primal-dual methods, complementary slackness theorem, maximal flows, transportation problems, 2-person game theory.

01:640:454. COMBINATORICS (3)
Prerequisites: CALC2 and 01:640:250.
Existence and enumeration of designs and patterns such as codes, graphs, and block designs, and extremal problems related to such objects. Emphasis on applications to computer, biological, physical, and social problems.

01:640:457-458. COMPUTATIONAL METHODS IN ABSTRACT ALGEBRA (1.5,1.5)
Pre- or corequisites: 01:640:351-352. No prior computing experience is assumed.
Computer techniques for the study of particular algebraic objects such as finite groups, finitely generated abelian groups, and vector spaces over finite fields. APL programming language used.

01:640:461. MATHEMATICAL LOGIC (3)
Prerequisite: CALC3.
Intuitive and formal development of the sentential and predicate calculus. Special emphasis given to questions of consistency, completeness, and independence. Formal systems; incompleteness and undecidability; theorems of Gödel. Exploration of which properties of structures can be defined in the first-order language.

01:640:477. MATHEMATICAL THEORY OF PROBABILITY (3)
Prerequisite: CALC3. Credit not given for both this course and 01:198:206, 14:330:349, or 01:960:381.
Basic probability theory in both discrete and continuous sample spaces, combinations, random variables and their distribution functions, expectations, law of large numbers, central limit theorem.

01:640:478. PROBABILITY II (3)
Prerequisites: 01:640:250 and 477.
Sums of independent random variables, moments and moment-generating functions, characteristic functions, uniqueness and continuity theorems, law of large numbers, conditional expectations, Markov chains, random walks.

01:640:481. MATHEMATICAL THEORY OF STATISTICS (3)
Prerequisites: 01:640:250 and 477. Credit not given for both this course and 01:960:382.
Fundamental principles of mathematical statistics, sampling distributions, estimation, testing hypotheses, correlation analysis, regression, analysis of variance, nonparametric methods.

01:640:491,492. UNDERGRADUATE MATHEMATICS SEMINAR (1,1)
Reading, presentation, and discussion of mathematical topics.

01:640:493,494. INDIVIDUAL STUDY IN MATHEMATICS (1-3 BA,1-3 BA)
Prerequisite: Permission of department.

01:640:495. SELECTED TOPICS IN MATHEMATICS (3)

01:640:496. RESEARCH IN MATHEMATICS (3)

01:640:497,498. HONORS IN MATHEMATICS (3,3)

MEDICAL TECHNOLOGY 660

Douglass College

Adviser: S. Beth Howard, Ph.D., Rutgers

Medical technology, also called clinical laboratory science, is a professional field for which the student prepares in chemistry, microbiology, hematology, and related disciplines. Well-trained and certified medical technologists or clinical laboratory technicians may enter careers in teaching, or may work in clinical laboratories, research institutions, and pharmaceutical firms. The baccalaureate program includes a yearlong, full-time clinical internship that qualifies the

student to take national certification exams. Entry into the internships is on a competitive basis; grade-point averages of 2.8 in the sciences and cumulatively are required to apply. Application is made during the fall term of the junior year.

Major Requirements

A major in medical technology consists of a total of 81.5 to 83.5 credits, distributed as follows:

1. English composition (3 credits)
2. Biological sciences (19 credits): 01:119:101-102; 01:447:390; 01:146:474, and a 4-credit elective above the 200 level
3. Mathematics (8 credits): 01:640:115 and 135, or equivalents. A course in computing or statistics may be used as a substitute for 01:640:135 with prior approval.
4. Chemistry (19.5–21.5 credits): 01:160:161-162, 171, and 251; plus either Sequence 1: 01:160:307-308 and 311; or, with prior approval, Sequence 2: 01:160:209, 211, and 01:115:301, 313
5. Course 06:660:485-486 Clinical Practicum in Medical Technology (16,16)

Courses

06:660:485-486. CLINICAL PRACTICUM IN MEDICAL TECHNOLOGY (16,16)
Prerequisites: Permission of department and acceptance by an affiliated clinical program. Application to clinical program is made early in the preceding academic year.
Series of field work experiences for the student of medical technology, in clinical settings. Topics include bacteriology, biochemistry, hematology, immunohematology, immunology, instrumentation, microscopy, mycology, parasitology, serology, and laboratory management.

MEDICINE AND DENTISTRY

(See also Health Professions in the Student Life and Services section of this catalog)

The Association of American Medical Colleges and the American Dental Association have set the following entrance requirements for their member medical and dental schools:

Subject	Credits
Biology	8
Chemistry: General Inorganic	8
Chemistry: Organic	8
English	6
Humanities	6
Physics	8

All four science areas should include a laboratory. In addition, some medical and dental schools may require knowledge of a foreign language, a year of college mathematics, and additional work in the sciences. There is, however, no prescribed premedical major. Applicants to medical and dental schools should have excellent records, especially in the sciences, as well as experience in a health-care field. Also, all schools recognize the importance of well-developed communication skills and a strong background in the humanities and the social sciences. Students should contact the Rutgers Health Professions office at 732/932-5667. Douglass College students should contact the Douglass Health Professions office at 732/932-9045. Cook College students should contact Dean Joseph Ventola at 732/932-3000, ext. 512.

MEDIEVAL STUDIES 667

Faculty of Arts and Sciences

Program Director:
James Masschaele, History; Ph.D., Toronto

Program Faculty:
Peter Bathory, Political Science; Ph.D., Harvard
Rudolph Bell, History; Ph.D., CUNY
John Bodel, Classics; Ph.D., Michigan
Christine Chism, English; Ph.D., Duke
Marlene Ciklamini, German; Ph.D., Yale
Joseph Consoli, Alexander Library; Ph.D., Rutgers
François Cornilliat, French; Doctorat d'Etat, Paris
Susan Crane, English; Ph.D., California (Berkeley)
Lowell Edmunds, Classics; Ph.D., Harvard
Mary Gossy, Spanish and Portuguese; Ph.D., Harvard
Floyd Grave, Music; Ph.D., New York
Conrado Guardiola, Spanish and Portuguese; Doctor en Filosofia y Letras, Zaragoza (Spain)
Archer St. Clair Harvey, Art History; Ph.D., Princeton
Samantha Kelly, History; Ph.D., Northwestern
Andrew Kirkman, Music; Ph.D., Princeton
Stacy Klein, English; Ph.D., Ohio State
David Marsh, Italian; Ph.D., Harvard
Elizabeth McLachlan, Art History; Ph.D., Courtland Institute (London)
Jacqueline Miller, English; Ph.D., Johns Hopkins
Karl Morrison, History; Ph.D., Cornell
Dámaris Otero-Torres, Spanish and Portuguese; Ph.D., California (San Diego)
Ana Pairet, French; Ph.D., Pennsylvania
Stephen Reinert, History; Ph.D., California (Los Angeles)
Larry Scanlon, English; Ph.D., Johns Hopkins
Barbara Shailor, Dean, Douglass College; Classics; Ph.D., Cincinnati
Mahlon Smith, Religion; M.S.L., Pontifical Institute of Medieval Studies (Toronto)
Mary Speer, French; Ph.D., Princeton
Floyd Sumner, Music; Ph.D., Rutgers
Antonia Tripolitis, Religion; Ph.D., Pennsylvania
Andrew Welsh, English; Ph.D., Pittsburgh
Mariet Westermann, Art History; Ph.D., New York
Laura White, Italian; Dottore in Lettere, Trieste; Ph.D., California (Los Angeles)

Major Requirements

The major in medieval studies requires 30 credits of course work, as follows:

1. 3 credits in medieval Latin or a medieval vernacular other than Middle English from the following:
   01:350:411,412 Old English Language and Literature
   01:420:415 Medieval French Literature
   01:470:331 German Literature of the Middle Ages
   01:470:341 German Civilization I: Fifth through Fifteenth Centuries
   01:560:401,402 Italian Literature of the Thirteenth and Fourteenth Centuries
   01:560:415,416 Dante
   16:667:501 Medieval Latin
   01:940:415 Medieval Spanish Literature
2. 6 credits in introductory courses on medieval European civilization, currently offered as 01:667:281,282 Medieval Civilization.
3. 3 credits in the seminar in Medieval Studies, currently offered as 01:667:481 Senior Seminar in Medieval Studies.

4. 18 credits in six elective courses chosen from approved cognate courses on medieval Europe offered in affiliated departments. Of the six elective courses, at least four must be at the 300 level or above. No more than three elective courses may be from any one department.

Minor Requirements

The interdisciplinary minor in medieval studies consists of seven courses distributed as follows: (1) 01:510:209 or 01:667:281; (2) 01:510:211 or 01:667:282; (3) 01:667:481; (4) four courses selected from the list of approved courses for the minor. At least five of these courses must be taken outside the student's major. A minimum of three courses must be at the 300 level or above, and the minor must include at least two courses in each of two disciplines outside the student's major.

Approved Courses

Additional courses approved for satisfaction of major and minor requirements:

01:082:308 The Age of Giotto (3)
01:082:312 Byzantine Art (3)
01:082:316 Anglo-Saxon Art (3)
01:082:318 Myth and Legend in Art (3)
01:082:319 Celtic and Early Irish Art (3)
01:082:320 Islamic Art and Architecture (3)
01:082:347 Early Northern European Painting (3)
01:082:373 Early Medieval Art (3)
01:082:374 Romanesque and Gothic Art (3)
01:082:384 Romanesque and Gothic Art and Architecture in Germany (3)
01:082:397 Medieval Architecture (3)
01:082:449 Early Christian Art (3)
01:082:473 Illuminated Manuscripts (3)
01:350:301 Literature of Medieval Courts (3)
01:350:302 Medieval Literature of Dissent (3)
01:350:321 Chaucer (3)
01:350:381 Medieval and Early Modern Women Writers (3)
01:350:389 Issues and Problems in Medieval Literature and Culture (3)
01:350:411,412 Old English Language and Literature (3,3)
01:350:415 Medieval Romance (3)
01:350:420 Seminar: Chaucer (3)
01:350:422 Seminar: Topics in Medieval Literature and Culture (3)
01:420:403 History of the French Language (3)
01:420:415 Medieval French Literature (3)
01:470:331 German Literature of the Middle Ages (3)
01:470:341 German Civilization I: Fifth through Fifteenth Centuries (3)
01:508:202 The Classical Age of Islam (3)
01:510:205 Byzantium: The Imperial Age (3)
01:510:207 Byzantium: The Last Centuries (3)
01:510:214 The European Intellectual Tradition (3)
01:510:306 The Roman World in Late Antiquity (3)
01:510:309 History of Western Morals (3)
01:510:313 Renaissance in the Middle Ages (3)
01:510:315 Reform and Dissent in the Middle Ages (3)
01:510:331 France 100–1000 (3)
01:510:337 Medieval Kings and Queens (3)
01:510:338 England in the Middle Ages (3)
01:510:345 English Constitutional History to 1688 (3)
01:510:409 The Crusades and the Holy Land (3)
01:510:441 The Social History of Medieval England (3)
01:560:401,402 Italian Literature of the Thirteenth and Fourteenth Centuries (3,3)
01:560:415,416 Dante (3,3)
01:560:441,442 Dante in Translation (3,3)
01:563:201 Jewish Society and Culture I (3)
01:580:302 Medieval Latin (3)
07:700:211 Music of the Middle Ages (3)
01:730:304 The Origins of Medieval Philosophy (3)
01:730:305 Philosophy in the High Middle Ages (3)
01:730:306 Between Medieval and Modern Philosophy (3)
01:730:374 Islamic Philosophy (3)
01:840:312 Greek Christianity (3)
01:840:313 Latin Christianity (3)
01:940:405 Civilization of Spain (3)
01:940:415 Medieval Spanish Literature (3)
01:940:417 History of the Spanish Language (3)
01:940:419 Hispanic Dialectology (3)

Courses

01:667:281,282. MEDIEVAL CIVILIZATION (3,3)
Credit not given for these courses and 01:510:209,210.
Intellectual, technological, artistic, and social developments as reflected in specific manifestations from each period. First term: from Justinian to the Crusades (400–1100), including Beowulf, Haghia Sophia, the Song of Roland, the manor. Second term: from Romanesque to Renaissance (1100–1450), including troubadour music, Chartres, the Black Death, Dante.

01:667:481. SENIOR SEMINAR IN MEDIEVAL STUDIES (3)
Interdisciplinary course taught by faculty drawn from the humanities and social science disciplines. Topics in medieval civilization vary from year to year. Research paper required, supervised by faculty in two disciplines.

MICROBIOLOGY

(See Life Sciences)

MIDDLE EASTERN STUDIES 685

Faculty of Arts and Sciences

Web Site: http://mideaststudies.rutgers.edu

Program Director: Eric Davis, Political Science; Ph.D., Chicago

Program Committee:

Morad Abou-Sabe, Biological Sciences; Ph.D., Pittsburgh
Hooshang Amirahmadi, Urban Planning and Policy Development; Ph.D., Cornell
Myron Aronoff, Political Science; Ph.D., California (Los Angeles); Ph.D., Manchester
Jack L. Cargill, History; Ph.D., California (Berkeley)
Elsayed A. Elsayed, Industrial Engineering; Ph.D., Windsor
Salah El-Shakhs, Urban Planning and Policy Development; Ph.D., Harvard
Lillian Farhat, Africana Studies; M.A., Rutgers
Peter Golden, History (Newark); Ph.D., Columbia
S. Nomanul Haq, Religion; Ph.D., London
Samantha Kelly, History; Ph.D., Northwestern
Dina Le Gall, History; Ph.D., Princeton
Stephen Reinert, History; Ph.D., California (Los Angeles)
Said Samatar, History (Newark); Ph.D., Northwestern
Richard Serrano, French; Ph.D., California (Berkeley)
Paul Sprachman, Program in American Language Studies; Ph.D., Chicago
Yael Zerubavel, History and Center for the Study of Jewish Life; Ph.D., Pennsylvania

For information about the program in Middle Eastern studies, contact the director at Bishop House, Rutgers, The State University of New Jersey, 115 College Avenue, New Brunswick, NJ 08901-1188, or by email at mideast@rci.rutgers.edu. Information also may be found at the program's web site. Rutgers faculty or students who want to be added to the program's electronic mailing list should email the director to request that their name be added to the list. The email address for the electronic mailing list is mideaststudies_stufac@email.rutgers.edu.

Major Requirements

The interdisciplinary major in Middle Eastern studies consists of 34 credits. A core curriculum of 22 credits that is composed of 16 credits in one of the Middle Eastern languages (Arabic, Persian, Turkish, and Hebrew) and 6 credits in the two core Middle Eastern studies courses, 01:685:350 Introduction to the Modern Middle East and 01:685:451 Critical Perspectives on the Middle East, is required. The remaining 12 elective credits are taken from other program courses, or approved courses relevant to the Middle East, offered in other departments. Acceptability of the latter courses is at the discretion of the director of the Middle Eastern studies program, whose approval is required. Students with prior knowledge of Middle Eastern languages must choose their courses for the language requirement in consultation with, and with the approval of, the Middle Eastern studies program director.

Minor Requirements

The interdisciplinary minor in Middle Eastern studies consists of 23 credits. A core curriculum of 14 credits that is composed of 8 credits in one of the Middle Eastern languages (Arabic, Persian, Turkish, and Hebrew) and 6 credits in the two core Middle Eastern studies courses, 01:685:350 Introduction to the Modern Middle East and 01:685:451 Critical Perspectives on the Middle East, is required. The remaining 9 elective credits are taken from other program courses, or approved courses in other departments relevant to the Middle East. Acceptability of the latter courses is at the discretion of the director of the Middle Eastern studies program, whose approval is required. Students with prior knowledge of Middle Eastern languages must choose their courses for the language requirement in consultation with, and with the approval of, the Middle Eastern studies program director.

Program Courses

Since the program in Middle Eastern studies is interdisciplinary, it offers a combination of courses originating in Middle Eastern studies, and cross-listed courses anchored in other departments that are approved for the Middle Eastern studies major or minor. All cross-listed courses have counterparts offered by the Middle Eastern studies program, usually utilizing the same last three digits of the course number as the cross-listed course, with the Middle Eastern studies code designation 01:685:__. (For example, course 01:790:351 Contemporary Politics in the Middle East, a political science course, is offered simultaneously within Middle Eastern studies as course 01:685:351, with the same title.) Credit is not, however, given for both a Middle Eastern studies course (01:685:__) and its corresponding cross-listed course.

Summary descriptions of cross-listed courses may be found under the relevant originating department's subject code listing (e.g., for a description of 01:685:409 The Crusades and the Holy Land, consult the parallel course entry in the history program, which is 01:510:409).

Courses Originating in Middle Eastern Studies

01:685:103-104. ELEMENTARY PERSIAN (4,4)
Students with prior knowledge of Persian must take a placement test, given by the Middle Eastern studies program, to determine their level of language competence.
Basic speaking and writing systems of Persian as employed in Iran, Afghanistan, Tajikistan, and other parts of Asia.

01:685:203,204. INTERMEDIATE PERSIAN (4,4)
Prerequisites: 01:685:103-104 or equivalent.
Intermediate Persian enables participants to read representative texts that require knowledge of 1,500–2,000 words and of the grammatical structures presented in elementary Persian. Participants acquire the skills needed to produce communicative Persian on the intermediate level.

01:685:329. MEDIEVAL ARABIC RELIGIOUS TEXTS (3)
Prerequisites: 01:013:128 or 01:685:128, and 01:013:228 or 01:685:228, or placement test given by the Middle Eastern studies program. Credit not given for both this course and 01:840:329.
Reading and close analysis of selected medieval religious texts, including Qur'an, Qur'anic exegesis, hadith, fiqh, and philosophical treatises exploring relationships between reason and revelation.

01:685:350. INTRODUCTION TO THE MODERN MIDDLE EAST (3)
Introduction to the languages and cultures of the Middle East and facilitation of cross-cultural communication and understanding between the people of the West and of the Middle East.

01:685:355. MUSLIMS AND ISLAMIC INSTITUTIONS IN AMERICA (3)
Credit not given for both this course and 01:014:355.
Explores the bonds of Muslim community, the meaning of Muslim American identity, how immigrant groups are assimilating into American society, and institutional frameworks being adopted for national integration.

01:685:437,438. TWENTIETH-CENTURY ARABIC LITERATURE (3,3)
Prerequisite: At least one course in literature (English or world) or one course in Middle Eastern studies. Credit not given for both these courses and 01:013:437,438 or 01:195:437,438.
Survey of representative works of Arabic literature in translation, including poetry, the novel, the short story, and plays. Emphasis on how new literary trends reflect sociocultural change in the Arab world, including debates over tradition, gender relations, and cultural pluralism.

01:685:451. CRITICAL PERSPECTIVES ON THE MIDDLE EAST (3)
Prerequisite: 01:685:350. Credit not given for both this course and 01:790:451.
Promotes critical thinking about the Middle East by analyzing how stereotypes and Western political thinking hinder intercultural understanding and encourages students to think more dynamically about the relationship between the United States and the Third World.

01:685:455. CULTURE AND REVOLUTION IN THE MIDDLE EAST (3)
Credit not given for both this course and 01:790:455.
Middle Eastern culture and its relationships with revolutionary movements and radical Islam. Major perspectives on current discourses regarding revolution and Middle Eastern culture.

01:685:481,482. INTERNSHIP IN MIDDLE EASTERN STUDIES (3,3)
Prerequisite: Permission of the program director.
Students work in outreach projects or with a designated agency concerned with Middle Eastern affairs; requires an appropriately designed academic project, resulting in a paper.

01:685:490. MODERN MIDDLE EASTERN LITERATURE IN TRANSLATION (3)
Credit not given for both this course and 01:195:490 or 01:563:480.
Modern literature in the Arabic, Hebrew, Persian, and Turkish traditions, with focuses on poetry, the short story, and the novel.

01:685:491-492. INDEPENDENT STUDY AND RESEARCH IN MIDDLE EASTERN STUDIES (3,3)

01:685:495-496. ADVANCED TOPICS IN MIDDLE EASTERN STUDIES (3,3)
Intensive study, in a discussion-oriented format, of a specifically defined subject of Middle Eastern studies. Subjects vary according to individual instructors; contact the program director for information.

Cross-Listed Middle Eastern Studies Courses

A. Languages and Literatures

01:013:127 (685:127)	Elementary Arabic I (4)
01:013:128 (685:128)	Elementary Arabic II (4)
01:013:227 (685:227)	Intermediate Arabic I (4)
01:013:228 (685:228)	Intermediate Arabic II (4)
01:013:327 (685:327)	Advanced Arabic I (3)
01:013:328 (685:328)	Advanced Arabic II (3)
01:014:223 (685:223)	Independent Study (in Arabic) I (1–4)
01:014:234 (685:234)	Independent Study (in Arabic) II (1–4)
01:195:393 (685:393)	Modern Israeli Theater and Film (3)
01:563:101 (685:101)	Elementary Modern Hebrew I (4)
01:563:102 (685:102)	Elementary Modern Hebrew II (4)
01:563:131 (685:131)	Intermediate Modern Hebrew I (4)
01:563:132 (685:132)	Intermediate Modern Hebrew II (4)
01:563:215 (685:215)	Introduction to Hebrew Style and Literature I (3)
01:563:216 (685:216)	Introduction to Hebrew Style and Literature II (3)
01:563:371 (685:371)	Hebrew Tales and Poetry I (3)
01:563:372 (685:372)	Hebrew Tales and Poetry II (3)
01:563:471 (685:471)	Studies in Hebrew Literature I (3)
01:563:472 (685:472)	Studies in Hebrew Literature II (3)
01:563:481 (685:479)	Agnon's Themes and Variations (3)
01:563:484 (685:484)	Modern Israeli Literature (3)

B. History

01:506:363 (685:363)	Imperialism (3) *
01:506:367 (685:367)	Protest and Revolution (3) *
01:508:200 (685:200)	The Ancient Near East (3)
01:508:204 (685:201)	Islamic Civilization (3)
01:508:210 (685:210)	The Armenian Experience in World History (3)
01:508:300 (685:300)	The Arab-Israeli Conflict (3)
01:508:301 (685:301)	The Ottoman Empire (3)
01:508:302 (685:302)	The Classical Age of Islam (3)
01:508:305 (685:305)	The Modern Middle East (3)
01:508:307 (685:307)	Women and Society in the Islamic Middle East (3)
01:508:316 (685:316)	Israeli Women: Historical and Literary Perspectives (3)
01:510:205 (685:205)	Byzantium: The Imperial Age (3)
01:510:207 (685:207)	Byzantium: The Last Centuries (3)
01:510:382 (685:382)	Genesis of Modern Greece: 1450–1830 (3)
01:510:386 (685:343)	History of Zionism (3)
01:510:409 (685:409)	The Crusades and the Holy Land (3)
01:563:375 (685:375)	The Jewish Immigrant Experience (3)

C. Art History

01:082:320 (685:320)	Islamic Art and Architecture (3)

D. Political Science

01:790:317 (685:317)	Imperialism and the Third World (3) *
01:790:351 (685:351)	Contemporary Politics in the Middle East (3)
01:790:352 (685:352)	Israeli Politics (3)
01:790:385 (685:385)	Arab Politics and Society (3)
01:790:452 (685:452)	Advanced Topics in Middle Eastern Politics (3)
16:790:539 (685:539)	Politics of the Middle East (3)

E. Sociology

01:920:354 (685:354)	Third-World Women (3) *

F. Geography, and Urban Planning and Development

01:450:341 (685:341)	South Asia and the Middle East (3)
10:975:475 (685:475)	World Cities (3) *
10:975:476 (685:476)	Islamic Cities (3)
10:975:498 (685:498)	Special Topics in Urban Studies (3) *

G. Religion and Philosophy

01:730:374 (685:374)	Islamic Philosophy (3)
01:840:312 (685:312)	Greek Christianity (3)
01:840:325 (685:325)	Prophet Muhammad (3)
01:840:326 (685:326)	Islam (3)
01:840:356 (685:356)	Islamic Mysticism (3)
01:840:482 (685:482)	Seminar in Islamic Ethics (3)

H. Jewish Studies

01:563:310 (685:310)	Israeli Culture (3)

The Ibn Khaldun Prize

This annually awarded prize honors an outstanding research paper or critical essay by a student majoring or minoring in the program. Faculty may nominate students by sending copies of outstanding papers to the director, who, on the advice of the program executive committee, in April appoints a two-person reading committee. Results are announced in late April. A stipend is associated with the prize.

MILITARY EDUCATION, AIR FORCE 690

Department of Aerospace Studies, Office of the University Vice President for Academic Affairs

Department Chairperson: Colonel Randall L. Lanning

Professor:

Colonel Randall L. Lanning, B.A., Nebraska (Omaha); M.A., Central Missouri State

Assistant Professors:

Captain Paul D. Pidgeon, B.S., U.S. Air Force Academy; M.S., U.S. Air Force Institute of Technology
Captain Susan B. Sample, B.S., Michigan Technological; M.A. candidate, Harvard
Captain Michael Adamitis, B.A., M.A., St. Bonaventure

Air Force Reserve Officer Training Corps

Air Force Reserve Officer Training Corps (AFROTC) is a voluntary program of military education and leadership development open to qualified male and female students

* With written permission of the program director, at time of registration.

of all academic majors of the university. Upon completion of the AFROTC program and the attainment of a baccalaureate-level degree, the individual receives a commission as an officer in the U.S. Air Force. A monthly subsistence is provided during the junior and senior years. Scholarships are awarded on a competitive basis in increments of four, three, and two years.

Discrimination Based on Sexual Orientation

Rutgers, The State University of New Jersey, has a clear policy that seeks to guarantee that the services and benefits offered to its students are available equally to all. This includes equality regardless of sexual orientation. However, ROTC programs are governed by the United States Department of Defense, which maintains a policy of discrimination against gays, lesbians, and bisexuals. Hence, equal opportunities are not guaranteed to all who may wish to fully participate in ROTC programs.

The university's opposition to the Department of Defense policy of discrimination will be actively maintained until full equality of access and benefits is available to all, regardless of sexual orientation. In the meantime, the university has secured the rights of all students to enroll in and receive academic credit for ROTC courses. Students who believe that they have been subjected to discrimination by ROTC, or by any other division of the university, should contact Dr. Emmet A. Dennis, Vice President for Student Affairs (732/932-8576).

Program Requirements

Two formats for AFROTC program completion are available: a four-year candidate program and a two-year candidate program.

Four-Year Program. The first two years of the four-year candidate program are called the General Military Course (GMC) and are voluntary. The GMC is designed to acquaint the new college student with the Air Force.

Enrollment in the GMC does not place the student under any military service obligation. Requirements for the GMC include 03:690:121,122 and 221,222 scheduled for one hour per week over the first four terms. In addition, Leadership Laboratory (03:690:171,172 and 271,272) is scheduled each week. One academic credit is awarded for the classroom work in each term of the GMC.

Four-year candidates must attend a four-week field training encampment prior to their junior year.

During his or her sophomore year, the student may apply for entrance into the Professional Officer Course (POC). The POC is contractual and is scheduled during the junior and senior years. Obligations include enlisting in the Air Force Reserve, completion of degree requirements, and acceptance of a commission in the U.S. Air Force Reserve if tendered. Term requirements for the POC include attendance at Leadership Laboratory and class attendance. The POC courses are 03:690:323,324, 371,372, 423,424, and 471,472. Three academic credits are awarded for the classroom work in each term of the POC. Students who successfully complete the POC are commissioned as second lieutenants in the Air Force upon graduation and have an initial active duty obligation of four years. This active duty period is longer for pilots and navigators.

Two-Year Program. The two-year candidate program offers college sophomores, who have two full academic years remaining, an opportunity to catch up with their contemporaries and complete the AFROTC program. Two-year candidates attend five weeks of field training during the summer between their sophomore and junior years of college. The additional week for two-year program candidates provides the academic background normally given in the GMC.

Membership Qualifications

To qualify for membership in the Air Force ROTC program a student must be a citizen of the United States, at least fourteen years of age, physically qualified, and enrolled as a full-time student. All Rutgers students are eligible to take AFROTC academic classes, even if they are not members of AFROTC.

Noncadet Enrollment

Rutgers students who desire a varied aerospace education without seeking a commission are encouraged to enroll in classes for the purpose of academic credit only. These students are not required to attend traditional ROTC activities, including the leadership laboratory. For more information, call 732/932-7706 or 7430, or send an email to rotc485@rci.rutgers.edu.

Uniforms and Allowances

Uniforms and textbooks are supplied to all students enrolled in AFROTC. A $50 deposit fee is required for textbooks and uniforms. This fee is refunded when textbooks and uniforms are returned. Students enrolled in the POC and scholarship students receive $200 per month.

Courses

03:690:121,122. THE AIR FORCE TODAY (1,1)
Introductory course acquainting students with the U.S. Air Force mission and organization. Assessment of writing and speaking skills.

03:690:171,172. LEADERSHIP LABORATORY I (0,0)
Corequisites: 03:690:121,122. Enrollment limited to Air Force ROTC cadets. Fundamentals of drill and ceremonies; physical fitness training; leadership exercises.

03:690:221,222. THE EVOLUTION OF AIR AND SPACE POWER (1,1)
Historical survey of changes in the nature of military conflict; development of air power from beginnings through the two world wars; evolution of air power doctrine; growth of air power technology; history of air power employment in military and nonmilitary operations. Assessment of writing and speaking skills.

03:690:271,272. LEADERSHIP LABORATORY II (0,0)
Corequisites: 03:690:221,222. Enrollment limited to Air Force ROTC cadets. Continuation of Leadership Laboratory I. Advanced drill and ceremonies; physical fitness training and evaluation; leadership exercises.

03:690:323,324. AIR FORCE LEADERSHIP AND MANAGEMENT (3,3)
Integrated management course emphasizing individual's role as leader / manager. Motivation and behavior, leadership, communication, and group dynamics; basic managerial decision making and analytic aids; organizational and personal values; management of forces in change; organizational power and politics in the military. Actual Air Force cases; assessment of writing and speaking skills.

03:690:371,372. LEADERSHIP LABORATORY III (0,0)
Corequisites: 03:690:323,324. Enrollment limited to Air Force ROTC cadets.
Advanced leadership experience in planning, organizing, directing, coordinating, and controlling.

03:690:423,424. NATIONAL SECURITY AFFAIRS (3,3)
Political science course integrated with studies of military profession. Approaches, processes, and actors of national security policy; evolution of U.S. national security policy; role of President, Congress, military; current issues of national strategy, focusing on regional security issues. Individual and group research and presentations required; writing and speaking skills assessed.

03:690:471,472. LEADERSHIP LABORATORY IV (0,0)
Corequisites: 03:690:423,424. Enrollment limited to Air Force ROTC cadets.
Advanced leadership and management skills and their application.

MILITARY EDUCATION, ARMY 691

Department of Military Education (Army), Office of the University Vice President for Academic Affairs

Web Site: http://teachx.rutgers.edu/rotc
Email: a-bnj-ru@rotc1.bragg.army.mil
732 / 932-7313, ext. 10

Department Chairperson: Lieutenant Colonel Richard G. Arntson

Professor:
Lieutenant Colonel Richard G. Arntson, B.A., Montana; M.S., Alabama (Troy)

Assistant Professors:
Captain John Stahl, B.S., Rutgers
Captain Mike Stelzig, B.S., Embry-Riddle Aeronautical
Captain Jeffrey Martuscelli, B.S., Eastern Washington State
Captain Chuck Duray, B.S., United States Military Academy

Army Reserve Officer Training Corps

Army ROTC is a leadership and management development program designed to commission officers in the United States Army. The program consists of 18 credits taken as general electives that can be combined with any academic major. Upon successful completion of the program, students will be commissioned as second lieutenants in the United States Army, the Army National Guard, or the Army Reserve. A monthly subsistence allowance is provided for juniors, seniors, and scholarship cadets. Several two- and three-year scholarships are awarded annually on a competitive basis. The mission of the Army ROTC is to educate and develop the leadership potential of students and have fun in the process.

Discrimination Based on Sexual Orientation

Rutgers, The State University of New Jersey, has a clear policy that seeks to guarantee that the services and benefits offered to its students are available equally to all. This includes equality regardless of sexual orientation. However, ROTC programs are governed by the United States Department of Defense, which maintains a policy of discrimination against gays, lesbians, and bisexuals. Hence, equal opportunities are not guaranteed to all who may wish to fully participate in ROTC programs.

The university's opposition to the Department of Defense policy of discrimination will be actively maintained until full equality of access and benefits is available to all, regardless of sexual orientation. In the meantime, the university has secured the rights of all students to enroll in and receive academic credit for ROTC courses. Students who believe that they have been subjected to discrimination by ROTC, or by any other division of the university, should contact Dr. Emmet A. Dennis, Vice President for Student Affairs (732 / 932-8576).

Program Requirements

Two programs lead to commissioning, a two-year program and a four-year program. Additionally, students not seeking a commission may take the leadership development courses for academic credit only.

Four-Year Program. The first two years of the four-year program is called the basic course, and does not include an obligation to the Army. Successful completion of the basic course is required for contracting as a cadet in the junior year. Basic course classes meet once a week for one class period (1.5 credits). Attendance at the management and training lab on alternate Friday afternoons (two class periods) is required. The junior and senior years are the advanced course. These classes meet twice a week for 3 credits, and attendance at the labs is required.

Two-Year Program. The two-year program offers qualified students an alternative method of entry into the advanced course. Students taking this option attend five weeks of leadership and military skill training at Fort Knox, Kentucky, during the summer before entering the advanced course. The Army provides a stipend for attendance, and there is no obligation until the student decides to continue with Army ROTC in the junior year. Prior service members who have completed basic training successfully with any of the armed forces also may get commissioning credit for the basic course and use the two-year option. Members of the Army National Guard and Army Reserve also qualify for this option.

Noncadet Enrollment

Rutgers students who desire a varied aerospace education without seeking a commission are encouraged to enroll in classes for the purpose of academic credit only. These students are not required to attend additional ROTC activities, including the leadership laboratory. Call 732 / 932-7706 for details.

Enrollment Qualifications

To qualify for enrollment in the ROTC program for the purpose of commissioning, an individual must be enrolled as a full-time undergraduate or graduate student, a citizen of the United States between seventeen and twenty-seven years of age (inclusive), and physically qualified. Noncitizen students may be permitted to take ROTC when they fulfill certain requirements of military regulations.

Uniforms and Allowances

Uniforms, equipment, and textbooks are provided to all students enrolled in Army ROTC. They must be returned to the department each term or as directed by the cadre. As of fall 2000, students enrolled in the advanced course receive a $200 monthly stipend while attending classes (Army scholarship recipients receive the stipend and an additional $500 for books per year). New Jersey Army National Guard members who also are Army ROTC cadets may be eligible for additional benefits for agreeing to take their commission in the New Jersey Army National Guard. As of fall 2000, this stipend was $385 per month for advanced course cadets.

Summer and Winter Break Training Opportunities

Qualified cadets may compete for training opportunities at Airborne, Air Assault, Mountain Warfare, and Northern Warfare schools. There are opportunities for exchange programs with cadets in other countries. Juniors scheduled for advanced camp are eligible for follow-on training with Army units around the world.

Army ROTC Extracurricular Activities

There are many volunteer opportunities for Rutgers students, including Scabbard and Blade Honor Society, Color Guard, Tactics Club, Ranger Challenge Team, and various community services.

Distinguished Military Student/Distinguished Military Graduate

Distinguished Army ROTC cadets are so designated by the professor of military science on the basis of high scholarship, evidence of high moral character, military aptitude, and demonstrated leadership ability.

Physical Training

Physical development is focused on the physically demanding requirements of being an Army officer. Students develop their ability to maintain personal fitness and build an appreciation for teamwork, inspire a will to win, and be successful. Physical fitness training is conducted three mornings a week and is open to all enrolled cadets.

Courses

03:691:101. INTRODUCTION TO MILITARY LEADERSHIP (1.5)
Organization of U.S. Army and responsibilities of the Army officer. First aid skills and physical fitness.

03:691:102. PRINCIPLES OF LEADERSHIP (1.5)
Introduction to the leadership assessment process. Communications and methods of performance evaluation. Development of work schedules and the techniques of counseling.

03:691:103,104. LEADERSHIP AND TRAINING LABORATORY (0,0)
Lab. 1.5 hrs. Corequisites: 03:691:101,102.
Practical exercises in leadership techniques.

03:691:201. LEADERSHIP DEVELOPMENT PROGRAM (1.5)
Instruction and evaluation techniques in the critical areas of leadership. Analysis of communication ability, presentation skills, and procedures for delegating responsibility. Land navigation and principles of physical fitness.

03:691:202. THE DIMENSIONS OF LEADERSHIP (1.5)
Analysis of the dimensions of leadership identified in 03:691:201. Specific analysis of initiative judgment, sensitivity, communication skills, and planning and organizing abilities. Principles of time management, and fundamentals of resource management.

03:691:203,204. LEADERSHIP AND TRAINING LABORATORY (0,0)
Lab. 1.5 hrs. Corequisites: 03:691:201,202.
Practical exercises in leadership techniques.

03:691:391,392. FUNDAMENTALS OF MILITARY LEADERSHIP AND TRAINING I,II (3,3)
Prerequisites: 03:691:102 and 202.
Case study of leadership traits and management principles. "Code of Conduct" and the military justice system. Principles of security and survival in a combat environment. Employment of tactical communications. Planning operations.

03:691:393,394. LEADERSHIP AND TRAINING LABORATORY (0,0)
Lab. 1.5 hrs. Corequisites: 03:691:391,392.
Practical exercises in leadership techniques.

03:691:491. COMMAND AND STAFF PROCEDURES I (3)
Prerequisites: 03:691:391,392 or permission of instructor.
Organization of Army staffs, functional areas of responsibility, planning techniques, and problem solving. Military writing; formats for studies, reports, and routine correspondence. The army logistics system.

03:691:492. COMMAND AND STAFF PROCEDURES II (3)
Prerequisite: 03:691:491 or permission of instructor.
Problems and responsibilities of an Army officer; treatment of contemporary social problems in the military environment. Training management and methods of instruction. Military law and ethics.

03:691:493,494. LEADERSHIP AND TRAINING LABORATORY (0,0)
Lab. 1.5 hrs. Corequisites: 03:691:491,492. Enrollment limited to and required of all Army ROTC cadets.
Practical exercises in leadership techniques.

MOLECULAR BIOLOGY

(See Life Sciences)

MUSIC (Music 700, Applied Music 701)

Department of Music, Mason Gross School of the Arts

The Department of Music is a member of the National Association of Schools of Music.

See the Mason Gross School of the Arts section for faculty listing, descriptions of all Applied Music 701 courses, and B.Mus. program information.

Major Requirements: B.A. Program

Prior to declaring the major in music, students must first complete both 07:700:122 and 124 with a grade of C+ or better. Written permission to enter the program also must be obtained from the Department of Music.

Music majors in the Bachelor of Arts program are required to complete at least 43 credits, distributed as follows:

1. 23 credits of music theory: 07:700:121-122, 123-124, 221-222, 223-224, 322
2. 12 credits of music history: 07:700:301-302, either 303 or 304, and either 419 or 420
3. 4 terms of performance study (4 credits)
4. 4 terms of ensemble (4 credits) *

All students must pass a keyboard competency examination no later than the spring term of the junior year or upon completion of applied music courses 07:701:159-160 and 259-260. In order to graduate with a major in music, students must achieve a minimum grade-point average of 2.5 in courses required for the major.

Minor Requirements

Students may elect a minor program in music consisting of at least 18 credits, distributed as follows: (1) at least 6 credits in music theory; (2) at least 6 credits in music history; and (3) 6 elective credits in music, to be chosen in consultation with a faculty adviser.

Departmental Honors Program

The Department of Music offers an honors program to qualified students majoring in music. Before the end of the junior year, interested students who meet departmental requirements for honors candidacy should apply in writing to the chairperson for admission to the honors program. To complete the program successfully, the candidate must submit an honors paper prepared under the supervision of a member of the faculty (07:700:495 or 496 Senior Honors Tutorial) and maintain a cumulative grade-point average of 3.0 or better and a grade-point average in the major of 3.5 or better.

Courses for Nonmajors

The department offers a large number of courses for the nonmajor. In general, 07:700:101 and/or 103 provide the prerequisites for most other nonmajor courses in music. Some ensembles and other performance courses also are open to nonmajors. See the listing under Applied Music 701 in the Mason Gross School of the Arts section.

Courses (700)

Attendance at certain music events may be required in any of the following courses.

07:700:100. Rudiments of Music Notation (1.5)
Corequisite: 07:700:121.
Intensive review of written skills in music fundamentals: rhythmic/pitch notation, intervals, triads, scales, key signatures, rhythm, and meter. Work in computer laboratory may be required.

07:700:101. Introduction to Music (3)
For students with little or no background in music. Basic concepts for intelligent listening to all kinds of music. Emphasis on aspects of sonority, rhythm, melody, harmony, and structure.

07:700:102. Introduction to Music History (3)
Prerequisite: 07:700:101 or 103 or equivalent.
Introductory historical survey of styles, genres, forms, and composers in music from antiquity to the present.

07:700:103. Introduction to Music Theory (3)
No previous musical experience required. Intended for nonmajors.
Rudiments of music: intervals, scales, key signatures, modes, chords, rhythm, and meter. Development of aural skills.

07:700:104. Introduction to Music Analysis (3)
Prerequisite: 07:700:103 or equivalent. Intended for nonmajors.
Exploration of basic analytical techniques that reveal principles of musical structure; examples drawn from the medieval period through the twentieth century; introduction to various types of music notation and score reading; further development of aural skills.

07:700:121. Theory I: Monophony and Modal Counterpoint (3)
Prerequisite: Demonstrated understanding by entrance examination of rhythmic/pitch notation, intervals, scales, and key signatures. Bachelor of Music students not passing the examination must enroll concurrently in and successfully complete 07:700:100 in order to enroll in 07:700:122. Corequisites: 07:700:123, 127.
Analysis and written exercises of melody and music in two voices within the historical context of the development of medieval and Renaissance music. Free counterpoint and imitation in a sixteenth-century style.

07:700:122. Theory II: Polyphony and Tonal Harmony (3)
Prerequisite: 07:700:121.
Analysis and written exercises of music in three and four voices within the stylistic context of the late Renaissance and early baroque. First-species, three-voice counterpoint. Principles of figured bass; melodic embellishment and nonharmonic tones. Triads, seventh chords, and their inversions; secondary dominants.

07:700:123-124. Fundamentals of Musicianship I (2,2)
Pre- or corequisites: 07:700:121,122 or permission of instructor. Intended for music majors.
Intensive work in sight-singing; dictation of melody, rhythm, and harmony; score reading; and keyboard harmony.

07:700:125. Survey of Jazz Styles (2)
Corequisite: 07:700:121.
Historical and analytical survey of major jazz recordings from the 1920s to the present.

07:700:127. Introduction to Music Technology (1)
Corequisites: 07:700:121, 123.
Fundamental skills in music technology: computer-based notation, MIDI sequencing, and digital-audio techniques.

07:700:173,174. Studies in Composition I (BA,BA)
Prerequisite: Permission of instructor. Intended primarily for B.Mus. students and music majors in the B.A. program.
Independent study in musical composition.

07:700:203,204. Music Theory and Analysis (3,3)
Prerequisite: 07:700:104 or equivalent. Intended for nonmajors and music minors. Credit not given for these courses and 07:700:121,122.
Analysis of works selected from various periods to demonstrate theoretical principles as derived from melodic, contrapuntal, harmonic, and rhythmic practices. Continued development of aural skills supplemented by written exercises.

07:700:210. Foundations of Music Education (3)
For Mason Gross School of the Arts music education students only.
Introduction to the historical and philosophical background for school music in the United States. Discussion of current practices and teaching roles at all grade levels and subjects. Includes field experience.

* The music department may require any student taking a performance lesson to participate in an ensemble of the department's choice.

07:700:211. MUSIC OF THE MIDDLE AGES (3)
Prerequisite: 07:700:101 or 103 or equivalent. Credit not given for both this course and 07:700:301. Offered in alternate years.
Historical survey of musical styles and genres from late antiquity to the early fifteenth century.

07:700:212. MUSIC OF THE RENAISSANCE (3)
Prerequisite: 07:700:101 or 103 or equivalent. Credit not given for both this course and 07:700:301. Offered in alternate years.
Historical survey of musical styles and genres in the fifteenth and sixteenth centuries.

07:700:213. MUSIC OF THE BAROQUE ERA (3)
Prerequisite: 07:700:101 or 103 or equivalent. Credit not given for both this course and 07:700:301. Offered in alternate years.
Historical survey of musical styles and genres in the seventeenth and early eighteenth centuries.

07:700:214. MUSIC OF THE CLASSIC ERA (3)
Prerequisite: 07:700:101 or 103 or equivalent. Credit not given for both this course and 07:700:302. Offered in alternate years.
Historical survey of musical styles and genres in the late eighteenth and early nineteenth centuries.

07:700:215. MUSIC OF THE ROMANTIC ERA (3)
Prerequisite: 07:700:101 or 103 or equivalent. Credit not given for both this course and 07:700:302. Offered in alternate years.
Historical survey of musical styles and genres in the nineteenth century.

07:700:216. MUSIC OF THE TWENTIETH CENTURY (3)
Prerequisite: 07:700:101 or 103 or equivalent. Credit not given for both this course and 07:700:302. Offered in alternate years.
Survey of musical styles and genres in the twentieth century.

07:700:221. THEORY III: EIGHTEENTH-CENTURY HARMONY (3)
Prerequisites: 07:700:121,122 or equivalent.
Harmonic practice of the late baroque and classic periods through analysis and composition. Modulation. Underlying melodic and harmonic structure. Harmonization of soprano lines.

07:700:222. THEORY IV: CHROMATIC HARMONY (3)
Prerequisite: 07:700:221.
Harmonic practice of the nineteenth and twentieth centuries.

07:700:223-224. FUNDAMENTALS OF MUSICIANSHIP II (2,2)
Prerequisites: 07:700:123-124 or permission of instructor.
Continued work in sight-singing; dictation of melody, rhythm, and harmony; score reading; and keyboard harmony.

07:700:226. AMERICAN MUSIC (3)
Prerequisite: 07:700:101 or 103 or equivalent. Offered in alternate years.
American music from colonial times to the present.

07:700:227. AFRICAN-AMERICAN MUSIC (3)
Prerequisite: 07:700:101 or 103 or equivalent. Offered in alternate years.
Origins and development of African-American music. Church music, blues, and jazz as expression of African-American life and contributions to American culture.

07:700:228. MUSIC AND SOCIETY (3)
Prerequisite: 07:700:101 or 103 or equivalent. Offered in alternate years.
Social aspects of music. Impact of social function, economic and political conditions, patronage, ideology, and mass communications on music history.

07:700:229. KEYBOARD MUSIC (3)
Prerequisite: 07:700:101 or 103 or equivalent. Offered in alternate years.
Survey of literature for keyboard instruments from earliest sources to the present.

07:700:230. CHAMBER MUSIC (3)
Prerequisite: 07:700:101 or 103 or equivalent. Offered in alternate years.
Major forms and examples of music for instrumental ensembles from the seventeenth to the twentieth century.

07:700:231. SYMPHONIC MUSIC (3)
Prerequisite: 07:700:101 or 103 or equivalent. Offered in alternate years.
Major forms and examples of orchestral music, especially the symphony, from the eighteenth to the twentieth century.

07:700:232. THE CONCERTO (3)
Prerequisite: 07:700:101 or 103 or equivalent. Offered in alternate years.
Survey of concerto literature from the baroque period to the present.

07:700:233. CHORAL MUSIC (3)
Prerequisite: 07:700:101 or 103 or equivalent. Offered in alternate years.
Historical survey of music for chorus and vocal ensemble from the Renaissance to the twentieth century.

07:700:235. MUSIC AND THE THEATER: FROM THE ORIGINS OF OPERA THROUGH MOZART (3)
Prerequisite: 07:700:101 or 103 or equivalent. Offered in alternate years.
Study of the ways in which music interacts with drama in Western culture. Historical discussion of geographic, social, and intellectual contexts. Study and analysis of music selected from 1600 to 1800.

07:700:236. MUSIC AND THE THEATER: FROM THE AGE OF ROMANTICISM TO THE PRESENT (3)
Prerequisite: 07:700:101 or 103 or equivalent. Offered in alternate years.
Study of the ways in which music interacts with drama in Western culture. Historical discussion of geographic, social, and intellectual contexts. Study and analysis of music selected from 1800 to the present.

07:700:237,238. STUDIES IN MAJOR COMPOSERS I,II (3,3)
Prerequisite: 07:700:101 or 103 or equivalent.
Studies of selected compositions by a major composer. Specific composer varies from term to term. May be repeated for credit with differing course content.

07:700:247-248. JAZZ THEORY I,II (3,3)
Prerequisites: 07:700:122 and 124.
Rudiments of jazz improvisation and composition: Lydian chromatic scales, jazz modes, seventh chords, rhythm, intervallic retention, and meter; sight-reading and dictation in jazz idioms.

07:700:251-252. KEYBOARD HARMONY FOR JAZZ MAJORS (2,2)
Prerequisites: 07:700:123-124.
Study of basic piano voicings and harmonic sequences set to compositions.

07:700:261. VOCAL TECHNIQUE FOR SCHOOL CHOIRS (1)
Pre- or corequisite: 07:700:121 or examination.
Fundamentals of singing; methods for class vocal instruction for elementary and high schools.

07:700:263. SCHOOL MUSIC: STRING INSTRUMENT TECHNIQUES (1)
Pre- or corequisite: 07:700:121.
Fundamentals of playing and teaching the string instruments; survey of materials for use in the schools.

07:700:265. SCHOOL MUSIC: WOODWIND INSTRUMENT TECHNIQUES (1)
Pre- or corequisite: 07:700:121.
Fundamentals of playing and teaching the woodwind instruments of the orchestra and band.

07:700:267. SCHOOL MUSIC: BRASS INSTRUMENT TECHNIQUES (1)
Pre- or corequisite: 07:700:121.
Fundamentals of playing and teaching the brass instruments of the orchestra and band.

07:700:269. SCHOOL MUSIC: PERCUSSION INSTRUMENT TECHNIQUES (1)
Pre- or corequisite: 07:700:121.
Fundamentals of playing and teaching the percussion instruments of the orchestra and band.

07:700:273,274. STUDIES IN COMPOSITION II (BA,BA)
Prerequisite: Permission of instructor. Intended primarily for B.Mus. students and music majors in the B.A. program.
Independent study in musical composition.

07:700:283. COMPUTER APPLICATIONS IN MUSIC (3)
Preference given to music majors. Limited enrollment.
Introduction to the creative use of computers and synthesizers. Compositional and improvisatory techniques, including sequencing, editing, and sampling MIDI and notational software.

07:700:301-302. SURVEY OF MUSIC HISTORY (3,3)
Prerequisite: 07:700:122. Intended primarily for music majors.
Styles and forms of Western music from antiquity to the present.

07:700:303,304. SPECIAL TOPICS IN WORLD MUSIC (3,3)
Prerequisite: 07:700:122.
Selected topics on the musical cultures of the Pacific, Asia, Near East, and Africa; and the aboriginal music of the Americas.

07:700:305-306. EVOLUTION OF JAZZ (3,3)
Prerequisites: 07:700:122 and 124 or permission of instructor. For Mason Gross School of the Arts jazz studies students only.
History of jazz. First term: African and African-American origins to the 1930s; basics of improvisation; development of aural ability to distinguish forms and styles. Second term: Jazz of the 1940s to the present.

07:700:309. MUSIC SINCE 1945 (3)
Prerequisite: 07:700:216 or 302 or equivalent.
Stylistic tendencies in new music such as post-Webern serialism, indeterminacy, electronic and computer-assisted composition, "third stream," mixed media, minimalism, and postmodernism.

07:700:321. TOPICS IN MUSIC THEORY (3)
Prerequisite: 07:700:222 or equivalent.
May include analysis of music of specific composers, historical periods, or cultures; Schenkerian analysis; eighteenth-century counterpoint.

07:700:322. MUSIC ANALYSIS (3)
Prerequisite: 07:700:222 or equivalent.
Analysis of twentieth-century music and beyond.

07:700:323. FUNDAMENTALS OF MUSICIANSHIP III (2)
Prerequisite: 07:700:224.
Advanced work in sight-singing; dictation of melody, rhythm, and harmony; score reading; and keyboard harmony.

07:700:329-330. INTRODUCTION TO CONDUCTING (2,2)
Prerequisite: 07:700:222.
Fundamentals of conducting and organization of school choruses and orchestras.

07:700:341. ORCHESTRATION I (2)
Prerequisite: 07:700:,222. Intended primarily for B.Mus. music education students.
Study and demonstration of instruments of the orchestra; writing idiomatically for individual instruments; scoring for small ensembles.

07:700:342. ORCHESTRATION II (2)
Prerequisite: 07:700:341.
Study of selected scores; writing for various ensembles and for symphony orchestra.

07:700:347-348. JAZZ COMPOSITION AND ARRANGING (2,2)
Prerequisites: 07:700:247-248 and 251-252.
Fundamentals of jazz composition and arranging, beginning with arrangements for two or three winds and rhythm sections, and culminating in compositions and arrangements for large ensembles in early, modern, and popular jazz idioms.

07:700:369. TECHNIQUES OF ELECTROACOUSTICAL COMPOSITION (3)
Prerequisite: 07:700:222 or permission of instructor. Preference given to music majors.
Historical survey of electroacoustic music and analysis of selected works. Digital audio recording and editing, sound synthesis, and MIDI systems and sequencing.

07:700:370. ELECTROACOUSTIC COMPOSITION (3)
Prerequisite: 07:700:369 or permission of instructor.
Sampling, integrated digital audio and MIDI systems, and advanced sound synthesis. Study of representative stylistic approaches and trends in electroacoustic music.

07:700:371-372. JAZZ IMPROVISATION I (3,3)
Prerequisites: 07:700:247-248 and 251-252.
Jazz techniques involving chord nomenclature, melodic development, turnbacks, cycles, the blues, scale coloring, rhythmic patterns, and harmonic concepts.

07:700:373,374. COMPOSITION (BA,BA)
Pre- or corequisites: 07:700:322 and permission of instructor.
Independent work in contemporary techniques of composition.

07:700:379-380. THEORY AT THE KEYBOARD (2,2)
Prerequisites: 07:700:123-124 or equivalent.
Keyboard application of harmonic and contrapuntal theory; elementary score reading.

07:700:381. MATERIALS AND METHODS IN ELEMENTARY SCHOOL MUSIC (3)
Prerequisite: 07:700:210 or permission of instructor.
A hands-on activity approach to classroom music programs. Conventional as well as Orff and Kodaly procedures. Fieldwork.

07:700:383. ELEMENTARY INSTRUMENTAL METHODS: INSTRUMENTAL MAJORS (1)
Prerequisite: 07:700:210.
Pedagogical techniques for instrumental music in K–6 curricula.

07:700:384. SECONDARY INSTRUMENTAL METHODS: INSTRUMENTAL MAJORS (1)
Prerequisite: 07:700:210.
Pedagogical techniques for instrumental music in 7–12 curricula.

07:700:385. INSTRUMENTAL METHODS: CHORAL/GENERAL MAJORS (1)
Prerequisite: 07:700:210.
Pedagogical techniques for instrumental music in K–12 curricula.

07:700:386. MUSIC EDUCATION LABORATORY (1)
Prerequisite: 07:700:210.
Practical conducting and performance of repertoire for K–12 ensembles. Sections in choral and instrumental emphases offered in alternate years.

07:700:388. MATERIALS AND METHODS IN SECONDARY CHORAL/GENERAL/SCHOOL MUSIC (3)
Prerequisite: 07:700:210 or permission of instructor.
Topics include the boy's changing voice, high school choral classes, instrumental music programs, and implications of the revised copyright law.

07:700:419,420. SPECIAL STUDIES IN MUSIC HISTORY (3,3)
Prerequisites: 07:700:301-302. Intended for music majors.
Intensive study of a single topic from a variety of perspectives; reading, discussion, and oral and written reports.

07:700:421,422. SPECIAL STUDIES IN MUSIC THEORY (3,3)
Prerequisite: 07:700:322.
Advanced study in music composition, theory, or analysis. Specific course content available at time of registration.

07:700:471-472. JAZZ IMPROVISATION II (3,3)
Prerequisites: 07:700:371-372.
Jazz techniques exploring forms in jazz from 1925 to the present; the study of cadences; the Lydian chromatic concept as applied to defining specific devices and as manifested in various compositions.

07:700:474. SPECIAL TOPICS: TECHNOLOGY IN MUSIC EDUCATION (3)
Prerequisite: 07:700:210.
Music technology and its applications in music education.

07:700:475. SPECIAL TOPICS: MUSIC FOR EXCEPTIONAL LEARNERS (1)
Prerequisite: 07:700:210.
Practical adaptation of instruction to accommodate students with special needs.

07:700:476. SPECIAL TOPICS: MULTICULTURAL MUSIC EDUCATION (1)
Prerequisite: 07:700:210.
Resources and teaching strategies for world music in K–12 curricula.

07:700:477. SPECIAL TOPICS: STAGED CHORAL PRODUCTIONS (1)
Prerequisite: 07:700:210.
Techniques, literature, and resources for staging productions of musical theater, jazz, and show choir in the secondary school.

07:700:478. SPECIAL TOPICS: MARCHING BAND (1)
Prerequisite: 07:700:210.
Techniques of designing marching band routines.

07:700:480. SEMINAR FOR STUDENT TEACHERS (1)
Corequisite: 07:700:487. Open only to students in a teacher education program who have been admitted formally to student teaching.
Examination of problems relevant to contemporary elementary and secondary music education. Concerns relevant to student teaching emphasized. Opportunity to address problems encountered while student teaching.

07:700:487. STUDENT TEACHING (11)
Corequisite: 07:700:480. Open only to students in a teacher education program who have been admitted formally to student teaching.
Full-time student teaching in approved schools under the supervision of members of the faculty.

07:700:493,494. INDEPENDENT STUDY (BA,BA)
Prerequisite: Permission of instructor.
Supervised research in music composition, education, history, or theory.

07:700:495,496. SENIOR HONORS TUTORIAL (3,3)
Prerequisite: Approval of departmental honors committee.
Independent research in music history, theory, or composition.

07:700:497,498. SPECIAL STUDIES IN MUSICIANSHIP (2,2)
Prerequisite: Permission of department.
Term courses designed to meet specific needs in students' musical development.

Applied Music (701): Ensembles and Performance

See the Course Listing chapter in the Mason Gross School of the Arts section for complete course listing.

NEUROBIOLOGY

(See Life Sciences)

NURSING

The College of Nursing in Newark awards a Bachelor of Science degree that also is offered on the New Brunswick campus. Specific information about the program and course offerings, admissions criteria, administrative procedures, and academic regulations of the school may be obtained from the College of Nursing office at 1 Richardson Street on the College Avenue campus.

NUTRITIONAL SCIENCES 709

(See Cook College section)

OPERATIONS RESEARCH 711

Faculty of Arts and Sciences

Web Site: http://rutcor.rutgers.edu

Program Director: Peter L. Hammer

Program Committee:

Adi Ben-Israel, RUTCOR, MSIS
Endre Boros, RUTCOR
Peter L. Hammer, RUTCOR
Andras Prekopa, RUTCOR
Michael Rothkopf, RUTCOR, MSIS

Operations research is an interdisciplinary science that uses mathematics, statistics, computer science, and economics to analyze and solve problems in business, industry, and government. Typical activities of operations research practitioners include the analysis of real-world problems and their formulation as mathematical models, the development of mathematical and statistical methodologies for the solution of such models, the development of computer algorithms and software for the determination of optimal solutions, and the implementation of theoretical solutions to handle real-world problems.

The minor in operations research is an interdisciplinary program aimed at introducing students to the basic methodologies and applications of operations research and preparing them for work on the practical, as well as the theoretical, aspects of the field.

Students interested in pursuing this minor must register early at the office of the program director. Registered students will be placed on a mailing list to receive announcements of course offerings and special events. Additional information can be found at the program's web site.

Minor Program

The interdisciplinary program in operations research consists of six courses comprised of four core courses and two electives.

The four core courses are:

01:640:424	Stochastic Models in Operations Research (3)
01:711:453	Theory of Linear Optimization (3) or 01:640:354 Linear Optimization (3)
01:711:465	Integer Programming (3)
01:711:481	Case Studies in Applied Operations Research (3)

Electives may be chosen from the following:

01:198:323	Numerical Analysis and Computing (4)
01:198:344	Design and Analysis of Computer Algorithms (4)
01:198:424	Modeling and Simulation of Continuous Systems (4)
01:198:440	Introduction to Artificial Intelligence (4)
01:220:322	Econometrics (3)
01:220:326	Econometric Theory (3)
01:220:401	Advanced Econometrics (3)
01:220:405	Economics of Risk and Uncertainty (3)
01:220:409	Mathematical Economics (3)
01:220:410	Operations Research II (3)
01:220:415	Portfolio Theory (3)
01:220:419	Managerial Economics (3)
01:220:421	Economic Forecasting (3)
01:220:430	Topics in Advanced Economic Theory (3)
01:220:436	Game Theory and Economics (3)
14:540:311	Deterministic Models in Operations Research (3)
14:540:338	Probabilistic Models in Operations Research (3)
33:623:370	Management Information Systems (3)
33:623:386	Operations Management (3)
33:623:400	Advanced Operations Management (3)
33:623:470	Advanced Management Information Systems (3)
01:640:321	Introduction to Applied Mathematics (3)
01:640:338	Mathematical Models in the Social and Biological Sciences (3)
01:640:355	Game Theory (3)
01:640:373	Numerical Analysis I (3)
01:640:428	Graph Theory (3)
01:640:454	Combinatorics (3)
01:711:447	Discrete Mathematical Models and Optimization (3)
01:960:337	Managerial Statistics (3)
01:960:390	Introductory Computing for Statistics (1)
01:960:467	Applied Multivariate Analysis (3)
01:960:483	Statistical Quality Control (3)
01:960:484	Basic Applied Statistics (3)
01:960:491	Reliability-Quality Control (3)

The choice of alternate pertinent electives should be approved by the program director.

Courses

01:711:447. DISCRETE MATHEMATICAL MODELS AND OPTIMIZATION (3)
Prerequisites: 01:640:135-136 or 151-152, or permission of instructor.
Basic concepts and tools of discrete mathematics for operations research, engineering, and the sciences. Major topics: graphs and algorithms, counting, Boolean functions, elements of discrete optimization.

01:711:453. THEORY OF LINEAR OPTIMIZATION (3)
Prerequisite: 01:640:250. Credit not given for both this course and 01:640:354 or 453.
Topics include convex sets, polyhedra, Farkas lemma, canonical forms, simplex algorithm, duality theory, revised simplex method, primal-dual methods, complementary slackness theorem, maximal flows, transportation problems, 2-person game theory.

01:711:465. INTEGER PROGRAMMING (3)
Prerequisites: 01:198:111; 01:640:354 or 01:711:453.
Discrete optimization models, linear programming relaxations of integer programs, structured integer problems, enumerative methods, cutting planes, preprocessing techniques, nonlinear binary optimization.

01:711:481. CASE STUDIES IN APPLIED OPERATIONS RESEARCH (3)
Prerequisites: 01:640:354 or 01:711:453; 01:640:424; 01:711:465.
Applications of operations research to real-life problems, typical operations research problems in business, industry, and government; model formulation and interpretation; determination of relevant parameters; formulation of mathematical programming models.

PHARMACY

Students who wish to earn a degree in pharmacy must be admitted to the College of Pharmacy. See the College of Pharmacy section for further information. Douglass, Livingston, and Rutgers colleges, however, offer a sequence of courses that may prepare students for consideration for admission by the College of Pharmacy. Students at those colleges interested in the pharmacy curriculum should consult with their academic dean or with the Office of the Dean of the College of Pharmacy.

PHILOSOPHY 730

Department of Philosophy, Faculty of Arts and Sciences

Chairperson: Brian McLaughlin

Undergraduate Director: Douglas Husak

Professors:

Martha Brandt Bolton, B.A., Ohio Wesleyan; Ph.D., Michigan
Robert Bolton, A.B., Princeton; B.Lit., Oxford; Ph.D., Michigan
Martin Bunzl, B.A., Ph.D., Minnesota
Jerry A. Fodor, B.A., Columbia; Ph.D., Princeton
Peter Kivy, B.A., M.A., Michigan; M.A., Yale; Ph.D., Columbia
Peter D. Klein, B.A., Earlham College; M.A., Ph.D., Yale
Ernest Lepore, B.A., Massachusetts; M.A., Ph.D., Minnesota
Brian Loar, B.A., Seton Hall; M.A., Toronto; B.Phil., D.Phil., Oxford
Barry Loewer, B.A., Amherst; Ph.D., Stanford
Robert Matthews, B.S., M.S., Cornell; M.A., Georgetown; Ph.D., Cornell
Tim Maudlin, B.A., Yale; Ph.D., Pittsburgh
Howard McGary, Jr., B.A., California (Los Angeles); Ph.D., Minnesota
Colin McGinn, B.A., M.A., Manchester; D.Phil., Oxford
Brian McLaughlin, B.A., Montclair State College; M.A., Ph.D., North Carolina
Stephen Neale, B.A., London; Ph.D., Massachusetts Institute of Technology; Ph.D., Stanford
Laurent Stern, Ph.D., Zurich
Stephen Stich, B.A., Pennsylvania; Ph.D., Princeton
Larry S. Temkin, B.A., Wisconsin (Madison); Ph.D., Princeton
Bruce W. Wilshire, B.A., Southern California; M.A., Ph.D., New York

Associate Professors:

Frank Arntzenius, B.S., Netherlands; M.S., Ph.D., London
Mary Frances Egan, B.A., Manitoba; Ph.D., Western Ontario
Mary Gibson, B.A., CUNY (Hunter College); Ph.D., Princeton

Assistant Professor:

Ruth Chang, A.B., Dartmouth; Ph.D., Oxford; J.D., Harvard

Visiting Professors:

Pierre Pellegrin, Doctorat, Paris I
Ernest Sosa, B.A., Miami; M.A., Ph.D., Pittsburgh

Major Requirements

Students must take a minimum of eleven classroom courses in philosophy, not more than five of which may be at the 100 to 200 level. Among these courses must be the following:

1. One term of logic from among the following:
   - 01:730:201 Introduction to Logic (3)
   - 01:730:315 Applied Symbolic Logic (3)
   - 01:730:407 Intermediate Logic I (3)
   - 01:730:408 Intermediate Logic II (3)
2. One term of ancient or medieval philosophy from among the following:
   - 01:730:301 Socrates and Plato (3)
   - 01:730:302 Plato and Aristotle (3)
   - 01:730:304 The Origins of Medieval Philosophy (3)
   - 01:730:305 Philosophy in the High Middle Ages (3)
   - 01:730:306 Between Medieval and Modern Philosophy (3)
   - 01:730:401 Plato (3)
   - 01:730:402 Aristotle (3)
3. One term of modern philosophy from among the following:
   - 01:730:307 Descartes, Locke, and the Seventeenth Century (3)
   - 01:730:308 Hume, Kant, and the Eighteenth Century (3)
   - 01:730:404 Spinoza (3)
   - 01:730:405 Kant (3)
   - 01:730:406 Nineteenth Century Philosophy (3)
4. One term of advanced ethics or political philosophy from among the following:
   - 01:730:340 History of Ethics (3)
   - 01:730:342 Seventeenth- and Eighteenth-Century Social and Political Philosophy (3)
   - 01:730:346 Rights, Justice, and Equality (3)
   - 01:730:441 Ethical Theory (3)
   - 01:730:445 Social and Political Philosophy (3)
   - 01:730:450 Topics in Moral and Political Philosophy (3)
5. Two courses from among the following, at least one of which must be at the 400 level:
   - 01:730:210 Philosophy of Language (3)
   - 01:730:220 Introduction to the Theory of Knowledge (3)
   - 01:730:225 Introduction to the Philosophy of Science (3)
   - 01:730:326 Philosophy of the Social Sciences (3)
   - 01:730:328 Philosophy of Psychology (3)
   - 01:730:360 Philosophical Aspects of Cognitive Science (3)
   - 01:730:412 Epistemology (3)
   - 01:730:415 Metaphysics (3)
   - 01:730:418 Philosophy of Mind (3)
   - 01:730:420 Philosophy of Language (3)
   - 01:730:425 Philosophy of Science (3)
   - 01:730:426 Philosophy of Physics (3)
   - 01:730:428 Topics in the Philosophy of Psychology (3)

A student may petition the department to substitute other courses for those on this list to satisfy any of the above requirements.

Minor Requirements

A minor in philosophy consists of six Philosophy 730 classroom courses of 3 or more credits each. At least three of the courses must be at the 300 or 400 level.

Departmental Honors

The department offers students the opportunity to graduate in philosophy with departmental honors. The requirements to achieve this distinction are that, at graduation, a student have a major in philosophy with a cumulative grade-point average of 3.0 or higher and a grade-point average of 3.5 or higher in philosophy courses; that the student have grades of B+ or higher in at least four 400-level courses offered by the Department of Philosophy; and that the student have obtained final approval of a paper as an honors thesis by the undergraduate curriculum committee of the department. (The paper may have been submitted previously for a course. The committee may make its final approval conditional on additional work.)

Courses

Courses at the 300 and 400 levels are not open to first-year students, and courses at the 400 level are not open to sophomores. Any course prerequisite can be waived by permission of the instructor.

01:730:101. LOGIC, REASONING, AND PERSUASION (3)
Enrollment not open to students who have taken 01:730:201.
Development of skills in reasoning. Consideration of what an argument is, how arguments go wrong, what makes an argument valid. Application of techniques for clarifying meaning, evaluating and constructing arguments.

01:730:102. LOGIC, REASONING, AND PERSUASION (4)
Credit not given for both this course and 01:730:101. Enrollment not open to students who have taken 01:730:201.
Same as 01:730:101 with special emphasis on in-class discussion and development of proficiency in writing.

01:730:103. INTRODUCTION TO PHILOSOPHY (3)
Examination of fundamental philosophical issues such as the meaning and basis of moral judgments, free will and determinism, theism and atheism, knowledge and skepticism, consciousness and the brain.

01:730:104. INTRODUCTION TO PHILOSOPHY (4)
Credit not given for both this course and 01:730:103.
Same as 01:730:103 with special emphasis on in-class discussion and development of proficiency in writing.

01:730:105. CURRENT MORAL AND SOCIAL ISSUES (3)
Examination of such issues as abortion, contraception, sterilization, capital punishment, sexism, racism, censorship, privacy, drug abuse and drug laws, consumption and scarcity of resources.

01:730:106. CURRENT MORAL AND SOCIAL ISSUES (4)
Credit not given for both this course and 01:730:105.
Same as 01:730:105 with special emphasis on in-class discussion and development of proficiency in writing.

01:730:201. INTRODUCTION TO LOGIC (3)
Introduction to formal logic, covering truth functional propositional logic and quantification theory. Emphasis on developing symbolic techniques for representing and evaluating arguments.

01:730:203. INTRODUCTION TO CLASSICAL PHILOSOPHY (3)
Origins and early development of Western philosophy among the ancient Greeks. Study of the pre-Socratics, Socrates, Plato, and Aristotle.

01:730:205. INTRODUCTION TO MODERN PHILOSOPHY (3)
Study of the formative period of modern philosophy. Readings selected from works of Descartes, Leibniz, Spinoza, Hobbes, Locke, Berkeley, Hume, and Kant.

01:730:210. PHILOSOPHY OF LANGUAGE (3)
Prerequisite: 01:730:201.
Examination of central issues in the philosophy of language concerning questions of meaning and reference.

01:730:220. INTRODUCTION TO THE THEORY OF KNOWLEDGE (3)
Not open to students who have taken 01:730:412.
Evaluation of evidence, criteria for truth, the nature of belief, theories of perception.

01:730:225. INTRODUCTION TO THE PHILOSOPHY OF SCIENCE (3)
Not open to students who have taken 01:730:425.
Study of scientific methodology using examples from a variety of scientific disciplines. Nature of scientific laws and theories, explanation, confirmation, objectivity, changes in scientific knowledge.

01:730:241. INTRODUCTION TO MORAL THEORY (3)
Nature of moral reasoning; analysis of moral theories such as egoism, utilitarianism, and Kantianism; consideration of objectivity and relativism in ethics; freedom and responsibility.

01:730:249. MEDICAL ETHICS (3)
Moral problems in medical practice and research. Issues such as euthanasia, right to medical care, human experimentation, genetic engineering, rights of patients, nature of death, scarce medical resources.

01:730:250. ENVIRONMENTAL ETHICS (3)
Ethical matters concerning the environment; moral justification for coercing individuals and corporations, just distribution of resources, moral rights of nonhuman animals; study of topical issues such as clean air standards, population control, land use.

01:730:251. ETHICS AND BUSINESS (3)
Social and moral problems that arise in the context of business: profit motive, corporate social responsibility, use and abuse of corporate power, truth in advertising, consumer rights, strikes, stockholders' rights, preferential hiring.

01:730:252. LOVE, PERSONHOOD, AND SEXUAL MORALITY (3)
Nature and kinds of love; relationships between sex and love; respect for persons. Topics such as adultery, jealousy, sexual perversion, sexual exploitation, the rationale of moral restrictions of sex.

01:730:255. INTRODUCTION TO SOCIAL AND POLITICAL PHILOSOPHY (3)
Survey of philosophical writings on the origin and nature of the state. Topics include the individual and the state, the social order, nature and limitation of state authority, political obligation, liberties of citizens.

01:730:258. PHILOSOPHY AND THE BLACK EXPERIENCE (3)
Analysis of what constitutes the black experience and analysisof issues in the black experience, e.g., racial integration, racial separatism, racism, black values.

01:730:260. PHILOSOPHICAL IDEAS IN LITERATURE (3)
Philosophical issues in literary works. Topics such as freedom and determinism, conceptions and reality of the self, the quest for meaning, the existence of evil.

01:730:261. PHILOSOPHICAL IDEAS IN SCIENCE FICTION (3)
Philosophical issues in science fiction. Topics such as time travel, personal identity, mind-body problem, nonhuman rationality, parallel worlds.

01:730:263. PHILOSOPHY AND THE ARTS (3)
Introduction to the major issues in the philosophy of art, with emphasis on the implications of recent developments in film, music, and painting for art theory.

01:730:265. INTRODUCTION TO THE PHILOSOPHY OF RELIGION (3)
Basic issues in the philosophy of religion, East and West: existence and nature of God, problem of evil, faith versus knowledge, mysticism and its claims, the problem of religious language, attacks on religion by Hume, Nietzsche, Marx, and Freud.

01:730:268. INTRODUCTION TO EXISTENTIALISM (3)
Study of the works of some recent existentialist philosophers and the ways in which their analysis of human existence affects their views of freedom, choice, and action.

01:730:297. SOPHOMORE ADVANCED SEMINAR (3)
Prerequisites: Outstanding performance in at least one course in philosophy and permission of instructor.
Intensive study of some classic philosophical text (e.g., Kant's Critique of Pure Reason) or central philosophical question (e.g., the mind-body problem). Extensive writing of papers and discussion of reading material.

01:730:301. SOCRATES AND PLATO (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102.
The thought of Socrates and Plato in the Platonic dialogues. The Socratic method; moral theory. Plato's early dialectic, theory of innate knowledge, theory of forms.

01:730:302. PLATO AND ARISTOTLE (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102.
Major work of Plato, such as the Republic; Aristotle's critical reaction and alternative theories in metaphysics, psychology, logic, ethics, and politics.

01:730:304. THE ORIGINS OF MEDIEVAL PHILOSOPHY (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102.
Emergence of a distinct medieval philosophical style (Philo of Alexandria); the Platonic legacy in Augustine and Boethius; the development of philosophical theology in Christianity, Islam, and Judaism.

01:730:305. PHILOSOPHY IN THE HIGH MIDDLE AGES (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102.
Impact of Aristotle in the Muslim-Jewish world (Averroës and Maimonides); the development of medieval science; Christian Scholasticism (Thomas Aquinas and Duns Scotus).

01:730:306. BETWEEN MEDIEVAL AND MODERN PHILOSOPHY (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102.
Critique of Aristotelian philosophy; the emergence of a new or "secular" Aristotle; the revival of Plato in the Italian Renaissance; the "new science" of Galileo.

01:730:307. DESCARTES, LOCKE, AND THE SEVENTEENTH CENTURY (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102.
Early development of modern views about the nature of the physical world; relation between the mental and the physical; the nature of one's self; skepticism and certainty. Readings from Descartes, Locke, and others such as Spinoza, Leibniz, Hobbes.

01:730:308. HUME, KANT, AND THE EIGHTEENTH CENTURY (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102.
Some major works of Hume and Kant with some attention to other eighteenth-century philosophers. Comparison of views on the structure of consciousness, space and time, the limits of knowledge, the foundations of natural sciences, mathematics, and metaphysics.

01:730:310. CONTEMPORARY MOVEMENTS IN PHILOSOPHY (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102.
Major movements in twentieth-century philosophy, such as American pragmatism, development of logic, logical positivism, existentialism, phenomenology. Philosophers such as Peirce, James, Frege, Russell, Carnap, Wittgenstein, Sartre, Heidegger, Husserl.

01:730:311. CLASSICAL JEWISH PHILOSOPHY (3)
Credit not given for both this course and 01:563:311.
Major trends and figures in medieval Jewish thought; Jewish Platonism (Solomon ibn Gabirol); Jewish Aristotelianism (Maimonides); the critique of philosophy (Hallevi); Jewish philosophy in the Renaissance.

01:730:312. MODERN JEWISH PHILOSOPHY (3)
Credit not given for both this course and 01:563:312.
Thinkers and systems in modern Jewish philosophy including interpretations of Jewish tradition, Jewish Kantianism (Cohen, Buber), Jewish existentialism and postmodernism (Rosenzweig, Levinas), the Holocaust, and Jewish feminism.

01:730:315. APPLIED SYMBOLIC LOGIC (3)
Prerequisite: 01:730:201.
Use of deduction techniques (see 01:730:201) to formalize various subject matters such as modal logic, set theory, formal arithmetic, and relevance logic.

01:730:326. PHILOSOPHY OF THE SOCIAL SCIENCES (3)
Prerequisite: One course in a social science.
Explanation. Relation to natural sciences. Discussion of debates in areas such as structuralism, functionalism, classical modeling, path analysis, statistical testing, and construct validation.

01:730:328. PHILOSOPHY OF PSYCHOLOGY (3)
Prerequisite: One course in psychology or philosophy other than 01:730:101 or 102.
Conceptual and methodological issues about information, mental illness, innate structure, developmental stages, rationality, deviance. Behaviorism, reductionism, cognitivism, and structuralism.

01:730:329. MINDS, MACHINES, AND PERSONS (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102.
Comparison of the nature of the human mind and that of complex machines. Consequences for questions about the personhood of robots.

01:730:340. HISTORY OF ETHICS (3)
Work of great philosophers such as Plato, Aristotle, Hume, Kant, Mill. Topics such as nature and moral judgment, justification of moral standards, the good life and its relation to doing what is right.

01:730:342. SEVENTEENTH- AND EIGHTEENTH-CENTURY SOCIAL AND POLITICAL PHILOSOPHY (3)
Special emphasis on the Social Contract Tradition: Hobbes, Locke, Hume, Rousseau. Topics include natural rights; nature and origin of the state; legitimate political authority; right to revolt, standards of justice.

01:730:343. MARX AND MARXISM (3)
Central introduction to Marx's thought. Topics such as materialism; dialectics; analysis of capitalism; class and class struggle; social revolution, political program for socialism.

01:730:345. PHILOSOPHY AND THE LAW (3)
Examination of normative problems in law. Topics such as justification of punishment; limits of the law; nature of excuses; negligence; strict liability; mens rea requirement.

01:730:346. RIGHTS, JUSTICE, AND EQUALITY (3)
Examination of natural rights, theories of justice, and nature and desirability of equality. Topics such as racism and oppression; evaluation of social institutions and practices; nature of just distribution of economic and social resources.

01:730:347. PHILOSOPHICAL ISSUES IN FEMINISM (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102; or one course in women's studies.
Clarification and analysis of feminist thought. Critical study of scientific theories of sex differences. Issues such as the family, abortion, nature of persons, prostitution, discrimination, pornography.

01:730:358. PHILOSOPHY OF LAW (3)
Examination of the nature and purpose of law and legal systems; analysis of judicial decision making and the role of discretion.

01:730:360. PHILOSOPHICAL ASPECTS OF COGNITIVE SCIENCE (3)
Exploration of ways in which research and discoveries in cognitive science influence, and have been influenced by, philosophical theorizing. Topics include consciousness, innate knowledge, mental representation, and the nature of rationality.

01:730:363. PHILOSOPHY OF CRITICISM: ART AND LITERATURE (3)
Nature of art criticism and its place in the art world. Concepts of reason, taste, interpretation, and appreciation.

01:730:364. AESTHETICS OF FILM (3)
Problems in the philosophy of art raised in theory and practice of film. Variety of films screened in conjunction with the course.

01:730:365. PHILOSOPHY OF MUSIC (3)
Concept of musical expression; music as language; music and drama; music and representation; the nature of the musical work.

01:730:367. AMERICAN PHILOSOPHY (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102.
Study in its historical setting of inquiry into the nature of experience, truth, goodness, and society by American philosophers including James, Peirce, Dewey, Royce, Lewis, Whitehead.

01:730:368. HINDU PHILOSOPHY (3)
Upanishads, Patanjali, Bhagavad-Gita; theories of matter, energy, states of consciousness; meditation. Yogas of knowledge, action, devotion. Karma. Ethics. Comparison of Hindu and Western cosmology.

01:730:370. CONTEMPORARY PHILOSOPHY OF RELIGION (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102.
Modern philosophical discussions of religious language and experience; the possibility of religious knowledge; the nature of religious discourse; mysticism and truth; divine omniscience; religious morality.

01:730:371. PHILOSOPHIES OF DEATH AND DYING (3)
Prerequisite: One course in philosophy other than logic. Sophomores by permission only.
Theories of death and dying in different metaphysical systems; Plato; Eastern philosophy; existentialism; thanatology. Extinction versus continuity of consciousness. Attitudes toward death and ethical values.

01:730:374. ISLAMIC PHILOSOPHY (3)
Basic characteristics and tenets of Islam as religion: the early theological controversies, the major thinkers and mystics; their interaction with the other aspects of Islamic civilization.

01:730:393,394. INDEPENDENT STUDY (1-4,1-4)
Individual study in some philosophical topic under the direction of a member of the department.

01:730:401. PLATO (3)
Prerequisite: 01:730:203 or 301 or 302.
Intensive study of selected works of Plato, with emphasis upon the later dialogues such as Theaetetus, Sophist, and Philebus.

01:730:402. ARISTOTLE (3)
Prerequisite: 01:730:203 or 301 or 302.
Topics in Aristotle's logic, physics, metaphysics, and philosophy of language.

01:730:403. ANCIENT PHILOSOPHY AFTER ARISTOTLE (3)
Prerequisite: One course in Greek philosophy.
Philosophy in the Hellenistic and Roman world. Stoics, Sceptics, and Epicureans; Hellenistic-Jewish philosophy; the revival of Aristotle; Plotinus and the neo-Platonic tradition.

01:730:404. SPINOZA (3)
Prerequisites: Two courses in philosophy other than 01:730:101 or 102. Recommended: 01:730:205 or 307.
Spinoza's theological political treatise: prophecy, miracles; faith and reason. Spinoza's Ethics: God and his attributes, the human mind; human bondage and freedom.

01:730:405. KANT (3)
Prerequisites: Two courses in philosophy other than 01:730:101 or 102, including one of the following: 01:730:205, 307, 308, 412, or 415.
Critical examination of Kant's Critique of Pure Reason; emphasis on metaphysical and epistemological views.

01:730:406. NINETEENTH-CENTURY PHILOSOPHY (3)
Prerequisites: Two courses in philosophy other than 01:730:101 or 102.
Critical reaction to Kant and the philosophy of the Enlightenment: Fichte, Hegel. Rise of the social sciences. Antecedents of twentieth-century intellectual movements.

01:730:407. INTERMEDIATE LOGIC I (3)
Prerequisite: 01:198:205 or 01:730:201 or 315.
Metatheory of propositional and first-order predicate logic. Completeness is proved and its consequences are explored.

01:730:408. INTERMEDIATE LOGIC II (3)
Prerequisite: 01:730:407.
Computability and recursiveness; metatheory of first-order theories; incompleteness theorems; special topics as time permits.

01:730:409. WITTGENSTEIN (3)
Prerequisites: Logic and one course in philosophy other than 01:730:101 or 102.
Detailed study of either Tractatus Logico-Philosophicus and its relation to writings of Frege and Russell; or Philosophical Investigations and related writings.

01:730:411. HISTORY OF EPISTEMOLOGY (3)
Prerequisites: Two courses in philosophy other than 01:730:101 or 102.
Historical development of positions on one or more epistemological issues, such as sensory knowledge, necessary truths, first-person authority, other minds, skepticism, and scientific method.

01:730:412. EPISTEMOLOGY (3)
Prerequisites: Logic (01:730:201 or higher) and one course in philosophy other than 01:730:101 or 102.
Topics such as belief, certainty, justification, knowledge, and skepticism. Detailed examination of epistemological writings of traditional and contemporary authors.

01:730:414. HISTORY OF METAPHYSICS (3)
Prerequisites: Two courses in philosophy other than 01:730:101 or 102.
Historical development of positions on one or more metaphysical issues, such as substance, change, causality, universals, matter, space, time, free will, necessity, possibility, contingency.

01:730:415. METAPHYSICS (3)
Prerequisites: Logic (01:730:201 or higher) and one course in philosophy other than 01:730:101 or 102.
Topics such as essence, particulars and universals, causation, space, time, identity. The nature of metaphysical arguments and problems of ontology. Realism and its alternatives.

01:730:418. PHILOSOPHY OF MIND (3)
Prerequisites: Two courses in philosophy other than 01:730:101 or 102.
Mind-body problem, the nature of consciousness; rationality; intentionality; human freedom. Theories of dualism, physicalism, functionalism, and behaviorism.

01:730:420. PHILOSOPHY OF LANGUAGE (3)
Prerequisites: Logic (01:730:201 or higher) and two courses in philosophy other than 01:730:101 or 102.
Philosophical study of language and linguistics. Pragmatics, theories of learnability, meaning and reference, formal semantics, truth, indexicality.

01:730:422. PHILOSOPHY OF LOGIC (3)
Prerequisite: 01:730:315.
Is logic a theory? The status and use of alternative logics. What logics and other mathematical systems can tell us about language and relations among language, belief, and the world.

01:730:424. THE LOGIC OF DECISION (3)
Prerequisite: One course in logic (01:730:201 or higher).
Analysis of rational preference and nondeductive inference with special emphasis on the examination of alternative concepts of utility and probability.

01:730:425. PHILOSOPHY OF SCIENCE (3)
Prerequisites: Logic, one course in science, and one course in philosophy other than 01:730:101 or 102. Recommended: 01:730:225.
Detailed study of one or more of the following topics: explanation, confirmation, causation, the status of theoretical entities, objectivity, reductionism, unity of science.

01:730:426. PHILOSOPHY OF PHYSICS (3)
Prerequisites: One course in physics and one course in philosophy other than 01:730:101 or 102. Recommended: 01:730:225.
Methodology of the physical sciences. Philosophical problems of space and time, measurement, and causation in modern physics.

01:730:428. TOPICS IN THE PHILOSOPHY OF PSYCHOLOGY (3)
Prerequisites: One course in psychology and one course in philosophy other than 01:730:101 or 102. Recommended: 01:730:225.
Detailed philosophical study of topics such as psychological explanation, implications of psychotherapy and theories of cognition, perception, learning, and personality.

01:730:435. PHILOSOPHY OF HISTORY (3)
Prerequisites: One course in history and one course in philosophy other than 01:730:101 or 102.
Theories of history and historical explanation; comparison of the methodologies of history and sciences; problems of historical interpretation.

01:730:441. ETHICAL THEORY (3)
Prerequisites: Two courses in philosophy other than 01:730:101 or 102.
Examination of contemporary theories such as naturalism, intuitionism, emotivism, and prescriptivism. Issues such as justification of moral judgments, methodological presupposition of ethical theories, and meaning of moral concepts.

01:730:445. SOCIAL AND POLITICAL PHILOSOPHY (3)
Prerequisites: Two courses in philosophy other than 01:730:101 or 102.
Examination of the writings of twentieth-century social and political philosophers such as Rawls, Nozick, Marcuse, and Friedman.

01:730:450. TOPICS IN MORAL AND POLITICAL PHILOSOPHY (3)
Prerequisites: Two courses in philosophy other than 01:730:101 or 102.
Detailed focus on one or more topics such as the nature of rights; free will and determinism; the nature of political obligation; moral virtue; and the right and the good.

01:730:461. TOPICS IN AESTHETICS (3)
Prerequisite: One course in philosophy other than 01:730:101 or 102.
Concepts of place and time in literature and the status of imaginary objects and fictional characters. The relevance of truth and morality to literature.

01:730:465. PHENOMENOLOGY AND EXISTENTIALISM (3)
Prerequisite: 01:730:268 or one other course in philosophy other than 01:730:101 or 102.
Issues in phenomenology and existentialism, selected from Kierkegaard, Nietzsche, Husserl, Heidegger, Sartre, and Merleau-Ponty. Consideration of contemporary philosophical literature.

01:730:470. BUDDHIST PHILOSOPHY (3)
Prerequisite: Two courses in philosophy other than logic. Recommended: 01:730:265 or 368.
Interdependence, impermanence, relativity; suffering; path to liberation; meditation; karma as cosmic justice; death and rebirth. Compassion as central ethical value. Theravada, Mahayana, and Tibetan Buddhism.

01:730:480. ISSUES IN CONTEMPORARY PHILOSOPHY (3)
Prerequisites: Two courses in philosophy at the 300 or 400 level.
Examination of some central issue(s) in contemporary philosophy. Topics vary from term to term.

01:730:493,494. INDEPENDENT STUDY (1-4,1-4)
Individual study in some philosophical topic under the direction of a member of the department.

01:730:495-496. HONORS THESIS (3,3)
Prerequisite: Admission to honors program and approval of thesis topic by faculty adviser and director of undergraduate studies.
Thesis research under the direction of a faculty adviser culminating in an honors thesis.

PHYSICS 750 (Includes Astronomy)

Department of Physics and Astronomy, Faculty of Arts and Sciences

Web Site: http://www.physics.rutgers.edu/ugrad/guide2ug.html

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Undergraduate Program Director: Mohan Kalelkar

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David Vanderbilt, B.A., Swarthmore College; Ph.D., Massachusetts Institute of Technology
Terence Watts, B.S., London; Ph.D., Yale
Theodore B. Williams, B.S., Purdue; Ph.D., California Institute of Technology
Larry Zamick, B.A., Manitoba; Ph.D., Massachusetts Institute of Technology
Alexander Zamolodchikov, B.S., Moscow College for Physics and Technology; Ph.D., Institute of Theoretical and Experimental Physics (Moscow); Doctorate of Science
Harold S. Zapolsky, B.A., Shimer College; Ph.D., Cornell

Associate Professors:

John S. Conway, A.B., Northwestern; Ph.D., Chicago
Ronald Gilman, S.B., Massachusetts Institute of Technology; Ph.D., Pennsylvania
Lev Ioffe, M.S., Moscow Physical Technical Institute; Ph.D., Landau Institute for Theoretical Physics
Terry A. Matilsky, B.S., Michigan; M.A., Ph.D., Princeton
Carlton Pryor, B.S., California Institute of Technology; M.A., Ph.D., Harvard
Ronald Ransome, B.S., Colorado School of Mines; Ph.D., Texas (Austin)
Sunil V. Somalwar, M.Sc., Indian Institute of Technology; Ph.D., Chicago

Assistant Professors:

Patrick Côté, B.S., Western Ontario (Canada); Ph.D., McMaster (Canada)
Laura Ferrarese, Laurea degree, Padova (Italy); Ph.D., Johns Hopkins
Michael Gershenson, M.Sc., Moscow Institute of Physics and Technology; Ph.D., Institute of Radio Engineering and Electronics, Russian Academy of Sciences (Moscow)
Raul Jimenez, B.S., Autonomous University of Madrid (Spain); Ph.D., Copenhagen (Denmark)
Valery Kiryukhin, M.S., Moscow Institute of Physics and Technology; Ph.D., Princeton
Arthur Kosowsky, B.A., Washington (St. Louis); Ph.D., Chicago
Amitabh Lath, B.S., Ph.D., Massachusetts Institute of Technology
Sergei Lukyanov, M.A., Moscow Engineering Physical Institute; Ph.D., Landau Institute for Theoretical Physics
Frank Zimmermann, M.S., Ph.D., Cornell

Assistant Research Professors:

Charles Joseph, B.S., Michigan State; M.S., Ph.D., Colorado
Ken-Ichi Nishikawa, B.S., M.S., Ph.D., Nagoya (Japan)

Introductory Courses

The department offers several general introductory sequences, as well as some nontechnical courses listed in the following section. Courses 01:750:271-272, 273 Honors Physics with 275-276 Classical Physics Laboratory are for honors students and well-prepared physics majors. It uses calculus as a pre- or corequisite. Courses 01:750:123-124, 227-228 Analytical Physics with 229-230 Analytical Physics Laboratory are for engineering students and physics majors. It uses calculus as a pre- or corequisite. Engineering students who need extra help or who have nontraditional backgrounds should ask the engineering dean's office for permission to take 01:750:115-116 Extended Analytical Physics instead of 01:750:123-124. There are three introductory sequences for majors in the biological sciences (including premedical curricula), computer science, chemistry, and other sciences, as well as for students who desire an elementary but thorough introduction to physics. All three cover basically the same material, but utilize different teaching techniques and require different levels of mathematical preparation. Courses 01:750:203-204 General Physics with 205-206 General Physics Laboratory require calculus as a pre- or corequisite, and use a lecture / recitation format. Courses 01:750:201-202 Extended General Physics are intended for students who need extra help or who have

nontraditional backgrounds. Recitations are replaced by cooperative learning workshops, and a laboratory is integrated into the course. Courses 01:750:193-194 Physics for the Sciences use only algebra and trigonometry. Recitations are replaced by cooperative learning workshops, and a laboratory is integrated into the course. Course 01:750:161 Elements of Physics is a one-term noncalculus course intended primarily for pharmacy students, but also suitable for well-prepared liberal arts majors. Courses that are suitable for nonscientists, requiring only high-school algebra, include 01:750:109,110 Astronomy and Cosmology, 01:750:140 The Greenhouse Effect, and 01:750:296 Great Ideas That Shook Physics and the World.

Students who are unsure which sequence to take are urged to consult an adviser in the physics department. Credit cannot be given for courses taken in different sequences if they cover substantially similar topics. Students who wish to switch from one sequence to another are urged to consult a departmental adviser; students who change their major or who have advanced standing also are urged to consult a departmental adviser.

Courses without Prerequisites

These courses have no prerequisites in physics or mathematics: 01:750:109, 110, 140, and 296. Most are relatively nonmathematical. Physics 01:750:109 and 110 are descriptive courses designed for nonscientists, requiring only minimal high school mathematics. Either may be taken without taking the other. Physics 01:750:140 is concerned with the scientific aspects of global warming. It is intended for liberal arts majors and is closed to natural science majors. Physics 01:750:296 discusses fundamental concepts of physics from a historical, sociological, and religious point of view.

Major Requirements

There are three options for completing a major in physics. The professional option is a thorough introduction to the subject for all those who expect to make physics an important component of their career. It may lead to careers in research, technical development, or education in physics, astronomy, or related fields.

The applied option is intended for students who wish to work in industry without graduate study. The required courses give a breadth of knowledge in technical fields rather than specialized preparation for graduate school.

The general option is for students who have an interest in physics but do not expect to become physicists or to do graduate work in physics. It is suitable preparation for careers in education, medicine, law, and business, and is particularly appropriate in an interdisciplinary course of study. A well-balanced sequence of courses should be chosen in consultation with an adviser in the department.

In addition, the department offers a five-year program in cooperation with the School of Engineering, leading to a degree in engineering and a degree in physics.

Prospective majors should consult an adviser in the physics department before choosing their courses.

Professional Option (Bachelor of Science)

Required courses and suggested curricula for honors students and other well-prepared students:

First year: 01:640:151-152; 01:750:271-272, 275-276.
Second year: 01:640:251, 244; 01:750:273, 326, 327, 351, 381-382.
Third year: 01:640:423; 01:750:361, 385-386, 387-388; 01:750:368 is recommended.
Fourth year: At least two courses out of 01:750:305, 406, 417, 418, 441, 464.

An alternate curriculum is available for students who did not begin with the Honors Physics sequence:

First year: 01:640:151-152; 01:750:123-124.
Second year: 01:640:251, 244.; 01:750:227-228, 229-230, 381-382.
Third year: 01:640:423; 01:750:326, 327, 361, 385-386; 01:750:368 is recommended.
Fourth year: 01:750:351, 387-388, and at least two courses out of 01:750:305, 406, 417, 418, 441, 464.

Students who took 01:750:203-204 (or 201-202) as their introductory physics sequence should consult a departmental adviser to plan an appropriate curriculum for the professional physics major.

Applied Option (Bachelor of Science)

First year: 01:640:CALC1-CALC2; 01:750:203-204 (or equivalent); 205-206 (or 229-230 or 275-276).
Second year: 01:160:159-160, 171; 01:640:CALC3; 01:750:323-324, 326, 327.
Third year: 01:198:111 or 14:440:127; 01:640:CALC4; 01:750:305, 313, 351, 389; 9 credits in natural science electives chosen in consultation with a departmental adviser to form a coherent concentration in a physics-related applied area.

A grade-point average of at least a C in the courses applied toward the major is required for graduation in the applied option.

General Option (Bachelor of Arts)

Introductory courses: 01:750:203-204 (or equivalent) and laboratory 205-206 (or 229-230 or 275-276). Two terms of any calculus sequence.
Advanced courses: Six advanced physics courses, including 01:750:323-324, 326, 327, and two additional 300- or 400-level physics courses (except 490 level). It is recommended, but not required, that the two additional courses be selected from the following: 01:750:301, 305, 313, 341,342, 343,344, or 397.
Electives: 18 additional credits with grades of C or better in science or mathematics, chosen in consultation with a departmental adviser to form a coherent sequence.

At least a C average in the physics and mathematics courses is required for admission, retention, and graduation in the general option. Four of the six advanced physics courses must be taken at Rutgers–New Brunswick.

Minor Requirements

The department offers two minors—one in physics and one in astronomy.

The following courses are required for the physics minor:

01:750:203-204 (or equivalent)
01:750:205-206 (or 229-230 or 275-276)
Twelve credits of any 300- or 400-level physics courses (excluding 490 level). Recommended courses include 01:750:301, 305, 313, 323-324, 326, 327, 341,342, 397.

The grade-point average for all courses applied toward the minor must be at least 2.0. No more than one D may be applied toward the minor. Three of the four advanced physics elective courses must be taken at Rutgers–New Brunswick.

The following courses are required for the astronomy minor:

01:750:203-204 (or equivalent)
01:750:205-206 (or 229-230 or 275-276)
01:750:341,342 Principles of Astrophysics
01:750:343,344 Observational Astronomy

The grade-point average for all courses applied toward the minor must be at least 2.0. No more than one D may be applied toward the minor. Three of the four 300-level courses must be taken at Rutgers–New Brunswick. Physics majors or minors who also wish to minor in astronomy must complete the five courses: 01:750:341,342, 343,344, and 441. These courses also may not be used to satisfy requirements for the major or minor in physics.

Five-Year Dual Engineering and Physics Degrees

This is a dual-degree program, providing a B.A. or B.S. in physics and a B.S. in an engineering major.

In addition to the courses taken in one of the four-year engineering programs, the following courses are required for the B.A. in physics: 01:750:385-386, 361, either 305 or 351, and one advanced laboratory (387 or 389 or 343), and any three additional 300- or 400-level physics courses, excluding the 490 level. Students who desire a B.S. in physics are urged to consult a departmental adviser.

The student also must satisfy the graduation (or distribution) requirement of the multipurpose college (Douglass, Livingston, Rutgers) with which he or she chooses to affiliate. All courses used for the B.A. degree also may be used for the engineering B.S. degree, where appropriate, without taking replacement credits.

Astronomy

The professional physics option is the appropriate preparation for a career in astronomy or astrophysics. Students who wish to pursue these subjects should take 01:750:441, after having taken 01:750:341,342, 343,344, and should not take 01:750:109, 110.

Departmental Honors Program

The chairperson of the department will invite physics majors who have shown considerable ability by the end of their junior year to participate in the honors program in physics. Candidates for honors either (1) take 01:750:495,496, and write an essay or conduct a seminar on a project undertaken in the senior year, or (2) take two terms of graduate courses normally included in the Ph.D. program. They also take advanced courses in addition to the required courses of the physics curriculum. Honors are awarded on the basis of the excellence of the honors project (if applicable), general performance in physics courses, and recommendations of the faculty.

More information about the undergraduate program is available at the department's web site.

Courses

01:750:109,110. ASTRONOMY AND COSMOLOGY (3,3)
No prerequisite. For nonscience majors. May not be taken for major credit.
Predominately descriptive introduction to current ideas concerning the nature and origin of the earth, the solar system, the galaxy, and the universe; neutron stars and black holes; the "big-bang"; the possibility of life outside the earth.

01:750:115-116. EXTENDED ANALYTICAL PHYSICS I (3,3)
Lec. 2 hrs., workshop 3 hrs. Corequisites: 01:640:112 or 115 (first term), 01:640:CALC1 (second term). Sequence 01:750:115-116 is equivalent to 01:750:123-124, if both 01:750:115 and 116 are taken. Intended for engineering students who need extra help in preparing for 01:750:227-228.
Together with 01:750:227-228 forms a thorough introductory sequence. First term: graphs, orders of magnitude, units, dimensions, errors and precision, review of mathematics useful to physics, kinematics, vectors, force and Newton's laws. Second term: energy, momentum, rotational motion, oscillations, liquids, and thermal physics, including the laws of thermodynamics and the kinetic theory of gases.

01:750:123-124. ANALYTICAL PHYSICS I (2,2)
Lec. 1 hr., rec. 1 hr. Corequisites: 01:640:151-152. Primarily for engineering and physics majors. This course should be followed by 01:750:227-228 (or 204 if changing major).
Forms a thorough introductory sequence together with 01:750:227-228. Kinematics, dynamics, energy, momentum, angular momentum, heat, and kinetic theory.

01:750:140. THE GREENHOUSE EFFECT (3)
For nonscience majors; may not be taken for major credit in science and engineering. Credit not given for both this course and 01:160:140, 01:450:140, or 01:556:140.
Physical and chemical bases of the "greenhouse effect" and its global impact: biological, climatic, economic, and political. Reducing the emission of "greenhouse" gases; nuclear energy, and other alternative energy sources.

01:750:161. ELEMENTS OF PHYSICS (4)
Lec. 3 hrs., workshop/lab. 3 hrs. Prerequisite: 01:640:112 or 115. Primarily for pharmacy students, but suitable for well-prepared liberal arts majors.
Survey of major topics in physics, such as motion, fluids, waves, electricity, electrical circuits, radioactivity, relativity, and atomic structure, with emphasis on developing laboratory and problem-solving skills.

01:750:171,172,173,174. TOPICS IN PHYSICS (1.5,1.5,1.5,1.5)
No prerequisite. Each course lasts one-half term. Graded on a pass/fail basis.
Physical concepts of the subject without emphasis on the mathematical details. New topics chosen from time to time. Examples: recent discoveries in astronomy and astrophysics; radioactivity; symmetry principles and elementary particle physics; relativity and space travel; waves and the basic concepts of quantum mechanics; science fiction, fact, and physics; power for the future; the physics of music; cameras and lenses; the physics of high-fidelity audio systems; semiconductors and transistors.

01:750:181,182,183,184. PHYSICS HONORS SEMINAR (3,3,3,3)
Prerequisite: Enrollment in an honors program or permission of department.
Physical principles and their implications, including interdisciplinary and societal issues. Topics vary by term. Extensive writing required.

01:750:193-194. PHYSICS FOR THE SCIENCES (4,4)
Lec. 2 hrs., workshop 1.5 hrs., lab. 3 hrs. Prerequisite: 01:640:112 or 115 or equivalent.
Introduction to physics with biological, ecological, and chemical applications. Selected topics in mechanics, thermodynamics, fluids, waves, electricity, magnetism, optics, and modern physics. Integrated laboratory experiments.

01:750:201-202. EXTENDED GENERAL PHYSICS (5,5)
Lec. 2 hrs., workshop 3 hrs., lab. 3 hrs. Corequisites: 01:640:112 or 115 (first term), 01:640:CALC1 (second term); or permission of instructor. Sequence 01:750:201-202 is an integrated program equivalent to 01:750:203-204 and 205-206. Intended for science, science teaching, and pre-health profession majors with a nontraditional background or who would benefit from additional support.
Elementary but detailed analysis of fundamental topics. First term: review of mathematical skills useful for physics, vectors, kinematics, Newton's laws including gravitation, conservation laws, fluids, thermal physics. Second term: electricity and magnetism, geometrical and wave optics, relativity and modern physics.

01:750:203-204. GENERAL PHYSICS (3,3)
Lec. 2 hrs., rec. 1 hr. Corequisites: 01:750:205-206 and any calculus course. Primarily for students in scientific curricula other than physics.
Elementary but detailed analysis of fundamental topics; motion, gravitation, momentum, energy, electromagnetism, waves, heat, kinetic theory, quantum effects, atomic and nuclear structure.

01:750:205-206. GENERAL PHYSICS LABORATORY (1,1)
Corequisites: 01:750:203-204.
Laboratory to complement 01:750:203-204.

01:750:227. ANALYTICAL PHYSICS IIA (3)
Prerequisites: 01:750:123-124 or 271. Corequisite: 01:750:229. Primarily for engineering and physics majors.
Electrostatics, particles in electric and magnetic fields, electromagnetism, circuits, Maxwell's equations, electromagnetic radiation.

01:750:228. ANALYTICAL PHYSICS IIB (3)
Prerequisite: 01:750:227 or 272 or 204. Corequisite: 01:750:230. Primarily for engineering and physics majors.
Waves and optics, relativity, quantum properties of electrons and photons, wave mechanics, atomic, solid state, nuclear, and elementary particle physics.

01:750:229-230. ANALYTICAL PHYSICS II LABORATORY (1,1)
Corequisites: 01:750:227 and 228.
Laboratory to complement 01:750:227 and 228.

01:750:271-272. HONORS PHYSICS I,II (3,3)
Prerequisite: Enrollment in an honors program or permission of the department. Corequisites: 01:640:CALC1 (for 271); 01:640:CALC2 (for 272).
Introduction to classical physics, covering mechanics, fluids, thermodynamics, waves, electricity, magnetism, and optics.

01:750:273. HONORS PHYSICS III (3)
Prerequisites: 01:750:272, or permission of the department, and 01:640:CALC2.
Relativity, wave and quantum properties of photons and electrons, the structure of atoms, molecules, and solids; nuclear physics; elementary particles.

01:750:275,276. CLASSICAL PHYSICS LABORATORY (1,1)
Prerequisite: Enrollment in an honors program or permission of the department. For physics majors and honors students.
Experiments in classical physics.

01:750:296. GREAT IDEAS THAT SHOOK PHYSICS AND THE WORLD (3)
Not for major credit.
Major physical discoveries in their scientific, social, and historical contexts. Topics include the discovery of the law of universal gravitation, the wave compared with corpuscular view of light, electromagnetic induction, the Second Law of Thermodynamics and the arrow of time, light as an electromagnetic wave, Röntgen's discovery of X rays, quantum physics, the principle of relativity, and the discovery of antimatter.

01:750:301. PHYSICS OF SOUND (3)
Prerequisites: Two terms of introductory physics and two terms of calculus. Primarily for science majors.
Scientific basis of sound: waves, vibrating systems, normal modes, Fourier analysis and synthesis, perception and measurement of sound, noise, musical instruments, room acoustics, sound recording and reproduction, electronic synthesizers, and digital sound.

01:750:305. MODERN OPTICS (3)
Prerequisites: 01:640:CALC3; 01:750:227,228 or 272,273 or permission of instructor.
Geometrical optics; electromagnetic waves, the wave equation; superposition, interference, diffraction, polarization, and coherence; holography; multilayer films, Fresnel equations; blackbody radiation, Einstein coefficients, lasers; waveguides and fiber optics; and optical properties of materials.

01:750:313. MODERN PHYSICS (3)
Prerequisites: 01:640:CALC2; 01:750:204 or 228.
Relativistic mechanics, wave and quantum properties of photons and electrons, Schrödinger equation and its application to the structure of atoms, molecules, and solids; nuclear physics; elementary particles.

01:750:323-324. ADVANCED GENERAL PHYSICS (3,3)
Prerequisites: 01:750:203-204 or permission of instructor; two terms of calculus.
For students in the general physics program and others who wish a course beyond elementary physics. Self-paced course in which the students work independently under the guidance of the instructor. The student should normally be free to participate in at least two of the scheduled periods. Material chosen from mechanics, electromagnetism, thermodynamics, optics, quantum mechanics, relativity, atomic and nuclear physics.

01:750:326. COMPUTER-BASED EXPERIMENTATION AND PHYSICS COMPUTING (4)
Prerequisites: 01:750:203-204, 205-206; or equivalent.
Experiments in mechanics, electromagnetism, and modern physics, emphasizing error analysis. Uses the computer as a laboratory tool for symbolic manipulation, data collection, data analysis, simulation, and report writing.

01:750:327. MODERN INSTRUMENTATION (3)
Prerequisites: 01:750:203-204 and 205-206, or equivalent. Required for physics majors, but also suitable for psychology, biological sciences, and other physical science majors.
Theory and use of integrated circuits and their interconnection to produce measuring devices, control apparatus, and interfaces for such devices to microcomputers.

01:750:341,342. PRINCIPLES OF ASTROPHYSICS (3,3)
Prerequisites: Two terms of introductory physics and two terms of calculus.
Properties and processes of the solar system, the stars, and the galaxies; origin of the elements; evolution of the stars and the universe; neutron stars and black holes.

01:750:343,344. OBSERVATIONAL ASTRONOMY (3,3)
Lec. 1.5 hrs., lab. 3 hrs. Prerequisites: Two terms of introductory physics. Corequisites: 01:750:341,342 recommended. Students must have evening hours free for observing.
Observational study of the solar system, stars, and galaxies, using the Serin 0.5 meter telescope. Emphasis on computer techniques for data reduction and analysis. Topics may include the dimensions of lunar features, planetary satellite orbits, planetary rotation measurements, asteroid photometry, solar studies, Cepheid variable stars, gaseous nebulae, color-magnitude diagrams for star clusters, the structure and colors of galaxies, and the expansion and age of the universe.

01:750:351. THERMAL PHYSICS (3)
Prerequisites: 01:640:CALC3; 01:750:227 or 272 or permission of instructor.
Principles of thermodynamics with physical and chemical applications: energy, entropy and temperature, the three laws of thermodynamics, cycles, open systems, critical phenomena, chemical equilibrium, ideal gas reactions, phase rule, phase diagrams, kinetic theory, and introduction to statistical mechanics.

01:750:361. QUANTUM MECHANICS AND ATOMIC PHYSICS (3)
Prerequisites: 01:640:CALC4; 01:750:228 or 273 or permission of instructor.
Introductory quantum mechanics: matter waves, uncertainty principle, stationary states and operators; the Schrödinger equation and its solutions for simple potentials; the hydrogen atom, quantization of angular momentum, spin; complex atoms and molecules.

01:750:368. JUNIOR SEMINAR (1)
For physics majors only.
Development of communication skills needed by professionals in physics and related fields. Oral and written reports, discussions of topics of current interest, and career options.

01:750:381-382. MECHANICS (3,3)
Prerequisites: 01:750:124 or 271 or 323; two terms of calculus. Corequisite: 01:640:CALC3 or permission of instructor. A theoretical course, primarily for physics majors.
Intermediate treatment of Newtonian mechanics, including particle dynamics, rigid body motion, accelerated and rotating reference frames, Lagrange's and Hamilton's equations.

01:750:385-386. ELECTROMAGNETISM (3,3)
Prerequisites: 01:640:CALC3; 01:750:227 or 272 or 324 or permission of instructor.
Intermediate course for physics majors and others who wish a thorough discussion of the fundamental laws of electromagnetism; electric and magnetic fields, dielectric and magnetic materials, D.C. and A.C. circuits, Maxwell's equations, electromagnetic radiation.

01:750:387-388. EXPERIMENTAL MODERN PHYSICS (3,3)
Prerequisites: 01:750:326,327. Corequisite: 01:750:313 or 361 or permission of instructor. Credit not given for both 01:750:387 and 389.
Experiments in atomic, nuclear, condensed matter, and surface physics.

01:750:389. EXPERIMENTAL APPLIED PHYSICS (3)
Prerequisites: 01:750:326,327. Corequisite: 01:750:313 or 361 or permission of instructor. Credit not given for both 01:750:387 and 389.
Experiments in classical and modern physics emphasizing techniques useful for applications.

01:750:397. PHYSICS OF MODERN DEVICES (3)
Prerequisites: Two terms of introductory physics and a course in calculus.
Physical laws and principles underlying modern devices and processes; examples including motors, generators, refrigerators, vacuum tubes, transistors, radio and television receivers, computers, rockets, nuclear reactors, radiation detectors, lasers, and holograms.

01:750:406. INTRODUCTORY SOLID STATE PHYSICS (3)
Prerequisites: 01:750:361 and 386; or permission of instructor.
Fundamental properties of metals, insulators, and semiconductors; dielectrics, magnetism, superconductivity.

01:750:417. INTERMEDIATE QUANTUM MECHANICS (3)
Prerequisite: 01:750:361.
Vector space formulation, identical particles, perturbation theory, variational and WKB approximations, applications, scattering.

01:750:418. NUCLEI AND PARTICLES (3)
Prerequisite: 01:750:361.
Nuclear forces and models; classification and interactions of elementary particles.

01:750:441. ASTROPHYSICS (3)
Prerequisites: 01:750:381-382, 385-386.
Treats some of the main problems of astrophysics in depth; gravitational interactions, stellar composition and evolution, gravitational collapse. Introduction to cosmology.

01:750:464. MATHEMATICAL PHYSICS (3)
Prerequisite: 01:640:423 or equivalent.
Physical applications of linear algebra, the exterior calculus, differential forms, complexes and cohomology. Applications include Hamiltonian dynamics, normal mode analysis, Markov processes, thermodynamics, Schrödinger's equation, special relativity, electrostatics, magnetostatics, Maxwell's equations, and wave equations.

01:750:487,488. SPECIAL TOPICS IN PHYSICS (3,3)
Prerequisite: Permission of instructor.
Study of selected areas in physics.

01:750:491,492. RESEARCH IN PHYSICS (BA,BA)
Prerequisite: Permission of instructor.
Independent research supervised by a member of the department.

01:750:493,494. INDEPENDENT STUDY IN PHYSICS (1-4,1-4)
Prerequisite: Permission of instructor.
Independent study supervised by a member of the department.

01:750:495,496. HONORS IN PHYSICS (1-4,1-4)
Prerequisite: Invitation of chairperson.
Supervised independent reading or research in theoretical or experimental physics culminating in an essay.

PHYSIOLOGY AND NEUROBIOLOGY

(See Life Sciences)

POLISH 787

(See also Russian, Central and East European Studies 861)

Department of Germanic, Russian, and East European Languages and Literatures, Faculty of Arts and Sciences

Web Site: http://seell.rutgers.edu/

Courses in English

01:787:259. TRADITION AND NATIONAL IDENTITY IN POLISH LITERATURE (3)
Examination of the quest for national identity and the unique position of the writer in this search in the nineteenth and twentieth centuries.

01:787:370. SPECIAL TOPICS IN POLISH STUDIES (3)
Credit not given for both this course and 01:861:370. Equivalent to 01:790:383, depending on instructor.
Topics related to Poland and Polish culture. Specific titles available at time of registration.

01:787:470. ADVANCED SPECIAL TOPICS IN POLISH STUDIES (3)
Prerequisite: Permission of department. Credit not given for both this course and 01:861:470.
Intensive study of a particular topic related to Poland and Polish culture. Specific titles available at time of registration.

01:787:475. SEMINAR IN POLISH STUDIES (3)
Prerequisite: Permission of department. Credit not given for both this course and 01:861:475.
Intensive seminar on selected topics related to Poland and Polish culture. Specific titles available at time of registration.

Courses in Polish

01:787:101,102. FIRST-YEAR POLISH (4,4)
Fundamentals of the language, with exercises in speaking, reading, and writing.

01:787:201,202. SECOND-YEAR POLISH (4,4)
Prerequisite: 01:787:102 or equivalent.
Developing language skills; emphasis on speaking, drills, and grammar.

01:787:401,402. ADVANCED POLISH (3,3)
Prerequisite: Permission of department.
Advanced work in grammar and stylistics. Discussion based on reading original literature, newspapers, and essays, and on contemporary films.

01:787:493,494. INDEPENDENT STUDY: POLISH (3,3)
Prerequisite: Permission of instructor.

POLITICAL SCIENCE 790

(See also History / Political Science Joint Major 514)

Department of Political Science, Faculty of Arts and Sciences

Chairperson: Milton Heumann

Vice Chairperson for Undergraduate Studies: Susan Lawrence

Professors:

Myron J. Aronoff, B.A., Miami (Ohio); M.A., Ph.D., California (Los Angeles)
Ross K. Baker, B.A., M.A., Ph.D., Pennsylvania
Benjamin R. Barber, B.A., Grinnell College; M.A., Ph.D., Harvard
Stephen Eric Bronner, B.A., CUNY (City College); M.A., Ph.D., California (Berkeley)
Barbara J. Callaway, B.A., Trinity; M.A., Ph.D., Boston
Susan J. Carroll, A.B., Miami (Ohio); M.A., Ph.D., Indiana
Mary E. Hawkesworth, B.A., Massachusetts; M.A., Ph.D., Georgetown
Milton Heumann, B.A., CUNY (Brooklyn College); M.Phil., Ph.D., Yale
Robert Kaufman, A.B., Ph.D., Harvard
Richard R. Lau, B.A., Stanford; M.A., Ph.D., California (Los Angeles)
C. Richard Lehne, B.A., Reed College; Ph.D., Syracuse
Jack Levy, B.S., Harvey Mudd College; M.A., Ph.D., Wisconsin (Madison)
Roy E. Licklider, B.A., Boston; M.A., Ph.D., Yale
Wilson Carey McWilliams, A.B., M.A., Ph.D., California (Berkeley)
Manus I. Midlarsky, B.S., CUNY (City College); M.S., Stevens Institute of Technology; Ph.D., Northwestern
Gerald M. Pomper, B.A., Columbia; M.A., Ph.D., Princeton
Gordon Schochet, B.A., M.A., Johns Hopkins; Ph.D., Minnesota
D. Michael Shafer, B.A., Yale; M.A., Ph.D., Harvard
Richard W. Wilson, B.A., M.A., Ph.D., Princeton

Associate Professors:

Peter Dennis Bathory, B.A., Oberlin College; Ph.D., Harvard
Pedro Caban, B.A., CUNY (City College); M.A., Ph.D., Columbia
Cynthia Daniels, B.A., Ph.D., Massachusetts
Eric Davis, B.A., SUNY (Binghamton); M.A., Ph.D., Chicago
Jan Kubik, B.A., M.A., Jagiellonian; Ph.D., Columbia
Susan Lawrence, B.A., Furman; M.A., Ph.D., Johns Hopkins
Barbara C. Lewis, B.A., Smith College; M.A., Ph.D., Northwestern
Edward Rhodes, A.B., Harvard; M.P.A., Ph.D., Princeton
Harvey Waterman, B.A., Southern California; M.A., Ph.D., Chicago

Assistant Professors:

Leela Fernandes, B.A., Michigan; M.A., Ph.D., Chicago
Kerry Haynie, B.A., North Carolina (Chapel Hill); M.A., Pittsburgh; Ph.D., North Carolina (Chapel Hill)
Jane Junn, A.B., Michigan; M.A., Ph.D., Chicago
Daniel Kelemen, B.A., California (Berkeley); M.A., Ph.D., Stanford
Beth L. Leech, B.S.J., Northwestern; Ph.D., Texas A&M
Michael Paris, B.A., Hobart and William Smith; J.D., Columbia School of Law; Ph.D., Brandeis
Daniel Tichenor, B.A., Earlham; Ph.D., Brandeis

The political science major is designed to expose students to the philosophical and practical problems of political organization, action, and governance and to encourage critical thinking about the nature of citizenship, rights, and duties in the modern world. The undergraduate political science curriculum is divided into three general areas: "Theoretical Approaches to Politics," "American Institutions and Politics," and "Foreign and International Politics." While majors may choose to focus their studies on one of these areas, they are required to develop a solid intellectual foundation and understanding that spans all three and to approach the study of political science within the broader context of the social sciences.

Students completing the political science major are expected to develop the ability to read and listen critically, to reason analytically and engage in thoughtful moral judgment, and to write and speak clearly and forcefully. The major emphasizes the enhancement of key intellectual skills and qualities of mind—the habits of questioning, debating, challenging, and shaping coherent and persuasive arguments and interpretations—and seeks to involve undergraduates in the active research life of the Rutgers department.

Course work is organized into two general levels. Classes at the 100 and 200 levels are regarded as introductory and are designed to expose students to general concepts, basic knowledge, and modes of inquiry, as well as to serve as a foundation for additional course work. Classes at the 300 and 400 levels focus on more specialized issues, questions, or problems. In general, students should complete appropriate introductory course work before enrolling in upper-division classes.

Political science majors are encouraged strongly to take advantage of opportunities to engage in experiential learning at Rutgers. These opportunities include not only the one-term Washington Internship Program and Rutgers Study Abroad program, but internships supervised by the department and by the Rutgers Citizenship and Service Education (CASE) program.

Prior to declaring a major in political science, a student must complete at least two 100- or 200-level political science courses with an average grade of C or better. These courses can be counted toward major credit.

Major Requirements

1. Majors must complete eleven 3-credit courses (or ten 3-credit courses and two 1.5-credit courses) in political science with a grade of C or better, including:
   a. at least one of the following introductory courses in "Theoretical Approaches to Politics": 01:790:101 or 105.
   b. at least one of the following introductory courses in "American Institutions and Politics": 01:790:201 or 247.
   c. at least one of the following introductory courses in "Foreign and International Politics": 01:790:102 or 204 or 210.
   d. at least one 300- or 400-level course in each of these three areas—"Theoretical Approaches to Politics," "American Institutions and Politics," and "Foreign and International Politics." A list of courses falling into each area is available from the department.
   e. 01:790:395 Political Science Seminar (normally taken in the junior year).

2. The major may include:
   a. no more than four 3-credit courses at the 100 or 200 level.
   b. no more than 6 credits of independent study, internships, or thesis work, or any combination of these.
   c. no more than 3 credits of minicourses.
3. In addition, majors must complete with a grade of C or better, two 3-credit courses in two of the following cognate departments: anthropology, economics, history, philosophy, psychology, religion, and sociology.

Joint Major in History/Political Science 514

This major is administered entirely by the Department of History. For further information, see the heading History / Political Science Joint Major 514 in this section of the catalog.

Minor Requirements

Minors must complete six 3-credit courses in political science with a grade of C or better. At least four of these courses must be at the 300 level or above.

Departmental Honors Program

To be eligible, students must have a cumulative grade-point average of 3.4 or better in political science and 3.0 or better overall. Students may receive honors either by completing an honors thesis through their undergraduate college in their senior year, or by enrolling in two terms of 01:790:495-496 Honors in Political Science in their senior year. Both term courses must be completed in order to receive credit, and students must apply for admission to the program in the spring term of their junior year.

Certificate Programs

Eagleton Undergraduate Associates Certificate
(Eagleton Institute of Politics)

Each year twenty to twenty-five juniors are selected to participate as undergraduate associates of the Eagleton Institute of Politics to study government and politics. Students selected for this program begin during the second term of their junior year and continue through their senior year. By means of special seminars, a supervised internship, and a series of visits by governmental officials and political practitioners, undergraduate associates explore applications of political science to the practice and processes of American politics.

To complete the program and receive an Undergraduate Associates Certificate from the institute upon graduation, each student must complete 12 credits of designated undergraduate and / or graduate courses in American politics with an average grade of at least a B. During the second term of their junior year, students are required to take 01:790:428 The Practice of Politics, which focuses on the idea of politics as choice, with students analyzing different political decisions each week. During the spring term of their senior year, students are required to take 01:790:429 Processes of Politics, which examines representation, leadership, campaigning, lobbying, management, and ethics. The 6 remaining credits must be satisfied by taking 300 level or above political science course(s) in American politics and / or an internship. Members of the faculty participate as guest lecturers in the entry seminar, while the exit course includes participation by political practitioners. Both courses emphasize individual and group participation by students.

The Eagleton Undergraduate Associates Program also offers students the opportunity to connect classroom learning with the experience of working in government, politics, or public affairs through a required internship experience. In recent years, students have been placed in internships in the New Jersey legislature, the governor's Office of Policy and Planning, various state departments, the public affairs' offices of corporations, public-interest groups, state associations, and lobbying firms.

Students must submit a completed application by the first week in October of their junior year to the director of the institute, along with an unofficial transcript and two letters of recommendation from faculty members, including at least one from a political science professor. For further information, see http://www.eagleton.rutgers.edu.

Note: The Eagleton Undergraduate Associates Certificate is awarded only with or subsequent to the awarding of a baccalaureate degree in an approved major.

Global Politics Certificate

Within the context of broad training in political science, this certificate program structures multidisciplinary course work and overseas educational experiences to offer a focused but flexible course of study for students interested in understanding the transformation of politics, political structures, and political institutions around the globe. The certificate requires overseas experience as well as language and political science training necessary to make such an experience valuable. It offers the opportunity to employ and build upon the ideas and insights acquired abroad in research and other activities back at Rutgers. Emphasizing work in comparative politics and international relations, the certificate program allows majors to develop research skills relevant to further study and encourage them to participate in the research life of the department through the activities of the Center for Global Security and Democracy.

While the career interests of students undertaking this major are diverse and there is no expectation that they will pursue any particular career track, the preparation offered by this major will be valuable for students interested in careers in international business and law, in international or transnational organizations or institutions, and in American foreign policy, or who are interested in graduate study in international affairs, public policy, international business and law, or an academic discipline.

Requirements

1. This program is open only to declared political science majors.
2. Students must submit an application to this program to the undergraduate vice chairperson. As part of this application, students must submit a brief essay describing their interests and background, and one letter of recommendation from a political science faculty member.
   Applications are available in the undergraduate political science office in Hickman Hall, Room 509.
3. Students must satisfactorily complete all political science major requirements as modified and supplemented below:
   a. 01:790:102 and either 01:790:204 or 210.
   b. a minimum of four 300- or 400-level courses in foreign and international politics, not including the senior thesis, internship, independent study, or 01:790:395.

c. a minimum of thirteen 3-credit courses in political science, at least nine of which must be at the 300 and 400 level.
d. an international experience, defined as study abroad, a CASE international program, or work with an international or transnational agency. A one-term experience is the norm; one year is recommended; and one summer is permissible under special circumstances. Arrangements for the international experience must be approved by the department in advance. Major credit awarded on a case-by-case basis.
e. a minimum of six 3-credit courses (of which three must be in one department) in the following cognate departments: anthropology, economics, history, psychology, and sociology.
f. demonstrated proficiency in a relevant foreign language, defined as qualifying for a 300-level course in that language.
g. participation in extracurricular global programs events.
h. participation in an interdisciplinary "exit seminar" for all global politics certificate students.

Courses

01:790:101. NATURE OF POLITICS (3)
Recommended for political science majors.
Crucial issues in politics: individual and community; political obligation and civil disobedience; stability, revolution, and change; legitimacy and justice; freedom and power.

01:790:102. INTRODUCTION TO INTERNATIONAL RELATIONS (3)
Explanations of patterns of behavior in international systems. Topics include the state, sovereignty, war, power, nationalism, imperialism, security dilemmas, interdependence, international regimes, and ethical issues.

01:790:105. AMERICAN POLITICS: PUBLIC AND PRIVATE (3)
Evolution of the American polity and its relationship to the world of private culture. Technology, political violence, alienation, bureaucracy, and mass media.

01:790:201. AMERICAN GOVERNMENT (3)
Comprehensive analysis of American political institutions. Issues and problems faced by federal, state, and local governments under the impact of modern conditions. The leading political, economic, and social influences affecting democratic government.

01:790:204. CAPITALISM, SOCIALISM, AND DEMOCRACY (3)
Genesis and development of democracies and dictatorships in advanced industrial societies and in the third world. Role of capitalism; revolutionary, conservative, and liberal movements; contemporary forms of imperialism and dependency.

01:790:210. COMPARATIVE POLITICS (3)
Selected political systems considered in a comparative framework. Cases taken from among both more and less economically developed countries. Focuses on governmental processes and institutions.

01:790:220. THE CIVIC COMMUNITY AS THEORY AND PRACTICE (3)
Corequisite: 01:790:400 Independent Study: CASE Community Service Placement (1).
Critical examination of issues of civil community, citizenship, democracy, and civic responsibility. Includes special activities and discussion of community service performed in conjunction with course.

01:790:237. POLITICAL ECONOMY AND SOCIETY (3)
Introduction to issues raised by the changing role of government toward business and the economy; survey of major policies; introduction to competing schools of political economic thought.

01:790:247. LAW AND POLITICS (3)
Inquiry into role of law and politics in federal court system. Focus on interaction between Supreme Court, Congress, and president. Assessment of role of courts in U.S.

01:790:250,251,252,253. TOPICS IN POLITICAL SCIENCE (1.5,1.5,1.5,1.5)
Special topics that vary with the instructor.

01:790:300. INTRODUCTION TO POLITICAL SCIENCE METHODS (3)
No special math skills required.
Logic and techniques of social science research. Topics may include survey research, experiments, content analysis, data processing, and elementary statistics.

01:790:301. POLITICAL CAMPAIGNING (3)
Development of campaign strategy, planning campaign activities, campaign organization, financing, public relations and media use, voter contact, polling, campaign ethics, the impact of campaigns on the American system.

01:790:302. AMERICAN PARTY POLITICS (3)
Nature and functioning of the two-party system, its causes and effects. Particular attention devoted to the electoral role of parties, including political leadership and organization, nominations, campaigns, finance, and party programs.

01:790:303. ELECTIONS AND PARTICIPATION (3)
Mass political participation in the United States as reflected in voting, electoral politics, and other forms of political participation.

01:790:304. CONGRESSIONAL POLITICS (3)
Functions of legislatures; their structure, organization, and procedure; the problems and principles of lawmaking; and the process by which law is created.

01:790:305. PUBLIC POLICY FORMATION (3)
Origin and impact of public policy decisions on society. How specific decisions are made. How these decisions affect the structure of society. Individual cases analyzed.

01:790:306. AMERICAN PRESIDENCY (3)
Historical and legal evolution of the office of the presidency. Role of the president as party leader, chief legislator, executive, and public spokesman.

01:790:308. NEW JERSEY POLITICS (3)
Examination of various aspects of politics in New Jersey, including elections, governmental institutions, and public policies and the policy-making process.

01:790:309. THE POLITICS OF PUERTO RICAN DEVELOPMENT (3)
Credit not given for both this course and 01:836:309.
Analysis of relationship between political and economic development in the twentieth century, changing nature of U.S. / Puerto Rican relations, formation of the colonial state, and the statehood and independence movements.

01:790:310. GOVERNMENT OF BRITAIN AND THE COMMONWEALTH (3)
Institutions and political practices in Great Britain and the Commonwealth of Nations. Emphasis on the functioning of democracy in the changing social, economic, and psychological conditions of the twentieth-century world.

01:790:311. EUROPEAN POLITICS (3)
Analysis of national governments in western Europe and of the European Union (EU). Focus on contemporary issues including economic liberalization, welfare state reform, European law, foreign policy, and enlargement to eastern Europe.

01:790:312. CHANGE IN LATIN AMERICA (3)
Emerging political and social issues in Latin America: development, democratization, sovereignty, religion, gender, race, migration.

01:790:313. COMPARATIVE POLITICAL DEVELOPMENT OF THE FAR EAST (3)
Government of the principal states of eastern Asia and the western Pacific, their domestic politics, and foreign policies.

01:790:314. SUB-SAHARA AFRICAN POLICIES (3)
Patterns of political change and political development in Africa south of the Sahara.

01:790:315. POLITICS AND CULTURE (3)
Relationship among various aspects of culture, e.g., the role of symbol, myth, ritual, and religion and its relationship to politics.

01:790:316. POLITICS, LITERATURE, AND THE ARTS (3)
Discussion and analysis of political elements in selected aesthetic works that vary with the instructor.

01:790:317. IMPERIALISM AND THE THIRD WORLD (3)
Various theories of imperialism. Impact of the political and economic development of the advanced, industrialized countries on underdeveloped countries.

01:790:318. COMPARATIVE PUBLIC POLICY (3)
Inquiry into a current major area of public policy drawn from the field of comparative politics or international relations. Policy area varies from year to year.

01:790:319. ISSUES OF AMERICAN FOREIGN POLICY (3)
Analysis of the major substantive questions facing U.S. foreign policy.

01:790:321. THEORIES OF WORLD POLITICS (3)
Alternative theories of world politics with emphasis on basic causal factors affecting global behavior.

01:790:322. STRATEGY IN INTERNATIONAL RELATIONS (3)
Examination of the dynamics of contemporary international politics, including strategic and bargaining theory.

01:790:323. DEFENSE POLICY (3)
Formulation of defense policy and doctrine, weapons development, the role of threats. Critical review of current U.S. military decisions.

01:790:324. CAUSES OF WAR (3)
Recent scientific research on the emergence of serious disputes, escalation, conflict spirals, arms races, the outbreak of war, consequences of war, and conditions of peace.

01:790:326. AMERICAN POLITICS: EXECUTIVE AND LEGISLATIVE DECISION MAKING (3)
Develops three models of individual decision making and applies them to executive and legislative branch decision making.

01:790:327. INTERNATIONAL POLITICAL ECONOMY (3)
Interdependence of political and economic structures and processes in the development and management of the modern world economy.

01:790:328. CONFLICT AND CHANGE IN THE CARIBBEAN (3)
Credit not given for both this course and 01:836:328.
Social development and political economy of the Caribbean in the context of its integration and membership in the capitalist world system. Interimperialist conflict and rivalry and its impact on the development of West Indian societies. The Caribbean as a microcosmos of the third world.

01:790:329. LATINO POLITICS IN THE U.S. (3)
Credit not given for both this course and 01:836:329.
Political organization of Latino communities in the Northeast since World War II. Role of Latinos in shaping U.S. domestic and foreign policy, the impact of immigration and language policies on political organization.

01:790:330. INTEREST GROUPS (3)
Role interest groups play in the representation of constituent interests, formulation of public policy, and implementation of governmental programs.

01:790:331. URBAN POLITICS (3)
City politics and public policy. Urban government and major urban problems such as finance, poverty, housing and economic development, education, crime, transportation, and the environment.

01:790:333. POLITICAL DEVELOPMENT OF AMERICAN RACE RELATIONS (3)
Development of race relations in the U.S. beginning with slavery. Relationship between the politics of race and the politics of class.

01:790:334. POLITICS OF BLACK AMERICA (3)
Political perspectives and strategies of black Americans and the responsiveness of the American political system to the interests and demands of the black community.

01:790:335. WOMEN AND AMERICAN POLITICS (3)
Students taking this course on the Douglass campus are expected to attend special seminars and colloquia in addition to the scheduled class hours. They are, therefore, invited to enroll also in 01:790:399 for one additional credit. Credit not given for both this course and 01:988:335.
Women's participation in American politics, with emphasis on the attitudes and behavior of women as voters, activists, and officeholders.

01:790:336. AMERICAN POLITICAL MOVEMENTS (3)
Origins and development of political and social movements in America; theories of their decay, reform, or absorption into the mainstream of American political life.

01:790:337. AMERICAN POLITICAL ECONOMY (3)
Analysis of the political factors associated with the structure of the American economy.

01:790:338. GOVERNMENT AND BUSINESS (3)
Relations between business and government. Assessment of impact of governmental action on business. Analysis of lobbying, business participation in electoral process, public service and public image activities, and legal relations with government.

01:790:339. CONTEMPORARY DOMINICAN POLITICS AND SOCIETY (3)
Credit not given for both this course and 01:836:339.
Examination of Dominican politics, economy, and society from the start of the Trujillo era (1930) to the present. Focus on the authoritarian legacy of the Trujillo dictatorship, relations with the U.S., electoral politics in the post-Trujillo period, and recurring trends of caudilloism, militarism, clientelism, and personalism in Dominican society.

01:790:340. LAW AND SOCIETY (3)
Reciprocal interaction between legal systems and societies. Cross-cultural with focus on the U.S. Appraisal of law as tool for social change.

01:790:341. PUBLIC ADMINISTRATION: AMERICAN BUREAUCRACY (3)
Institutional setting and political relationships in administration; leadership, decision making, personnel and budgeting functions; administrative law and regulation; the problem of responsibility.

01:790:342. PUBLIC ADMINISTRATION: POLICY MAKING (3)
Bureaucracy's role in policy formulation, implementation, and rule making with an emphasis on state and local influences on federal policy initiatives.

01:790:344. PUBLIC OPINION (3)
Theory and research on public opinion in U.S., including uses and abuses of polls, recent trends in political and social opinions, and relationship between public opinion and public policy.

01:790:345. MASS MEDIA AND U.S. DEMOCRACY (3)
Theoretical and actual role of mass media in U.S., including the structure of mass media industry, news production, effects on political and social views, and how the media are regulated.

01:790:346. POLITICAL SOCIALIZATION (3)
Theory and process of the development of political attitudes. The influence of the family, school, media, occupation, personality, and social background.

01:790:348. PSYCHOLOGY AND POLITICS (3)
Political behavior of individuals and groups. Themes selected from personality and politics, attitude change, leadership, cognitive development, identity, ideology, psychology of oppression, and role theory.

01:790:349. TOPICS IN AMERICAN POLITICS (3)
Credit not given for both this course and 01:014:349.
Special topics in American politics that vary with the instructor.

01:790:350. ENVIRONMENTAL POLITICS—U.S. AND INTERNATIONAL (3)
Environmental politics and policy from American, comparative, and international perspectives. National styles of regulation, trade-environment conflicts, role of international institutions.

01:790:351. CONTEMPORARY POLITICS IN THE MIDDLE EAST (3)
Contemporary politics of the Middle East through scholarly literature, and through documentary-type films dealing with socioeconomic and cultural influences on politics.

01:790:352. ISRAELI POLITICS (3)
Basic understanding of the historical background of the establishment of the state of Israel; major characteristics of the political culture and institutions and how they have responded to the dynamic sociocultural and political changes that have shaped the society.

01:790:353. GOVERNMENT AND POLITICS OF SOUTHEAST ASIA (3)
Comparative examination of Burma, Thailand, Malaysia, Vietnam, Laos, Cambodia, Philippines, and Indonesia.

01:790:354. SOUTHEAST ASIA IN WORLD AFFAIRS (3)
Examination of the emergent states of Southeast Asia in world affairs with specific reference to big-power diplomacy, the United Nations, regionalism, neutralism, and war.

01:790:355. WOMEN AND PUBLIC POLICY (3)
Credit not given for both this course and 01:988:355.
Examination of major public policy questions affecting women. Topics, drawn from the U.S. and other societies, may include reproduction issues, economic equality, violence against women, and political rights.

01:790:357. COMPARATIVE POLITICAL ECONOMY (3)
Analysis of different approaches to political economy and the interaction of political, social, and economic forces in historical perspective.

01:790:361. INTERNATIONAL ORGANIZATION (3)
Review of League of Nations, United Nations, World Court, and specialized agencies.

01:790:362. INTERNATIONAL LAW (3)
Fundamental rules of international law in its relation to the state and the individual. Discussion of cases, status, treaties.

01:790:363. CONFLICT RESOLUTION IN WORLD POLITICS (3)
Nature and management of conflict in world politics, with emphasis on the instruments and limits of national power, sources of international conflict, changing patterns of alliance and alignment, and approaches to peace, reconciliation, and stability.

01:790:365. GENDER AND POLITICAL THEORY (3)
Credit not given for both this course and 01:988:365.
Role and place of gender in political thought. Readings drawn from major historical theorists and modern feminists.

01:790:366. FORMULATION OF AMERICAN FOREIGN POLICY (3)
Foreign policy from an internal point of view; major institutions and constraints on policy implementation.

01:790:369. TOPICS IN WORLD POLITICS (3)
Prerequisite: Permission of instructor.
Intensive examination of a number of significant questions related to world politics. Questions vary with instructor.

01:790:370. TOPICS IN POLITICAL THEORY (3)
Examination of major issues in political theory. Topics vary by instructor.

01:790:371. WESTERN TRADITION: PLATO TO MACHIAVELLI (3)
Relationship of man to society and the political order and the ethical foundations of politics as seen by the major Western political philosophers. Plato to Machiavelli.

01:790:372. WESTERN TRADITION: HOBBES TO MILL (3)
Relationship of man to society and the political order and the ethical foundations of politics as seen by the major Western political philosophers. Hobbes and Rousseau to Mill and Marx.

01:790:373. LEGAL PHILOSOPHY, RIGHTS, AND JUSTICE (3)
Place of law in the democratic state. The nature of law, its role in regulating behavior, legal reasoning, rival legal theories; the conflict between positivism and the theory of law; punishment and responsibility; various standards of justice.

01:790:374. DEMOCRATIC POLITICAL PHILOSOPHY (3)
Analysis of the relationship between ethics and politics in contemporary democracy and current challenges to traditional democratic theory. Political obligation; the justification of authority; disobedience and the right of resistance; freedom; social justice; and equality.

01:790:375. AMERICAN POLITICAL THOUGHT (3)
Philosophical and theoretical foundations of the American republic with attention to themes and conflicts in American thought and culture. European background and political thought of the colonial period to the Civil War.

01:790:376. AMERICAN POLITICAL THEORY (3)
American political thought and philosophy in the era of industrialism, world power, and mass society. The political thought of political movements since the Civil War.

01:790:377. MARX AND MARXIST THEORY (3)
Development of Marxist thought from Hegel to the twentieth century. Alienation, class consciousness and class struggle, universal human emancipation, the labor theory of value, historical materialism and the dialectic.

01:790:378. THEORIES OF THE LABOR MOVEMENT (3)
Explores the various democratic, socialist, and Marxist ideas that influenced the labor movements of the twentieth century. Particular emphasis on Karl Marx, Edward Bernstein, Lenin, Eugene Debs, Rosa Luxemburg.

01:790:380. RUSSIAN AND CENTRAL EUROPEAN POLITICAL THOUGHT (3)
Russian and central European Marxism; its origins in the nineteenth-century political thought of the region; Marx, Engels, Lenin, Stalin, and their intellectual opponents. Intellectual roots of the 1989-1991 revolutions.

01:790:381. POST-COMMUNIST DEMOCRACIES (3)
Examination of democracy building in the post-communist world. Focus on the interaction between legacies of communism and new institutional designs in Russia and eastern Europe. Major patterns of post-communist politics identified, compared, and analyzed. Emphasis on political institutions, historical legacies, and cultural contexts.

01:790:382. FOREIGN POLICY OF RUSSIA AND THE EAST EUROPEAN STATES (3)
Foreign policies of Russia, other Soviet "successor" states, and East European countries since 1989. Includes discussion of main features of foreign policy of former Soviet Union, relations between the Soviet Union and its satellite states, and international ramifications of the collapse of the Soviet bloc.

01:790:383. POLITICS OF POST-COMMUNIST ECONOMIC REFORMS (3)
Specific patterns of interaction between post-communist politics and economic reforms examined. Brief introduction to political economy of communism and its collapse. Politics of economic reforms. Discussion of neo-liberalism, mechanisms of accountability, corruption, and clientelism.

01:790:385. ARAB POLITICS AND SOCIETY (3)
Study of Arab nationalism, civil-military relations, radical Islam, women in politics, and ethnic relations through social science readings and literature in translation.

01:790:386. POLITICAL CHANGE IN CHINA (3)
Changes taking place in China in the twentieth century, with particular emphasis on the People's Republic of China. The utility of various types of comparative analysis.

01:790:388. IDEOLOGIES OF THE RIGHT (3)
Centers upon the sociopolitical experience of conservative and often reactionary movements in selected countries. Leading theorists discussed.

01:790:389. TOPICS IN COMPARATIVE POLITICS (3)
Selected topics in comparative politics that vary with the instructor.

01:790:392. APPLIED RESEARCH METHODS (3)
For students considering graduate study.
Detailed instruction in methods of research in political science. Survey design, simulation, documentary analysis, use of computers, the epistemology of political science.

01:790:395,396. POLITICAL SCIENCE SEMINAR (3,3)
Open to political science majors only.
Seminars involving analysis, discussion, and research of topics in political science.

01:790:397. WASHINGTON INTERNSHIP (9)
Prerequisites: 12 credits in political science, including 3 credits of introductory American government and 3 credits of advanced American government, or equivalent with permission of department; and junior or senior standing. Corequisite: 01:790:494. Graded Pass/No Credit. Field experience: thirty-five hours per week plus speaker series and group sessions. Residence in Washington, DC, required.
Internship in a government or public-service agency in Washington, DC.

01:790:399,400. INDEPENDENT STUDY (1,1)
Prerequisite: Permission of department before registration. Must be taken in conjunction with a 3-credit political science course specified in course list.

01:790:401. AMERICAN CONSTITUTIONAL LAW I (3)
Exploration of forms of legal reasoning and argumentation through close analysis of U.S. Supreme Court cases. Focus on economic policy, property rights, and substantive due process cases.

01:790:402. AMERICAN CONSTITUTIONAL LAW II (3)
Study of the dynamics of the American system of constitutional law with emphasis on national regulatory power, the role of Congress, the parameters of the war power, foreign relations, and the presidency in the constitutional structure.

01:790:404. POLITICS OF CRIMINAL JUSTICE (3)
Systematic examination of the relationship between political variables, crime rates, police behavior, court dynamics and sentences, and prison practices and functions.

01:790:406. CIVIL LIBERTIES AND CIVIL RIGHTS (3)
Political and civil rights and duties, such as freedom of the person; elementary freedoms of speech, press, assembly, and religion; freedom against arbitrary action; discrimination; free interchange of ideas.

01:790:409. COURTS AND PUBLIC POLICY (3)
Examines the legitimacy, capacity, and effectiveness of policy making by the judicial branch.

01:790:410. ADVANCED STUDIES IN LAW (3)
Prerequisite: Permission of instructor.
Intensive seminar on selected public law issues.

01:790:418. DEMOCRACY AND MARKETS IN LATIN AMERICA (3)
Transitions from authoritarian to democratic regimes in Latin America; economic policy challenges faced by new democratic governments; and prospects for the consolidation of democratic regimes.

01:790:419. RESEARCH SEMINAR ON CAUSES OF WAR (3)
Prerequisites: At least one course in international relations or foreign policy and permission of instructor.
Survey of the leading theories of the causes of war; student research projects on the causes of individual wars; comparison of the causes of different wars.

01:790:423. CONTEMPORARY FEMINIST THEORY (3)
Credit not given for both this course and 01:988:423.
Survey of both classic and contemporary texts in feminist theory emphasizing their relevance for modern political thought and social praxis.

01:790:424. WOMEN AND POLITICAL DEVELOPMENT (3)
Credit not given for both this course and 01:988:424.
Effect of development theory and practice relating to women; the role of women in development planning and implementation; analysis of aid and assistance programs.

01:790:428. THE PRACTICE OF POLITICS (3)
Required of, and limited to, participants in the Eagleton Undergraduate Associates Certificate Program.
Emphasizes the interaction of political science theory and literature with the realities of political experience.

01:790:429. PROCESSES OF POLITICS (3)
Open only to participants of the Eagleton Undergraduate Associates Certificate Program. Permission of instructor required.
Exploration of significant aspects of the American political system, including representation, leadership, bargaining, advocacy, participation, and achievement.

01:790:430. ADVANCED STUDIES IN PUBLIC POLICY (3)
Special topics in public policy that vary with the instructor.

01:790:437. POLITICS OF AMERICAN CAPITALISM (3)
Impact of continuing industrial and technological development on politics in Western society. Impact of multinational corporations on national sovereignty, stagflation, alienation, feminism, race relations, trade unionism, and youth culture.

01:790:438. LABOR AND AMERICAN POLITICS (3)
Role of the labor movement in American politics. Importance of the workplace, community, ethnicity, and development of differentiated labor markets for political attachments and attitudes.

01:790:439. ADVANCED STUDIES IN POLITICAL ECONOMY (3)
Selected topics in political economy that vary with the instructor.

01:790:440. ADVANCED STUDIES IN AMERICAN POLITICS (3)
Selected topics in American politics that vary with the instructor.

01:790:442. POLITICAL LEADERSHIP (3)
Focus on the leader's problem of self-definition in a democratic society. General issues explored through works in modern political theory and ego psychology. Specific problems of American political leadership examined through political novels, biographies, and case studies.

01:790:450. ADVANCED STUDIES IN COMPARATIVE POLITICS (3)
Selected topics in comparative politics that vary with the instructor.

01:790:451. CRITICAL PERSPECTIVES ON THE MIDDLE EAST (3)
Credit not given for both this course and 01:685:451.
Promotes critical thinking about the Middle East by analyzing how stereotypes and Western political theories hinder intercultural understanding and encourages students to think more dynamically about the relationship between the United States and the third world.

01:790:452. ADVANCED TOPICS IN MIDDLE EASTERN POLITICS (3)
Prerequisite: Permission of instructor. Credit not given for both this course and 01:685:452.
Detailed analysis of selected topics including religious radicalism, Israeli-Palestinian conflict, gender politics, the authoritarian state, nationalism, politics of authenticity, and political economy of development.

01:790:453. COMPARATIVE POLITICAL ANTHROPOLOGY (3)
Development of political anthropology and its relationship to political science. Major approaches and trends in the field; kinship, patron-client relations, social networks, political symbols, myths, rituals, ideology, and their role in political change.

01:790:454. POLITICAL DEVELOPMENT OF ASIA (3)
Roots of modern nationalism in various Asian nations; emphasis on leaders and ideas.

01:790:455. CULTURE AND REVOLUTION IN THE MIDDLE EAST (3)
Credit not given for both this course and 01:685:455.
Middle Eastern culture and its relationships with revolutionary movements and radical Islam. Major perspectives on current discourses regarding revolution and Middle Eastern culture.

01:790:470. ADVANCED STUDIES IN POLITICAL PHILOSOPHY (3)
Selected topics in political philosophy that vary with the instructor.

01:790:471. MACHIAVELLI AND THE RENAISSANCE (3)
The Prince and other political works of Machiavelli in the context of the Renaissance.

01:790:472. RELIGION AND POLITICS (3)
Relationship between religion and political life. Emphasis on the work of religious and political theorists. The place of religion in American political life and discussion of religion in contemporary politics.

01:790:473. CRITICS OF MODERNITY (3)
Writings of Alexis de Tocqueville, Karl Marx, Friedrich Nietzsche, Sigmund Freud, and Max Weber and their impact on twentieth-century social and political thought.

01:790:477. CRITICAL THEORY AND SOCIETY (3)
Course emphasizes the development of dialectical thought in the twentieth century. Emphasis placed on "Frankfurt School" and its major representatives such as Max Horkhiemer, Theodore Adorno, Walter Benjamin, and Herbert Marcuse.

01:790:481,482. INTERNSHIP IN POLITICAL SCIENCE (3,3)
Prerequisite: Permission of department before registration.
Work in a designated agency; an appropriately designed academic project resulting in a paper.

01:790:488. FIELD INTERNSHIPS IN POLITICAL SCIENCE (3 OR 6)
Pre- or corequisites: Junior or senior status and permission of department.
Internship in a government or public affairs office working ten to twenty-five hours per week according to the number of credits elected. Graded on a Pass / Fail basis.

01:790:491,492. ADVANCED INDEPENDENT STUDY AND RESEARCH (3,3)
Prerequisite: Permission of department before registration.
Supervised individual study of selected topics of interest with extensive reading and / or independent research project.

01:790:494. WASHINGTON RESEARCH (6)
Corequisite: 01:790:397. Graded credits.
Internship-related seminar and research paper submitted to the department.

01:790:495-496. HONORS IN POLITICAL SCIENCE (3,3)
Open only to senior majors with 15 credits in political science and a 3.4 grade-point average or better in political science and a 3.0 or better cumulative grade-point average. Both 01:790:495 and 496 must be completed to receive credit.
Independent readings on a specialized topic of interest; completion of research paper and an oral defense.

01:790:497-498. THESIS IN POLITICAL SCIENCE (6,6)
Prerequisite: Permission of department. Both terms must be completed in order to receive credit. For students writing an honors thesis.

PORTUGUESE 810

Department of Spanish and Portuguese, Faculty of Arts and Sciences

Web Site: http://span-port.rutgers.edu

Chairperson: Mary Lee Bretz

Assistant Professor:

César Braga-Pinto, B.A., Universidade de São Paulo; M.A., San Francisco State; Ph.D., California (Berkeley)

Adjunct Instructor:

Phillip Rothwell, B.A., M.A., Cambridge

Major Requirements

A major in Portuguese consists of 36 credits with a grade of C or above in each course, of which 30 credits must be completed at the 200 level or above in classes taught in Portuguese. In addition, 6 credits from two different disciplines related to the major must be selected. The student's entire course of study must be approved by a departmental adviser.

Minor Requirements

A minor in Portuguese consists of 18 credits, taught in Portuguese, with a grade of C or better in each course, of which 9 credits must be in literature. The student's entire course of study must be approved by a departmental adviser.

Departmental Honors Program

To be eligible for graduation with departmental honors, majors must maintain a cumulative grade-point average of 3.5 or better in their major courses, and 3.25 or better overall. Students are admitted to the departmental honors program by selection of the honors committee. The honors project is two terms in duration (3 credits each term), and may focus on any aspect of Luso/Brazilian/Portuguese language, linguistics, literature, or culture. Prior to beginning the honors project, the student is expected to complete at least two courses at the 300 level and one course at the 400 level. Two additional 400-level courses are required prior to graduation. The student must present the honors project for an oral defense before a committee assembled by the project director, in consultation with the candidate. More detailed information is available in the Department of Spanish and Portuguese.

Study Abroad

Rutgers sponsors summer study abroad programs in Spain, Portugal, and Brazil. Information about these and other study abroad opportunities is available in the department office.

Portuguese Major/Global Studies Certificate

Requirements

1. 36 credits toward the Portuguese major.
2. Eight courses, with a grade of C or above in each course, to be chosen from among options A, B, C, or D listed below. No more than two courses may be used to fulfill both the Portuguese major and the global studies certificate. The student's entire program must be approved by a departmental adviser.
   A. The Hispanic World. Students must choose a balance of courses between Spanish America and Spain within each of the following groups:

      Group 1 (Economics, History, Political Science):
      Four courses to be drawn from Africana studies, economics, history, Latin American studies, political science, Puerto Rican and Hispanic Caribbean studies, sociology, or other related departments or programs (including courses taken abroad).

      Group 2 (Studies on Culture):
      Four courses to be drawn from Africana studies, anthropology, archaeology, art history, Latin American studies, Puerto Rican and Hispanic Caribbean studies, Spanish and Portuguese, or other related departments or programs (including courses taken abroad).

   B. The Luso-Brazilian World. Students must choose a balance of courses between Brazil and Portugal within each of the groups mentioned in Option A above.
   C. Latin America. Students must choose a balance of courses between Spanish American countries and non-Spanish-speaking countries within each of the groups mentioned in Option A above.
   D. Iberian Peninsula. Students must choose a balance of courses between Spain and Portugal within each of the groups mentioned in Option A above.
3. In addition to the eight courses required above, an exit seminar involving a research project (fifteen to twenty pages) on a topic of international or global scope. The seminar also requires participation in extracurricular global programs events. The seminar must be taken during the senior year or year of graduation.
4. An international experience of one year during the junior year in an appropriate country or countries approved by a departmental adviser. A one-term option or summer option will be considered under extraordinary circumstances.

Additional information is available at the program's web site.

Minor in African Area Studies

Note: The following courses count toward the minor in African area studies with a concentration on Lusophone Africa. Interested students must inform themselves about other requirements for the minor in African area studies in this catalog and with a program adviser.

01:810:309	Introduction to Civilization and Culture of Portugal and Lusophone Africa (3)
01:810:350	African Literatures of Portuguese Expression (3)
01:810:440	Studies in Luso-Brazilian Civilization (3)

Courses

01:810:101-102. ELEMENTARY PORTUGUESE (4,4)
Open only to those with no prior knowledge of Portuguese. Not open to speakers of Spanish.
Speaking, reading, and writing; oral, aural, and written exercises.

01:810:130. INTERMEDIATE PORTUGUESE (4)
Prerequisites: 01:810:101-102, or placement exam, or permission of department. Not open to speakers of Spanish or native speakers of Portuguese.
Study and practice of specific areas of grammar, linguistic structure, and style. Selected reading of modern authors, with composition and class discussion.

01:810:135. PORTUGUESE FOR SPEAKERS OF SPANISH (4)
Prerequisite: Permission of department. Open only to speakers of Spanish with no prior knowledge of Portuguese. Not open to native speakers of Portuguese.
Study of Portuguese as it contrasts to Spanish. Development of speaking and listening skills. Practice in specific areas of grammar, linguistic structure, and style.

01:810:141-142. ACCELERATED PORTUGUESE (4,4)
Open only to those with no prior knowledge of Portuguese. Credit not given for these courses and 01:810:101-102 and 130.
Intensive study of Portuguese. Practice of specific areas of grammar, linguistic structure, style, and literary analysis. Selected readings of modern authors with composition and class discussions.

01:810:201. PORTUGUESE FOR NATIVE SPEAKERS (4)
Prerequisite: Placement exam or permission of department.
Study of specific areas of grammar and orthography. Development of reading skills and vocabulary building. Practice in oral communication, grammar application, and composition.

01:810:203. PORTUGUESE CONVERSATION AND COMPOSITION (4)
Prerequisites: 01:810:130 or 135 or 141-142 and permission of department. Not open to native speakers of Portuguese.
Development of oral fluency and writing skills in a variety of contexts. Conversation, vocabulary building, oral reports, fundamentals of expository writing.

01:810:309. INTRODUCTION TO CIVILIZATION AND CULTURE OF PORTUGAL AND LUSOPHONE AFRICA (3)
Prerequisite: 01:810:201 or 203, placement exam, or permission of department.
Discussion of significant historical, social, and cultural trends in Portugal and Lusophone Africa.

01:810:310. INTRODUCTION TO CIVILIZATION AND CULTURE OF BRAZIL (3)
Prerequisite: 01:810:201 or 203, placement exam, or permission of department.
Discussion of significant historical, social, and cultural trends in Brazil.

01:810:315,316. INTRODUCTION TO LUSO-BRAZILIAN LITERATURE (3,3)
Prerequisite: 01:810:201 or 203, or placement exam, or permission of department.
Reading and discussion of literary works representative of significant movements and authors of the Portuguese-speaking world.

01:810:325. ADVANCED GRAMMAR AND STYLE (3)
Prerequisite: 01:810:201 or 203, or placement exam, or permission of department.
Study of Portuguese grammatical forms and structures; vocabulary building, translation, composition.

01:810:330. LITERATURE AND CULTURE OF BRAZIL (3)
Prerequisite: 01:810:315 or 316 or permission of department.
Reading and discussion of selected works of fiction and nonfiction with emphasis on their place in the development of Brazilian literature and their relationship to Brazilian culture.

01:810:335. CONTEMPORARY PORTUGUESE LITERATURE (3)
Prerequisite: 01:810:315 or 316 or permission of department.
Major writers and movements from symbolism through Fernando Pessoa to the present.

01:810:340. CONTEMPORARY BRAZILIAN LITERATURE (3)
Prerequisite: 01:810:315 or 316 or permission of department.
Reading and discussion of representative works of fiction, poetry, and theater from modernism to the present.

01:810:345. REALISM IN PORTUGUESE LITERATURE (3)
Prerequisite: 01:810:315 or 316 or permission of department.
Readings from the works of Eça de Queiroz, the generation of 1870, and the neorealists.

01:810:350. AFRICAN LITERATURES OF PORTUGUESE EXPRESSION (3)
Prerequisite: 01:810:315 or 316 or permission of department.
Study of the literatures from African countries whose official language is Portuguese. Emphasis on twentieth-century colonial and postindependence literature and theory.

01:810:420. THE BRAZILIAN NARRATIVE (3)
Prerequisite: One term of 300-level literature in Portuguese or permission of department.
Development of the Brazilian novel and short story from the colonial period to the present. Emphasis on nineteenth and twentieth centuries. Reading and analysis of representative works.

01:810:430. CAMÕES AND THE RENAISSANCE (3)
Prerequisite: One term of 300-level literature in Portuguese or permission of department.
Epic and lyric poetry of Camões and his contemporaries. Antecedents and repercussions of the Portuguese Renaissance.

01:810:440. STUDIES IN LUSO-BRAZILIAN CIVILIZATION (3)
Prerequisite: One term of 300-level literature in Portuguese or permission of department.
Main traits of the civilization of the Portuguese-speaking world. Evolution of its social institutions and customs. Representative literary, philosophical, and artistic works.

01:810:491,492. TOPICS IN LUSO-BRAZILIAN LITERATURE AND CULTURE (3,3)
Prerequisite: One term of 300-level literature in Portuguese or permission of department.
Topics vary by term. Consult department.

01:810:493,494. INDEPENDENT STUDY (BA,BA)
Prerequisites: One term of 300-level Portuguese and permission of department and instructor.
Independent readings under faculty supervision.

01:810:497,498. HONORS IN PORTUGUESE (BA,BA)
Prerequisites: 01:940:394 and permission of department. Open only to seniors.
Preparation for comprehensive examination in Portuguese. Research paper prepared under the direction of the departmental honors committee.

01:810:499. READINGS IN PORTUGUESE (3)
Prerequisites: One term of 400-level literature in Portuguese and permission of department and instructor. May not be taken more than once for credit.
Independent readings under faculty supervision.

PSYCHOLOGY 830

Department of Psychology, Faculty of Arts and Sciences

Chairperson: G. Terence Wilson

Undergraduate Vice Chairperson: Arnold L. Glass

Vice Chairperson: Arlene Walker-Andrews

Professors:

John Aiello, B.B.A., CUNY (City College); M.A., CUNY (Queens College); Ph.D., Michigan State
Richard Ashmore, B.A., Stanford; Ph.D., California (Los Angeles)
George E. Atwood, B.A., Arizona; M.A., Ph.D., Oregon
Maurice Elias, B.A., CUNY (Queens College); M.A., Ph.D., Connecticut
Yakov M. Epstein, B.A., Pennsylvania; Ph.D., Columbia
John L. Falk, B.A., M.A., McGill; Ph.D., Illinois
Charles F. Flaherty, B.A., Northeastern; M.A., Ph.D., Wisconsin
Charles R. Gallistel, A.B., Stanford; Ph.D., Yale
Ronald J. Gandelman, B.S., Pittsburgh; M.S., Ph.D., Massachusetts
Rochel Gelman, B.A., Toronto; M.S., Ph.D., California (Los Angeles)
Leonard W. Hamilton, B.S., Iowa; Ph.D., Chicago
Jeannette M. Haviland-Jones, B.A., Radcliffe College; M.A., Ph.D., Michigan State
Lee Jussim, B.A., Massachusetts; Ph.D., Michigan
Eileen Kowler, B.A., CUNY (Queens College); Ph.D., Maryland
Alan M. Leslie, M.A., Edinburgh; Ph.D., Oxford
Howard Leventhal, Board of Governors Professor of Health Sciences; Ph.D., North Carolina (Chapel Hill)
Daniel M. Ogilvie, B.A., Ph.D., Harvard
Lawrence A. Pervin, B.A., CUNY (Queens College); Ph.D., Harvard
Zenon Pylyshyn, Board of Governors Professor of Cognitive Science; B.Eng., McGill; M.Sc., Ph.D., Saskatchewan
Carolyn K. Rovee-Collier, B.S., Louisiana State; S.M., Ph.D., Brown
H. Richard Schiffman, B.A., M.S., George Washington; Ph.D., North Carolina
Charles F. Schmidt, B.A., Concordia Senior College (Indiana); M.A., Ph.D., Iowa
Judith M. Stern, B.A., CUNY (Brooklyn College); Ph.D., Rutgers (Newark)
George C. Wagner, B.A., Fairfield; M.A., Western Michigan; Ph.D., Chicago
Arlene Walker-Andrews, B.A., Texas; Ph.D., Cornell
Mark O. West, B.S., California (Irvine); Ph.D., Wake Forest School of Medicine
David Wilder, B.S., Pittsburgh; M.S., Ph.D., Wisconsin
Robert L. Woolfolk, B.A., Ph.D., Texas

Associate Professors:

David Brodzinsky, B.A., Ph.D., SUNY (Buffalo)
Richard J. Contrada, B.A., Long Island; Ph.D., CUNY
Melvin L. Gary, B.A., Haverford College; M.A., Ph.D., Ohio State
Arnold L. Glass, B.A., SUNY (Buffalo); Ph.D., Stanford
Judith A. Hudson, B.A., Trinity College; Ph.D., CUNY
Carlton T. James, B.A., Texas; Ph.D., Indiana
Robert A. Karlin, B.A., Harvard; M.A., Yale; Ph.D., Rutgers
Deirdre A. Kramer, B.A., Davidson College; Ph.D., Temple
Michael Leyton, B.S.C., Warwick (England); Ph.D., California (Berkeley)
Louis D. Matzel, B.A., American; M.A., George Mason; Ph.D., SUNY (Binghamton)
Timothy A. Otto, B.A., Bowling Green State; M.A., Ph.D., New Hampshire
Tracey J. Shors, B.S., Alabama; Ph.D., Southern California
Karin J. Stromswold, B.A., Harvard; Ph.D., Massachusetts Institute of Technology; M.D., Harvard
Arthur Tomie, B.A., Southern California; M.A., Ph.D., Colorado

Assistant Professors:

Gretchen Chapman, A.B., Bryn Mawr College; Ph.D., Pennsylvania
Jacob Feldman, A.B., Harvard; M.S., Ph.D., Massachusetts Institute of Technology
Michael A. Friedman, B.A., Pennsylvania; M.S., Ph.D., Yale
Ilona Kovacs, Ph.D., Eotvos Lorand University of Sciences (Budapest)
Alexander Kusnecov, B.A., Ph.D., Newcastle (New South Wales)
Laurie A. Rudman, B.A., Ph.D., Minnesota

Major Requirements

The following requirements must be met before declaring a major in psychology:

1. Completion of 01:830:101 General Psychology with a grade of C or better.
2. Completion of 01:830:200 Quantitative Methods in Psychology with a grade of C or better.

The following requirements must be met to complete a major in psychology:

1. Completion of six of the seven core courses in psychology. The seven core courses are 01:830:301 Sensation and Perception, 01:830:305 Cognition, 01:830:311 Conditioning and Learning, 01:830:313 Physiological Psychology, 01:830:321 Social Psychology, 01:830:330 Developmental Psychology, and 01:830:338 Personality Psychology.
2. Completion of one course designated as a laboratory course.
3. Completion of four additional 3- or 4-credit elective courses, no more than one of which may be a nonclassroom course, such as fieldwork, internship, or research. No college honors courses may count toward this requirement.
4. Completion of precalculus (01:640:112 or 115) or tested placement into calculus. Several required courses for the major have precalculus as a prerequisite.
5. A cumulative grade-point average of at least 2.0 in all psychology (01:830) courses including, if available, up to 6 credits of honors research in psychology or up to 3 credits of other nonclassroom credits in psychology.
6. A minimum of 38 credits in psychology is necessary to complete the major.
7. At least seven of the 3- or 4-credit courses counting toward the major must be taken at Rutgers–New Brunswick.

Specializations

In addition to the general psychology major, students who have particular interests for graduate school, or specialized aspects of psychology, may wish to consider the following recommendations.

Behavioral Neuroscience. Students interested in the biological aspects of psychology, graduate school in the neurosciences, or medical school may wish to complete all or many of the following courses:

From the Department of Psychology: 01:830:301 Sensation and Perception; 01:830:311 Conditioning and Learning; 01:830:313 Physiological Psychology; 01:830:365 Hormones and Behavior; 01:830:412 Neuropsychopharmacology; 01:830:495,496 Research in Psychology.

From other departments: 01:119:101-102 General Biology; 01:160:161-162 General Chemistry; 01:640:135, 138 Calculus; 01:119:245 Fundamentals of Neurobiology; 01:119:445 Advanced Neurobiology; 01:119:380 Genetics; 01:119:384 Behavior Genetics.

Clinical Psychology. Students with particular interests in clinical psychology should consider the following courses: 01:830:340 Principles of Abnormal Psychology; 01:830:311 Conditioning and Learning; 01:830:313 Physiological Psychology; 01:830:338 Personality; 01:830:393 Systems of Psychotherapy; 01:830:412 Neuropsychopharmacology; 01:830:451 Advanced Topics in Clinical Psychology; 01:830:474 Tests and Measurements.

Cognitive Psychology. Courses in cognition include those dealing with memory, language, attention, perception, cognitive development, thinking, and artificial intelligence. Students interested in pursuing careers in cognition also are encouraged to take courses in related fields, such as computer science, mathematics, linguistics, philosophy, and neuroscience. Consultation with cognitive faculty about course selection is recommended strongly. See also the listing in this section of the catalog for the minor in cognitive science.

Developmental Psychology. Students interested in developmental issues in psychology may wish to complete all or many of the following courses: 01:830:330 Developmental Psychology; 01:830:331 Infant and Child Psychology; 01:830:333 Adolescent Development; 01:830:335 Adult Development and Aging; 01:830:346 Atypical Development in Childhood and Adolescence; 01:830:361 Developmental Psychobiology; 01:830:431 Advanced Topics in Developmental Psychology.

Students are encouraged to take a balanced array of courses within the discipline as a whole, and to develop and carry out individual research projects and participate in fieldwork courses, working with departmental faculty. Consult faculty with developmental interests for advice about courses concerning developmental issues available in other departments.

Health Psychology. Students interested in the psychological aspects of physical health should take 01:830:377 Health Psychology and may wish to combine elements of the behavioral neuroscience specialization (e.g., 01:830:313 Physiological Psychology; 01:830:311 Conditioning and Learning) and the social psychology specialization (e.g., 01:830:321 Social Psychology; 01:830:338 Personality Psychology; and 01:830:372 Psychological Approaches to Social Problems). Students interested in health psychology also should complete 01:830:305 Cognition. Because health psychology is a research-oriented field, independent study and honors research are highly recommended. Relevant courses outside of psychology include 01:070:309 Medical

Anthropology; 10:832:232 Introduction to Public Health; 10:832:335 Epidemiology; 01:920:210 Sociology of Medicine and Health Care; and 01:920:334 Social Gerontology.

Social Psychology. Students with particular interests in social psychology may wish to complete all or many of the following courses: 1) 01:830:321 Social Psychology and 01:830:338 Personality Psychology; 2) 01:830:323 Research Methods in Social Psychology should be one of two required laboratory courses for the major; 3) four or more courses from: 01:830:326 Small Groups; 01:830:374 Environmental Psychology; 01:830:375 Prejudice and Conflict; 01:830:377 Health Psychology; 01:830:372 Psychological Approaches to Social Problems; 01:830:373 Organizational and Personnel Psychology; 01:830:474 Psychological Tests and Measurements; 01:830:421 Advanced Topics in Social Psychology; 01:830:441 Advanced Topics in Personality Psychology; any of the research opportunities in social psychology including 01:830:495,496 Research in Psychology; and / or 01:830:497,498 Honors Research in Psychology, all of which are highly recommended for those interested in attending graduate school in social psychology.

Minor Requirements

A psychology minor consists of at least six courses of 3 or more credits, including 01:830:101 General Psychology. At least three of the six courses must be taken in the Rutgers–New Brunswick psychology program (01:830). No more than one of these additional courses may be a nonclassroom course, such as fieldwork, internship, or research. No college honors courses may count toward this requirement.

Transfer Students

Transfer students who wish to major in psychology must take at least seven in-class psychology courses at Rutgers–New Brunswick; minors must take at least three courses at the New Brunswick campus. Fieldwork, research in psychology, internship, and honors courses do not count toward meeting this requirement. Students transferring from two-year colleges may transfer General Psychology, Quantitative Methods, and no more than two additional courses to be counted toward the major. Transfer courses that do not meet for at least four calendar weeks, in-classroom, on college campuses may not be counted toward the major.

Departmental Honors Program

In order to be a candidate for departmental honors, a student must have a cumulative grade-point average greater than 3.0 overall and 3.4 in psychology courses. After finding a faculty sponsor, the student must seek approval of the vice chair for undergraduate studies (Tillett Hall, Room 101) by filing the appropriate form. The sponsor must be a member of the Department of Psychology in the Faculty of Arts and Sciences. These arrangements should be completed before preregistration in the spring of the junior year. If the proposal is approved, the student enrolls in 01:830:497 for the fall, followed by 01:830:498 in the spring. (Midyear graduates are eligible for honors. Such students should enroll in 01:830:497 in either the spring or summer term, followed by 01:830:498 in the fall term.) A grade is given each term based upon performance. (The sponsor may elect to assign an H grade at the end of the first term.) In the spring, a thesis must be submitted to the departmental honors committee (usually around the middle of April). That committee assigns the level of honors (honors, high honors, highest honors) based on the quality of the thesis as judged by the sponsor and a reader assigned by the committee. The student defends the thesis at a public poster session.

The department also has an active chapter of Psi Chi, the national honor society in psychology. In addition, membership in the Psychology Club is open to all majors. Information and applications may be obtained online at http://www.psychology.rutgers.edu.

Behavioral Pharmacology Certificate Program

The certificate program in behavioral pharmacology is offered by Rutgers' Department of Psychology at New Brunswick. The program's primary goals are to provide undergraduate students with an integrated academic and practical background in psychopharmacology and the behavioral sciences that will enhance their eligibility for employment in the pharmaceutical, biotechnology, and / or health-related industries. The certificate program provides a direct service to the diverse social and economic needs of New Jersey and serves the interests and needs of students at Rutgers. In general, the program will produce a well-educated and experienced workforce that will be attractive to employers in various sectors of the biomedical research community. Applications for the program and the requirements are available from the Department of Psychology.

Student Qualifications for Program Entry

1. Junior or senior year standing.
2. A declared major in psychology.
3. At least a B (3.0 to 4.0) average in the major.
4. The certificate program committee evaluates each application and selects interns based on academic excellence, relevant experience, and a personal statement outlining career goals.

Requirements for Completion of the Program

Students are required to complete three of the following four courses with a grade of B or better:

01:830:311 Conditioning and Learning (3)
01:830:313 Physiological Psychology (3)
01:830:363 Behavioral Pharmacology (3)
01:830:412 Neuropsychopharmacology (3)

Students also must complete two terms of research for a minimum of 6 credits in participating faculty members' laboratories. To complete this requirement, the student may take 01:830:495,496 Research in Psychology, or, if qualified, 01:830:497,498 Honors Research in Psychology.

In addition, completion of a summer internship in a participating pharmaceutical or biotechnology company is required. Students become eligible for summer internships after they have completed at least one term of independent study in the laboratory of a Rutgers faculty member who participates in the certificate program. The major adviser, the company sponsor, and the certificate program committee will jointly determine a student's placement in a pharmaceutical company.

Courses

01:830:101. GENERAL PSYCHOLOGY (3)
Survey of main areas of contemporary psychology.

01:830:200. QUANTITATIVE METHODS IN PSYCHOLOGY (4)
One term of college-level mathematics recommended.
Quantitative methods used in psychological research. Regular exercises required.

01:830:201. PRINCIPLES OF COGNITIVE SCIENCE (3)
Prerequisite: 01:830:101.
Introduction to the field of human cognition, surveying methods, concepts, findings, and problems in perception, learning, memory, thinking, problem solving, psycholinguistics, and development.

01:830:211. PRINCIPLES OF PSYCHOBIOLOGY (3)
Prerequisite: 01:830:101. Not to be taken with or after 01:830:313.
Introduction to the relationship between brain and behavior. Topics such as structural bases of perceptions, learning, emotions, and abnormal behaviors.

01:830:271. PSYCHOLOGY OF THE FAMILY (3)
Prerequisite: 01:830:101.
Life-span couple development, parent-child relationships, and extended family relations. Effects of family environments on adjustment.

01:830:272. DRUGS AND HUMAN BEHAVIOR (3)
Prerequisite: 01:830:101.
Drug classification; contexts of drug usage; effects of various drugs; analysis of drug action in the central nervous system; aspects of "human nature" revealed by drug usage.

01:830:300. RESEARCH METHODS IN PSYCHOLOGY (3)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:101, 200. Fulfills laboratory course requirement but not a 300/400-level course requirement. Open only to psychology majors.
Logic and design of behavioral experiments; analysis and interpretation of data; writing of formal laboratory reports.

01:830:301. SENSATION AND PERCEPTION (3)
Prerequisite: 01:830:101.
Principles of sensory processes in vision, audition, and other modalities, and of the perception of objects and events.

01:830:302. SENSATION AND PERCEPTION LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:200. Pre- or corequisite: 01:830:301.
Experiments and written reports on a variety of topics in sensation and perception. Training in scientific method with respect to data analysis, experimental methods, and research design.

01:830:303. MEMORY AND ATTENTION (3)
Prerequisite: 01:830:101.
Principles of acquisition, retention, recall, and forgetting of verbal and nonverbal material.

01:830:304. MEMORY AND ATTENTION LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:200. Corequisite: 01:830:303.
Experiments and written reports on a variety of topics in learning and memory. Stresses training in scientific method with respect to data analysis, experimental methods, and research design.

01:830:305. COGNITION (3)
Prerequisite: 01:830:101 or permission of instructor.
Cognitive processes, including thinking, language, and memory and their development.

01:830:306. COGNITION LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:200. Pre- or corequisite: 01:830:305.
Experiments and written reports on cognitive processes, including thinking, language, and memory.

01:830:307. PERCEPTION IN COGNITIVE SCIENCE (3)
Approaches to visual perception that emphasize reasoning about stimulus properties (shading, texture, lines, movement, etc.) that give information about the structure of the environment.

01:830:311. CONDITIONING AND LEARNING (3)
Prerequisite: 01:830:101.
Topics include habituation, sensitization, associative learning, rule and category learning. Data derived from animal and human research.

01:830:312. CONDITIONING AND LEARNING LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:101, 200. Pre- or corequisite: 01:830:311.
Learning experiments conducted with animals.

01:830:313. PHYSIOLOGICAL PSYCHOLOGY (3)
Prerequisite: 01:830:101.
Physiological determinants and mechanisms of behavior.

01:830:314. PHYSIOLOGICAL PSYCHOLOGY LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:200 or permission of instructor. Pre- or corequisite: 01:830:313.
Experiments with animals demonstrating or testing principles of physiology.

01:830:315. COMPARATIVE PSYCHOLOGY (3)
Prerequisite: 01:830:101.
Evolution of behavior.

01:830:316. COMPARATIVE PSYCHOLOGY LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:101, 200. Pre- or corequisite: 01:830:315.
Experiments designed and conducted with animals to demonstrate or test principles of comparative psychology.

01:830:321. SOCIAL PSYCHOLOGY (3)
Prerequisite: 01:830:101.
Social aspects of behavior. Topics such as socialization, communication, small-group interaction, attitudes and attitude change, social perception, and social conflict.

01:830:323. RESEARCH METHODS IN SOCIAL PSYCHOLOGY (4)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:101, 200, 321. Fulfills laboratory course requirement and one of the 300/400 level course requirements.
Research methods for laboratory and field studies in social psychology. Logic and design of behavioral experiments; analysis and interpretation of data; writing of formal laboratory reports.

01:830:326. SMALL GROUPS (3)
Prerequisites: 01:830:321 and permission of instructor.
Empirical findings and theories drawn from research on small-group behavior, group development, leadership, conformity, deviation, and intergroup relations.

01:830:327. SMALL GROUPS LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:200. Corequisite: 01:830:326.
Laboratory and field studies in small-group behavior.

01:830:330. DEVELOPMENTAL PSYCHOLOGY (3)
Prerequisite: 01:830:101.
Survey of life-span human development covering prenatal, infant, child, adolescent, and adult periods.

01:830:331. INFANT AND CHILD DEVELOPMENT (3)
Prerequisite: 01:830:101.
Review of psychological theory and research on perceptual, cognitive, social, and personal growth during infancy and childhood.

01:830:332. INFANT AND CHILD DEVELOPMENT LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:200.
Corequisite: 01:830:331 or permission of instructor.
Experiments and written reports based on observations of children in a school setting, interviews, application of research protocols, and existing databases including videotapes.

01:830:333. ADOLESCENT DEVELOPMENT (3)
Prerequisite: 01:830:101 or permission of instructor.
Review of theory and research on adolescent growth, cognition, personality, and social development.

01:830:335. ADULT DEVELOPMENT AND AGING (3)
Prerequisite: 01:830:101.
Review of psychological theory and research on cognitive, personality, and interpersonal development.

01:830:338. PERSONALITY PSYCHOLOGY (3)
Prerequisite: 01:830:101.
Major personality systems. Personality structure, dynamics, development, and assessment.

01:830:340. PRINCIPLES OF ABNORMAL PSYCHOLOGY (3)
Prerequisite: 01:830:101.
Survey of etiology, diagnosis, and treatment of psychopathology.

01:830:341. RESEARCH IN PERSONALITY (3)
Prerequisites: 01:830:101, 338. Corequisite: 01:830:342.
Research approaches to major issues in personality psychology.

01:830:342. RESEARCH IN PERSONALITY LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:200.
Corequisite: 01:830:341.
Research projects designed and conducted in personality psychology. Participation in ongoing research programs.

01:830:346. ATYPICAL DEVELOPMENT IN CHILDHOOD AND ADOLESCENCE (3)
Prerequisites: 01:830:101 and one of the following: 01:830:330, 331, 333, 335, or 340.
Origin, diagnosis, and treatment of deviations from normal physical, intellectual, psychological, and social development.

01:830:351. PSYCHOLOGY OF LANGUAGE (3)
Prerequisite: 01:830:101. Recommended: 01:615:101 or 201.
Production, perception, and acquisition of language at the level of sound (phonology), words (morphology and the lexicon), and grammar (syntax).

01:830:352. PSYCHOLOGY OF LANGUAGE LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:200.
Pre- or corequisite: 01:830:351.
Covers phonology and speech perception, morphology, lexical change and access, syntax and sentence processing, language acquisition, neurolinguistics, genetics, and evolution of language.

01:830:353. LANGUAGE ACQUISITION (3)
Recommended: 01:615:101, 201, 441, or 01:830:351.
Empirical and theoretical studies of the acquisition of syntax, morphology, and phonology; word learning, the neural bases of language acquisition, language disorders, and learnability theory.

01:830:361. DEVELOPMENTAL PSYCHOBIOLOGY (3)
Prerequisite: 01:830:101.
Growth, maturation, and development of behavior with emphasis on physiological mechanisms and early experience.

01:830:362. PSYCHOLOGY OF SEX AND GENDER (3)
Prerequisite: 01:830:101. Credit not given for both this course and 01:830:381; 01:988:362, 381.
Biological, psychological, and cultural determinants in sex differences in behavior with emphasis on humans. Sexual behavior, aggression, personality, intelligence, and social roles.

01:830:363. BEHAVIORAL PHARMACOLOGY (3)
Prerequisites: 01:830:101; 211 or 313.
Effects of drugs on physiological and behavioral mechanisms.

01:830:364. MOTIVATION AND EMOTION (3)
Prerequisite: 01:830:101.
Psychological and physiological aspects of motivation and emotion in human and animal behavior.

01:830:365. HORMONES AND BEHAVIOR (3)
Prerequisite: 01:830:101. Recommended: One year of general biology.
Relationship between hormones, the nervous system, and behavior; sexual, parental, aggressive, and ingestive behaviors; fear, coping, learning, and memory. Emphasis on higher vertebrates, including humans.

01:830:366. HORMONES AND BEHAVIOR LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:200.
Pre- or corequisite: 01:830:365.
Laboratory experiments in hormones and behavior.

01:830:371. GROUP DYNAMICS (3)
Prerequisites: 01:830:101 and written permission of instructor.
Basic aspects of group interaction. Participation in experiential group. Focus on variety of topics related to group interaction, development, and change.

01:830:372. PSYCHOLOGICAL APPROACHES TO SOCIAL PROBLEMS (3)
Prerequisite: 01:830:321.
How social problems are defined. Theories and methods used to study social problems such as crowding, poverty, education, and race relations.

01:830:373. ORGANIZATIONAL AND PERSONNEL PSYCHOLOGY (3)
Prerequisite: 01:830:101.
Social psychological research and theory applied to industrial problems. Personnel selection, job satisfaction and morale, organizational effectiveness, group and intergroup relationships, and communication in work settings.

01:830:375. PREJUDICE AND CONFLICT (3)
Prerequisites: 01:830:101 and one other course in psychology.
Social psychology of development and consequences of stereotypes and attitudes toward outgroups; special emphasis on interactions within the classroom.

01:830:376. PSYCHOLOGY AND AFRICAN-AMERICAN EXPERIENCE (3)
Prerequisite: 01:830:101.
Examination of selected psychological principles and concepts as they pertain to the African-American experience. Critical evaluation of psychological research involving race comparisons.

01:830:377. HEALTH PSYCHOLOGY (3)
Prerequisite: 01:830:101.
Relationships between behavior and health. Stress, personality, and lifestyle as disease causes; modifying high-risk behaviors; coping with serious illness.

01:830:381. PSYCHOLOGY OF WOMEN (3)
Prerequisite: 01:830:101. Credit not given for both this course and 01:830:362; 01:988:362, 381.
Theories of feminine psychology; physiological and cultural sex differences as they affect motivation; personality; social and sexual adjustment; and maladjustment.

01:830:393. SYSTEMS OF PSYCHOTHERAPY (3)
Prerequisite: 01:830:340.
Examination of clinical, empirical, and theoretical foundations of therapeutic intervention.

01:830:394. COMMUNITY PSYCHOLOGY AND COMMUNITY MENTAL HEALTH (3)
Prerequisite: 01:830:321, 323, or 340. Open only to juniors and seniors.
Influence of social and community forces on development, treatment, and prevention; applications to community problems.

01:830:395. INTERNSHIP IN HUMAN FACTORS RESEARCH (6)
Prerequisites: 01:830:101 and permission of instructor. Open only to juniors and seniors.
Fully supervised participation in research in an industrial environment, involving the application of psychology to the design of complex computer systems.

01:830:396,397. FIELDWORK (3,3)
Prerequisite: Contact department for prerequisites of sections offered.
Faculty-supervised placements in human service centers and agencies, both on and off campus. Includes regular meetings with faculty. Academic reading and report-writing assignments required.

01:830:398. SERVICE-LEARNING INTERNSHIP (1)
Corequisite: Must be taken in conjunction with a designated CASE (Citizenship and Service Education) course offered in the Department of Psychology.
One-credit community service placement in psychology-related field setting.

01:830:401. ADVANCED TOPICS IN HUMAN COGNITION (3)
Prerequisite: Contact department for prerequisites of sections offered.
Multisectioned course with each section investigating advanced problems and issues in human cognition. Contact department for titles, descriptions, and requirements of sections.

01:830:411. ADVANCED TOPICS IN PSYCHOBIOLOGY (3)
Prerequisite: Contact department for prerequisites of sections offered.
Multisectioned course with each section investigating advanced problems and issues in psychobiology. Contact department for titles, descriptions, and requirements of sections.

01:830:412. NEUROPSYCHOPHARMACOLOGY (3)
Prerequisites: 01:830:101, 211; or 313.
Effects of drugs on behavior. Emphasis on central nervous system mechanisms and clinical psychopharmacology.

01:830:413. NEUROPSYCHOPHARMACOLOGY LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:200 or permission of instructor. Pre- or corequisite: 01:830:412.
Research on the effect of drugs on animal behavior.

01:830:421. ADVANCED TOPICS IN SOCIAL PSYCHOLOGY (3)
Prerequisite: Contact department for prerequisites of sections offered.
Multisectioned course with each section investigating advanced problems and issues in social psychology. Contact department for titles, descriptions, and requirements of sections.

01:830:431. ADVANCED TOPICS IN DEVELOPMENTAL PSYCHOLOGY (3)
Prerequisite: Contact department for prerequisites of sections offered.
Multisectioned course with each section investigating advanced problems and issues in developmental psychology. Contact department for titles, descriptions, and requirements of sections.

01:830:441. ADVANCED TOPICS IN PERSONALITY PSYCHOLOGY (3)
Prerequisite: Contact department for prerequisites of sections offered.
Multisectioned course with each section investigating advanced problems and issues in personality psychology. Contact department for titles, descriptions, and requirements of sections.

01:830:451. ADVANCED TOPICS IN CLINICAL AND ABNORMAL PSYCHOLOGY (3)
Prerequisite: Contact department for prerequisites of sections offered.
Multisectioned course with each section investigating advanced problems and issues in clinical and abnormal psychology. Contact department for titles, descriptions, and requirements of sections.

01:830:470. HISTORY OF PSYCHOLOGY (3)
Prerequisites: Six courses in psychology. Open only to juniors and seniors.
Philosophical and scientific antecedents of modern psychology. Schools of thought in psychology including structuralism, functionalism, behaviorism, Gestalt, and psychoanalysis. Recurrent issues in the history of psychology.

01:830:472. COGNITION AND COMPUTATION (3)
Prerequisites: 01:830:101 and permission of instructor.
Intelligent behavior as a process involving creation and modification of symbolic structures; examples from psychology and artificial-intelligence research.

01:830:473. COGNITION AND COMPUTATION LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus; 01:830:200 or permission of instructor. Corequisite: 01:830:472.
Projects involving the use and evaluation of computational models of cognition.

01:830:474. PSYCHOLOGICAL TESTS AND MEASUREMENTS (3)
Prerequisites: 01:830:101, 200; or permission of instructor.
Corequisite: 01:830:475.
Theoretical, developmental, and methodological bases of psychological tests. Includes introduction to selected standard tests of intelligence and personality and their administration procedures.

01:830:475. PSYCHOLOGICAL TESTS AND MEASUREMENTS LABORATORY (1)
Prerequisites: 01:640:112, 115, or tested placement in calculus. Corequisite: 01:830:474.
Research projects using various assessment techniques.

01:830:480. TOPICS IN VISUAL PERCEPTION (3)
Prerequisite: Permission of instructor.
Current theories of human visual perception and its physiological correlates. Analogies to auditory perception and parallels with computer vision.

01:830:493. INTERNSHIP IN APPLIED AND COMMUNITY PSYCHOLOGY (BA)
Prerequisites: At least five courses in psychology and permission of instructor. Corequisite: 01:830:494. Open only to junior and senior psychology majors.
Supervised full-time involvement in service settings, providing opportunity to apply knowledge in developmental, community, clinical psychology; may include service delivery, planning, evaluation research.

01:830:494. INTERNSHIP SEMINAR IN APPLIED AND COMMUNITY PSYCHOLOGY (3)
Corequisite: 01:830:493.
With fellow interns, study dynamics of service organizations and forces influencing how professionals function; group and individual supervision around problems and issues arising from internship experiences.

01:830:495,496. RESEARCH IN PSYCHOLOGY (BA,BA)
Prerequisites: Satisfactory completion of application form and permission of instructor. May be taken more than once.
Supervised research. Written agreement with the supervisor required. May include laboratory / library research. Final written report required.

01:830:497,498. HONORS RESEARCH IN PSYCHOLOGY (3,3)
Prerequisite: Permission of department. Open only to seniors with 3.4 or better cumulative grade-point average in courses counting toward the major. Honors Research in Psychology (either 01:830:497 or 498); does not count as a laboratory course.
Individual research projects to be written as honors thesis.

PUBLIC HEALTH

(See the Edward J. Bloustein School of Planning and Public Policy section)

PUERTO RICAN AND HISPANIC CARIBBEAN STUDIES 836

Department of Puerto Rican and Hispanic Caribbean Studies, Faculty of Arts and Sciences

Chairperson: Luis Martínez-Fernández

Associate Professors:

Pedro A. Cabán, B.A., CUNY; M.A., Ph.D., Columbia
Luis Martínez-Fernández, B.A., M.A., Puerto Rico; Ph.D., Duke

Assistant Professors:

Lawrence M. La Fountain-Stokes, B.A., Harvard; M.A., Ph.D., Columbia
Ana Yolanda Ramos-Zayas, B.A., Yale; M.A., Ph.D., Columbia
Carmen T. Whalen, B.A., Hampshire College; M.A., Ph.D., Rutgers

Assistant Instructor:

Ernesto Sagás, B.A., Puerto Rico (Mayagüez); M.A., Ph.D., Florida

The Department of Puerto Rican and Hispanic Caribbean Studies offers an interdisciplinary program of studies that examines the diverse political, social, and cultural histories of the Spanish-speaking societies of the Caribbean as well as Latino communities in the United States. Using a comparative approach, the curriculum focuses on the formation and evolution of the peoples and societies of the region. Courses examine the gender, racial, class, and cultural dimensions of the migration experience of Caribbean peoples and the reformulation of national identities.

The curriculum fosters critical thinking about how knowledge is created, different methods and modes of analysis, and the limitations of traditional disciplinary approaches. It does so while developing competencies in research, analysis, and written as well as oral presentations.

Major Requirements

The major consists of eleven courses. The following six courses are required as the core curriculum:

01:836:101	Formation of Hispanic Caribbean Identities (3)
01:836:205	History of the Hispanic Caribbean (3)
01:836:210	Gender Across Cultures (3)
01:836:309	The Politics of Puerto Rican Development (3)
01:836:310	Migration and Community: The Latino Experience (3)
01:836:497	Seminar in Puerto Rican and Hispanic Caribbean Studies (3)

Students are required to take an additional five courses, four of which must be at the 300 or 400 level. With the department's approval, students may substitute appropriate courses at the 300 or 400 level that are offered by other departments in the Faculty of Arts and Sciences. A maximum of two independent study courses may be used to satisfy the requirements of the major. Independent study courses may not be substituted for the six required core courses. Only grades of C or higher will count toward the major requirements.

Minor Requirements

A minor in Puerto Rican and Hispanic Caribbean studies requires successful completion of six 3-credit courses of which three courses must be at the 300 level or above. Only one independent study course can be counted toward the minor. Only grades of C or higher will count toward the minor requirements.

Honors Program

The honors program in Puerto Rican and Hispanic Caribbean Studies enables students to work closely with a faculty member to develop and complete an individualized research project.

At the end of the junior year, students with a cumulative grade-point average of 3.0 or better and averages of 3.4 or better in courses taken for the major are eligible to apply to the chairperson of the department for admission to the honors program. Students must discuss their plans with the department chair at this time, who will recommend the appropriate faculty to serve as the honors project director.

Honors students must enroll in senior seminar 01:836:497 during the fall term. At the end of the term, the student must submit a detailed research proposal to the project director. During the spring term of the senior year, the student completes a substantial research project and prepares a paper. Upon approval by the project director, the department confers honors. The project director will read the completed project and recommend to the department chair whether to confer department honors.

Courses

01:836:101. FORMATION OF HISPANIC CARIBBEAN IDENTITIES (3)
Introduction to interdisciplinary study of Caribbean and Latino communities. History of migration and cultural formation; focus on changing national, ethnic, racial, and gendered identities.

01:836:110. U.S. AND CARIBBEAN TWENTIETH CENTURY (3)
Survey of the twentieth century development of the Spanish speaking Caribbean in the context of U.S. expansion and intervention in the region.

01:836:150. THE LATIN AMERICAN WOMAN (3)
Credit not given for both this course and 01:988:150.
Analysis of women's roles within the family structure in the Caribbean and the U.S. Understanding of the double standards imposed on men and women. The impact of socialization and the development of a critical consciousness.

01:836:200. PUERTO RICAN CULTURAL HERITAGE (3)
Origin and development of Puerto Rican culture on the island and in the U.S. Selective focus on the family, religion, morality, race relations, sex roles, and institutions of authority.

01:836:201. AFRICAN BELIEF SYSTEMS AND THE LATINO COMMUNITY (3)
Credit not given for this course and 01:014:201.
Historical examination of ancestor worship, Santería (Cuba), Vodun (Santo Domingo), Espiritismo (Puerto Rico), and other African-based belief systems. Formation from African to slave societies and use in contemporary period.

01:836:203. MUSICAL EXPRESSION OF LATIN AMERICA (3)
Contemporary history of Puerto Ricans, Chicanos, and other Latin Americans through the legacy of song.

01:836:205. HISTORY OF THE HISPANIC CARIBBEAN (3)
Overview of the Spanish-speaking Caribbean. Focus on slavery, colonial relationships, politics, economy, U.S. relations, migration during twentieth century.

01:836:210. GENDER ACROSS CULTURES (3)
Credit not given for both this course and 01:988:210.
Social construction of gender in Puerto Rico, Cuba, and Dominican Republic. Impact of migration and comparisons with gender roles in the U.S.

01:836:220. ORIGINS AND DEVELOPMENT OF PUERTO RICAN POLITICAL PARTIES (3)
Development of political parties and organizations in Puerto Rico since the nineteenth century. Political struggles in a modern colonial context. The independence movement and Puerto Rico's political status options.

01:836:225. CARIBBEAN CINEMA (3)
Examination of the outstanding films produced in the Hispanic Caribbean region.

01:836:229. CARIBBEAN (3)
Credit not given for both this course and 01:508:270.
Introductory survey of Caribbean history emphasizing the common aspects (foreign intervention, slavery, primary export economies) of the culturally diversified countries of the area.

01:836:231. SOCIAL CLASS DEVELOPMENT IN PUERTO RICO (3)
Theories of social class formation and the process of social change examined through the historical development of social classes in Puerto Rico.

01:836:250. THE PUERTO RICAN EDUCATIONAL EXPERIENCE (3)
Sociohistorical development of the Puerto Rican experience with the North American educational system in Puerto Rico and the U.S.

01:836:266. PUERTO RICAN LITERATURE (3)
Credit not given for both this course and 01:940:331,332.
Study of the development of Puerto Rican literature from the Spanish colonial period to the present. Emphasis on major writers: Pales Matos, Corretjer, Marquez, Gonzalez, Soto, Diaz, Valcarcel, Sanchez, and Blanco.

01:836:300. SLAVERY IN THE CARIBBEAN (3)
Analysis of different institutions of slavery in the Caribbean and the rise of the plantation societies. Investigating the effects on Europe and the western hemisphere and its legacy.

01:836:301. HISPANIC COMMUNITIES IN THE UNITED STATES (3)
Survey of the historical development, cultural and political expression, and social reality of the Chicano, Cuban, Dominican, and Puerto Rican communities in the U.S.

01:836:302. DOMINICAN IDENTITY FORMATION (3)
Examination of formation of Dominican identity across time and place; focus on social class and issues of race, gender, and sexuality.

01:836:305. INTRODUCTION TO PUERTO RICAN AND CARIBBEAN FOLKLORE (3)
Artwork, music, and folk religion as integrating forces in the evolution of oral traditions and legends. Use of ethnography and literature.

01:836:309. THE POLITICS OF PUERTO RICAN DEVELOPMENT (3)
Credit not given for both this course and 01:790:309.
Analysis of the relationship between political and economic development in the twentieth century; the changing nature of U.S./Puerto Rican relations; formation of the colonial state; and the statehood and independence movements.

01:836:310. MIGRATION AND COMMUNITY: THE LATINO EXPERIENCE (3)
Development of Latino communities in the U.S., 1840s to present. Impact of U.S. foreign policy, economic and political conditions in countries of origin and U.S.

01:836:311. PUERTO RICAN MIGRATION TO THE UNITED STATES (3)
Historical evolution of the movement of Puerto Ricans between the island and the U.S. examined within the colonial context and the international circulation of workers.

01:836:315. POETRY OF PROTEST IN LATIN AMERICA (3)
Poetry as a vehicle for inciting political or social activism; works by Neruda, Martí, and others.

01:836:322. LATINAS: MIGRATION, WORK, AND FAMILY (3)
Credit not given for both this course and 01:988:322.
Interaction of work and family in Latinas' migration to U.S. Focus on reasons for migration, incorporation into U.S. society, and questions of continuity and change.

01:836:323. U.S. LATINA FEMINISTS (3)
Overview of diverse perspectives of U.S. Latina feminists based on their multiple positions as racialized ethnic women.

01:836:325. U.S. FOREIGN POLICY AND THE CARIBBEAN (3)
Implementation of U.S. foreign policy (diplomatic, political, military, and economic) towards the Caribbean region during the twentieth century.

01:836:328. CONFLICT AND CHANGE IN THE CARIBBEAN (3)
Credit not given for both this course and 01:790:328.
Social development and political economy of the Caribbean in the context of its integration and membership in the capitalist world system. Interimperialist conflict and rivalry and their impact on the development of West Indian societies. The Caribbean as a microcosm of the third world.

01:836:329. LATINO POLITICS IN THE U.S. (3)
Credit not given for both this course and 01:790:329.
Political organization of Latino communities in the northeastern U.S. since World War II. Role of Latinos in shaping U.S. domestic and foreign policy, the impact of immigration and language policies on political organization.

01:836:339. CONTEMPORARY DOMINICAN POLITICS AND SOCIETY (3)
Credit not given for both this course and 01:790:339.
Examination of Dominican politics, economy, and society from the start of the Trujillo era (1930) to the present. Focus on the authoritarian legacy of the Trujillo dictatorship, relations with the U.S., electoral politics in the post-Trujillo period, and recurring trends of caudilloism, militarism, clientelism, and personalism in Dominican society.

01:836:340. RELIGION AND THE HISPANIC COMMUNITY (3)
Sociological comparison of religious institutions and practices under Spanish and U.S. influence. The role of religion in Caribbean migrations and processes of adaption in the U.S.

01:836:354,356. INDEPENDENT STUDY (3,3)
Prerequisite: Permission of instructor. Open only to junior and senior majors and minors in Puerto Rican and Hispanic Caribbean studies.

01:836:360. CULTURE AND SOCIETY IN PUERTO RICO AND THE SPANISH-SPEAKING CARIBBEAN (3)
Understanding the evolution of culture and society in Puerto Rico, the Dominican Republic, and Cuba. Emphasis on the present-day political mobilization that contributes to national consciousness.

01:836:370. LAW AND THE LATINO COMMUNITY (3)
Focus on the legal struggle of the Latino community to achieve equality in the U.S. Analyzes organization of migrant workers, immigration laws, bilingual education, and the Latino struggle for equal representation in government.

01:836:371. HISTORY OF PUERTO RICO (3)
Credit not given for both this course and 01:508:371.
Examination from pre-Columbian time to present. Focus on Spanish colonial policy, slavery and land tenure systems, emergence of national identity, U.S. invasion and rapid economic changes, and population control and migration.

01:836:372. HISTORY OF DOMINICAN REPUBLIC (3)
Credit not given for both this course and 01:508:372.
From French invasion of Hispaniola to present. Role in Spanish empire, U.S. control in transition to sugar economy, Trujillismo, U.S. invasion in 1965 and impact of migration on society.

01:836:375. CONSTITUTIONAL RELATIONS BETWEEN PUERTO RICO AND THE UNITED STATES (3)
Political, social, and economic relations between the U.S. and Puerto Rico through analysis of the Foraker Act, Jones Act, and Law 600.

01:836:385. SOCIAL CHANGE IN THE CARIBBEAN (3)
Examines how the formation of Caribbean societies was influenced by the development of capitalism on a world scale. Focus on the political struggles of Caribbean peoples to create alternative development models.

01:836:390. THE HISTORY OF CUBA (3)
Credit not given for both this course and 01:508:370.
Study of Cuba from pre-Columbian times to the present day. Deals with the long battle for freedom during the nineteenth and twentieth centuries.

01:836:399. SOCIOECONOMIC HISTORY OF LATIN AMERICA (3)
Credit not given for both this course and 01:508:466.
Analysis of the capitalist mode of production in Latin America. Class struggles and state structures in the historical formation of Latin American societies.

01:836:400. TOPICS IN PUERTO RICAN AND CARIBBEAN LITERATURE (3)
Thematic approach to the textual analysis of selected poets, dramatists, essayists, and fiction writers.

01:836:401. SPECIAL TOPICS IN HISPANIC CARIBBEAN STUDIES (3)
Prerequisite: Permission of instructor.
Study of selected social science and historical topics on Cuba, Puerto Rico, the Dominican Republic, and the Caribbean. Selections may vary; consult department for offerings.

01:836:405. LATINO ETHNIC CONSCIOUSNESS (3)
Credit not given for both this course and 01:070:405.
Addresses contemporary understandings about formation of Latino ethnic consciousness in the United States. Examines theoretical and critical perspectives that inform social issues relevant to Latinos.

01:836:415. SOCIAL CHANGE IN PUERTO RICO (3)
Analysis of different approaches to social change in Puerto Rico, in the context of the Caribbean. Covers modernization, dependency, feminist, nationalist, and ecological perspectives.

01:836:462. LATIN AMERICAN SOCIAL HISTORY (3)
Credit not given for both this course and 01:508:462.
Impact of economic development, immigration, and urbanization on lower- and middle-class life in the nineteenth and twentieth centuries through literary and anthropological as well as historical sources.

01:836:475. HISTORY OF THE PUERTO RICAN LABOR MOVEMENT (3)
Overview of the development of labor organizations and their socioeconomic and political impact on the Puerto Rican society. Current problems confronting the labor movement discussed.

01:836:494. SERVICE LEARNING INTERNSHIP (1)
Must be taken in conjunction with a designated CASE (Citizenship and Service Education) course in the Department of Puerto Rican and Hispanic Caribbean Studies.
One-credit community service placement in Puerto Rican and Hispanic Caribbean Studies.

01:836:495,496. INDEPENDENT STUDY (3,3)
Prerequisite: Permission of instructor. Open only to junior and senior majors and minors in Puerto Rican and Hispanic Caribbean studies.

01:836:497. SEMINAR IN PUERTO RICAN AND HISPANIC CARIBBEAN STUDIES (3)
Prerequisite: Permission of instructor.
Analysis of contemporary or historical topic leading to students' independent research and writing of substantial paper. Critical thinking and discussion emphasized.

RELIGION 840

Department of Religion, Faculty of Arts and Sciences

Chairperson: Chün-fang Yü

Professors:

Henry W. Bowden, B.A., Baylor; M.A., Ph.D., Princeton
Alberto R. Green, B.A., Colegio de las Antillas (Cuba); M.A., Andrews; Ph.D., Michigan
James T. Johnson, A.B., Brown; B.D., Vanderbilt Divinity School; M.A., Ph.D., Princeton
James W. Jones, B.A., Earlham College; B.D., Episcopal Theological Seminary; Ph.D., Brown; Psy.D., Rutgers
Hiroshi Obayashi, B.A., B.D., Doshisha (Japan); S.T.M., Andover Newton Theological School; Ph.D., Pennsylvania
Chün-fang Yü, B.A., Tunghai (Taiwan); M.A., Smith College; Ph.D., Columbia

Associate Professors:

Mahlon H. Smith, B.A., Rutgers; B.D., Drew; M.S.L., Pontifical Institute of Medieval Studies (Toronto)
Antonia Tripolitis, B.S., Temple; M.S., Ph.D., Pennsylvania

Assistant Professor:

Syed Nomanul Haq, B.Sc., Hull (England); M.Sc., Ph.D., London (England)

Major Requirements

A major in religion requires a minimum of twelve courses (36 credits) in the field, of which at least seven (21 credits) must be at the 300 level or higher. A maximum of five courses (15 credits) numbered below the 300 level may be counted toward the major. All majors must complete with a grade of C or better 01:840: 211 and 212. With prior approval of the department, up to two religion-related courses (6 credits) offered by other departments may be credited toward the major.

Minor Requirements

A minor in religion consists of six religion courses of 3 or more credits. At least three of the courses must be at the 300 or 400 level. An average grade of C or better in these courses is required to complete the minor.

Departmental Honors Program

To qualify for honors in religion, a student must have a cumulative grade-point average of 3.0 or better and an average of 3.4 or better in the major. Qualified students should apply to the chairperson by March in their junior year. Those whose candidacy is accepted should enroll in 01:840:497-498 during their senior year. In consultation with an adviser, the student decides whether the project undertaken is to earn 3 or 6 credits per term. In order to graduate with honors, a student must complete a research thesis and departmental examination with grades of distinction.

Courses

01:840:101. INTRODUCTION TO RELIGION: SOCIAL PATTERNS (3)
Only open to first-year students and sophomores.
Varied origins of religion and motifs in its development in different cultures.

01:840:102. INTRODUCTION TO RELIGION: PATTERNS OF THOUGHT (3)
Only open to first-year students and sophomores.
Lifestyles and systems of thought represented by major religions.

01:840:112. DEATH AND AFTERLIFE (3)
Open only to first-year students and sophomores.
Various religious concepts of death, resurrection, reincarnation, and other forms of afterlife; their relevance to this-worldly life.

01:840:201. OLD TESTAMENT (3)
Interpretation of basic Hebrew scriptures in translation; history of religious themes such as sin, covenant, and prophecy in ancient Israel.

01:840:202. NEW TESTAMENT (3)
Interpretation of basic Christian scriptures in translation; influence of Jesus and Paul on the early Christian community.

01:840:203. ISLAMIC SCRIPTURES: QURAN AND HADITH (3)
Introduction to sacred texts of Islam; emphasis on words and deeds of the prophet Muhammad, collectively known as the Hadith or Sunnah. Explores how revelation bridges the gap between the divine and human by examining Islamic scriptures in historical, theological, legal, and mystical contexts.

01:840:211. RELIGIONS OF THE EASTERN WORLD (3)
Religious beliefs, practices, and sacred writings of Hinduism, Buddhism, Confucianism, Taoism, and Shinto.

01:840:212. RELIGIONS OF THE WESTERN WORLD (3)
Religious beliefs, practices, and sacred writings of Judaism, Christianity, and Islam.

01:840:221. ETHICAL ISSUES, RELIGIOUS RESPONSES (3)
Jewish and Christian ethical traditions related to contemporary issues in personal and social ethics, such as sexuality, racism, medical ethics.

01:840:222. ISSUES IN RELIGIOUS THOUGHT (3)
Questions faced by religion in the contemporary era: faith and reason, religious experience, role of religion in a scientific society, nature of God.

01:840:240. LOVE AS ETHIC AND IDEA (3)
Judeo-Christian religious tradition, viewed through the concept of love as moral and theological ideal, from the biblical period to the present.

01:840:301. ANCIENT NEAR EASTERN RELIGIONS (3)
Green. Not open to first-year students.
Religious patterns in Mesopotamia, Anatolia, Canaan, Israel, and Egypt from texts in translation; their impact on cultural development of the Near East.

01:840:302. CULTURAL CONTEXT OF THE OLD TESTAMENT (3)
Green. Prerequisite: 01:840:201 or permission of instructor.
Emergence of the Hebrew scriptures from the religious, social, political, and economic milieu of ancient Israel and influence of contiguous cultures on their development.

01:840:303. HEBREW PROPHETS: SOCIAL AND RELIGIOUS THOUGHT (3)
Green. Prerequisite: 01:840:201 or permission of instructor. Not open to first-year students.
Development and diffusion of Israelite prophetic thought from early associations with divination in Near Eastern culture through the Exile and later decline.

01:840:304. POST-EXILIC LITERATURE OF ISRAEL (3)
Green. Prerequisite: 01:840:201 or permission of instructor.
Influence of the Babylonian Exile on the religion and writings of late-biblical Israel; development of Jewish life and thought in the Persian and Hellenistic period.

01:840:306. RELIGIONS OF THE GRECO-ROMAN WORLD (3)
Development of philosophical and religious thought beginning with the Hellenistic Age up to 400 C.E. Covers Mithraism, Hellenistic Judaism, Gnosticism, and Christianity.

01:840:307. JESUS (3)
Smith. Prerequisite: 01:840:202 or permission of instructor.
Career and teaching of Jesus viewed in historical context; development of the Gospel tradition and its effect on later concepts of Christ.

01:840:308. PAUL (3)
Prerequisite: 01:840:202 or permission of instructor.
Letters of Paul in historical context: his background, conversion, and apostolic mission; the development and influence of his thought on later Christianity.

01:840:309. JOHN (3)
Smith. Prerequisite: 01:840:202 or permission of instructor.
Historical and theological background of the Fourth Gospel and its influence on the thought of early Christianity.

01:840:312. GREEK CHRISTIANITY (3)
Eastern church tradition from the second through the eighth centuries; theological controversies and the development of liturgy, monasticism, and mysticism.

01:840:313. LATIN CHRISTIANITY (3)
Western church tradition from the third through the thirteenth centuries; theological controversies and the development of sacraments, papacy, and religious orders.

01:840:315. PROTESTANT REFORMATION (3)
Reform movements in the Western Christian world from the fourteenth through eighteenth centuries; focus on figures who formed Protestant thought, such as Luther, Calvin, Cranmer, Fox, Wesley.

01:840:317. CATHOLICISM AND THE MODERN WORLD (3)
Roman Catholicism, from the French Revolution to the present; thinkers such as Lammenais, Newman, and Gilson; topics such as liturgy, political rights, theological pluralism.

01:840:318. CONTEMPORARY CATHOLIC THEOLOGY (3)
Selected themes in the thought of twentieth-century Roman Catholic figures, such as Rahner, Schillebeeckx, Küng.

01:840:319. RELIGION IN AMERICAN HISTORY (3)
Bowden
Colonial patterns of established churches, revivalism, deism, and separation of church and state; denominational growth and immigration; effects of urban development, evolutionary thought, and social reform.

01:840:320. RELIGION AND THE AMERICAN INDIAN (3)
Bowden
Beliefs and practices in aboriginal North American cultures before European exploration; subsequent patterns of conflict, acculturation, and survival.

01:840:322. HINDUISM (3)
Historical development of religious beliefs and practices in the culture of India; syncretism, mysticism, devotion, and personal disciplines.

01:840:323. BUDDHISM (3)
Yü
Rise of Buddhist theory and practice in the context of Indian culture; encounters with indigenous religions of East and Southeast Asia; development of Theravada, Mahayana, and Vajrayana.

01:840:324. CHINESE RELIGIONS (3)
Yü
Religious concepts and classic texts of Confucianism and Taoism; relation of religion to society and self in China, including role models and paradigms for self-transformation; alchemy and meditation.

01:840:325. PROPHET MUHAMMAD (3)
Muhammad's prophetic career in historical context; mystical and devotional tradition centering on him in Sunni and Shii Islam; sociopolitical reform movements based on prophetic model.

01:840:326. ISLAM (3)
Muhammad and the development of Muslim beliefs and practices; major movements and their effects on historical and current events.

01:840:327. ENCOUNTER OF RELIGIONS (3)
Religions in a pluralistic world; concepts of God, man, spirit, freedom as understood in East and West. Interreligious dialogue, religious synthesis, and universalism.

01:840:329. MEDIEVAL ARABIC RELIGIOUS TEXTS (3)
Credit not given for both this course and 01:685:329.
Reading and close analysis of selected medieval religious texts, including Qur'an, Quar'anic exegesis, hadith, fiqh, and philosophical treatises exploring relationships between reason and revelation.

01:840:331. MYTH AND RITUAL (3)
Role of myth and patterns of ritual in primitive and ancient religious societies and their survival in contemporary cultures.

01:840:334. HEALING: SACRED AND SECULAR (3)
Jones
Examination of healing as a religious process in various cultures; discussion of transition from sacred healing to secular medicine and psychotherapy in the West.

01:840:335. BUDDHIST MEDITATION TRADITIONS (3)
Yü
Introduction to Buddhism. Explores meditative techniques / practices for attaining enlightenment, with emphasis on Zen (Ch'an) meditation and roles played by Koan and Zazen in this process of transformation.

01:840:336. CHRISTIAN MYSTICISM (3)
Smith
Phenomenological analysis of classic descriptions of mystical experience; evolution of relevant motifs through Christian traditions.

01:840:338. RELIGIOUS THEMES IN EAST ASIAN LITERATURE (3)
Yü
Religious ideas and attitudes as expressed in Chinese, Korean, and Japanese literature.

01:840:341. RELIGION AND PSYCHOLOGY (3)
Jones
Psychological inquiry into the role of religion in the life history of the individual and his or her relation to the transcendent.

01:840:342. RELIGIOUS EXPERIENCE AND CONTEMPORARY CULTURE (3)
Jones
Religion and modern consciousness as investigated by the social sciences; topics such as the function of religion, secularism, and modernity.

01:840:343. RELIGION AND POLITICS (3)
Obayashi. Not open to first-year students.
Function of religion in initiating social and political changes by envisioning the future, formulating utopian blueprints, and providing transcendent norms for social criticism.

01:840:346. SEXUALITY IN THE WESTERN RELIGIOUS TRADITIONS (3)
Johnson. Prerequisite: One course in Western religious traditions.
Ideas and problems in Catholic, Protestant, and Jewish normative traditions on sexuality. Topics include sexuality and human nature, sexual identity / roles, marriage and family.

01:840:347. WAR, PEACE, AND VIOLENCE IN WESTERN RELIGIOUS THOUGHT (3)
Johnson. Prerequisite: One course in Western religious traditions.
Ideas of just war, holy war, and pacifism in Judaism, Christianity, and Islam; their relation to contemporary issues of war and peace.

01:840:350. WOMEN IN EASTERN RELIGIONS (3)
Yü
Images and roles of women in major Asian religions: Hinduism, Buddhism, Confucianism, and Taoism. Women's autobiographical accounts of religious experiences, attitudes toward women expressed in these religious institutions, the feminine as a symbol of the divine; representative great goddesses such as Kuan-yin.

01:840:351. WOMEN IN WESTERN RELIGIONS (3)
Images and roles of women in Judaism, Christianity, and Islam; attitudes toward women expressed in these religious institutions; religious experiences of women mystics and religious practices favored by women.

01:840:352. RELIGION AND SCIENCE (3)
Jones
Theories of religious and scientific knowledge, cosmology and astronomy, life and creation.

01:840:356. ISLAMIC MYSTICISM (3)
Based essentially on primary sources. Examines both Islamic mystical theory and practice, paying particular attention to a range of core Sufi doctrines.

01:840:395,396. RESEARCH IN RELIGION (3,3)
Prerequisites: Previous course work in field and permission of department.
Directed study resulting in a major paper.

01:840:401. STUDIES IN OLD TESTAMENT LITERATURE (3)
Green. Prerequisites: 01:840:301, 304, or permission of instructor.
Role of redactional criticism in determining literary structure, interdependence of primary divisions, and development of basic themes in Hebrew scriptures.

01:840:402. STUDIES IN NEW TESTAMENT LITERATURE (3)
Smith, Tripolitis. Prerequisite: 01:840:202 or permission of instructor.
Select problems in development of New Testament text, including oral tradition, literary sources, Greek language, and translation.

01:840:411. HISTORICAL STUDIES IN EASTERN RELIGION (3)
Obayashi, Yu. Prerequisite: 01:840:211 or permission of instructor.
Central issues in the theory and practice of Eastern religious tradition presented in select sources from various periods; questions of method and interpretation.

01:840:412. HISTORICAL STUDIES IN WESTERN RELIGION (3)
Bowden, Tripolitis. Prerequisite: 01:840:212 or permission of instructor.
Central issues in the theory and practice of Western religious tradition presented in select sources from various periods; questions of method and interpretation.

01:840:420. STUDIES IN RELIGION AND PSYCHOLOGY (3)
Jones. Prerequisites: At least one course in religion and one course in psychology or by permission of instructor. Open only to juniors and seniors.
Advanced topics in religion and psychology.

01:840:421. STUDIES IN RELIGION AND SOCIETY (3)
Johnson. Prerequisite: One of the following: 01:840:212, 221, 222, or permission of instructor.
Interaction of religion and society in the thought of selected theologians, ethicists, and sociologists of religion.

01:840:422. STUDIES IN THEOLOGY (3)
Obayashi. Prerequisite: One of the following: 01:840:101, 102, 212, 222, or permission of instructor. Open only to juniors and seniors.
Contributions of selected European and American theologians, past or present; attention to theological method.

01:840:424. STUDIES IN RELIGION AND SCIENCE (3)
Jones. Prerequisite: One course in religion or permission of instructor. Open only to juniors and seniors.
Contemporary topics in the relationship between science and religion. Potential topics include evolution; cosmology and creation; mind, brain, and consciousness; religious and scientific methods. Topics change from year to year.

01:840:481. SEMINAR ON BUDDHIST RELIGION AND ART OF CHINA (3)
Yü. Prerequisite: 01:082:323, 01:840:211 or 323 or permission of instructor. Credit not given for both this course and 01:082:481.
Focus on evolution of the Buddha image in the scriptures and art of China.

01:840:482. SEMINAR IN ISLAMIC ETHICS (3)
Describing and evaluating reasons Muslims give for judgments they make about right and wrong or good or evil, as they relate to human acts, attitudes, and beliefs. Attention to modern Islamic ethical writings and contemporary issues, such as Islam and human rights, relativism, universalism, and interfaith dialogue.

01:840:495,496. RESEARCH IN RELIGION (3,3)
Prerequisites: Previous course work in field and permission of department.
Directed study resulting in a major paper.

01:840:497-498. HONORS IN RELIGION (3,3 OR 6,6)
Both terms must be completed to receive credit.

RUSSIAN 860

(See also Russian, Central and East European Studies 861)

Department of Germanic, Russian, and East European Languages and Literatures, Faculty of Arts and Sciences

Associate Professors:

Carol Avins, B.A., Pennsylvania; Ph.D., Yale
Gerald Pirog, B.A., Rutgers; M.Phil., Ph.D., Yale

Visiting Professor:

Alla A. Akishina, B.A., M.A., Ph.D., Lvov

Part-Time Lecturers:

Svetlana Bogomolny, B.A., Hebrew (Jerusalem); Ed.S., Iowa
Natalya Medvedeva, M.A., Moscow Polygraphic Institute; M.A., Pittsburgh

Major Requirements

To complete the major in Russian, students may choose from among three options:

1. An option in Russian language and literature (36 credits) is intended for students whose primary goal is language proficiency and a thorough knowledge of Russian literary culture.
2. An option in Russian language and linguistics (36 credits) is intended to satisfy students who are primarily interested in studying language within the theoretical framework of linguistics.
3. An option in Russian literature and history (36 credits) is designed for students with a broad interest in literature and language and who wish to do structured, interdisciplinary work that examines Russian literature within its historical and political context.

In addition to these options, students with an exclusive interest in acquiring language proficiency may elect to pursue a Certificate in Russian Language Proficiency (21 credits of work exclusively in Russian language courses).

Scholastic Standing

Students must complete all required course work with grades of C or better.

Option in Russian Language and Literature

The option in Russian language and literature aims to provide a solid training in the Russian language and a broad introduction to Russian culture, particularly literary culture, in the prerevolutionary, Soviet, and Post-Soviet periods. It provides a context in which students can explore the ways that literature has formed and has been formed by larger social and cultural forces. While its central focus is the study of literature, majors are encouraged to study literary discourse in the context of other discursive forms, particularly history, art history, philosophy, and political science. It also is recommended highly that students who wish to continue their studies of Russian literature in graduate school acquire proficiency in another Slavic or East European language or French or German and that they consider course work in comparative literature. Students are urged to do some language course work during the summer session and to consider strongly summer programs in Russia.

The option in Russian language and literature consists of 36 credits beyond 01:860:201,202 Second-Year Russian. Students whose knowledge of Russian places them beyond 01:860:302 are required to substitute other courses to complete 36 credits.

Required Core Courses (18 credits)

01:860:205 Introduction to Russian Literature (3)
01:860:301,302 Third-Year Russian (3,3)
01:860:401,402 Fourth-Year Russian (3,3)
01:860:486 Seminar in Russian Literature (3)

Electives (15 credits from the following):

01:860:320 Special Topics in Russian Studies (3)
01:860:322 Russian Short Story (3)
01:860:327,328 The Russian Novel I,II (3,3)
01:860:330 Dostoevsky (3)
01:860:332 Russian Poetry (3)

01:860:335 Landscapes of the Mind: Country and City in Russian Literature and Art (3)
01:860:336 Art and Literature of the Soviet Period and the Varieties of Nonconformism (3)
01:860:337 Ideology and the Construction of Fact: Soviet Cinema and the Historical Record (3)
01:860:338,339 Zimmerli Museum Internship in Russian Art (3,3)
01:860:347 Russian Drama (3)
01:860:433 Pushkin and His Age (3)
01:860:435 Social Construction of Gender and Sexuality in Russian Literature (3)
01:860:491,492 Russian Practicum (3,3)

Option in Russian Language and Linguistics

The option in Russian language and linguistics consists of 36 credits. It offers students with a particular interest in language study the opportunity to develop a high level of proficiency in Russian while preparing a foundation for further work in linguistics. Students may begin their study of linguistics (01:615:201) while they are in their first or second year of Russian language study. Students are encouraged strongly to take courses in Russian literature.

Required Courses (30 credits):

01:615:201 Introduction to Linguistic Theory (3)
01:615:305 Syntax (3)
01:615:315 Phonology (3)
01:615:322 Semantics (3)
01:860:301,302 Third-Year Russian (3,3)
01:860:401,402 Fourth-Year Russian (3,3)
01:860:451 Introduction to Slavic Linguistics (3)
01:860:452 Seminar in Slavic Linguistics (3)

Electives (6 credits from the following):

01:860:351,352 Structure of the Russian Language (3,3)
01:860:491,492 Russian Practicum (3,3)

Option in Russian Literature and History

The option in Russian literature and history consists of 36 credits from the combined disciplines. It aims to place Russian literature within the larger framework of Russian history, particularly intellectual history, and to show the constant and extensive interaction of literature and history.

Required Core Courses (24 credits)

Language Courses (9 credits)

01:860:301,302 Third-Year Russian (3,3)
01:860:359 Translation (3) or 01:860:375, 378, 380: three 1-credit language workshops in which texts connected with course work in history or political science are read in Russian (3) or 01:860:338 or 339 Zimmerli Museum Internship in Russian Art (3)

Courses in Russian History and Political Science (9 credits)

01:510:375 Revolutionary Russia and the Soviet Union (3)
01:510:378 State and Society in Imperial Russia (3)
01:790:380 Russian and Central European Political Thought (3)

Senior Seminar and Senior Thesis (6 credits)

01:860:486,487 Development of a topic designed by the student in consultation with an instructor from at least two disciplines who agree to direct the project. Culminates in a substantial research paper.

Electives (12 credits from the following):

01:860:320 Special Topics in Russian Studies (3)
01:860:327,328 The Russian Novel I,II (3,3)
01:860:330 Dostoevsky (3)
01:860:335 Landscapes of the Mind: Country and City in Russian Literature and Art (3)
01:860:336 Art and Literature of the Soviet Period and the Varieties of Nonconformism (3)
01:860:337 Ideology and the Construction of Fact: Soviet Cinema and the Historical Record (3)
01:860:433 Pushkin and His Age (3)
01:860:435 Social Construction of Gender and Sexuality in Russian Literature (3)

Minor in Russian Language and Literature

The minor in Russian language and literature consists of three courses of 3 or more credits each in the Russian language and three courses in Russian literature. The student's program must be approved by the departmental adviser.

Departmental Honors Program

To qualify, a student must have a cumulative grade-point average of 3.0 or better and an average of 3.4 or better in the major at the end of junior year. At that time the student should make a formal application. During their senior year, in addition to fulfilling major course requirements, candidates who are accepted by the discipline honors committee take 01:860:496-497, in which they complete a major research paper under the direction of an adviser. Students who complete the requirements for honors may use their research paper to fulfill the discipline research-paper requirement.

Certificate in Russian Language Proficiency

Any student may earn a certificate of proficiency in Russian after successfully completing (B or better) work in the following courses (15 credits):

01:860:301,302 Third-Year Russian (3,3)
01:860:401,402 Fourth-Year Russian (3,3)

Choose one of these courses:

01:860:351 Structure of the Russian Language (3)
01:860:359 Translation (3)

Students who present advanced placement or who are native speakers may be awarded certificates of proficiency after earning a grade of B or better in 01:860:351 or 359, and both 401 and 402.

Proficiency Examination for Credit

Students who have acquired any level of skill in a Slavic language by studying at some academic institution may, with the approval of the discipline director, take a proficiency examination in courses offered through the Faculty

of Arts and Sciences. Credit is given for a grade of B or better. For courses passed by this means, the grade is not computed in the cumulative average.

Courses in English

01:860:259,260. MAJOR RUSSIAN WRITERS IN TRANSLATION (3,3)
First term: Pushkin, Gogol, Lermontov, Dostoevsky, Turgenev, Tolstoy. Second term: Chekhov, Bely, Bulgakov, Olesha, Zamyatin, Pasternak, Solzhenitsyn.

01:860:279. WOMEN IN NINETEENTH-CENTURY RUSSIAN LITERATURE (3)
Textual and contextual examination of the foremost female protagonists in major nineteenth-century narrative texts and their overall impact upon the evolving woman's identity in Russian society.

01:860:330. DOSTOEVSKY (3)
Major works in historical, intellectual, and aesthetic context. Brothers Karamazov, Crime and Punishment, Notes from the Underground, and short works.

See Russian, Central and East European Studies 861 for full descriptions of the following courses.

01:861:259. INTRODUCTION TO SLAVIC CIVILIZATIONS AND CULTURES (3)

01:861:264. LITERATURE AND POLITICS: THE EASTERN EUROPEAN EXPERIENCE (3)

Courses in Russian

01:860:101,102. FIRST-YEAR RUSSIAN (4,4)
Fundamentals of the language with exercises in speaking, reading, and writing.

01:860:105,106. RUSSIAN FOR READING KNOWLEDGE (3,3)
Does not satisfy prerequisite for 01:860:201.
First term: alphabet and basic grammar of Russian, use of dictionary, reading of basic texts. Second term: more advanced grammar, readings of texts from various fields.

01:860:201,202. SECOND-YEAR RUSSIAN (4,4)
Prerequisite: 01:860:102 or two or more years of secondary school Russian.
Development of language skills, emphasis on speaking, translation drills, and grammar.

01:860:203,204. SECOND-YEAR RUSSIAN LANGUAGE LABORATORY (1,1)
Pre- or corequisites: 01:860:201,202.
Instructor-guided laboratory practicum based on intensive use of media and designed for improvement of aural / oral skills. Practice involves use of text-related and other audio and video material, individual and group work, and recording of student speech for evaluation of pronunciation and fluency.

01:860:205,206. INTRODUCTION TO RUSSIAN LITERATURE (3,3)
Principles of literary study. Russian literature in the context of European literature; periodization and genre; literature and ideology; literary institutions; gender, form, authorship.

01:860:215. INTERMEDIATE RUSSIAN FOR RUSSIAN SPEAKERS I (3)
Credit not given for both this course and 01:860:201.
Study of specific areas of grammar, orthography, usage; reading, writing, grammatical analysis.

01:860:216. INTERMEDIATE RUSSIAN FOR RUSSIAN SPEAKERS II (3)
Pre- or corequisite: 01:860:215 or permission of department. Credit not given for both this course and 01:860:202.
Continued study of specific areas of Russian grammar. Development of reading, writing, and oral skills and vocabulary building through conversation, composition, newspapers, magazines, and film.

01:860:301,302. THIRD-YEAR RUSSIAN (3,3)
Prerequisite: 01:860:202 or its equivalent.
Refinement of reading, writing, listening, and speaking skills. Selected topics of advanced Russian grammar. Vocabulary building.

01:860:320. SPECIAL TOPICS IN RUSSIAN STUDIES (3)
Credit not given for both this course and 01:082:358. May be conducted in English.
Variable content. Intensive study of a particular topic related to Russia and Russian culture. Specific topics available at time of registration.

01:860:322. RUSSIAN SHORT STORY (3)
Prerequisite: 01:860:202 or permission of instructor.
Reading, analysis, and discussion in Russian.

01:860:327. THE RUSSIAN NOVEL I (3)
Prerequisite: 01:860:202 or permission of instructor.
Russian novel from its beginnings in the eighteenth century to Tolstoy.

01:860:328. THE RUSSIAN NOVEL II (3)
Prerequisite: 01:860:202 or permission of instructor.
Russian novel in the twentieth century; Bely, Ilf and Petrov, Nabokov, Zamyatin, Pilnyak, Pasternak, Solzhenitsyn, Bitov, Aksenov, et al.

01:860:332. RUSSIAN POETRY (3)
Prerequisite: 01:860:202 or permission of instructor.
Reading, analysis, and discussion of nineteenth- and twentieth-century poetry.

01:860:335. LANDSCAPES OF THE MIND: COUNTRY AND CITY IN RUSSIAN LITERATURE AND ART (3)
Credit not given for both this course and 01:082:356.
Moscow and St. Petersburg; the Russian countryside vs. the exotic sublime; the idyll vs. the reality of peasant life; the city and modernism; utopia and antiurban impulse.

01:860:336. ART AND LITERATURE OF THE SOVIET PERIOD AND THE VARIETIES OF NONCONFORMISM (3)
Credit not given for both this course and 01:082:356.
Official literature and art; literary and art institutions. Official and unofficial art; alternative venues.

01:860:337. IDEOLOGY AND THE CONSTRUCTION OF FACT: SOVIET CINEMA AND THE HISTORICAL RECORD (3)
No knowledge of Russian required.
Examination of how early Soviet cinema produces and was produced by Soviet political history; emphasis on theoretical writings of S.M. Eisenstein.

01:860:338,339. ZIMMERLI MUSEUM INTERNSHIP IN RUSSIAN ART (3,3)
Prerequisite: Permission of program director. Credit not given for both these courses and 01:082:359,360. Knowledge of Russian necessary.
Research work related to Dodge and Riabov collections; assisting in development, coordination of special exhibitions, translation, compiling artists' files.

01:860:347. RUSSIAN DRAMA (3)
Prerequisite: 01:860:202 or permission of instructor.
Reading, analysis, and discussion of major Russian playwrights.

01:860:351,352. STRUCTURE OF THE RUSSIAN LANGUAGE (3,3)
Prerequisite: 01:860:202 or permission of instructor.
Advanced course with emphasis on morphology, difficult points of grammar. Theory and extensive drill work.

01:860:355. RUSSIAN PHONETICS (3)
Prerequisite: 01:860:202 or permission of instructor.
Analysis of the Russian phonetic system, intonation, and transcription; emphasis on reading of texts and dialogues.

01:860:359. TRANSLATION (3)
Prerequisite: 01:860:202 or permission of instructor.
Translation of advanced-level texts from Russian into English; emphasis on linguistic and stylistic problems, contrastive analysis.

01:860:375. LANGUAGE WORKSHOP: HISTORY (1)
Prerequisite: Permission of instructor. Corequisite: 01:510:375.
Reading of research material in Russian; development of specific professional vocabulary.

01:860:378. LANGUAGE WORKSHOP: HISTORY (1)
Prerequisite: Permission of instructor. Corequisite: 01:510:378.
Reading of research material in Russian; development of specific professional vocabulary.

01:860:380. LANGUAGE WORKSHOP: POLITICAL SCIENCE (1)
Prerequisite: Permission of instructor. Corequisite: 01:790:380.
Reading of research material in Russian; development of specific professional vocabulary.

01:860:401,402. FOURTH-YEAR RUSSIAN (3,3)
Prerequisite: 01:860:302 or permission of instructor.
Reading and discussion of various oral and written styles. Phraseology. Communicative skills.

01:860:433. PUSHKIN AND HIS AGE (3)
Prerequisites: 01:860:301 and at least one 300-level course in Russian literature; or permission of instructor.
Historical examination of Russian literary scene during the period 1740 to 1841, in Russian.

01:860:435. SOCIAL CONSTRUCTION OF GENDER AND SEXUALITY IN RUSSIAN LITERATURE (3)
Reading knowledge of Russian helpful but not required.
Gender, power, and imperial discourse; cross-dressing; gender and authorship; sadism, masochism, and suicide; exile, dislocation, and sexuality; homosexuality. Readings from nineteenth and twentieth centuries.

01:860:451. INTRODUCTION TO SLAVIC LINGUISTICS (3)
Prerequisite: 300-level course in Russian or permission of instructor.
Linguistic concepts and their applicability to Russian and the Slavic languages. Origin and development of the Slavic languages.

01:860:452. SEMINAR IN SLAVIC LINGUISTICS (3)
Prerequisite: 01:860:451 or permission of instructor.
Devoted to specific problems in the area of Slavic linguistics. Variable content, e.g., history of the Russian language, readings in Old Russian, advanced problems of morphology.

01:860:486. SEMINAR IN RUSSIAN LITERATURE (3)
Prerequisites: 01:860:301 and at least one 300-level course in Russian literature; or permission of instructor.
Intensive reading and research in one specific aspect of Russian letters. Critical and analytical paper required.

01:860:487. SENIOR THESIS (3)
Prerequisite: 01:860:486. Required of students who choose options in Russian literature or Russian history.
Extended research paper written in close consultation with an instructor.

01:860:491,492. RUSSIAN PRACTICUM (3,3)
Prerequisites: 01:860:302 and/or permission of instructor.
Corequisites: 01:860:401,402, if applicable.
Drill methods, techniques of facilitating classroom interaction, error analysis, grammar review, and weekly drill sessions conducted in beginning Russian sections under faculty supervision.

01:860:493,494. INDEPENDENT STUDY: RUSSIAN (3,3)
Prerequisite: Permission of instructor.

01:860:496-497. HONORS IN RUSSIAN (3,3)
Prerequisite: Permission of honors committee. Both terms must be completed to receive credit.
Preparation for research paper and oral examination under direction of a faculty adviser.

RUSSIAN, CENTRAL AND EAST EUROPEAN STUDIES 861

(See also Hungarian 535, Polish 787, Russian 860, Ukrainian 967)

Department of Germanic, Russian, and East European Languages and Literatures, Faculty of Arts and Sciences

Web Site: http://seell.rutgers.edu

Director: Jan Kubik

Associate and Undergraduate Director: Gerald Pirog

Program Committee:

József Böröcz, Sociology; Ph.D., Johns Hopkins
Ziva Galili, History; Ph.D., Columbia
Jan Kubik, Political Science; Ph.D., Columbia
Gerald Pirog, Slavic and East European Languages and Literatures; Ph.D., Yale
Joanna Regulska, Center for Russian, Central and East European Studies; Geography; Ph.D., Colorado

Major Requirements

The interdisciplinary major in Russian, Central and East European Studies requires a total of 33 credits. Of the eleven courses, no more than two may be from each of the following disciplines: economics, geography, history, Hungarian, journalism, Polish, political science, Russian, Ukrainian. Only one independent study can be counted toward the major.

For additional information, consult the program's web site.

Four Core Courses (12 credits)

01:220:378 Economies of the USSR and Russia (3)
01:450:332 Newly Independent States and Eastern Europe (3)
01:510:271 Russia and the West (3)
01:790:383 Politics of Post-Communist Economic Reforms (3)

Exit Seminar (3 credits)

01:861:455 Contemporary Russia, Central and Eastern Europe (3)

Six Elective Courses (18 credits)

Five of the elective courses must be at the 300 level or above.

Economics

01:220:362 Comparative Economic Systems (3) *

* Course must be approved each term by the program director, pending the relevance of the course's content to the major.

Geography

01:450:262 Geographic Background to Current World Affairs (3)
01:450:405 Political Geography (3) *

History

01:506:231 Revolution (3) *
01:506:361 History of Socialism and Communism (3)
01:510:371 Russia from the Vikings to Peter the Great (3)
01:510:373 State and Society in Imperial Russia (3)
01:510:375 Revolutionary Russia and the Soviet Union (3)
01:510:381 The Making of Modern Eastern Europe (3)
01:510:383 Nationalism and Socialism in Eastern Europe (3)
01:510:385 The History of East European Jewry (3)
01:510:391 Historical Studies: Ideas of Modernity (3) *

Hungarian

01:535:259 Hungarian Literature and Civilization (3)
01:535:260 Hungarian Culture Today (3)
01:535:360 Special Topics in Hungarian Studies (3)
01:535:460 Advanced Topics in Hungarian Studies (3)

Journalism

04:567:463 Advanced Research Studio in Journalism and Mass Media (3) *

Polish

01:787:259 Tradition and National Identity in Polish Literature (3)
01:787:370 Special Topics in Polish Studies (3)
01:787:470 Advanced Special Topics in Polish Studies (3)
01:787:475 Seminar in Polish Studies (3)

Political Science

01:790:380 Russian and Central European Political Thought (3)
01:790:381 Post-Communist Democracies (3)
01:790:382 Foreign Policy of Russia and the East European States (3)

Russian

01:860:327 The Russian Novel I (3)
01:860:328 The Russian Novel II (3)
01:860:335 Landscapes of the Mind: Country and City in Russian Literature and Art (3)
01:860:336 Art and Literature of the Soviet Period and the Varieties of Nonconformism (3)
01:860:337 Ideology and the Construction of Fact: Soviet Cinema and the Historical Record (3)
01:860:435 Social Construction of Gender and Sexuality in Russian Literature (3)

Russian, Central and East European Studies

01:861:360 Special Topics in Hungarian Studies (3)
01:861:370 Special Topics in Polish Studies (3)
01:861:391 Historical Studies: Ideas of Modernity (3) *
01:861:460 Advanced Special Topics in Hungarian Studies (3)
01:861:470 Advanced Special Topics in Polish Studies (3)
01:861:475 Seminar in Polish Studies (3)

Ukrainian

01:967:259 Ukrainian Literature in Translation (3)

* Course must be approved each term by the program director, pending the relevance of the course's content to the major.

Additional Requirements

Each student must prepare an exit paper in conjunction with enrollment in an honors course, seminar, or independent study, and have it approved by the director of the program prior to graduation.

Language Proficiency. It is recommended highly that majors acquire some proficiency in another Slavic or East Central European language (see 01:861:121,122 Special Language Study; Hungarian 535; Polish 787; Russian 860; and Ukrainian 967).

Scholastic Standing. In order to graduate with a major in Russian, Central and East European Studies, students are required to have a cumulative grade-point average of at least 2.0 in courses counting toward the major. No more than one D in major course work can be counted toward graduation in the major.

Minor Requirements

An interdisciplinary minor consists of six courses (18 credits) that include the four core courses and two electives. Four of the six courses must be outside the student's major, with no more than two courses in any one discipline. A minimum of four courses must be at the 300 level or above.

Honors Program

To qualify for departmental honors, a student must have a cumulative grade-point average of 3.0 or better, and an average of 3.4 or better in the major at the end of the junior year. At that time, the student should formally apply to the director of the program. During their senior year, in addition to fulfilling major course requirements, candidates who are accepted by the discipline honors committee take 01:861:496-497, in which they complete a major research paper under the direction of an adviser in the discipline.

Courses

01:861:121,122. SPECIAL LANGUAGE STUDY (4,4)
Prerequisite: Permission of department. This course may be taken twice as the language changes.
Devoted to one of the languages relevant to the geographic area covered by the 861 major other than Russian, Polish, or Ukrainian.

01:861:259. INTRODUCTION TO SLAVIC CIVILIZATIONS AND CULTURES (3)
Conducted in English.
Slavic peoples, their languages, and cultures.

01:861:264. LITERATURE AND POLITICS: THE EASTERN EUROPEAN EXPERIENCE (3)
No knowledge of Russian required.
Literary ideology and its place historically in the countries of Eastern Europe. Readings of works that have challenged or espoused political dogmas.

06:090:285,286. SLAVIC CULTURAL EXPERIENCE (P/NC 1.5, P/NC 1.5)
Limited to and required of residents of the Douglass College Slavic House. May not be used in satisfaction of major requirements. Course may be repeated.
Cultural, social, and political life of Slavic-speaking peoples of Central and Eastern Europe. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

01:861:299. LANGUAGE HOUSE/DORMITORY RESIDENCE (E3)
Prerequisite: Permission of the department and college housing authority. Graded satisfactory or unsatisfactory.
Residence in an East-European-interest section of the dormitories on the College Avenue campus during which students pledge themselves to speak Russian (or one of the other languages of East Europe, depending upon the interest and demand). Group activities.

01:861:317,318. RUSSIAN CULTURE TODAY (1.5,1.5)
Taught in English.
Contemporary cultural, social, and political life in the Soviet Union with emphasis on the daily experience. Field trips.

01:861:360. SPECIAL TOPICS IN HUNGARIAN STUDIES (3)
Conducted in English. No knowledge of Hungarian is necessary. Credit not given for both this course and 01:535:360.
Variable content. With permission of program director, course may be taken repeatedly if content is different.

01:861:370. SPECIAL TOPICS IN POLISH STUDIES (3)
Conducted in English. Credit not given for both this course and 01:787:370.
Topics related to Poland and Polish culture. Specific titles available at time of registration.

01:861:391. HISTORICAL STUDIES: IDEAS OF MODERNITY (3)
Credit not given for both this course and 01:510:391.
Variable content. Consult program director for specific topic and requirements.

01:861:455. CONTEMPORARY RUSSIA, CENTRAL AND EASTERN EUROPE (3)
Exit seminar required of majors. Theme of seminar changes each year depending on faculty members teaching it. Seminar culminates with a substantial research paper written under the guidance of at least two faculty members.

01:861:460. ADVANCED SPECIAL TOPICS IN HUNGARIAN STUDIES (3)
Conducted in English. No knowledge of Hungarian is necessary. Credit not given for both this course and 01:535:460.
Variable content. With permission of program director, course may be taken repeatedly if content is different.

01:861:470. ADVANCED SPECIAL TOPICS IN POLISH STUDIES (3)
Prerequisite: Permission of department. Conducted in English. Credit not given for both this course and 01:787:470.
Intensive study of a particular topic related to Poland and Polish culture. Specific titles available at time of registration.

01:861:475. SEMINAR IN POLISH STUDIES (3)
Prerequisite: Permission of department. Conducted in English. Credit not given for both this course and 01:787:475.
Intensive seminar on selected topics related to Poland and Polish culture. Specific titles available at time of registration.

01:861:493,494. INDEPENDENT STUDY (3,3)
Prerequisite: Permission of instructor.
Supervised individual study of selected topics of interest, with extensive reading and/or independent research project.

01:861:496-497. HONORS IN RUSSIAN, CENTRAL AND EAST EUROPEAN STUDIES (3,3)
Prerequisite: Permission of honors committee. Both terms must be completed to receive credit.
Preparation of research paper and oral examination under direction of a faculty adviser.

RUTGERS COLLEGE COURSES

(See Arts and Science 090)

SCIENCE, TECHNOLOGY, AND SOCIETY

Faculty of Arts and Sciences

Program Director: Michael N. Geselowitz

Program Committee:

Monica A. Devanas, Teaching Excellence Center
Michael N. Geselowitz, IEEE History Center; Ph.D., Harvard
Marc Manganaro, English; Ph.D., North Carolina
Ellen F. Mappen, Douglass College; Ph.D., Rutgers
Terry A. Matilsky, Physics; Ph.D., Princeton
Philip J. Pauly, History; Ph.D., Johns Hopkins

The interdisciplinary minor in science, technology, and society (STS) provides a structure for learning about science and technology—their conceptual foundations, their history, their interaction with each other, the social context of their development, and their impact on people and societies—as a way of understanding contemporary public issues. For further information about the program and a list of additional faculty and staff associated with the STS program, contact the program director.

Minor Requirements

The interdisciplinary minor in STS consists of seven courses that must include 01:556:220 Introduction to Science, Technology, and Society, a 3-credit multidisciplinary course that is designed specifically for students in the minor; 01:556:404 Topics in Science, Technology, and Society, a 1-credit senior seminar; and five 3-credit courses in the area of STS (see STS-Area Courses below).

In addition, students must show some familiarity with mathematics and science, defined by taking two courses in each (see Mathematics Requirement and Science Requirement below).

Course selections for the minor must be approved by the program director or a program adviser. Only courses completed with grades of C or better are counted toward the minor.

STS-Area Courses

As noted above, to complete the STS minor, students must take five STS-area courses. Two of the five courses must be in two different disciplines outside the student's major, and at least three of the five courses must be upper level (300 level or above). The STS-area courses include the following:

01:014:380	Blacks in Science: Ancient and Modern (3)
01:050:314	Technology and Culture in America (3)
01:119:150	Biology, Society, and Biomedical Issues (3)
01:119:152	Biomedical Issues of AIDS (3)
01:119:154	Genetics, Law, and Social Policy (3)
01:119:160	Biology, Society, and Ecological Issues (3)
01:160:140	The Greenhouse Effect (3) (Credit not given for both this course and 01:450:140, 01:556:140, or 01:750:140)
04:192:347	Information Systems and Communication (3)
04:192:446	Communication and Social Change (3)
04:192:449	Telecommunication Processes and Policy (3)
01:198:405	Seminar in Computers and Society (3)
01:220:316	Health Economics (3)
01:220:332	Environmental Economics (3) (Credit not given for both this course and 11:373:363)

01:351:349 Literary and Scientific Writings (3)
11:373:363 Environmental Economics (3) (Credit not given for both this course and 01:220:332)
01:450:102 Transforming the Global Environment (3)
01:450:140 The Greenhouse Effect (3) (Credit not given for both this course and 01:160:140, 01:556:140, or 01:750:140)
01:450:211 Conservation and Use of Natural Resources (3)
01:450:370 Global and Regional Climate Change (3)
01:450:470 History and Theory of Geography (3)
01:506:251 History of Science and Society (3)
01:506:253 History of Technology and Society (3)
01:512:121 Health and Environment in America (3)
01:512:236 Edison and His Era (3)
01:512:326 Technology and Society in America (3)
01:512:328 Science in American Culture (3)
01:512:395 The Electric Century (3)
01:556:140 The Greenhouse Effect (3) (Credit not given for both this course and 01:160:140, 01:450:140, or 01:750:140)
01:730:225 Introduction to the Philosophy of Science (3)
01:730:249 Medical Ethics (3)
01:730:329 Minds, Machines, and Persons (3)
01:730:424 The Logic of Decision (3)
01:730:425 Philosophy of Science (3)
01:730:426 Philosophy of Physics (3)
01:750:109 Astronomy and Cosmology I (3)
01:750:110 Astronomy and Cosmology II (3)
01:750:140 The Greenhouse Effect (3) (Credit not given for both this course and 01:160:140, 01:450:140, or 01:556:140)
11:776:170 Plants and People (3)
01:840:334 Healing: Sacred and Secular (3)
01:840:344 Religion and Technological Society (3)
01:840:348 Ethical Problems in Medicine (3)
01:840:352 Religion and Science (3)
01:920:210 Sociology of Medicine and Health Care (3)
01:920:331 Sociology of Industry (3)
01:988:240 Social Issues about Women in Science (3)

Mathematics Requirement

To complete the STS minor requirement, students must show some familiarity with mathematics, ordinarily by the end of the junior year. The mathematics requirement ordinarily may be fulfilled by placing into CALC3, or by placing into CALC2 and taking one of the following courses (other than Calculus I), or by taking two of the following courses:

1. 01:640:103, 104, or any mathematics course of 3 credits or more at the level of 135 or above;
2. 01:198:111, 112, 205, 206, 211, or any computer science course of 4 credits at the level of 314 or above;
3. Any statistics course at the level of 211 or above; or
4. 01:730:201 Introduction to Logic.

Science Requirement

As noted above, to complete the minor requirement, students must show some familiarity with science, ordinarily by the end of the junior year. The science requirement may be fulfilled by completing two courses of 3 or more credits in a single science, where at least one course has a significant laboratory component. This ordinarily shall be done by taking one of the laboratory-based two-course sequences in life sciences, chemistry, geology, or physics; but in any event, the courses selected for fulfillment of the science requirement must be approved by the program director or a program adviser.

Courses

01:556:220. INTRODUCTION TO SCIENCE, TECHNOLOGY, AND SOCIETY (3)
Prerequisite: Sophomore standing.
Development of sciences and technologies; shifting relations with economics, politics, religion, and philosophy; ways of understanding contemporary public issues.

01:556:404. TOPICS IN SCIENCE, TECHNOLOGY, AND SOCIETY (1)
Prerequisite: Completion of all other STS minor requirements or permission of the program director or a program adviser. Open only to students in the STS minor.
Discussion and reading about selected topics in science, technology, and society. Enables students to integrate the variety of perspectives acquired in the course of completing the minor.

SOCIAL WORK 910

Baccalaureate Social Work Program, School of Social Work

Dean: Mary Edna Davidson, B.A., San Francisco; M.S.W., California (Berkeley); Ph.D., Brandeis

Director of B.A. Social Work Program: Ann A. Abbott, B.S., St. Norbert College; M.S.S., Ph.D., Bryn Mawr College

Site Coordinator (Livingston College Program): Anne Sparks, B.A., Case Western Reserve; M.S., Columbia

The major in social work is accredited by the Council on Social Work Education. Students who successfully complete the program receive a Bachelor of Arts degree from Livingston College. The program prepares students for beginning-level generalist social work practice. The focus for practice addresses work with special populations including the poor, the oppressed, and other at-risk groups. Participants are expected to acquire the knowledge base, professional ethics, values, and skills to work effectively within individual, family, group, organizational, and community levels of practice. The program also prepares students for graduate study in social work and related fields.

Students are admitted to the major at the beginning of their junior year, after having completed approximately 60 credits of course work. Students should plan to apply to the major early in the spring term of their sophomore year. A cumulative grade-point average of 3.0 is required for acceptance into the program. Inquiries and applications should be directed to the Site Coordinator, Baccalaureate Social Work Program, School of Social Work.

Following acceptance into the program, all social work majors are assigned a faculty adviser within the School of Social Work. To continue in this major, students must maintain a 3.0 grade-point average in social work courses.

Major Requirements

Prerequisites

Students should complete the following courses prior to enrollment in the social work program.

01:119:150 Biology, Society, and Biomedical Issues (3) or 01:119:154 Genetics, Law, and Social Policy (3) or 01:119:160 Biology, Society, and Ecological Issues (3) or 01:119:182 Human Sexuality (3)

01:830:101 General Psychology (3)
01:920:101 Introduction to Sociology (3) or 01:920:111 Social Class (3)
01:960:211 Statistics I (3) or equivalent
One course from each of three areas chosen from the following: administration of justice, Africana studies, American studies, anthropology, economics, political science, public health, urban studies and community health, women's studies.

Course Sequence

The required courses and their recommended sequence are as follows:

Junior Year

Fall Term
09:910:220 Introduction to Social Work and Social Services (3)
09:910:311 Social Welfare Policy and Services I (3)
19:910:502 Human Behavior in the Social Environment I (3)

Spring Term
09:910:312 Social Welfare Policy and Services II (3)
09:910:332 Professional Development Seminar (3)
19:910:503 Human Behavior in the Social Environment II (3)
19:910:505 Methods of Social Work Research I (3)

Senior Year

Fall Term
09:910:352 Groups at Risk in Contemporary Society (3)
09:910:471 Field Practicum I (6)
09:910:472 Generalist Practice I (3)

Spring Term
09:910:473 Field Practicum II (6)
09:910:474 Generalist Practice II (3)
09:910:475 Integration Seminar (3)

Courses

09:910:220. Introduction to Social Work and Social Services (3)
Required for social work major. Should be taken by pre-majors in sophomore year.
Overview of social work values, ethics, arenas of practice, and problem areas. Includes forty-hour volunteer experience within a social service agency.

09:910:311. Social Welfare Policy and Services I (3)
Pre- or corequisite: 09:910:220. Open only to students admitted to the major.
In historical perspective, exploration of social welfare, social policy, and the emergence of the social work profession. Philosophical, political, and practical bases of social policies and programs.

09:910:312. Social Welfare Policy and Services II (3)
Prerequisite: 09:910:311.
Process of social policy development and theoretic frameworks for the analysis of social policy. Emphasis on policies addressing problems of poverty, mental health, child welfare, and vulnerable groups such as the elderly, gays / lesbians, women, and persons of color.

09:910:332. Professional Development Seminar (3)
Prerequisite: 09:910:220. Open only to social work majors in their junior year.
Professional skills necessary for baccalaureate-level generalist practitioners. Emphasizes development of a professional social work identity and skills needed to work within an organizational context.

09:910:352. Groups at Risk in Contemporary Society (3)
Analysis of the relationship between institutionalized practices and the functioning level of key high-risk groups within our society: aged, veterans, people with disabilities, refugees, women, ethnic and racial minorities, participants in alternative lifestyles. Obstacles impeding the functioning of these groups explored.

09:910:471. Field Practicum I (6)
Prerequisites: Social work major, senior status. Corequisite: 09:910:472. Requires two days per week of supervised field instruction in a social service agency.
Participation in a supervised practicum applying the tenets of generalist practice. Gain greater understanding of the goals,organization, and delivery system of the field setting and the application of social work methods, values, ethics, and skills.

09:910:472. Generalist Practice I (3)
Prerequisites: Social work major, senior status. Corequisite: 09:910:471.
Preparation for students to apply a generalist practice perspective to systems of all sizes and levels. Essential skills, values, concepts, and ethical considerations as they pertain to generalist practice.

09:910:473. Field Practicum II (6)
Prerequisites: 09:910:471, 472. Corequisites: 09:910:474, 475. Requires two days per week of supervised field instruction in a social service agency.
Development and enhancement of essential values, skills, use of self, and use of supervision in interventive work with individuals, families, groups, organizations, and communities.

09:910:474. Generalist Practice II (3)
Prerequisites: 09:910:471, 472. Corequisites: 09:910:473, 475.
Basic comcepts and skills, including ethnic, racial, and gender-sensitive practice. Application of problem-solving model to micro and macro level intervention.

09:910:475. Integration Seminar (3)
Prerequisites: 09:910:471, 472. Corequisites: 09:910:473, 474.
Seminar course integrates all areas of prior and concurrent course learning as it applies to "real-life" field situations. Critical thinking skills and use of the social work profession's knowledge base emphasized.

19:910:502. Human Behavior in the Social Environment I (3)
Pre- or corequisite: 09:910:220. Open only to students admitted to the major.
Theories, themes, and issues concerning the ongoing interaction between people as they grow, change, and develop over the life course, and the social context in which this occurs. Particular attention to assumptions about human behavior that may interfere with recognition of diversity in the ongoing interaction between individual, family, and group identity, social context, and social life. Content about values and ethical issues related to bio-psycho-social development highlighted.

19:910:503. Human Behavior in the Social Environment II (3)
Prerequisite: 19:910:502.
Provides content about theories and knowledge of action groups, organizations, and communities as the context for micro and macro social practice. Content provided about the ways in which systems promote or deter people in the maintenance or attainment of optimal health and well-being. Evaluate and apply theory to client situations to understand how macro systems affect client benefit.

19:910:505. Methods of Social Work Research I (3)
Introduction to scientific, analytic approach to building knowledge and skills including: role of concepts and theory, hypothesis formulation, operationalization, research design, data collection, data processing, statistical analysis, introductory computer skills, and report writing.

SOCIOLOGY 920

Department of Sociology, Faculty of Arts and Sciences

Chairperson: Ellen L. Idler

Director of Undergraduate Studies: Richard Williams

Professors:

Cathy Greenblat, A.B., Vassar College; A.M., Ph.D., Columbia
Allan V. Horwitz, B.A., Dickinson College; M.Phil., Ph.D., Yale
Ellen L. Idler, B.A., College of Wooster; M.A., Rutgers; M.Phil., Ph.D., Yale
David Mechanic, University Professor, B.A., CUNY; M.A., Ph.D., Stanford
David Popenoe, A.B., Antioch; M.C.P., Ph.D., Pennsylvania
Patricia A. Roos, B.A., M.A., California (Davis); Ph.D., California (Los Angeles)
Thomas K. Rudel, B.A., Princeton; Ph.D., Yale
Jackson Toby, B.A., CUNY (Brooklyn College); M.A., Ph.D., Harvard
Chaim I. Waxman, B.A., M.H.L., Yeshiva; M.A., Ph.D., New School for Social Research
Helene Raskin White, Center for Alcohol Studies, B.A., Rutgers (Douglass); M.Phil., Ph.D., Rutgers
Benjamin Zablocki, A.B., Columbia; Ph.D., Johns Hopkins
Eviatar Zerubavel, B.A., Tel Aviv; M.A., Ph.D., Pennsylvania

Associate Professors:

Helmut K. Anheier, B.A., Trier (West Germany); M.A., M.Phil., Ph.D., Yale
József Böröcz, M.A., Ph.D., Johns Hopkins
Karen A. Cerulo, B.A., Rutgers; M.A., Ph.D., Princeton
Lee Clarke, B.S., Florida; M.A., Ph.D., SUNY (Stony Brook)
Jeanette Covington, B.A., M.A., Ph.D., Chicago
Judith Friedman, B.A., Antioch; M.A., Ph.D., Michigan
Judith Gerson, A.B., M.S., Syracuse; Ph.D., Cornell
Sherry Gorelick, B.A., CUNY (Queens College); M.A., Cornell; Ph.D., Columbia
Stephen Hansell, A.B., Brown; Ph.D., Chicago
John C. Leggett, B.A., M.A., Ph.D., Michigan
Martin Oppenheimer, B.A., Temple; M.A., Columbia; Ph.D., Pennsylvania
Ann P. Parelius, B.A., CUNY (Hunter College); A.M., Ph.D., Chicago
Robert J. Parelius, B.A., Oregon; M.A., Ph.D., Chicago
Sarah Rosenfield, B.A., Washington (St. Louis); M.A., Ph.D., Texas
D. Randall Smith, A.B., Dartmouth College; Ph.D., Johns Hopkins
Arlene J. Stein, B.A., Amherst College; Ph.D., California (Berkeley)
Richard Williams, B.A., Brandeis; Ph.D., SUNY (Binghamton)

Assistant Professors:

Vilna Bashi-Bobb, B.A., South Florida (Tampa); M.A., Columbia; M.S., Ph.D., Wisconsin (Madison)
Ethel C. Brooks, B.A., Williams College; Ph.D. New York
John L. Martin, A.B., Wesleyan; M.A., Ph.D., California (Berkeley)
Leslie McCall, A.B., Brown; M.S., Ph.D., Wisconsin (Madison)
Paul McClean, B.A., Toronto; M.A., Ph.D., Chicago
Ann Mische, B.A., Yale; M.A., Ph.D., New School for Social Research
Julie A. Phillips, B.A., M.A., Ph.D., Pennsylvania
Megan M. Sweeney, B.A., Carlton College; M.S., Ph.D., Wisconsin (Madison)

Major Requirements

The major in sociology consists of eleven courses totaling 36 credits. Grades of C or better are required in each of the courses. However, students planning a career in education must maintain a grade-point average of at least 3.0 in sociology courses to receive departmental certification for student teaching.

Prior to declaring the major in sociology, students must complete one of 01:920:311 or 312 or 313 or 314.

Core Courses

01:920:101 Introduction to Sociology (3)

and three of the following:

01:920:311 Introduction to Social Research (4)
01:920:312 Computer Analysis of Social Science Data (4)
01:920:313 Development of Sociological Theory (4)
01:920:314 Contemporary Sociological Theories (4)

Electives

Of the seven elective courses, at least four must be at the 300 level or higher, including at least one course numbered 400 or higher. No more than 6 credits of Independent Study (01:920:483,484, 493,494, 495,496) and no more than 3 credits of Field Study (01:920:385,386) or Citizenship and Service Education (01:920:399) may be applied toward the major.

Minor Requirements

The minor in sociology consists of at least six courses totaling 19 credits. Grades of C or better are required in each of the courses. Courses required for the minor are 01:920:101 Introduction to Sociology and any one of 01:920:311 Introduction to Social Research, 01:920:312 Computer Analysis of Social Science Data, 01:920:313 Development of Sociological Theory, and 01:920:314 Contemporary Sociological Theories. Of the four elective courses, at least two must be at the 300 to 400 level. No more than 6 credits at the 100 level and no more than 3 credits of Field Study (01:920:385,386) or Citizenship and Service Education (01:920:399) may be applied toward the minor.

Departmental Honors Program

Students who by the end of their junior year have earned 18 credits in sociology and have obtained a 3.6 grade-point average or better in these courses and a 3.0 cumulative grade-point average are eligible for the departmental honors program. Admission is competitive and by permission of the department. In their senior year, honors students take two terms of honors research, which include participation in an honors seminar and the completion of a major research project. An oral presentation on their research is made to the department in the spring.

Transfer Students

Students majoring in sociology must complete at least six courses (21 credits) at Rutgers–New Brunswick. Each of the three 300-level core courses as well as the required 400-level course must be completed in New Brunswick.

Sociology minors must complete at least three courses (10 credits) at Rutgers–New Brunswick.

Recommended Course Clusters

For the convenience of both majors and nonmajors, the department suggests the following groupings of 01:920 courses that may be relevant to different student interests and career plans:

Aging and gerontology: 303, 438
Business and industry: 315, 331, 363
Community and urban planning: 321, 326, 353, 428
Crime and deviance: 222, 304, 349, 361, 410, 413
Education: 218, 345, 441
Family: 216, 272, 324
Gender and sex: 216, 324, 354, 440, 470
Government and politics: 290, 349, 362, 375, 434
Health and illness: 210, 307, 361, 410
Inequality and class stratification: 111, 227, 306, 332, 489
Mass media and communication: 205, 442
Minorities: 108, 306
Socioeconomic development: 270, 331, 354, 375

Social movements and change: 280, 290, 362
Social psychology: 283, 319
Welfare: 103, 281, 332, 410

Independent Study

Students wishing to conduct an independent study in sociology must apply to the department in writing. Majors and minors must have a 3.0 grade-point average in sociology courses and have taken all prerequisites for 400-level courses. All other applications will be evaluated on a case by case basis.

Courses

Course Prerequisites

In the following course list, the Introductory Sociology prerequisite may be fulfilled with 01:920:101 or any other 920 course at the 100 or 200 level and permission of the instructor. The prerequisite for courses numbered between 315 and 399 is any one of 01:920:311, 312, 313, or 314. For courses numbered 400 or higher, the prerequisite is any two of 01:920:311, 312, 313, and 314.

01:920:101. Introduction to Sociology (3)
Not open to majors in their senior year.
Introduction to the systematic study of society and social behavior.

01:920:103. Sociological Analysis of Social Problems (3)
Not open to majors in their senior year.
Understanding the major social problems of our times through the application of sociological principles and methods.

01:920:108. Minority Groups in American Society (3)
Not open to majors in their senior year.
Historical experiences of racial and ethnic groups in American society. Contemporary movements of minorities for greater power in the society, including the young, women, and senior citizens.

01:920:111. Social Class (3)
Not open to majors in their senior year.
Development of classes in Western society. Relation of class to race and ethnicity. Relevance of class to understanding modern society.

01:920:205. Mass Communication in Modern Society (3)
Who says what, to whom, with what kinds of interests, within which media, and with what kinds of outcomes. The historical forerunners, development, ownership, and interests of the mass media.

01:920:210. Sociology of Medicine and Health Care (3)
Dynamics of health behavior. Social organization and development of health-care institutions and professions. Issues of cost and quality of health care.

01:920:216. Sociology of Women (3)
Credit not given for both this course and 01:988:216.
Overview of contemporary issues affecting women's lives: family, health, employment, discrimination, poverty. The women's movement and the antimovement backlash.

01:920:218. Sociology of Education (3)
Credit not given for both 01:920:218 and 345.
Focus on elementary and secondary education. Education and class systems; education and social change; alternative schools.

01:920:222. Criminology (3)
Crime and the criminal in modern society. Theories regarding causes of crime, methods of treatment, and preventive programs.

01:920:227. Population and Society (3)
Study of population dynamics: causes and consequences of population explosions; societal factors such as baby bust, aging, migration, family (abortion, teenage pregnancy), residential segregation, income distribution.

01:920:248. Sociology of Sports (3)
Sociological perspective on sports. Topics include mobility through sports, stratification in sports, deviance and violence within sports, and racial and gender inequalities in sports. Examples illustrate common sociological concepts.

01:920:270. Sociology of the Third World (3)
Development, underdevelopment, imperialism, and mutual effects of these processes between third-world areas and dominant industrial nations. Case materials drawn from Latin America, Asia, and Africa.

01:920:272. Sociology of the Family (3)
Credit not given for both this course and 01:988:272.
Family as a social institution: family formation and dissolution, life in families, varieties of family experiences, the future of the family.

01:920:280. Collective Behavior and Social Movements (3)
Analysis of spontaneous and organized efforts to promote or resist social change. Cases from movements such as temperance, civil rights, religious cults, youth, and women's movements.

01:920:281. Sociology of Social Welfare (3)
Development and current organization and operation of social welfare systems.

01:920:283. Individual and Society (3)
Relations between social structure and psychological structure; processes of socialization; interaction of biological, situational, and social factors on personality and behavior.

01:920:290. Political Sociology (3)
Bases and structure of power in modern societies: political socialization, ideology, political parties, movement organizations. Forms of participation linked to social change.

01:920:291,292. Topics in Sociology (3,3)
Special topics in sociology, to be determined each time the courses are offered.

01:920:298. Sociology Honors Seminar (3)
Enrollment by invitation of the department only.
Selected topics in sociology. Content varies from term to term.

01:920:303. Social Gerontology (3)
Prerequisite: Introductory Sociology.
Social aspects of aging and old age. Analysis of public policy, social roles, and population characteristics of the elderly, including variations by sex, class, and race.

01:920:304. Sociology of Deviant Behavior (3)
Prerequisite: Introductory Sociology.
Major forms of social deviance, theories accounting for them, and societal responses to them.

01:920:306. Race Relations (3)
Prerequisite: Introductory Sociology.
Dynamics of U.S. race relations seen in theoretical and historical perspective; significance of racial domination-subordination in world context; current issues.

01:920:307. Sociology of Mental Illness (3)
Prerequisite: Introductory Sociology.
Social and cultural variations in the definitions, causes, and treatment of mental illness. Analysis of institutions and professions dealing with mental illness.

01:920:311. INTRODUCTION TO SOCIAL RESEARCH (4)
Prerequisite: 01:920:101 or permission of instructor.
Major methods and techniques of social research: various types of research design, sampling, methods of data gathering, analysis and interpretation of research findings.

01:920:312. COMPUTER ANALYSIS OF SOCIAL SCIENCE DATA (4)
Prerequisite: 01:920:101 or permission of instructor.
Introduction for social science majors to computer data processing and analysis. Individually designed projects. Emphasis on logical, nonmathematical explanations of techniques and procedures.

01:920:313. DEVELOPMENT OF SOCIOLOGICAL THEORY (4)
Prerequisite: 01:920:101 or permission of instructor.
Intensive study of sociological classics by such nineteenth- and early twentieth-century theorists as Marx, Durkheim, Weber, Simmel, and Veblen, who have influenced subsequent work in sociology.

01:920:314. CONTEMPORARY SOCIOLOGICAL THEORIES (4)
Prerequisite: 01:920:101 or permission of instructor.
Survey of major systems of sociological thought of the last fifty years. Application to contemporary social issues.

01:920:315. ORGANIZATIONS AND BUREAUCRACIES (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Sociological analysis of public and private organizations and bureaucracies in the modern world, with attention to formal and informal structures, power, careers, status systems, and organizational change. Case materials from government, universities, business.

01:920:319. SOCIOLOGICAL APPROACHES TO SOCIAL PSYCHOLOGY (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Topics include interpersonal exchange, cognitive consistency, conceptions of justice, small groups, friendship networks, social support networks, and techniques for analyzing networks. Topics vary each term; consult department.

01:920:321. URBAN DEVELOPMENT AND COMMUNITY CHANGE (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Historical development of the contemporary community form. Emergence of modern patterns of urban life.

01:920:323. SOCIOLOGY OF CHILDHOOD AND ADOLESCENCE (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Study of social interaction during childhood and adolescence; emphasis on social interaction in various types of families and peer groups.

01:920:324. SOCIOLOGY OF GENDER (3)
Prerequisite: One of 01:920:311, 312, 313, 314. Credit not given for both this course and 01:988:324.
Study of sources, maintenance, consequences, and change of men's and women's roles in society. Cultural, social, political, economic, and psychological perspectives.

01:920:326. SOCIOLOGY OF COMMUNITIES (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Study of villages, towns, cities, suburbs, and metropolitan areas. Their social problems, organization, and change.

01:920:331. SOCIOLOGY OF INDUSTRY (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Industrialism and industrialization; development of work, the labor force, and careers. Unions, management, and industrial relations. Worker participation in management and other alternative work arrangements.

01:920:332. SOCIAL INEQUALITIES (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Facts and theories of unequal distribution of income, honor, prestige, life chances, opportunities, social mobility, status attainment. Implications for social integration and conflict.

01:920:345. EDUCATION AND SOCIETY (3)
Prerequisite: One of 01:920:311, 312, 313, 314. Credit not given for both 01:920:218 and 345.
Organization and functions of school systems; differential opportunities and stratification; educational developments as effects and causes of social change; community conflict; internal organization of schools.

01:920:349. LAW AND SOCIETY (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
How social forces affect law and how law affects society. The relationships among legal and other institutions in society. The roles of lawyers, judges, and juries.

01:920:353. SOCIOLOGY OF HOUSING AND THE BUILT ENVIRONMENT (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Social and cultural influence on housing and urban design and the reciprocal impact of the built environment on social organization, interaction, and personality.

01:920:354. THIRD-WORLD WOMEN (3)
Prerequisite: One of 01:920:311, 312, 313, 314. Credit not given for both this course and 01:988:354.
Comparative analysis of objective conditions and subjective experiences of women in Africa, Asia, Latin America, and of third-world women in the U.S. and other industrialized nations.

01:920:359. ENVIRONMENTAL SOCIOLOGY (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Interaction between people and the environment, with emphasis on such problems as air and water quality, energy, and land use.

01:920:361. SOCIOLOGY OF DRUG USE (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Causes and extent of illegal drug use, nature and effectiveness of law enforcement, treatment-oriented efforts to control drugs, and the criminalization and decriminalization of drugs.

01:920:362. OPPRESSION AND POLITICAL PROTEST (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Origins, dynamics, and control of protest. Liberation, revolutionary, and reform movements by racial and ethnic minorities, the poor, and women.

01:920:363. SOCIOLOGY OF WORK AND OCCUPATIONS (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Meaning of work; occupational development and socialization; occupations and careers; social control of work; occupational cultures and lifestyles; relations between occupations.

01:920:375. ECONOMIC SOCIOLOGY (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Analysis of economic institutions from a sociological perspective. Historical and contemporary viewpoints drawing on material from developed and underdeveloped, capitalist, and state socialist societies.

01:920:393. TOPICS FOR SOCIOLOGICAL ANALYSIS (3)
Prerequisite: One of 01:920:311, 312, 313, 314.
Topics vary each term. Consult department.

01:920:398. SOCIOLOGY HONORS SEMINAR (3)
Prerequisite: One of 01:920:311, 312, 313, 314. Enrollment by invitation of the department only.
Selected topics in sociology. Content varies from term to term.

01:920:399. SERVICE LEARNING INTERNSHIP (1)
Prerequisite: One of 01:920:311, 312, 313, 314. Corequisite: Must be taken in conjunction with a designated CASE (Citizenship and Service Education) course offered in the sociology department.
One-credit community service placement in sociology.

01:920:406. SOCIOLOGY OF RELIGION (3)
Prerequisites: Two of 01:920:311, 312, 313, 314.
Orientations to the superempirical; the interaction of religious beliefs and institutions with secular society. Classical and contemporary theories and data.

01:920:408. SOCIOLOGY OF AMERICAN JEWISH RELIGIOUS MOVEMENTS (3)
Prerequisites: Two of 01:920:311, 312, 313, 314. Credit not given for both this course and 01:563:408.
Denominational patterns of America's Jews; religious patterns including Hasidism, fundamentalism-secularization, women's roles, intermarriage, and intra- and interreligious patterns.

01:920:410. SOCIOLOGY OF ALCOHOL PROBLEMS (3)
Prerequisites: Two of 01:920:311, 312, 313, 314.
Social, social-psychological, and physiological functions of alcohol; relations to institutional values; efforts at social control.

01:920:428. SOCIOLOGY OF CITIES AND SUBURBS (3)
Prerequisites: Two of 01:920:311, 312, 313, 314.
Suburban growth; implications for cities. Job location, housing, nature of public spaces, neighborhoods, environment, growth itself. Responses by city and suburban residents.

01:920:434. SOCIAL SCIENCE AND PUBLIC POLICY (3)
Prerequisites: Two of 01:920:311, 312, 313, 314.
Federal government and policy making; roles of foundations, private agencies, and policy sciences. Data bank and social indicators in the study of policy. Game theory and policy making.

01:920:435. IMMIGRANT MINORITIES IN THE UNITED STATES (3)
Prerequisites: Two of 01:920:311, 312, 313, 314.
Study of migrations to the U.S. and their impact; detailed consideration of pluralist versus assimilationist hypotheses about the effects of immigration; effects of ethnicity on U.S. culture. Case study materials on various ethnic Americans.

01:920:438. SOCIOLOGY OF AGE (3)
Prerequisites: Two of 01:920:311, 312, 313, 314.
Age stratification and society; conflict and cooperation among young, middle-aged, and old; aging, succession of generations, and social change. Implications for public policy and professional practice.

01:920:440. SEXUALITY AND SOCIETY (3)
Prerequisites: Two of 01:920:311, 312, 313, 314. Credit not given for both this course and 01:988:440.
Description of sexual conduct and variation; patterns of sexual behavior and attitudes analyzed in terms of social, historical, and cross-cultural antecedents and consequences.

01:920:442. MASS MEDIA AND POPULAR CULTURE (3)
Prerequisites: Two of 01:920:311, 312, 313, 314.
Analysis of popular culture, with stress on propaganda techniques and myth disseminations. Touches on such topics as romantic love, pop music, and sports.

01:920:461,462. SOCIOLOGY OF SELECTED INSTITUTIONS (3,3)
Prerequisites: Two of 01:920:311, 312, 313, 314.
Intensive analysis of such institutions as prisons, hospitals, mental hospitals, schools. Different institutions considered in different terms.

01:920:464. ART AND SOCIETY (3)
Prerequisites: Two of 01:920:311, 312, 313, 314.
Analysis of uses of art in modern society. Organization of artists, producers, critics, and audiences in the different art worlds. "High" art and "popular" art.

01:920:470. SEMINAR IN THE SOCIOLOGY OF GENDER (3)
Prerequisites: Two of 01:920:311, 312, 313, 314. Credit not given for both this course and 01:988:470.
Social relations and structures, ideas and practices that define women and men. Emphasis on contemporary theories and research findings.

01:920:489. THE AMERICAN WORKING CLASS (3)
Prerequisites: Two of 01:920:311, 312, 313, 314.
Developments among blue- and white-collar workers and working-class movements. Emphasis on implications for the American political system.

01:920:491,492. ADVANCED SEMINAR IN SOCIOLOGY (3,3)
Prerequisites: Two of 01:920:311, 312, 313, 314. Open only to advanced undergraduates by permission of instructor.
Topics vary by section.

01:920:493,494. INDEPENDENT STUDY IN SOCIOLOGY (3,3)
Prerequisites: Two of 01:920:311, 312, 313, 314; permission of department.

01:920:495. RESEARCH IN SOCIOLOGY (3)
Prerequisites: Two of 01:920:311, 312, 313, 314; permission of department.

01:920:497,498. HONORS IN SOCIOLOGY (3,3)
Prerequisites: Two of 01:920:311, 312, 313, 314; permission of department.

SPANISH 940

Department of Spanish and Portuguese, Faculty of Arts and Sciences

Web Site: http://span-port.rutgers.edu

Chairperson: Mary Lee Bretz

Professors:

Mary Lee Bretz, B.A., Trinity College; M.A., Stanford; Ph.D., Maryland
Conrado Guardiola, Doctor en Filosofia y Letras, Zaragoza (Spain)
Carl Kirschner, B.A., SUNY (Buffalo); M.A., Rhode Island; Ph.D., Massachusetts
Tomás Eloy Martínez, B.A., Universidad Nacional de Tucumán (Argentina); M.A., Université de Paris VII
Gabriela Mora, Profesora de Estado, Chile; Ph.D., Smith College
Margaret H. Persin, B.A., Cleveland State; M.A., Ph.D., Indiana
Susana Rotker, B.A., Universidad Católica Andrés Bello (Venezuela); M.A., Ph.D., Maryland
Phyllis Zatlin, B.A., Rollins College; M.A., Ph.D., Florida

Associate Professors:

Mary Gossy, B.A., Bryn Mawr College; M.A., Ph.D., Harvard
Jorge Marcone, B.A., Pontificia Universidad Católica del Perú; M.A., Ph.D., Texas
Carlos Raúl Narváez, B.A., CUNY (Hunter College); M.A., New York University in Madrid; Ph.D., Columbia
Marcy Schwartz, B.A., Syracuse; M.A., Ph.D., Johns Hopkins
Adolfo Snaidas, B.A., CUNY (Brooklyn College); M.A., Kansas; Ph.D., Rutgers
Thomas M. Stephens, B.A., M.A., South Carolina; Ph.D., Michigan

Assistant Professors:

José Camacho, Licenciatura, Complutense de Madrid (Spain); M.A., Ph.D., Southern California
Yeon-Soo Kim, B.A., M.A., SUNY (Binghamton); M.A., M.Phil., Ph.D., Yale
Lawrence La Fountain-Stokes, B.A., Harvard; M.A., Ph.D., Columbia
Susan Martin-Márquez, B.A., M.A., Chicago; Ph.D., Pennsylvania
Yolanda Martínez-San Miguel, B.A., Puerto Rico; Ph.D., California (Berkeley)
Liliana Sánchez, B.A., Pontificia Universidad Católica del Perú; M.A., Ph.D., Southern California
Ben Sifuentes-Jáuregui, B.A., M.A., M.Phil., Ph.D., Yale
Camilla Stevens, B.A., Tulane; M.A., New Mexico; Ph.D., Kansas

Lecturer:

Dámaris Otero-Torres, B.A., M.A., Syracuse; Ph.D., California (San Diego)

Introductory Courses and Placement

Students who have already studied Spanish or who speak Spanish in the home and wish to continue the language are assigned to courses according to their achievement on a placement test. Native speakers of Spanish may not take elementary, intermediate, or conversation courses. Unless given departmental permission to begin course work at 01:940:215 or above, they should take the sequence of courses designated for native speakers. Laboratory programs are an integral part of most language courses. Language laboratories are located on the College Avenue, Douglass, and Livingston campuses.

Major Requirements

A major in Spanish consists of 36 credits given in the Spanish language at the 200-400 level completed with a grade of C or better in each course. The following credits are required unless a student successfully completes an advanced placement test or receives special permission from the department:

9 credits at the 200 level: from 01:940:201 or 203; 215; 216.
15 credits at the 300 level: 3 credits from 01:940:325, 326; 3 credits from 01:940:331, 332; 3 credits from 01:940:333, 334; 3 credits from 01:940:335, 336; and 3 credits from 01:940:361, 362, 363, 364.
6 credits at the 400 level, of which at least 3 credits must be in literature.

In order to complete the remaining credits toward the total, the student must choose electives at the 300 or 400 level. Students are responsible for consulting the catalog course listing for prerequisites and special conditions prior to registration. All major programs must be reviewed and approved by a departmental adviser.

Minor Requirements

A minor in Spanish consists of 18 credits of courses given in the Spanish language completed with a grade of C or better in each course. Nine credits must be in literature. Nine credits must be at the 300 level or above. All minor programs must be approved by a departmental adviser.

Departmental Honors Program

To be eligible for graduation with honors, departmental majors must maintain a cumulative grade-point average of 3.5 or better in their major courses, and 3.25 overall. Students are admitted to the departmental honors program by selection of the honors committee. The honors project is two terms in duration (3 credits in each term), and may focus on either the language / linguistics or the literature / civilization of the Spanish / Portuguese / Catalan-speaking world. Prior to beginning an honors project in the language / linguistics option, the student must take 01:940:325 and three terms of Spanish linguistics courses. One additional language / linguistics course and one additional 400-level course are required prior to graduation. Prior to beginning an honors project in the literature / civilization option, the student must take two courses numbered 01:940:331 through 336 and one 400-level literature course in Spanish other than independent study. Two additional 400-level literature / civilization courses are required prior to graduation. Spanish 01:940:394 is required of all honors candidates and should normally be taken in the junior year. The student must present the honors project for an oral defense before a committee that is assembled by the project director in consultation with the candidate. Departmental honors are awarded to those students maintaining a grade-point average of 3.5 in the major and completing the requirements for the Henry Rutgers Honors Thesis, the Mabel Smith Douglass Honors Project, the Paul Robeson Project, or the University College Honors Program. Interested students are encouraged to apply at the department toward the end of their junior year. More detailed information is available in the departmental office.

Study Abroad

Rutgers University sponsors a Junior Year in Mexico, a Junior Year in Spain, and a Summer Study in Spain, Portugal, or Brazil. Information on these and other study-abroad opportunities is available in the department office.

Certificate of Proficiency in Spanish-English and English-Spanish Translation

This certificate is offered to students who complete 19–21 credits in the following courses: 01:940:363 (or 419), 364, 401, 402, 471*, 475, 476†, 477†, 478 (or 479), 486†, and 487†. A 3.5 or better cumulative grade-point average for the entire 19–21 credit sequence is required, with a minimum of B in all courses (except 01:940:401 and 402, which require B+ or better). For further information contact the department.

Spanish Major/Global Studies Certificate

Requirements

1. 36 credits toward the Spanish major.
2. Eight courses, with a grade of C or above in each course, to be chosen from among options A, B, C, or D listed below. No more than two courses may be used to fulfill both the Spanish major and the global studies certificate. The student's entire program must be approved by a departmental adviser.
   A. The Hispanic World. Students must choose a balance of courses between Spanish America and Spain within each of the following groups:

      Group 1 (Economics, History, Political Science):
      Four courses to be drawn from Africana studies, economics, history, Latin American studies, political science, Puerto Rican and Hispanic Caribbean studies, sociology, or other related departments or programs (including courses taken abroad).

      Group 2 (Studies on Culture):
      Four courses to be drawn from Africana studies, anthropology, archaeology, art history, Latin American studies, Puerto Rican and Hispanic Caribbean studies, Spanish and Portuguese, or other related departments or programs (including courses taken abroad).

   B. The Luso-Brazilian World. Students must choose a balance of courses between Brazil and Portugal within each of the groups mentioned in Option A above.

* Flexible assignment based on individual student background. Course may be waived for practicing translators or interpreters.
† Courses offered in Summer Session. With prior approval, may be counted in lieu of core course.

C. Latin America. Students must choose a balance of courses between Spanish American countries and non-Spanish-speaking countries within each of the groups mentioned in Option A above.
D. Iberian Peninsula. Students must choose a balance of courses between Spain and Portugal within each of the groups mentioned in Option A above.

3. In addition to the eight courses required above, an exit seminar involving a research project (fifteen to twenty pages) on a topic of international or global scope. The seminar also requires participation in extracurricular global programs events. The seminar must be taken during the senior year or year of graduation.
4. An international experience of one year during the junior year in an appropriate country or countries approved by a departmental adviser. A one-term option or summer option will be considered under extraordinary circumstances.

Teacher Certification

Teacher certification is available to students accepted into the education program who complete a Spanish major. For additional requirements and further information, contact the Graduate School of Education.

Spanish Language Houses

The Casa Hispánica on the Douglass campus and the Spanish Interest Section of the dormitories on the College Avenue campus are open to qualified students.

For additional information, visit the program's web site.

Courses in English

01:940:241,242. Masterpieces of Hispanic Literature in Translation (3,3)
Reading and interpretation of outstanding Hispanic writers.

01:940:347. Latin American Cinema—English (3)
Prerequisite: One course in literature at the 200 level or above. Not for major credit. Credit not given for both this course and 01:940:348.
Film as a major expression of the culture of Latin America, including Brazil. Viewing and analysis of films by directors such as dos Santos, Rocha, Gutierrez Alea, and Littin. Both fiction films and documentaries.

01:940:445. Cervantes in Translation (3)
Critical study of Cervantes. Don Quixote, selected Exemplary Novels, and the Interludes.

01:940:446. Contemporary Latin American Literature in Translation (3)
Selected major authors of present-day Spanish America including Borges, Carpentier, Fuentes, Paz, García Márquez.

Courses in Spanish

01:940:100. Intensive Elementary Spanish (7)
Prerequisite: Permission of department. Credit not given for both this course and 01:940:101-102.
For students with little or no previous study of Spanish. Intensive practice of basic skills in speaking, understanding, reading, and writing. Integrated laboratory session.

01:940:101-102. Elementary Spanish (4,4)
Credit not given for both these courses and 01:940:100. Not open to students who have had two or more years of secondary school Spanish.
For students with little or no previous study of Spanish. Designed to develop basic skills in speaking, understanding, reading, and writing. Integrated laboratory sessions.

01:940:103,104. Elementary Spanish Laboratory (1,1)
Corequisites: 01:940:101 (for 103); 102 (for 104).
Instructor-guided laboratory practicum based on intensive use of media and designed for the improvement of aural / oral skills.

01:940:105. Spanish for Reading Knowledge (3)
Does not satisfy prerequisite for 01:940:131-132, or 139.
Development of reading skills for advanced undergraduate and graduate students who wish to acquire a basic competence in the language for research purposes. Texts chosen from humanities, social sciences, and natural sciences.

01:940:121. Spanish Review and Continuation (4)
Not open to students who have taken 01:940:100 or 101-102.
Review of basic structures and further development of Spanish language skills.

01:940:130. Intensive Intermediate Spanish (7)
Prerequisite: Permission of department. Credit not given for both this course and 01:940:131-132.
Intensive study and practice of specific areas of grammar, linguistic structure, and style. Selected readings of modern authors with composition and class discussion.

01:940:131-132. Intermediate Spanish (4,4)
Prerequisite: 01:940:100 or 101-102 or 121, or permission of department. Credit not given for both these courses and 01:940:130.
Study and practice of specific areas of grammar, linguistic structure, and style. Selected reading of modern authors, with composition and class discussion.

01:940:139. Spanish for Native Speakers I (3)
Prerequisite: Permission of department. Credit not given for both this course and 01:940:130 or 131-132.
Study of specific areas of grammar and orthography. Practice in oral communication and grammar application.

01:940:150. Spanish for the Service Professions (3)
Prerequisite: 01:940:131 or equivalent. Does not count toward the Spanish major. Not open to native speakers.
Oral practice to increase fluency and accuracy in conversation; emphasis on interviewing techniques and the vocabulary relevant to the service professions.

01:940:201. Spanish for Native Speakers II (3)
Prerequisite: 01:940:139 or equivalent. Credit not given for both this course and 01:940:203.
Continued study of specific areas of Spanish grammar through translation and compositions. Development of reading skills and vocabulary building through newspapers and magazines.

01:940:203. Spanish Conversation and Composition (4)
Prerequisites: 01:940:130 or 131-132 or equivalent. Not open to native speakers or other students already conversant in the language.
Designed to develop oral fluency and writing skills in a variety of contexts. Conversation, vocabulary building, oral reports, fundamentals of expository writing.

01:940:215. Main Currents in Hispanic Literature (3)
Prerequisite: 01:940:201 or 203. Credit not given for both this course and 01:940:217.
Introduction to major literary periods of the Hispanic world. Study of representative authors and texts.

01:940:216. HISPANIC LITERATURE: INTRODUCTION TO LITERARY CONCEPTS (3)
Prerequisite: 01:940:215 or equivalent. Credit not given for both this course and 01:940:217.
Introduction to the fundamental concepts of the study of literature; development of a critical approach to Hispanic literature through intensive study of selected modern works from Spain and Spanish America.

01:940:217. INTRODUCTION TO HISPANIC LITERATURE: HONORS (3)
Prerequisite: 01:940:201 or 203 or permission of department. For college honors students and students invited by the department. Credit not given for both this course and 01:940:215 or 216.
Introduction to fundamental concepts of the study of literature and to the major literary periods of the Hispanic world. Study of representative authors and texts.

06:090:287,288. THE SPANISH LANGUAGE EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass House. May not be used in satisfaction of major requirements. Course may be repeated.
Development of active language skills through formal instruction and the daily experience of foreign language immersion in the varied activities of the house.

01:940:299. LANGUAGE HOUSE RESIDENCE (E3)
Prerequisite: Permission of department. Graded satisfactory or unsatisfactory.
Residence in a Spanish Interest Section of the dormitories on the College Avenue campus, during which students, under the guidance of a resident counselor, speak only Spanish. Group activities.

01:940:313. ADVANCED SPANISH CONVERSATION AND CONTEMPORARY ISSUES (3)
Prerequisite: 01:940:203 or equivalent. Not open to native speakers or students returning from a junior year in Mexico or other Spanish-speaking country. Not for major credit.
Intensive class discussions, oral reports, and debates based on cultural materials taken from newspapers, journals, radio, television, and films.

01:940:317,318. HISPANIC CULTURE TODAY (1.5,1.5)
Prerequisite: 01:940:215 or equivalent.
Contemporary cultural, social, and political life in Spanish-speaking countries with emphasis on the daily experience. Field trips.

01:940:325. ADVANCED GRAMMAR AND COMPOSITION (3)
Prerequisite: 01:940:201 or 203 or equivalent.
Intensive grammatical study of selected Spanish forms and structures; vocabulary building and composition.

01:940:326. ADVANCED LANGUAGE WORKSHOP (3)
Prerequisite: 01:940:325 or equivalent or permission of department.
Refine reading and writing skills and oral fluency. Detailed rhetorical analysis and discussion of writing techniques using texts taken from all media.

01:940:331,332. LITERATURE AND CULTURE OF THE HISPANIC CARIBBEAN (3,3)
Prerequisite: 01:940:216 or 217 or permission of department. Credit not given for these courses and 01:836:266.
Reading and discussion of representative works from the Hispanic Caribbean with emphasis on their cultural content and elements reflecting literary periodization.

01:940:333,334. LITERATURE AND CULTURE OF SPANISH AMERICA (3,3)
Prerequisite: 01:940:216 or 217 or permission of department.
Reading and discussion of representative works from Spanish America with emphasis on their cultural content and elements reflecting literary periodization.

01:940:335,336. LITERATURE AND CULTURE OF SPAIN (3,3)
Prerequisite: 01:940:216 or 217 or permission of department.
Reading and discussion of representative works from Spain with emphasis on their cultural content and elements reflecting literary periodization.

01:940:348. LATIN AMERICAN CINEMA (3)
Prerequisite: 01:940:215 or permission of department. Credit not given for both this course and 01:940:347.
Film as a major expression of the culture of Latin America, including Brazil. Viewing and analysis of films by directors such as dos Santos, Rocha, Gutierrez Alea, and Littin. Both fiction films and documentaries.

01:940:360. SPANISH FOR COMMERCE (3)
Prerequisites: 01:940:325, 326, or equivalent.
Fundamental principles governing commercial organization in Spanish-speaking countries. Practical business correspondence. Students taking this course have the option to take a special exam for the Diploma in Spanish Commerce given by the Chamber of Commerce of Madrid.

01:940:361. INTRODUCTION TO THE STUDY OF LANGUAGE (3)
Prerequisites: 01:940:325, 326, or equivalent, or permission of department. Credit not given for both this course and 01:615:101.
Review of the different aspects of language from the point of view of its internal organization, relationship with cognitive sciences, and relationship to the world.

01:940:362. SPANISH PHONETICS AND PHONOLOGY (3)
Prerequisites: 01:940:325, 326, or equivalent.
Study of Spanish phonetics in theory and practice. Exercises in transcription. Contrastive analysis of the English and Spanish sound systems.

01:940:363. HISPANIC BILINGUALISM (3)
Prerequisites: 01:940:325, 326, or equivalent.
History and theory of Spanish-English bilingualism in the U.S. and its application in the field. Bilingualism in Spanish America and Spain. Social issues raised by theories of bilingualism.

01:940:364. STRUCTURE OF MODERN SPANISH (3)
Prerequisites: 01:940:325, 326, or equivalent.
Application of current syntactic and semantic theories of language analysis to Spanish, including structuralism, transformational grammar, case grammar, and generative semantics. Spanish-English contrastive analysis.

01:959:379-380. JUNIOR YEAR IN SPAIN (BA,BA)

01:959:387,388. JUNIOR YEAR IN MEXICO (BA,BA)

01:940:394. RESEARCH METHODS (1.5)
Prerequisite: Two terms of Spanish or Portuguese literature or linguistics at the 300 level or permission of department.
Research methods in Hispanic literatures or linguistics. Basic approaches to literary study and criticism or linguistic analysis. Practice in preparation of bibliographies, essays, and research papers. Assignments individualized to meet needs and interests of students.

01:940:399. SERVICE LEARNING INTERNSHIP (1)
Corequisite: Must be taken in conjunction with a designated CASE (Citizenship and Service Education) course offered in the Department of Spanish. No more than 3 credits of 01:940:399 may be counted toward the major; none may be counted toward the minor.
Community-service placement in Spanish-related field setting.

01:940:401. ADVANCED TRANSLATION: I (3)
Prerequisites: With grades of B+ or better, 01:940:325,326, and 01:355:101 or equivalent. Students with a minimum of B in each of these three courses must submit a writing sample according to departmental guidelines in order to be considered for admission into the class. Not open to first-year students and sophomores.
Introduction to the theory of translation and guidance in the use of materials essential to the translation process. Intensive practice in the translation of short texts in various fields from Spanish into English and English into Spanish.

01:940:402. ADVANCED TRANSLATION: II (3)
Prerequisite: 01:940:401 or equivalent.
Intensive practice in the translation of short texts in various fields from Spanish into English and English into Spanish.

01:940:403,404. CIVILIZATION OF SPANISH AMERICA (3,3)
Prerequisite: One term of 300-level Spanish or permission of department. Credit not given for both these courses and 01:590:401,402.
Main traits of the civilization of Spanish America. Evolution of its social institutions and customs. Representative literary, philosophical, and artistic works.

01:940:405,406. CIVILIZATION OF SPAIN (3,3)
Prerequisite: One term of 300-level Spanish or permission of department.
Main traits of the civilization of Spain. Evolution of its social institutions and customs. Representative literary, philosophical, and artistic works.

01:940:411. CREATIVE WRITING (3)
Prerequisites: 01:940:325,326, and permission of department. A sample of the student's writing normally required.
General practice in the writing of essay, verse, and narrative in the Spanish language.

01:940:415. MEDIEVAL SPANISH LITERATURE (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Study of selected works from the medieval period including the various types of poetry and the development of prose, with emphasis on El Cid, El Libro de Buen Amor, and La Celestina.

01:940:417. HISTORY OF THE SPANISH LANGUAGE (3)
Prerequisite: 01:615:201 or 01:940:362 or permission of department.
Development of Spanish from its origins to the present. Settlement history and non-Roman influences in Spain. Evolution of sounds, forms, sentence structures, and words.

01:940:419. HISPANIC DIALECTOLOGY (3)
Prerequisite: 01:615:201 or 01:940:362 or permission of department.
Study of major dialects in the Spanish-speaking world. Theories of dialectology, geolinguistics, and social dialects as applied to Spanish. Survey of defining phonological, morphological, syntactic, and lexical features of modern dialects in Spain, Spanish America, and the U.S.

01:940:423. POETRY OF THE GOLDEN AGE (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Spanish poetry of the Renaissance and baroque periods. Garcilaso and the Italianate School; San Juan de la Cruz and the mystics; conceptismo and culteranismo.

01:940:424. DRAMA OF THE GOLDEN AGE (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Spanish drama from its early manifestations through the baroque period. Reading and discussion of dramatists such as Lope de Vega, Tirso de Molina, Ruiz de Alarcón, and Calderón de la Barca.

01:940:425. PROSE OF THE GOLDEN AGE (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Study of representative works with emphasis on the picaresque novel and Cervantes' novelas ejemplares.

01:940:426. DON QUIXOTE (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Critical study of Cervantes' masterpiece within its Golden Age context.

01:940:434,435. NINETEENTH-CENTURY SPANISH LITERATURE (3,3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Reading and discussion of representative works from the neo-classic, romantic, realistic, and naturalistic periods.

01:940:437,438. TWENTIETH-CENTURY SPANISH LITERATURE (3,3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Representative works by authors from the Generation of 98, the Generation of 27, and the post-civil war period.

01:940:440. COLONIAL SPANISH-AMERICAN LITERATURE (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Study of colonial Spanish-American literature. Reading and analysis of representative works.

01:940:441. NINETEENTH-CENTURY SPANISH-AMERICAN LITERATURE (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Reading and discussion of representative works from the main literary movements since the wars of independence through the early 1900s (romanticism, regionalism, naturalism, and modernism).

01:940:443. SPANISH-AMERICAN SHORT STORY (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Study of Spanish-American short story since modernism. Reading and analysis of representative works.

01:940:444. SPANISH-AMERICAN POETRY (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Study of Spanish-American poetry since modernism. Reading and analysis of representative works.

01:940:447. SPANISH-AMERICAN NOVEL I (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Study of the Spanish-American novel from modernism through the boom. Reading and analysis of representative works.

01:940:448. SPANISH-AMERICAN NOVEL II (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Study of the Spanish-American novel; covers post-boom literature. Reading and analysis of representative works.

01:940:449. SPANISH-AMERICAN ESSAY (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Study of the Spanish-American essay since modernism. Reading and analysis of representative works.

01:940:450. SPANISH-AMERICAN THEATER (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Development of the theater in Spanish America from the colonial period to the present day. Reading and analysis of representative works.

01:940:451. LITERATURE OF LATIN AMERICAN EXILE AND DISPLACEMENT (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Study of works concerning geographical displacement; focus on political exile from Cuba, the Southern Cone, and other displaced Hispanic communities in the United States.

01:940:452. READINGS IN U.S. LATINO/A LITERATURE AND CULTURE (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department. When taught in English, course will count for the Spanish major or minor if all written work is done in Spanish.
Study of recent texts produced by and about Latino / as in the U.S. Examination of issues of exile, integration and assimilation, political presence, and nationalism.

01:940:460. RACE, CLASS, AND ETHNICITY IN LATIN AMERICA (3)
Prerequisite: One term of 300-level literature in Spanish or permission of department. Credit not given for both this course and 01:590:460.
Investigation of racioethnic conflicts and racial formation and renegotiation in Latin America through literary and nonliterary sources. Consideration of class, racism, miscegenation, marginalization, and ethnonymy.

01:940:470. INTERNSHIP IN SPANISH FOR COMMERCE (3)
Rec. 1 hr., fieldwork 6 hrs., plus one week of fieldwork during January break. Prerequisites: 01:940:360 with a grade of B or better; 01:940:401 and 402 taken at Rutgers–New Brunswick with a grade of B or better. Open only to seniors.
Supervised training in an appropriate business firm; weekly seminar and discussion of situations and practices arising from internship experiences. Final paper written in Spanish.

01:940:471. INTERNSHIP IN TRANSLATION/INTERPRETATION (1-3)
Rec. 1 hr., fieldwork 2 hrs. per credit. Maximum of 3 credits. Prerequisite: 01:940:401 with a grade of B+ or better. Pre- or corequisite: 01:940:402 or 475 or permission of department.
Supervised training in a business firm, social service agency, or government office. Weekly discussions of specific texts and problems arising from the fieldwork experience. Supplementary written and laboratory assignments.

01:940:475. INTERPRETATION (3)
Prerequisite: 01:940:401 or 402.
Introduction to theory and practice of liaison, consecutive, and simultaneous interpretation. Spanish-English and English-Spanish. Intensive classroom and language laboratory exercises.

01:940:476. LEGAL TRANSLATION (1.5)
Pre- or corequisites: 01:940:401, 475.
Practice in sight and written translation of legal documents, court records, and language of courtroom procedures. Spanish-English and English-Spanish.

01:940:477. COURT INTERPRETATION (1.5)
Pre- or corequisites: 01:940:401, 475.
Intensive practice in interpretation of courtroom and other legal procedures. Development of bilingual legal glossary. Review of New Jersey and federal standards for interpreters.

01:940:478. THEORY AND PRACTICE IN TRANSLATION (3)
Prerequisites: 01:940:401,402 with a grade of B+ or better; or permission of department.
Introduction to translation studies. Application of linguistic theory and computer technology to translation. Intensive practice in nonliterary and literary translation, including narrative and theater.

01:940:479. TRANSLATION WORKSHOP (3)
Prerequisites: 01:940:401, 402 with grades of B+ or better. With permission of department, 01:940:402 may be taken as corequisite.
Intensive practice in advanced translation, Spanish to English and English to Spanish. Nonliterary and literary texts. Individual and group projects, with emphasis on translation into the native language.

01:940:486. MEDICAL/TECHNICAL TRANSLATION (1.5)
Pre- or corequisite: 01:940:401 or permission of department.
Practice in translation in such areas as medical, pharmaceutical, communications, computers, and science textbooks. Development of specialized glossaries. Spanish-English and English-Spanish.

01:940:487. HOSPITAL/COMMUNITY INTERPRETATION (1.5)
Pre- or corequisites: 01:940:402 and 475 or 486, or permission of department.
Theory and practice of hospital, medical, and other sensitive community interpretation roles. Development of specialized glossaries. Field assignments in area hospitals and clinics.

01:940:490. SEMINAR IN HISPANIC LITERATURE (3)
Prerequisite: One term of Spanish literature at the 400 level.
In-depth study of a specific genre, author, or theme. Subject announced by the department.

01:940:491,492. TOPICS IN HISPANIC LITERATURE AND CULTURE (3,3)
Prerequisite: One term of 300-level literature in Spanish or permission of department.
Specific topic chosen each term from a list available in the department.

01:940:493,494. INDEPENDENT STUDY (BA,BA)
Prerequisites: Minimum of one term of 400-level Spanish and permission of department and instructor.
Independent readings under faculty supervision. Project must not be one already treated in a formal course.

01:940:497,498. HONORS IN SPANISH (BA,BA)
Prerequisites: 01:940:394 and permission of department. Open only to seniors.
Preparation for comprehensive examination in Spanish and research paper prepared under the direction of the departmental honors committee.

STATISTICS 960

Department of Statistics, Faculty of Arts and Sciences

Chairperson: Yehuda Vardi

Undergraduate Director: David Tyler

Graduate Director: Cunhui Zhang

Professors:

Robert H. Berk, S.B., Massachusetts Institute of Technology; A.M., Ph.D., Harvard
Arthur Cohen, B.A., CUNY (Brooklyn College); M.A., Ph.D., Columbia
Richard F. Gundy, A.B., Illinois College; Ph.D., Indiana; Ph.D., Chicago
Regina Y. Liu, B.S., Soochow (Taiwan); M.Phil., Ph.D., Columbia
Joseph I. Naus, B.B.A., CUNY (City College); M.A., Ph.D., Harvard
Harold B. Sackrowitz, B.S., CUNY (Brooklyn College); Ph.D., Columbia
Kesar Singh, B.S., Allahabad (India); M.S., Ph.D., Indian Statistical Institute (Calcutta)
William E. Strawderman, B.S., Rhode Island; M.S., Cornell; M.S., Ph.D., Rutgers
David E. Tyler, B.A., Indiana (Pennsylvania); M.A., Massachusetts (Amherst); M.A., Ph.D., Princeton
Yehuda Vardi, B.S., Hebrew; M.S., Technion; Ph.D., Cornell
Zhiliang Ying, B.S., Fudan; M.A., Ph.D., Columbia
Cunhui Zhang, B.A., Huainan Mining Institute (China); M.S., Ph.D., Columbia

Associate Professor:

Javier Cabrera, B.A., Madrid; M.A., Ph.D., Princeton

Assistant Professors:

Steve Buyske, B.A., Haverford College; M.Sc., Ph.D., Brown; Ph.D., Rutgers
Juan K. Lin, Ph.D., Chicago
Minge Xie, B.S., University of Science and Technology of China; M.S., Ph.D., Illinois (Urbana-Champaign)

The department offers a statistics major and a joint statistics / mathematics major in cooperation with the mathematics department. The joint statistics / mathematics major provides a stronger preparation for graduate study

in statistics. Students who are interested most in applying statistics in industry, government, or in applied areas of graduate study should take the statistics major. The department encourages interdisciplinary study, and students should consult with departmental advisers to plan their program.

Major Requirements

Statistics

A total of 46 credits is required: 18 credits in mathematics, 25 credits in statistics, and 3 credits in computer science, as follows:

1. Computer Science 01:198:110 or 111
2. Mathematics 01:640:151-152, 250, 251
3. Statistics 01:960:381*,382*, 384, 390, 463, 486, 490
4. Two courses chosen from 01:960:467, 476, 483
5. Three credits in mathematics electives (01:640:252 or a course at the 300 level or above, but not 477 or 481)

Statistics/Mathematics

A total of 56 credits is required: 28 credits in mathematics, 25 credits in statistics, and 3 credits in computer science, as follows:

1. Computer Science 01:198:110 or 111
2. Mathematics 01:640:151-152, 250, 251, 252, 311, 478
3. Statistics 01:960:381*,382*, 384, 390, 463, 486, 490
4. Two courses chosen from 01:960:467, 476, 483
5. Three credits in mathematics electives (300 level or above, but not 01:640:477 or 481)

No more than two courses with a grade of D can be counted toward the major.

Sequence of Courses for Nonmajors †

The sequence of courses in the study of statistics is related to a student's primary field of specialization. Students seeking credit for courses other than those for which their class and major qualify them must have the prior approval of the undergraduate director of statistics.

Political science, psychology, sociology, and humanities: 01:960:211,212; subsequent courses: 01:960:463, 467, 486, 490

Mathematics, physics, statistics, engineering, chemistry, and computer science: introductory courses: 01:960:379, and 384 or 401; subsequent courses: 01:960:381,382, 463, 476, 486, 490

Biology, agriculture, ceramic engineering, and pharmacy: introductory courses: 01:960:401, 490; subsequent courses: 01:960:463, 467, 486

Business: introductory courses: 33:623:385, 01:960:285; subsequent courses: 01:960:463, 486, 490

Economics: 01:960:201 or 211

Environmental science: introductory courses: 01:960:211,212; subsequent courses: 01:960:463, 486, 490

* 01:640:477 and 481 may be taken instead of 01:960:381,382. Credit is not given for both 01:640:477 and 01:960:381, nor for both 01:640:481 and 01:960:382.

† Credit is not given for more than one of 01:960:201, 211, 285 , and 401. Note also that the recommended follow-up course for 01:960:211 is 212 or 384.

Minor Requirements

A minor in statistics consists of 01:960:390 and six additional courses in the Department of Statistics of which at least one must be at the 400 level. Neither 01:960:401 nor 484 may be used to fulfill this 400-level requirement. Students who complete 01:960:381 and 382 may count two terms of calculus toward the minor.

Courses

In the following course list, the Level II Statistics prerequisite may be fulfilled with 01:960:212 or 384 or 401 or 484 or equivalent. Credit is not given for more than one course fulfilling the Level II Statistics prerequisite.

01:960:201. BASIC STATISTICS FOR ECONOMICS (4)
Prerequisite: 01:640:115 or permission of department. Credit not given for more than one of the following: 01:960:201, 211, and 285.
Introduction to statistical inference, including descriptive statistics, probability, sampling, estimation, hypothesis testing, and simple regression analysis. Instruction in the use of computer packages.

01:960:211,212. STATISTICS I,II (3,3)
Prerequisite: 01:640:115 or permission of department. See Level II Statistics restrictions. Credit not given for more than one of 01:960:201, 211, and 285, nor for more than one of 01:960:212, 384, and 401.
Principles and methods of statistics, including frequency distributions, measures of central tendency and dispersion, simple probability, sampling, regression and correlation analysis, curve fitting, chi-square analysis, test of significance.

01:960:285. INTRODUCTORY STATISTICS FOR BUSINESS (3)
Prerequisite: 01:640:115 or equivalent. Credit not given for more than one of 01:960:201, 211, and 285.
Topics include descriptive statistics, probability, random variables, sampling distributions, principles of hypothesis testing, and one and two sample T-tests.

01:960:337. MANAGERIAL STATISTICS (3)
Prerequisite: 01:960:211 or equivalent.
Modern data analysis and applied statistical decision theory in such fields as market research, business forecasting, and operations research. Analysis of time series and index numbers.

01:960:379. BASIC PROBABILITY AND STATISTICS (3)
Prerequisite: One term of calculus.
Methods of presenting data; basic statistical measures of location; frequency distributions; elementary probability theory; probability distributions; the binomial, Poisson, and normal distributions; basic sampling theory.

01:960:381. THEORY OF PROBABILITY (3)
Prerequisites: Two terms of calculus.
Probability distributions; the binomial, geometric, exponential, Poisson, and normal distributions; moment-generating functions; sampling distributions; applications of probability theory.

01:960:382. THEORY OF STATISTICS (3)
Pre- or corequisite: 01:960:381 or equivalent.
Statistical inference methods, point and interval estimation, maximum likelihood estimators, information inequality, hypothesis testing, Neyman-Pearson lemma, linear models.

01:960:384. INTERMEDIATE STATISTICAL ANALYSIS (3)
(Formerly 01:960:380)
Prerequisite: One of the following courses: 01:960:201, 211, 285, 379, 381, or permission of the instructor. Credit not given for this course and 01:960:212 or 401 or 484.
Application of statistical techniques to the analysis of data, tests of significance, correlation and regression analysis, confidence intervals, analysis of variance, and some design of experiments, analysis of cross-classified data, Chi-square tests. Course requires the use of basic statistics computer package.

01:960:385. STATISTICS FOR SOCIAL WORK (E2)
Registration limited to students in the Graduate School of Social Work. Graded as satisfactory or unsatisfactory.
Descriptive statistics; methods of classifying and summarizing data; estimation and prediction; correlation and regression analysis; principles of hypothesis testing.

01:960:390. INTRODUCTORY COMPUTING FOR STATISTICS (1)
Five-week course; 3 hrs. lec. and lab. Pre- or corequisite: Level II Statistics. Graded on a Pass/Fail (undergraduate) and S/U (graduate) basis.
Introduction to the use of statistics computer packages with main focus on SAS. Includes generating random samples, estimation, testing hypothesis, ANOVA.

01:960:391,392. HONORS SEMINARS IN PROBABILITY/ STATISTICS (3,3)
Prerequisite: CALC1 or permission of the department. Corequisite: CALC2. Open to students in college honors programs.
Real-life examples or case studies on statistics and probability theory, and their ramifications. Topics may vary from term to term. Extensive data analysis required.

01:960:401. BASIC STATISTICS FOR RESEARCH (3)
Prerequisite: 01:640:115 or equivalent. For students in the biological sciences, ceramic engineering, computer sciences, pharmacy, etc. May be followed by 01:960:490, or 590 with permission of department. Credit not given for more than one of 01:960:212, 384, and 401.
As applied in fields other than statistics; treats research projects dependent on the use of observed data from planned experiments. Includes inference methods in estimation and hypothesis testing and general linear models.

01:960:463. REGRESSION METHODS (3)
Prerequisite: Level II Statistics.
Multiple and nonlinear correlation and regression techniques for analysis of events in time and space: analysis of variance and covariance, related multivariate techniques, response surface approaches.

01:960:467. APPLIED MULTIVARIATE ANALYSIS (3)
Prerequisite: Level II Statistics or permission of department.
Introduction to the methodology of multivariate analysis. Multiple linear regression, discriminant analysis, profile analysis, canonical correlation, principal components, and factor analysis.

01:960:476. INTRODUCTION TO SAMPLING (3)
Prerequisite: 01:960:379 or 381 or equivalent or permission of department.
Principles of sampling application for economic procurement or assessment of data. Current techniques for area sampling, sampling of accounts, large-scale surveys, stratification, cluster sampling, systematic sampling, two-stage sampling, and construction estimates.

01:960:483. STATISTICAL QUALITY CONTROL (3)
Prerequisite: One term of statistics at the college level.
Statistical measures; histogram analysis; construction and analysis of control charts for variables and attributes; use of Dodge-Romig and Military Standards acceptance sampling plans; statistical aspects of tolerances.

01:960:484. BASIC APPLIED STATISTICS (3)
Prerequisite: One of the following courses: 01:960:201, 211, 285, 379, 381, or permission of instructor. Credit not given for both this course and 01:960:212 or 384 or 401.
Confidence estimation, hypothesis testing, chi-square methods, correlation and regression analysis, basis of design of experiments.

01:960:486. COMPUTING AND GRAPHICS IN APPLIED STATISTICS (3)
Use of various computer-based techniques, including graphical, to understand and interpret data. Exposure to basic analysis of categorical, time-series, and multivariate data in applied areas such as biostatistics, quality control, and others.

01:960:490. INTRODUCTION TO EXPERIMENTAL DESIGN (3)
Prerequisite: Level II Statistics.
Basic concept and principles of designs. Nature and analysis of various designs; randomized blocks, Latin squares, factorial designs. Applications to specific problems.

01:960:491. RELIABILITY-QUALITY CONTROL (3)
Prerequisites: 01:640:251 and Level II Statistics.
Survey of current theory and practice in this field.

01:960:495. INDEPENDENT STUDIES IN STATISTICS (3)
Prerequisite: Permission of department.

STATISTICS-MATHEMATICS

(See Statistics 960)

STUDY ABROAD 959

Rutgers conducts full immersion study abroad programs around the globe for a full year, a single term, or a summer for students of any major. In countries where the national language is not English, two terms of the national literature are recommended highly. Students, however, need not be majoring in the language to participate. Interested students should write to the Study Abroad Director, Rutgers, The State University of New Jersey, 102 College Avenue, New Brunswick, NJ 08901-8543 or visit the web site at http://studyabroad.rutgers.edu.

Summer study abroad programs are offered in France, Spain, Italy, Portugal, Germany, Kenya, Tanzania, Poland, India, Costa Rica, Brazil, and Israel. For further information, consult the appropriate language department or the Study Abroad Office.

Students wishing to study abroad with programs other than those hosted by Rutgers may contact other American colleges or may seek admission directly from a foreign university. Students making these arrangements should speak with their academic dean about the acceptability of the program and the transfer of credit.

Courses

01:959:300. AFRICAN-CARIBBEAN HISTORY AND CULTURE: THE VIEW FROM LIMON (6)
Interdisciplinary study of African-Caribbean history and culture, with a focus on the African-Caribbean community in Limon, Costa Rica. Readings are in African-Caribbean history and literature, in Costa Rican history, and in studies of multiculturalism and the politics of language. On-site interactions through community service work (English instruction) at St. Mark's School (kindergarten through ninth grade) in Limon.

01:959:301. SUMMER PROGRAM IN BRAZILIAN STUDIES AND PORTUGUESE (BA)
Intern at Folha de S. Paulo and study Brazilian culture and advanced Portuguese.

01:959:302. SUMMER INSTITUTE IN MIDDLE EASTERN STUDIES (BA)
Study Middle Eastern culture, literature, history, and politics in context through two courses for six weeks.

01:959:321,322. HOWARD/RUTGERS EXCHANGE (BA,BA)
Study at Howard University in Washington, DC, for a year or a single term.

01:959:374. RUTGERS LONDON THEATER TERM (BA)
Spring term conservatory training in London. All majors welcome; serious interest in theater a must.

01:959:375,376. STUDY ABROAD IN JAPAN (BA,BA)
One year study at Ritsumeikan University in Kyoto, Japan. Students with an appropriate level of Japanese may choose from a wide range of courses.

01:959:377,378. STUDY ABROAD IN AUSTRALIA (BA,BA)
Term study at either the University of Queensland or Melbourne in a wide variety of subjects.

01:959:379,380. JUNIOR YEAR IN SPAIN (BA,BA)
Study for a year or a spring term at the Universitat de València. All majors welcome; good knowledge of Spanish urged.

01:959:381-382. JUNIOR YEAR IN FRANCE (BA,BA)
Study for a year at the Université François Rabelais in Tours. All majors welcome; good knowledge of French urged.

01:959:383,384. JUNIOR YEAR IN ITALY (BA,BA)
All majors welcome. Students may choose to study for a year at the Università degli Studi di Firenze in Florence with a good knowledge of Italian, or for a spring term in Florence with any level of Italian.

01:959:385,386. JUNIOR YEAR IN GERMANY (BA,BA)
Study for a year or a spring term at the Universität Konstanz in Constance. All majors welcome; good knowledge of German urged.

01:959:387,388. STUDY ABROAD IN MEXICO (BA,BA)
Study for a year or a single term at the Universidad Autónoma de Yucatán in Mérida. All majors welcome; good knowledge of Spanish urged.

01:959:389,390. STUDY ABROAD IN ISRAEL (BA,BA)
Study for a year or a single term at the University of Haifa or Ben-Gurion. All majors welcome.

01:959:391,392. STUDY ABROAD IN BRITAIN (BA,BA)
Study for a year or a single term in one of eleven universities in the U.K. All majors welcome.

01:959:393,394. INDEPENDENT STUDY (BA,BA)
By permission.

01:959:395,396. STUDY ABROAD IN IRELAND (BA,BA)
Study for a year or a single term at University College Dublin or Cork. All majors welcome.

01:959:397. THE CONSTRUCTION OF THE EUROPEAN UNION (6)
Survey of the main issues pertaining to the construction of Europe as assessed from a variety of European perspectives.

01:959:398. STUDY ABROAD IN SOUTH AFRICA (BA)
By permission.
Study at the University of Natal in South Africa. There are two options, a CASE option and a liberal arts option.

01:959:399. STUDY ABROAD IN POLAND (BA)

01:959:400,401. STUDY ABROAD IN INDIA (BA,BA)
Study for a year or the fall term at St. Stephen's College in New Delhi. All majors welcome.

THEATER ARTS 965, 966

Department of Theater Arts, Mason Gross School of the Arts

See the Mason Gross School of the Arts section for faculty listing and Bachelor of Fine Arts (B.F.A.) program information.

The Bachelor of Arts (B.A.) major program in theater arts is designed for those students seeking a liberal arts education. The program is intended to provide an excellent generalized background in theater. Students who wish to specialize in acting, design, or production should consider auditioning / interviewing to be a Bachelor of Fine Arts (B.F.A.) theater arts major. Casting and directing opportunities are available with the several extracurricular theater organizations on campus: the Cabaret Theater (Douglass), the College Avenue Players (Rutgers), and the Livingston Theater Company (Livingston). Casting in departmental productions is restricted to B.F.A. and M.F.A. acting students.

Major Requirements

Students who are considering the major should take 07:965:211 Theater Appreciation and 07:965:271 Basic Acting or 07:966:215 Scenic Art as a means to explore potential aptitude for the field. B.A. theater majors should complete courses in 07:966:215-216 Scenic Art, 07:965:311-312 Theater History, and 07:966:123 Theater Practice (repeated) by the end of the junior year, since they are required of all majors and are prerequisites for most advanced theater courses.

Theater arts majors in the B.A. program are required to take a minimum of 44 credits, distributed as follows:

1. 15 credits in academic courses: 07:965:311-312 Theater History (3,3); 07:965:398 Basic Theater Texts (3); and 6 credits from among 07:965:211 Theater Appreciation (3); 07:965:212 Theater and Contemporary Issues (3), 07:965:343 American Theater and Drama (3), 07:966:364 Theater Management (3), 07:965:401 Theater Criticism (3), and 07:965:400 Theater Theory (3).
2. 8 credits in physical theater: 07:966:215-216 Scenic Art (3,3); 07:966:123 Theater Practice (1,1).
3. 6 credits in performance (acting and / or directing).
4. 6 credits in 07:965:491-492 Project Work (BA,BA) or 07:965:396 Internship (BA) (for example, a year of study or performance in children's theater ensemble or an internship with a professional theater organization). Students should consult with their theater arts B.A. adviser.
5. 9 credits in theater arts electives.

Theater arts students should take correlative courses in dramatic literature (modern drama, Shakespeare) as well as courses in art, dance, and music history and appreciation.

Minor Requirements

The minor in theater arts requires 18 credits. 07:965:311-312 Theater History (3,3) and 07:966:215-216 Scenic Art (3,3) are required courses. In addition, theater arts minors take 6 credits in theater arts electives. B.A. advisers in theater arts must be consulted for approval of elective selections. Theater arts minors who are declaring in the senior year must preregister for classes to ensure availability; space is limited.

Departmental Honors Program

A student in the theater arts major qualifies as a candidate for departmental honors after meeting several requirements: at the time the proposal for candidacy is submitted, the student must have a cumulative grade-point average of 3.0 or better and an average of 3.5 or better in the major; the student must submit to their B.A. adviser a project proposal that has the sanction of one member of the department who has agreed to serve as mentor. The project may take the form of a paper in theater history, or aesthetics and criticism, or may be a creative work in areas of acting and directing, design, or playwriting.

The candidate whose proposal is accepted must enroll in 07:965:493, an honors seminar, and 07:965:494, the thesis project. This project must be completed by May 1, and is judged by the student's mentor and two other faculty members who determine whether the student's work merits high honors, honors, or no honors.

Courses (965)

07:965:211. THEATER APPRECIATION: EXPERIENCES IN CONTEMPORARY THEATER (3)
Mancuso, Krebs
Designed for nonmajors. Students attend a wide spectrum of theater offerings—Broadway, Off-Broadway, Off-Off-Broadway, repertory, and university theater performances—and, through discussion and lectures by professional artists, gain an appreciation of performance.
Theater tickets: up to $100 (generally, no text fee is required).

07:965:212. THEATER AND CONTEMPORARY ISSUES (3)
Prerequisite: 07:965:211.
Exploration of theater and drama as they relate to issues of contemporary culture. Class attends between six and eight productions in local, regional, and New York theater; reads several works on current issues; and writes on topics related to the two areas.
Theater tickets: up to $100 (generally, no text fee is required).

07:965:218. PLAYWRITING (3)
Rabkin
Exploration of the craft of playwriting through the writing and evaluation of exercises, adaptations, and short plays.

07:965:219. PLAYWRITING PROJECT (BA)
Prerequisite: Permission of instructor.
Advanced projects in playwriting by arrangement with instructor.

07:965:271-272. BASIC ACTING (3,3)
Theory and practice of the art of acting.

07:965:311-312. THEATER HISTORY (3,3)
Blumenthal
Western theatrical traditions from Greek through contemporary avant-garde theater.

07:965:325-326. INTERMEDIATE ACTING: SCENE STUDY (3,3)
Prerequisites: 07:965:271-272. Approval of instructor or audition required for admission.
Scene study and the basis of characterization.

07:965:343. AMERICAN THEATER AND DRAMA (3)
Rabkin
Survey of American theater and drama from the nineteenth century to the contemporary, with concentration from the period of Eugene O'Neill and the Provincetown Players to the present.

07:965:359-360. INDEPENDENT STUDY (BA,BA)
Open only to theater arts majors with permission of instructor and student's theater arts adviser.

07:965:384. SHOESTRING PERFORMANCE AND PRODUCTION (BA)
J. Hart. Prerequisite: By audition only.
Intensive investigation of advanced ensemble acting and creative dramatics. Full-length theater piece for children and adults produced. Eligible students assigned roles as performers or production staff. The Shoestring Players perform a limited touring season in the tristate area.

07:965:396. INTERNSHIP/THEATER (BA)
Prerequisite: Permission of instructor.
Supervised work experience in a department of a professional theater organization. Includes design and production, performance, stage management, business management, or literary management.

07:965:398. BASIC THEATER TEXTS (3)
Prerequisites: 07:965:311-312 or permission of instructor.
Reading and discussion of key works in the theatrical repertoire. Survey begins with the classic Greek drama and ends with contemporary plays. Develops habits of script analysis particularly useful to theater practice.

07:965:400. THEATER THEORY (3)
Rabkin. Prerequisites: 07:965:311-312 or permission of instructor.
Study of major critical questions about the nature of theater from Aristotle and Zeami to Brecht and Artaud.

07:965:401. THEATER CRITICISM (3)
Blumenthal. Prerequisites: 07:965:311-312, accepted writing sample, and permission of instructor.
Study of criteria for analyzing and evaluating plays and performances; workshops in critical writing.

07:965:421. DIRECTING (3)
Hart. Prerequisites: 07:965:271-272 and 07:966:215-216. Open to juniors and seniors only.
Principles of play directing.

07:965:422. ADVANCED DIRECTING PROJECT (3)
Hart. Prerequisite: 07:965:421. By permission of instructor.
Principles of play directing and scene study.

07:965:471-472. CREATIVE DRAMATICS FOR CHILDREN (3,3)
J. Hart. Prerequisite: Open only to juniors and seniors by permission of instructor.
Techniques of conducting informal dramatic activity; supervised practice with a group of children.

07:965:491-492. PROJECT WORK (6,6)
Prerequisites: 07:966:215-216 and permission of student's B.A. adviser. Open to juniors and seniors only.
Application of performance, production, or critical theory under professional supervision in an outside theatrical organization. Activities include, but are not limited to, literary management, acting, stage management, design, and theater management.

07:965:493. HONORS SEMINAR IN THEATER ARTS (3)
Prerequisite: Permission of instructor.
Students perfect abilities to do independent work.

07:965:494. HONORS PROJECT IN THEATER ARTS (3)
Prerequisites: 07:965:493 and permission of department.
Individual research and / or creative project presented as honors thesis.

07:965:495-496. SEMINAR: TOPICS IN THEATER (BA,BA)

07:965:497-498. WORKSHOP ASSIGNMENTS (BA,BA)

Courses (966)

The following courses are open to B.A. students. See the course listing for prerequisites and course descriptions.

Most classes also require the permission of the instructor and have maximum class size restrictions.

07:966:105. DRAWING PRACTICE: THEATER DESIGN (0.5)
07:966:123. THEATER PRACTICE (1)
07:966:215-216. SCENIC ART (3,3)
07:966:243-244. ELEMENTS OF DESIGN (2,2)
07:966:245-246. HISTORY OF ARCHITECTURE AND DECORATIVE ARTS (2,2)
07:966:247-248. COSTUME HISTORY AND RENDERING (2,2)
07:966:251-252. FUNDAMENTALS OF DRAFTING (2,2)
07:966:273. THEATRICAL MAKEUP (1)
07:966:300-301. INTRODUCTION TO DESIGN FOR THE THEATER (3,3)
07:966:305. INTRODUCTION TO STAGE LIGHTING (2)
07:966:307. PRODUCTION PROPERTIES (2)
07:966:316. SCENE PAINTING (2)
07:966:323. THEATER PRACTICE (BA)
07:966:343-344. FUNDAMENTALS OF LIGHTING DESIGN (2,2)
07:966:359-360. DIRECTED STUDY (BA,BA)
07:966:361. SOUND TECHNOLOGY IN THE THEATER (2)
07:966:362. SOUND TECHNOLOGY PRACTICUM (BA)
07:966:364. THEATER MANAGEMENT (3)
07:966:365. THEATER MANAGEMENT PRACTICUM (3)
07:966:389-390. COSTUME CONSTRUCTION TECHNIQUES (1,1)
07:966:423. STAGE MANAGEMENT (3)
07:966:424. STAGE MANAGEMENT SEMINAR (3)

Note: Graduate courses are open to juniors and seniors in good standing with permission of the graduate director and the instructor.

UKRAINIAN 967

(See also Russian, Central and East European Studies 861)

Department of Germanic, Russian, and East European Languages and Literatures, Faculty of Arts and Sciences

Web Site: http://seell.rutgers.edu

For additional information, consult the program's web site.

Course in English

01:967:259. UKRAINIAN LITERATURE IN TRANSLATION (3)
Reading and interpretation of major writers.

Courses in Ukrainian

01:967:121,122. UKRAINIAN IN REVIEW (4,4)
Prerequisite: Placement test or permission of instructor.
Overview of grammar, development of conversation, reading, and composition skills.

01:967:493,494. INDEPENDENT STUDY: UKRAINIAN (3,3)
Prerequisite: Permission of instructor.

UNIVERSITY COLLEGE–NEW BRUNSWICK COLLEGE COURSES

(See Arts and Science 090)

URBAN STUDIES AND COMMUNITY HEALTH

(See the Edward J. Bloustein School of Planning and Public Policy section)

VISUAL ARTS

(See Art 080)

WOMEN'S STUDIES 988

Women's Studies Program, Faculty of Arts and Sciences

Web Site: http://womens-studies.rutgers.edu

Director: Joanna Regulska, Ph.D., Colorado

Associate Director: Barbara J. Balliet, Ph.D., NYU

Faculty:

Barbara J. Balliet, Women's Studies/History; Ph.D., NYU
Ethel Brooks, Women's Studies/Sociology; Ph.D., NYU
Charlotte Bunch, Urban Studies and Community Health; B.A., Duke
Abena Busia, English/Women's Studies; Ph.D., St. Anthony's College (Oxford)
Susan J. Carroll, Political Science; Ph.D., Indiana
Ed Cohen, English/Women's Studies; Ph.D., Stanford
Barbara Cooper, Africana Studies/History/Women's Studies; Ph.D., Boston
Drucilla Cornell, Political Science/Women's Studies; J.D., California (Los Angeles)
Harriet Davidson, English/Women's Studies; Ph.D., Vanderbilt
Marianne DeKoven, English/Women's Studies; Ph.D., Stanford
Josephine Diamond, French/Women's Studies; Ph.D., Cornell
Leela Fernandes, Political Science/Women's Studies; Ph.D., Chicago
Lora Dee Garrison, History/Women's Studies; Ph.D., California (Irvine)
Judith Gerson, Sociology/Women's Studies; Ph.D., Cornell
Sherry Gorelick, Sociology/Women's Studies; Ph.D., Columbia
Mary Gossy, Spanish/Portuguese/Women's Studies; Ph.D., Harvard
Mary Hartman, History/Women's Studies; Ph.D., Columbia
Mary Hawkesworth, Political Science/Women's Studies; Ph.D., Georgetown
Nancy Hewitt, History/Women's Studies; Ph.D., Pennsylvania
Jennifer M. Jones, History/Women's Studies; Ph.D., Princeton
Samira Kawash, English/Women's Studies; Ph.D., Duke
Dorothy Ko, History/Women's Studies; Ph.D., Stanford
Phyllis Mack, History/Women's Studies; Ph.D., Cornell
Leslie McCall, Sociology/Women's Studies; Ph.D., Wisconsin
Jennifer Morgan, History/Women's Studies; Ph.D., Duke
Jasbir Puar, Women's Studies/Geography; Ph.D., California (Berkeley)
Joanna Regulska, Geography/Women's Studies; Ph.D., Colorado
Bonnie Smith, History/Women's Studies; Ph.D., Rochester
Deborah White, History/Women's Studies; Ph.D., Illinois

Affiliate Faculty:
Suzan Armstrong-West, Douglass College Dean's Office; Ph.D., Florida
Louise K. Barnett, English; Ph.D., Bryn Mawr College
Emily Bartels, English; Ph.D., Harvard
Francis Bartkowski, English–Newark; Ph.D., Iowa
Mia E. Bay, History; Ph.D., Yale
Eleanor L. Brilliant, Social Work; D.S.W., Columbia
Judith Brodsky, MGSA; M.F.A., Tyler School of Art, Temple
Barbara J. Callaway, Political Science; Ph.D., Boston
Christine Chism, English; Ph.D., Duke
Dorothy Sue Cobble, Labor Studies; Ph.D., Stanford
Ann Baynes Coiro, English; Ph.D., Maryland
Sheila Cosminsky, Sociology–Camden; Ph.D., Brandeis
Jeanette Covington, Sociology; Ph.D., Chicago
Susan Crane, English; Ph.D., California (Berkeley)
Jocelyn Crowley, Public Policy; Ph.D., Massachusetts Institute of Technology
Cynthia Daniels, Political Science; Ph.D., Massachusetts
Belinda Davis, History; Ph.D., Michigan
Elin Diamond, English; Ph.D., California (Davis)
William C. Donahue, German; Ph.D., Harvard
Katherine Ellis, English; Ph.D., Columbia
Leslie E. Fishbein, American Studies; Ph.D., Harvard
Jerry Flieger, French; Ph.D., California (Berkeley)
Sandra Flitterman-Lewis, English; Ph.D., California (Berkeley)
Ziva Galili, History; Ph.D., Columbia
Mary Gibson, Philosophy; Ph.D., Princeton
John Gillis, History; Ph.D., Stanford
Cathy Greenblat, Sociology; Ph.D., Columbia
Dorothy L. Hodgson, Anthropology; Ph.D., Michigan
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Marjorie Howes, English; Ph.D., Princeton
Mary B. Hutchison, English; Ph.D., Washington
Karla Jackson-Brewer, Africana Studies; M.S., Bank Street College of Education
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Barbara A. Lee, Industrial Relations and Human Resources; Ph.D., Ohio
Barbara C. Lewis, Political Science; Ph.D., Northwestern
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Ruth B. Mandel, Eagleton Institute; Ph.D., Connecticut
Umberto Mariani, Italian; Dottore in Lettere, Pavia
Joan M. Marter, Art History; Ph.D., Delaware
Meredith L. McGill, English; Ph.D., Johns Hopkins
Ferris Olin, Rutgers University Libraries; Ph.D., Rutgers
Alicia Ostriker, English; Ph.D., Wisconsin
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Gerald Pirog, Chinese, Comparative Literature, and Slavic Languages; Ph.D., Yale
David Popenoe, Sociology; Ph.D., Pennsylvania
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Nancy Rao, Music, MGSA; Ph.D., Michigan
Bruce Robbins, English; Ph.D., Harvard
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Sarah Rosenfield, Sociology; Ph.D., Texas
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Louisa Schein, Anthropology; Ph.D., California (Berkeley)
Joan W. Scott, Social Science, Institute for Advanced Study; Ph.D., Wisconsin
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Carol H. Smith, English; Ph.D., Michigan
Linda C. Steiner, Journalism and Mass Media; Ph.D., Illinois (Urbana)
Judith M. Stern, Psychology; Ph.D., Rutgers
Gayle T. Tate, Africana Studies; Ph.D., CUNY
Mary Trigg, Center for Women and Work; Ph.D., Brown
Antonia Tripolitis, Comparative Literature; Ph.D., Pennsylvania
Meredeth Turshen, Urban Studies; Ph.D., Sussex
Margaret Varma, Nutritional Sciences; Ph.D., Brigham Young
Cheryl A. Wall, English; Ph.D., Harvard
Carmen T. Whalen, Puerto Rican and Hispanic Caribbean Studies; Ph.D., Rutgers
Carolyn Williams, English; Ph.D., Virginia
Virginia Yans, History; Ph.D., SUNY (Buffalo)
Yael Zerubavel, History; Ph.D., Pennsylvania

Women's studies concentrates on the implications of gender for women's lives. The program strives to serve women of all races and classes, investigating differences as well as similarities among women. The women's studies program is guided by an interdisciplinary committee of faculty.

For additional information about the program, consult the web site.

Major Requirements

The major in women's studies consists of 36 credits, made up of 18 credits of required women's studies 988 courses and 18 credits in approved cognate courses of which 12 credits must be at the 300 level or above.

The following courses are required:

1. 01:988:101 Women, Culture, and Society (3) or 01:988:235 Dynamics of Class, Race, and Sex (3)
2. 01:988:201 Introduction to Women's Studies: History and Method (3)
3. 01:988:301 Theories of Feminism (3)
4. 01:988:302 Comparative Feminisms (3)
5. 01:988:370 Research Methods in Women's Studies (3) or 300-level 988 core course (3)
6. 01:988:425 Internship in Women's Studies (6) or 01:988:490 Seminar: Women and Contemporary Issues (3) or 01:988:491,492 Special Topics (3,3)
7. Six additional courses chosen from the women's studies course list or the approved cognate course list or other courses approved by a program adviser. At least four of the six elective courses must be at the 300 level or above.

Minor Requirements

Students may qualify for this minor by completing the following requirements:

1. 01:988:101 Women, Culture, and Society (3) or 01:988:201 Introduction to Women's Studies: History and Method (3)
2. 01:988:301 Theories of Feminism (3) or 01:988:302 Comparative Feminisms (3)
3. 01:988:370 Research Methods in Women's Studies (3) or 01:988:490 Seminar: Women and Contemporary Issues (3) or 01:988:491,492 Special Topics (3,3) (400-level requirement)
4. Three elective courses chosen from the women's studies course list or the approved cognate course list, at least one of which must have race or class at its center. Of the three elective courses, not more than two can be from the same department and at least one elective must be at or above the 300 level.

Honors in Women's Studies

Women's studies majors may petition to obtain honors if they have an overall cumulative grade-point average of 3.0 or better and 3.4 or better in women's studies courses at the end of their junior year. Candidates are required to write an honors paper and participate in an honors research course (01:988:497,498).

Approved Cognate Courses

The women's studies program accepts certain courses offered by other departments as cognate courses, which may be counted toward the women's studies major or minor. These courses are cross-listed below. The courses in this cross-listing have counterparts offered by the women's studies program that utilize the same last three digits of the course number as the cross-listed course, but with the women's studies school/subject code designation of 01:988:___. (For example, course 01:014:206, an Africana studies course, also is offered by the women's studies program as course 01:988:206.) There are twenty-one courses that do not follow this pattern, cross-referenced as follows:

01:014:481 = 01:988:483
01:050:326 = 01:988:327
01:350:371 = 01:988:366
01:350:381 = 01:988:388
01:351:355 = 01:988:352
01:351:356 = 01:988:353
01:351:361 = 01:988:364
01:351:435,436 = 01:988:437,438
01:351:496,497 = 01:988:495,496
01:354:385 = 01:988:376
01:450:361 = 01:988:367
01:470:385 = 01:988:377
01:508:307 = 01:988:308
01:508:346 = 01:988:348
01:512:482 = 01:988:484
01:790:335 = 01:988:336
01:836:323 = 01:988:328
01:840:350 = 01:988:343
01:840:351 = 01:988:349
01:840:360 = 01:988:361

Full course descriptions for all cross-listed courses can be found under the appropriate originating department's subject code listing. Credit is not given for both a women's studies course (01:988:___) and its corresponding cross-listed course.

01:014:206 The Black Woman (3)
01:014:306 The Black Woman in Political Context (3)
01:014:481 The Black Family (3)
01:050:325 Women on the Fringe (3)
01:050:326 The Culture of American Women (3)
01:070:225 Women in an Anthropological Perspective (3)
01:070:323 Women Writing Culture (3)
01:070:363 Race, Class, Gender, and Schooling (3)
01:070:378 The Anthropology of Gender (3)
01:070:379 Gender and Power in Africa (3)
07:080:300 Women Artists (3)
01:082:305 Women and Art (3)
01:190:320 Women in Antiquity (3)
04:192:405 Communication and Gender (3)
01:195:327 Women's Traditions in Literature (3)
01:220:375 Women and the Economy (3)
01:350:371 Black Women Writers (3)
01:350:381 Medieval and Early Modern Women Writers (3)
01:350:382 Restoration and Eighteenth-Century Women Writers (3)
01:350:383 Nineteenth-Century Women Writers (3)
01:350:384 Twentieth-Century Women Writers (3)
01:350:385 American Women Writers to 1900 (3)
01:350:386 Twentieth-Century American Women Writers (3)
01:351:265 Introduction to the Study of Women Writers (3)
01:351:266 Issues and Methods in Feminist Literary Studies (3)
01:351:355 Drama by Women (3)
01:351:356 Fiction by Women (3)
01:351:357 Poetry by Women (3)
01:351:358 Autobiography by Women (3)
01:351:359 Gender and Genre (3)
01:351:361 Issues and Problems in Feminist Literary Studies (3)
01:351:435,436 Seminar: Feminist Literary Studies (3,3)
01:353:340 Feminist Theory in Literary Study (3)
01:353:346 Theories of Gender and Sexuality (3)
01:353:496,497 Seminar: Topics in Feminist Theory (3,3)
01:354:385 Theories of Women and Film (3)
01:420:313 Twentieth-Century Feminism: Theories of Gender (3)
01:420:319 Women Writers from 1789 to the Present (3)
01:450:361 Gender Geographies (3)
01:470:385 The Changing Image of Women in German Literature (3)
01:500:315 The Woman in Judaism (3)
01:506:211 Women in Europe and the Americas until 1800 (3)
01:506:212 Women in Europe and the United States since 1800 (3)
01:506:373 or 01:563:373 History of Jewish Women (3)
01:506:393 Advanced Topics in the History of Women (3)
01:508:307 Women and Society in the Islamic Middle East (3)
01:508:316 or 01:563:316 Israeli Women: Historical and Literary Perspectives (3)
01:508:346 Women in Chinese History (3)
01:510:253 History of Witchcraft and Magic (3)
01:512:380 Women in American History I (3)
01:560:356 Women in Italian Literature and Society (3)
01:565:360 Japanese Women Writers (3)
37:575:309 Working Women in American Society (3)
37:575:335 Women and the Labor Movement (3)
01:730:347 Philosophical Issues in Feminism (3)
01:790:335 Women and American Politics (3)
01:790:355 Women and Public Policy (3)
01:790:365 Gender and Political Theory (3)
01:790:423 Contemporary Feminist Theory (3)
01:790:424 Women and Political Development (3)
01:830:362 Psychology of Sex and Gender (3)
01:830:381 Psychology of Women (3)
01:836:150 The Latin American Woman (3)
01:836:210 Gender Across Cultures (3)
01:836:322 Latinas: Migration, Work, and Family (3)
01:836:323 U.S. Latina Feminists (3)
01:840:350 Women in Eastern Religions (3)
01:840:351 Women in Western Religions (3)
01:840:360 Feminist Theology (3)
01:860:435 Social Construction of Gender and Sexuality in Russian Literature (3)
01:920:216 Sociology of Women (3)
01:920:272 Sociology of the Family (3)
01:920:324 Sociology of Gender (3)

01:920:354 Third-World Women (3)
01:920:440 Sexuality and Society (3)
01:920:470 Seminar in the Sociology of Gender (3)

Courses

01:988:101. WOMEN, CULTURE, AND SOCIETY (3)
Credit not given for both 01:988:101 and 202.
Study of women's lives as they vary within a culture and across cultures. Differences according to sex, gender, class, ethnicity, and age examined.

01:988:201. WOMEN'S STUDIES: INTRODUCTION TO HISTORY AND METHODS (3)
Required for major.
History and development of women's studies with an introductory survey of methodological issues in the interdisciplinary study of women and gender.

01:988:202. WOMEN IN AMERICAN CULTURES (3)
Credit not given for both 01:988:202 and 101.
Use major concepts of feminist thought and students' own experiences to focus on such aspects of society shaping women's identity as family, ethnic origins, sexuality, education, media, health, and workplace.

01:988:235. DYNAMICS OF CLASS, RACE, AND SEX (3)
Examination of dynamics of, and connections among, classism, racism, and sexism in contemporary American society; ways they influence and are influenced by the structure of society at large; their effect on individuals; strategies for personal and social change.

01:988:240. SOCIAL ISSUES ABOUT WOMEN IN SCIENCE (3)
Examination of the historical and contemporary careers of women in the science and mathematics professions; analysis of scientific theories about women and men; feminist critique of the nature of the scientific enterprise.

01:988:285. LESBIANS AND GAY MEN AND SOCIETY (3)
Introduction to various disciplines' contributions to understanding the relationship of homosexuality, particularly lesbianism, to society. Includes a section on the political organization and recent theory coming out of the gay movement.

01:988:301. THEORIES OF FEMINISM (3)
Pre- or corequisite: 01:988:101 or 235 or permission of instructor.
Theoretical approach to the social implications of gender. Conservative, liberal, radical-feminist, Marxist, and socialist-feminist theories, with their application to family, work, sexuality, and ideology.

01:988:302. COMPARATIVE FEMINISMS (3)
Compares the development of feminist writing in several historical periods across different cultures.

01:988:307. WOMEN AND THE LAW (3)
Areas of law that regulate the position of women, including birth control, abortion, marriage, alimony, child support and custody, child care, education, employment, criminal law (including rape, prostitution, women in prison, and the juvenile justice system), and constitutional rights. Readings in court decisions, statutes, and supplementary materials.

01:988:312. AFRICAN FEMINISM (3)
Prerequisite: 01:988:101 or 235.
What feminism means to Africa; how gender affects female socialization, women as state subjects; how diverse African feminist strategies differ from and / or parallel other feminisms.

01:988:318. THE GENDERED BODY (3)
Explores the processes by which the body is gendered in different cultures. How is the relationship between physical body, gender, and sexuality forged?

01:988:326. PSYCHOLOGY OF WOMEN (3)
Credit not given for both this course and 01:830:381.
Evaluation of some major psychological conceptualizations of women in light of current research. Bases for these formulations and their influence on the position of women today.

01:988:329. RACE, GENDER, AND NATION (3)
Pre- or corequisite: 01:988:101, 201, or 235.
Introduces central debates in contemporary feminist research and theory about race, gender, and nation.

01:988:344. WOMEN AND LEADERSHIP (3)
By special permission of instructor. Students for this course must have applied and been accepted into the IWL Leadership Scholars Program.
Course explores women's leadership for social change at work, in politics, communities, and household in a variety of historical and contemporary meetings.

01:988:350. GENDER AND SPIRITUALITY (3)
Class explores women's spirituality, feminist theology, and spiritual systems from around the world. How are spiritual systems and practices gendered?

01:988:370. RESEARCH METHODS IN WOMEN'S STUDIES (3)
Prerequisite: 01:988:301 or permission of instructor.
Critical examination of various research techniques used in women's studies with the emphasis needed for interdisciplinary work.

01:988:371. WOMEN AND SOCIAL MOVEMENTS TO 1945 (3)
Credit not given for both this course and 01:506:313.
In-depth analysis of different ways women have organized for change. Focus on three or four case studies using cross-cultural perspectives to illustrate various themes of gender and collective action by women.

01:988:372. WOMEN AND SOCIAL MOVEMENTS SINCE 1945 (3)
Recommended: 01:988:371. Credit not given for both this course and 01:506:314.
Twentieth-century autonomous women's movements, emphasizing the second wave of feminism and cross-cultural perspectives. Selected case studies to illustrate themes of gender and collective action.

01:988:399. SERVICE LEARNING INTERNSHIP (1)
Corequisite: Must be taken in conjunction with a designated CASE (Citizenship and Service Education) course offered in the women's studies program.
Community service placement in women's studies.

01:988:406. WOMEN, WORK, AND SOCIAL CHANGE (3)
Study of problems faced by women working in industry, unions, the home, and professions in light of modern agitation and social trends; analysis of sex-differentiated occupations, legislation, and service roles with attention to biological, psychological, and social differences between the sexes.

01:988:425. INTERNSHIP IN WOMEN'S STUDIES (6)
Permission of associate director required.
Interns work in organizations related to women's studies. Supervision by assigned staff at the placement site. Seminar, student journal, paper, and assessment of work experience required.

01:988:490. SEMINAR: WOMEN AND CONTEMPORARY ISSUES (3)
Pre- or corequisites: 01:988:101 or 235; 301. Open only to seniors enrolled in women's studies major or minor; or by permission of instructor.
Intensive reading and discussion; designed for graduating seniors. Topic changes annually.

01:988:491. SEMINAR IN WOMEN'S STUDIES (3)
Pre- or corequisites: 01:988:101 or 235; 301.
Advanced course on a selected topic in women's studies. Paper is required.

01:988:492. SEMINAR: SPECIAL TOPICS IN WOMEN'S STUDIES (3)
Pre- or corequisites: 01:988:101 or 235; 301. Open to junior and senior majors and minors; others with instructor's permission.
Selected interdisciplinary topics in women's studies. Past topics included sexuality, popular culture, women and religion, and women and the arts.

01:988:493,494. INDEPENDENT STUDY (3,3)
Permission of associate director required.
Independent study project under the guidance of a faculty supervisor.

01:988:497-498. HONORS RESEARCH IN WOMEN'S STUDIES (3,3)
Open only to seniors who are candidates for honors in women's studies. Permission of associate director required. Both terms required.
Individual research project to be written as honors thesis.

DOUGLASS COLLEGE

Information on the following subjects may be found in the General Information section at the back of this catalog: Student Life and Services, Admission, Tuition and Fees, Financial Aid, and University Policies and Procedures.

History and Aims of the College

Douglass College is the largest women's college in the United States, with approximately 3,000 students. Established as the New Jersey College for Women in 1918, the college was renamed in 1955 for Mabel Smith Douglass, who cooperated with the New Jersey State Federation of Women's Clubs in making the case for an institution of higher education for women in New Jersey and who became the college's first dean.

Within the coeducational Rutgers setting, Douglass offers women a high-quality academic atmosphere in which they learn to think critically, study a major field in depth, obtain a broad general education and useful professional skills, and interact with peers and faculty. In a society that still confronts women with barriers to achievement, Douglass College offers a supportive community in which students from diverse cultural and ethnic backgrounds can develop their full potential while at the same time taking advantage of the wide choice of programs and fields of study available in the larger university.

Douglass enjoys a national reputation as a center of research, public service, and community outreach organizations focusing on women. It is the site of the university's model women's studies program; it houses the Institute for Women's Leadership and the Institute for Research on Women; and it is the location of the Center for the American Woman and Politics, a unique service, research, and teaching unit devoted to studying women's political roles. The Blanche, Edith, and Irving Laurie New Jersey Chair in Women's Studies was established at Douglass in 1983. Students at the college are invited to include women's lives in their courses of study and to participate in programs and organizations that involve women's issues.

Whatever their specific interests or courses of study, students at the college are encouraged to challenge attitudes and institutions limiting women's roles, to develop a deeper understanding of themselves as individuals, and to acquire the skills that will enable them to contribute to the society in which they live.

Academic Policies and Procedures

Note: See also the University Policies and Procedures section for regulations that pertain to all the undergraduate colleges at Rutgers–New Brunswick.

STUDENT RESPONSIBILITY TO KEEP INFORMED

In addition to the material in this catalog, Douglass College students are responsible for the information appearing in the Official Notices columns in the Daily Targum and Caellian, all announcements in the Undergraduate Schedule of Classes, notices sent to DPOs, and official announcements posted electronically or broadcast to Rutgers' email addresses.

ACADEMIC CREDIT

Credit by Examination

Advanced Placement. Students entering Douglass College from secondary schools are awarded advanced placement college credit for scores of 4 or 5 on the College Board Advanced Placement Examinations. Credit is given for an advanced placement score of 3 only at the specific direction of the appropriate academic department. Credit is not given for scores of 1 or 2.

College Level Examination Program (CLEP). Students who have taken subject tests of the College Level Examination Program may have the scores and essay tests forwarded to the college for evaluation by the appropriate academic departments.

Proficiency Examinations. An academic department may recommend that credit be granted on the basis of its own proficiency test. Matriculated students may request permission after enrollment to take advantage of this plan. However, it is up to the individual department to decide whether or not to recommend credit.

Transfer Credit

An evaluation of transfer credit is made only after acceptance, at which time the student is asked to submit a catalog of the institution attended, marked to show the courses taken. No credit is accepted in transfer from any university or college other than Rutgers if the grade earned is below the equivalent of C at Rutgers. Credits accepted in transfer by Douglass College are applied toward general degree requirements. However, the appropriate academic department determines whether or not transfer credit is accepted toward fulfillment of major requirements.

Students who have attended another college or university are required to submit official transcripts from all prior educational institutions by November 1 following fall admission or March 1 following spring admission. Failure to reveal all prior work or to provide official transcripts may be cause for denial of transfer credit, revocation of admission, or dismissal.

First-year students admitted to Douglass College who have taken college courses at an accredited college prior to enrolling in September may apply for college credit at Douglass if they provide an official transcript to the class dean by November 1 of their first year. Credit may be granted on the same basis as other transfer credits if an official transcript is submitted. Such courses taken at Rutgers University Summer Session before or after graduation from high school but before entrance into Douglass College may be counted for credit toward graduation at Douglass College under the same conditions as for Douglass College students.

Matriculated students may, with prior approval, receive degree credit for courses at other institutions passed with a grade of C or better. Official transcripts must be received by November 1 for fall-term credit or March 1 for spring-term credit. These credits may not be used to satisfy Douglass College core curriculum requirements.

A maximum of 60 credits of course work acceptable to Douglass College and completed with a grade of C or better at accredited two-year institutions may be transferred to Douglass. No more than 6 credits completed at an accredited two-year institution may be transferred after a student has earned 60 credits toward graduation.

Credit for Prerequisites

Students are not permitted to receive credit for any course that is a prerequisite for a course already passed with a grade of C or better. For example, a student may not take precalculus after having successfully passed a calculus course.

REGISTRATION AND COURSE INFORMATION

Academic Advising

First-year students and sophomores are advised by faculty members. At the beginning of the first year, each student is assigned a faculty adviser whom she may call upon throughout her first two years at Douglass. Her adviser guides her selection of courses, assists in the choice of a major, and, when requested to do so, aids in resolving scholastic difficulties. Juniors and seniors are advised by faculty in their major departments.

Students also may seek advice regarding academic rules and regulations from the Office of Academic Services and from their class deans. Special advisers are available for students in the Educational Opportunity Fund Program (EOF); the Educational Foundations Program (EFP); the Mary I. Bunting Program for mature women; and for students interested in law, health professions, medical technology, and several certificate programs.

Although members of the faculty and staff are available for advice, each student is responsible for understanding the academic regulations and for ensuring that she has completed the course work necessary for completion of the degree.

Registration

Registration for matriculated students begins in October for the following spring term and in April for the following fall term. Matriculated students register through the Rutgers Touchtone Telephone Registration System (RTTRS) or the online web registration system. Registration is completed upon full payment of tuition and fees by the announced deadline prior to start of the term. The university reserves the right to restrict registration in all courses offered and, when necessary, to cancel courses previously announced. See the Tuition and Fees section for further information on registration.

Change of Courses. After registration is complete, a student may change her program by dropping or adding courses or changing sections at times designated by the university registrar. See the University Policies and Procedures section for information on drop / add procedures. Specific drop / add dates are announced regularly. Students are responsible for checking their registration regularly throughout the term and correcting errors in a timely fashion.

Prerequisites. All students are responsible for successfully completing any prerequisites required for enrollment in a course. Failure to complete prerequisites may result in cancellation of registration in the course requiring the prerequisites.

Intercollege Registration. Special permission must be secured from the associate dean of academic services for intercampus registration at Newark College of Arts and Sciences and Camden College of Arts and Sciences.

Concurrent registration at Rutgers–New Brunswick and any other institution during the academic year is not permitted without the prior consent of the Student Academic Affairs Committee.

Course Load

Full-time students usually carry 15 credits per term and must carry a minimum of 12 credits per term; part-time students normally carry 9 credits, and must carry a minimum of 6 credits. Approval of an academic dean is required before a student may take more than 20 credits.

Full-Time and Part-Time Status. For statistical and billing purposes, a full-time student is defined as one who is enrolled in at least 12 credits a term. Those enrolled in fewer than 12 credits are considered part time. All courses taken, whether on a degree credit or nondegree credit basis, are counted for billing and statistical purposes.

Douglass College students must be enrolled full-time unless special permission for part-time status has been obtained in advance from the Student Academic Affairs Committee. Only students in the Mary I. Bunting Program may have part-time status on a continuing basis.

Class Year

The anticipated month and year of graduation (or class year) are assigned upon entrance to the college. A student may change this date by filing a Notice of Reclassification in the Office of Academic Services. The college reserves the right not to extend beyond eight terms the enrollment of any student who has earned 120 credits and completed all other degree requirements.

Departure and Readmission

Leave of Absence. A leave of absence for a period not to exceed one year may be granted a student if, in the opinion of the Student Academic Affairs Committee, such a leave seems educationally advisable. Among reasons that are given consideration are study abroad under an approved program, approved study at another recognized institution for a limited period of time, illness that prevents continuation during the current term, or other reasons of weight. Application forms for a leave of absence may be secured from the Office of Academic Services and must be submitted to the executive secretary of the Student Academic Affairs Committee. Students returning from a leave of absence are expected to complete their registration by the beginning of the term in which they are returning. Students who fail to register for the term following a leave of absence are withdrawn from the college.

Withdrawal. Any student withdrawing from college is considered as having left in good standing provided she is in good academic standing, is not subject to disciplinary action, is not in arrears in payment of college bills, and has signed the official withdrawal form and submitted it to the Office of Academic Services. The effective date of withdrawal is the day on which the registrar receives the form properly completed, unless the form indicates that the student intends to leave at some specified future date.

A student who has withdrawn or been dismissed has no further opportunity to make up the work of an uncompleted term, nor may she again be considered a registered student until she has been readmitted to the college.

A student who withdraws from college during the last two full weeks of instruction in any term automatically receives a grade of F or No Credit in each course in which she was enrolled.

Withdrawal by the College. A student may be withdrawn at the discretion of the college if she fails to complete registration for a term without obtaining an approved leave of absence, fails to comply with a regulation or condition set by the college, fails to submit official transcripts for all secondary and postsecondary work, or misrepresents her academic records.

Readmission. Students seeking readmission to the college should request an application from the Office of Academic Services. Applications for the fall term should be filed in that office by June 15, and notification is sent after July 1 provided the record is complete. A decision is deferred until official grades are received for any courses in progress. Students seeking readmission for the spring term are considered on a space-available basis only. Applications should be filed by November 15.

The readmission decision will be based on evidence of a student's readiness to resume her studies and ability to do satisfactory work at the university. In no case is readmission guaranteed.

For the college's policy on readmission after dismissal for academic reasons, see Scholastic Standing later in this chapter.

Course Information

Graduate Courses. A student may register for graduate courses for undergraduate credit with the approval of the graduate director and the dean of academic affairs of the graduate school in question. Approval generally is not given unless the student has a cumulative grade-point average of 3.0 or better and senior standing. Forms are available in the Office of Academic Services.

Pass/No Credit Courses. Students who have earned 60 or more credits may elect one course for a grade of Pass/No Credit in each of two terms. Students have until the end of the sixth week of the term to inform the registrar which course, if any, will be taken on a Pass/No Credit basis. The decision, once made and communicated to the registrar, may not be changed. The student need not inform the instructor that a course is being taken for a grade of Pass/No Credit. All instructors provide a letter grade for all students. Pass/No Credit is entered on the records of those students who opt to take a course on that basis. Pass is entered for those who received a grade of C or better and No Credit is entered for those who receive a grade of D or F.

No course in the student's major or minor field or required for the student's major, regardless of the department offering the course, may be taken on a Pass/No Credit basis; no course may be taken on a Pass/No Credit basis to fulfill distribution requirements; no education courses or courses offered by the School of Business may be taken Pass/No Credit; no course in the Douglass Scholars Program may be taken Pass/No Credit; and no Summer Session courses may be taken Pass/No Credit.

However, once a student has completed all her major requirements, she is permitted to take courses in her major on a Pass/No Credit basis. A student must have completed all her major requirements in the preceding term before choosing this option, and the total number of courses that may be taken on this basis remains two.

Limited Credit for Internships and Fieldwork. Degree credit for all internships and fieldwork is limited to a total of 9 credits. Internships that are not sponsored by an academic department do not receive academic credit. No credit toward the degree is allowed for work in cooperative education programs. Exceptions to these policies are granted only for work beyond the minimum 120 credits required for the degree.

Grades of F. In general, when a course is repeated in which a student previously earned a grade of F, both the original grade of F and the new grade remain on the transcript and in the cumulative grade-point average. However, for up to four courses repeated at Rutgers, the student may elect to have the original grade of F removed from the cumulative grade-point average, although it will remain on the transcript. A student may exercise this option for any four

courses during the undergraduate years, but it may be used only once for a given course. A student elects this option by filling out a form in the Office of Academic Services at any time after the completion of the term in which the course is repeated. Once the form has been submitted, the first grade is E-credited and the second grade is used in the cumulative grade-point average, even if it is also F. Election of this option may not be revoked.

Grades of D. If a student earns a grade of D and repeats the course, both grades are computed in the cumulative grade-point average, but the student receives degree credit only the first time. The second grade is prefixed with a K.

Grades of C or Better. In general, if a student earns a grade of C or better and repeats the course, no additional credit is earned toward the degree, and the second grade is not computed in the cumulative grade-point average. The record of the repeated course appears on the transcript with an E prefix.

Summer Courses. Students may take Summer Session courses equivalent to no more than 1 credit per week if they have the approval of the appropriate Rutgers department. If summer school work is taken at a community college, no more than 6 credits are accepted after the student has earned 60 credits. Transfer students who have been granted the maximum number of credits (60) from an accredited two-year college may not receive credits beyond that maximum. A properly approved Summer Session form must be filed in the Office of Academic Services before attendance at summer school to ensure that degree credit is granted. No credit is accepted in transfer from any university or college other than a college within Rutgers if the grade earned is below the equivalent of a C at Rutgers.

Declaration and Change of Major

Choice of Major. A student choosing one of the following majors should declare it in the spring of the first year: American studies; visual arts; biochemistry; dance; music; nutritional science; and physics. A student declaring any other major should do so during the sophomore year at the time designated by the registrar as long as she meets any conditions that may be set by the major department. Application and admission to the appropriate department are required of majors in professional schools awarding a joint degree.

Double Major. A double major can be recognized provided a student fulfills the requirements of both major departments by the date of graduation. The student must declare the majors at the proper time and fulfill all conditions required by either department. The double major is recorded on the student's transcript.

Change of Major. A student wishing to change her major should consult the undergraduate director of the department of her proposed new major. If the undergraduate director approves the new program and all the requirements can be met within the time allotted, the student should then file a change-of-major form at the Office of Academic Services. Changes of major may be difficult after the start of the junior year and sometimes require extensive extra course work.

Declaration of Minor

An approved minor may be declared in the second term of the sophomore year or thereafter. However, completion of a minor is not a graduation requirement.

SCHOLASTIC STANDING

The student's scholastic standing is determined by her cumulative grade-point average. See the University Policies and Procedures section for information on the computation of the cumulative grade-point average and other grading regulations. For the purposes of determining academic standing, a grade of TZ is computed as a grade of F in the cumulative grade-point average.

Dean's List

Students who have attained a high term grade-point average are recognized in the Dean's List after the completion of each term. Qualified students are included if they have attained a term grade-point average of 3.5 or better. All courses for which a student is enrolled must be completed and grades recorded at the time the Dean's List is prepared. A minimum of 12 credits per term with letter grades computed in the term grade-point average is required.

Poor Academic Performance

The cumulative grade-point average required for graduation is C or 2.0 (1.951 or higher as computed by the registrar). A student whose cumulative grade-point average is at or less than 1.950 is considered academically deficient. Deficient students are under the jurisdiction of the Student Academic Affairs Committee, composed of elected faculty fellows and administrators, who may dismiss a student from the college, place her on probation, and / or set conditions under which she may continue her enrollment.

Warning. A student is sent a letter of academic warning after any term in which her term grade-point average is below 1.951 (unless she is subject to probation or dismissal). A notice of academic warning is mailed to the student's permanent address of record and / or Douglass Post Office address by the beginning of the following term. In the following term, the student is limited to a course load of no more than 16 credits (including E-credited courses).

Probation. A student is placed on academic probation when her cumulative grade-point average is at or less than the figure below:

After	1 term	1.600
	2 terms	1.700
	3 terms	1.800
	4 terms	1.900
	5 terms	1.950

The number of terms includes all periods of enrollment at Rutgers University and other postsecondary institutions.

After 6 or more terms, a student whose cumulative grade-point average is at or less than 1.950 is subject to dismissal.

While on academic probation, a student is limited to a course load of no more than 16 credits (including E-credited courses), must attend classes regularly, and must meet any other conditions imposed by the Student Academic Affairs Committee. A written notice of probationary status, including any conditions for continuing her enrollment, is mailed to a student's permanent address of record and/or Douglass Post Office address soon after the term grade information is available. A change of grade or summer school grades will not automatically remove a student from probation.

A student who would be on probation for a third consecutive term is subject to dismissal by the Student Academic Affairs Committee regardless of the cumulative grade-point average.

Dismissal. A student ordinarily is dismissed from the college when her cumulative grade-point average is at or less than the figure given below:

After	1 term	no automatic dismissal
	2 terms	1.600
	3 terms	1.700
	4 terms	1.800
	5 terms	1.900
	6 or more terms	1.950

In addition, a student who would be on probation for a third consecutive term is subject to dismissal by the Student Academic Affairs Committee. A student not previously on probation may be dismissed if the cumulative grade-point average at the completion of the term falls at or below the standards listed above. Terms completed at Rutgers University and at other postsecondary institutions are included in the calculation of terms attended.

A notice of dismissal is sent to a student at her permanent address of record as soon as possible after the end of the term. Students who fail to meet conditions of reinstatement or continued enrollment at the college are subject to dismissal from the college and termination of current enrollment at any time during the term.

Appeal. Students dismissed from Douglass College by the Student Academic Affairs Committee may appeal in writing to the committee. Complete details regarding documentation required for the appeal and the deadline dates are included in the dismissal letter.

Grounds for appeal include technical error, changes in temporary grades, extenuating circumstances, and/or additional information not previously available to the committee. Letters of appeal must state the reasons for appeal and, where possible, should be accompanied by appropriate documentation. The decision of the committee is final.

Readmission after Dismissal. Students seeking readmission after dismissal for academic reasons must have earned a minimum of 12 credits at an accredited four-year institution and/or at the Summer Session of Rutgers University with no grade below C. Ordinarily students are not eligible for readmission until they have been out of Douglass College for not less than two full academic terms. See the section on Departure and Readmission for procedures. All educational records are considered, and readmission is not automatic.

DISCIPLINARY HEARING PROCEDURES

The Board of Governors of Rutgers, The State University of New Jersey, has established a list of offenses that may result in separation from the university. These offenses are handled through the University Code of Student Conduct. (See the University Policies and Procedures section.) In addition, each college has a hearing procedure for use in instances where charges against a student are not of sufficient gravity to lead to separation from the university. The Douglass College hearing procedure is available on the Douglass College web site. Lists of separation and nonseparation offenses and details on the hearing procedures also are available from the Department of Community Development.

Degree Requirements

REQUIREMENTS

Credits and Residency

All students must earn at least 120 credits, with a minimum cumulative grade-point average of 1.951. While some programs require additional credits, all students can complete their baccalaureate requirements in four years of full-time study.

Each candidate for the bachelor's degree must earn a minimum of 30 of her last 42 credits as a regularly enrolled undergraduate at Douglass College, but these credits may be earned anywhere within the university. Students entering Douglass College from another division of the university are expected to complete, as a minimum, the equivalent of two full-time terms enrolled at Douglass College.

Liberal Arts Requirements

All students must fulfill the following liberal arts requirements:

1. Core curriculum—9 credits in each of the following areas:
   a. scientific and mathematical experience and problems;
   b. problems and methods in history and the social sciences; and
   c. the humanities.
2. Demonstrated proficiency in a foreign language to the intermediate level.
3. Two courses totaling 6 or more credits related to the experience of women, chosen from a variety of disciplines.
4. A 3-credit course in cross-cultural perspectives.
5. Demonstrated proficiency in intermediate algebra.

Students choose courses to fulfill the liberal arts requirements from an extensive list that is distributed to all first-year and transfer students. Courses chosen must be taken at Rutgers University in New Brunswick.

English Composition

Ordinarily, all new students are assigned to a course in English composition. Satisfactory completion of 01:355:101 or its equivalent is a graduation requirement. Additionally, students must complete satisfactorily a course formally designated by the college as writing intensive.

On the basis of placement tests, some students also may be required to take a noncredit writing skills course or a multiple-course sequence in English composition. Students are placed in writing courses based on university-administered placement tests.

Students are required to enroll in the appropriate writing course each term until they have fulfilled the requirement.

Completion of a Major

A student must complete an approved major. Majors available to Douglass College students are listed in the Programs of Study chapter in this section.

Second Bachelor's Degree

A student who holds a credential equivalent to the baccalaureate degree in the United States from an accredited institution may pursue a second degree at Douglass College. A minimum of 45 credits beyond the first degree is required, at least 30 of which must be earned at Rutgers University. Requirements include the completion of a full major and additional work in the arts and sciences. For further information, contact the Office of Academic Services.

GRADUATION

Degrees are conferred by the university on the recommendation of the Douglass College Fellows. Degrees are dated October, January, or May, but diplomas are issued only at the annual commencement convocation. A student who completes the requirements for her degree at any other time may request an interim certificate for use in lieu of the diploma until the next commencement exercises. A student must complete all degree requirements in their entirety in order to participate in the commencement exercises. Official notice of all academic work should be received by the registrar at least seventy-two hours prior to the graduation ceremony.

Degrees are conferred *in absentia* only if the candidate has been excused in advance from attendance at commencement exercises by the appropriate official of the college.

Diplomas are withheld from all students whose financial or library accounts are not clear.

To ensure that her eligibility may be verified, a candidate for graduation is asked to submit a Graduation and Diploma Application form at least three months before the expected degree date. This is especially important for ordering diplomas in time for the May commencement.

Graduation with Honors

"Honors" are awarded to all graduating seniors with a cumulative grade-point average of 3.496 or better, "High Honors" to those with an average of 3.696 or better, and "Highest Honors" to those with an average of 3.896 or better.

Phi Beta Kappa

Each spring term, the Phi Beta Kappa Society invites to membership the outstanding students of the junior and senior classes. Election to the society is based on high academic achievement, a record of course work that is at least three-quarters liberal in nature, proficiency in a foreign language through the intermediate level, a minimum of two years equivalent of full-time course work at Rutgers University, and breadth of scholarship. Phi Beta Kappa, established in 1776, is the oldest and most widely recognized liberal arts honorary society in the United States.

Prizes and Awards

Douglass College students who excel in their academic discipline or in their contribution to the college or the greater community may be recognized with particular prizes or awards, many of which are made possible by the Associate Alumnae of Douglass College. Recipients usually are notified late in the spring term.

Programs of Study

MAJORS

The following majors are available to Douglass College students. They are offered by the Faculty of Arts and Sciences, the School of Business–New Brunswick, the Mason Gross School of the Arts, Cook College, the School of Communication, Information and Library Studies, the School of Management and Labor Relations, and the Edward J. Bloustein School of Planning and Public Policy. See the Programs of Study for Liberal Arts Students section or the appropriate professional school section for detailed program information.

- Accounting
- Africana Studies
- American Studies
- Anthropology
- Art History
- Biochemistry *
- Biological Sciences
- Biomathematics
- Biotechnology *
- Cell Biology and Neuroscience
- Chemistry
- Chinese
- Classics
- Communication
- Comparative Literature
- Computer Science
- Dance
- East Asian Languages and Area Studies
- Economics
- English
- Environmental Policy, Institutions, and Behavior *
- Environmental Sciences *
- Evolutionary Anthropology
- Exercise Science and Sport Studies
- Finance
- Food Science *
- French
- Genetics and Microbiology
- Geography
- Geological Sciences
- German
- History
- History / French
- History / Political Science
- Information, Technology, and Informatics
- Italian
- Jewish Studies
- Journalism and Media Studies
- Labor Studies
- Latin American Studies
- Linguistics
- Management
- Management Science and Information Systems
- Marine Sciences
- Marketing
- Mathematics
- Medical Technology
- Medieval Studies
- Meteorology *
- Middle Eastern Studies
- Molecular Biology and Biochemistry
- Music
- Nutritional Sciences *
- Philosophy
- Physics
- Plant Science *
- Political Science
- Portuguese
- Psychology
- Public Health
- Puerto Rican and Hispanic Caribbean Studies
- Religion
- Russian
- Russian, Central and East European Studies
- Sociology
- Spanish
- Statistics
- Statistics / Mathematics
- Theater Arts
- Urban Studies
- Visual Arts
- Women's Studies

* Offered through Cook College. Please see the Cook College section of this catalog for program information.

A Bachelor of Arts degree is conferred for all majors except the following, for which a Bachelor of Science degree is awarded: accounting; biotechnology; environmental policy, institutions, and behavior; environmental sciences; evolutionary anthropology; exercise science and sport studies; finance; food science; geological sciences management; management science and information systems; marine sciences; marketing; medical technology; meteorology; nutritional sciences; plant science; and public health. Either a Bachelor of Arts or a Bachelor of Science degree is available in the following majors: computer science and physics. For further information, see departmental listings in the Programs of Study section.

Students majoring in a department of the School of Business–New Brunswick, the School of Communication, Information and Library Studies, or the Edward J. Bloustein School of Planning and Public Policy receive a joint degree from Douglass College and that school.

Individualized Major

Students who wish to pursue a major other than those regularly available may make application in writing for an individualized major to the dean's office of the appropriate faculty. See Individualized Major in the Programs of Study for Liberal Arts Students section for further information.

MINORS

Minor programs of study are offered by various disciplines and are available to students attending Douglass College as supplements to their major programs of study. Currently these are:

- American Studies
- Animal Science
- Anthropology
- Art History
- Biological Sciences
- Chemistry
- Chinese
- Classical Humanities
- Cognitive Science
- Communication
- Comparative Literature
- Economics
- English
- Entomology
- Environmental and Business Economics
- Food Science
- French
- Geography
- Geological Sciences
- German
- Greek (Ancient)
- Greek (Modern)
- History
- Human Ecology
- Hungarian
- Italian
- Japanese
- Jewish Studies
- Labor Studies
- Latin
- Linguistics
- Marine Sciences
- Mathematics
- Meteorology
- Music
- Natural Resource Management
- Nutrition
- Operations Research
- Philosophy
- Physics
- Plant Science
- Political Science
- Portuguese
- Psychology
- Puerto Rican and Hispanic Caribbean Studies
- Religion
- Russian Language and Literature
- Science and Agriculture Teacher Education
- Sociology
- Spanish
- Statistics
- Theater Arts
- Women's Studies

Interdisciplinary minors are available in:

- African Area Studies
- Aging
- Asian Studies
- Cinema Studies
- Health Care
- Latin American Studies
- Medieval Studies
- Middle Eastern Studies
- Professional Youth Work
- Russian, Central and East European Studies
- Science, Technology, and Society

OTHER ACADEMIC PROGRAMS

Douglass College is unique at Rutgers University in the organizational structure of its administration. Committed to a holistic approach to student development, academic as well as cocurricular programs and services for students are all offered within the college as part of a combined division of Academic and Student Affairs.

Douglass Scholars Program

Designed for intellectually gifted students, the Douglass Scholars Program offers a four-year program of academic enrichment and cultural opportunity. Douglass scholars enroll in two honors seminars during their first year in the program. As sophomores or juniors, they enroll in the Scholars Program Sophomore-Junior Seminar. As juniors and seniors, they pursue honors work either in their major departments, independently with a faculty supervisor, or through the Mabel Smith Douglass Program. A limited number of continuing students are offered a place in the program based on their outstanding academic record. The program staff provides individual advising to each Douglass scholar, including assistance with career planning. The special courses for the program are listed in the course listing chapter in this section.

Mabel Smith Douglass Honors Program

The Mabel Smith Douglass Honors Program provides outstanding Douglass College seniors with the opportunity to do independent research that leads to an interdepartmental thesis or a thesis in the student's major field. The research project replaces two academic courses in each term of the senior year. Students must complete both terms in order to receive degree credit. Students with a grade-point average of 3.4 in their major and a cumulative grade-point average of 3.4 overall are eligible to apply to the program during the second term of their junior year.

Douglass Project for Rutgers Women in Math, Science, and Engineering

The Douglass Project for Rutgers Women in Math, Science, and Engineering offers a wide range of academic and enrichment support programs to encourage the persistence of women studying mathematics, science, and engineering. Project SUPER is an initiative that features summer residential orientation for entering students, peer and faculty mentoring, a course on research skills and methods, and a paid research placement. The Douglass Project Outreach Program is a community service component that allows undergraduates to teach and assist in science classrooms and after-school programs at a local elementary school.

Academic and career-related programs coordinated by the Bunting-Cobb Graduate Fellows are held in Bunting-Cobb, a residence hall for students in math, science, and engineering.

Certificate Programs

All certificate programs offered in New Brunswick are available to Douglass College students. Certificates are awarded only with the awarding of a baccalaureate degree in an approved major.

Five-Year Teacher Certification Program

Teacher certification programs in many areas of specialization are available to Douglass College students through the Graduate School of Education. This program leads to the bachelor's degree and the Master of Education. Education students major in a subject other than education since the teacher certification programs do not constitute a major. An application and acceptance into the program are required. For further information, see Education 300 in the Programs of Study for Liberal Arts Students section.

Eight-Year Bachelor's Degree/M.D. Program

The bachelor's degree / M.D. program, offered jointly by Douglass College and the University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School, permits selected students to obtain a bachelor's degree and a medical degree in seven or eight years of study. Students are selected for this program at the conclusion of their sophomore year and are granted provisional admission into the medical school, with a second review of the student's credentials during the fourth year of the program required to qualify for formal admission to the medical school. In the junior year, students begin to take medical science courses along with courses in fulfillment of their undergraduate degree. The bachelor's degree typically is awarded by the end of the fifth year, and the medical degree by the end of the eighth year. For further information, contact the Douglass Health Professions Office in College Hall.

Five-Year Bachelor's Degree/M.B.A. Program

The bachelor's degree / M.B.A. program, offered by Douglass College in cooperation with the Graduate School of Management in Newark, permits students from the regular arts and sciences curricula at Douglass to accelerate, completing both the baccalaureate and Master of Business Administration degrees in a total of five years of study. Students who qualify for the program spend three years at Douglass followed by two years of course work offered by the Graduate School of Management. Further information may be obtained from the Office of Academic Services, College Hall, Room 104.

Five-Year Bachelor's Degree/M.P.P. Program

The bachelor's degree / M.P.P. program, offered by Douglass College in cooperation with the Edward J. Bloustein School of Planning and Public Policy, permits students from the regular arts and sciences curricula at Douglass to complete both the baccalaureate and Master of Public Policy degrees in a total of five years of study.

Students admitted to the program take up to six graduate courses in public policy in their senior year, followed by a summer internship, and complete their graduate studies in the fifth year. Further information may be obtained from the Office of Academic Services, College Hall, Room 104.

Five-Year, Dual-Degree Program in Engineering and Liberal Arts/Sciences

A five-year, dual-degree program that leads to a B.A. degree from Douglass College and a B.S. degree from the School of Engineering is available. For more information, see Programs of Study in the School of Engineering section.

Pharmacy

Students who wish to earn a degree in pharmacy must be admitted directly to the College of Pharmacy. However, Douglass offers a sequence of courses that prepares students for consideration for admission by the College of Pharmacy. Students interested in the pharmacy curriculum are urged to consult the Office of the Dean at the College of Pharmacy.

Certificate Program in International Studies

Douglass College, in cooperation with the Faculty of Arts and Sciences, the School of Business–New Brunswick, the School of Communication, Information and Library Studies, and the Edward J. Bloustein School of Planning and Public Policy, offers a certificate program in international studies. The program, which is appropriate for students in all majors, includes three tracks: (1) international business and political economy, (2) women, world politics, and global leadership, and (3) transnational communication. A total of 21 credits, selected from a prescribed list of courses, is required for completion of the certificate. In addition, students must achieve an intermediate level of proficiency in the language of a target culture. Ordinarily, students in the certificate program are expected to spend one year as residents in one of the Douglass cultural houses. For more information, contact the program director.

Institute for Women's Leadership (IWL)

Douglass College is one of six members of this consortium located on the Douglass campus. Douglass students may apply to the two-year IWL Scholars Program that prepares undergraduate students to be informed, innovative, and socially responsible leaders.

Global Village

Douglass students can expand their horizons by living in one of the cultural houses of the Global Village. Residents enroll each term in a credit-bearing course tailored to the theme of the house and taught by the house's live-in director. More information is available in the Student Life and Services section of this catalog and in the course listing chapter in this section.

Study Abroad

Douglass students may study abroad with one of the Rutgers programs, through a program of another U.S. institution, or by enrolling directly in a university abroad. For more information on the Rutgers programs, see the description under the Study Abroad heading in the Programs of Study for Liberal Arts Students section of this catalog. Students considering other arrangements are urged to consult the Associate Dean for Academic Services in advance to review their plans.

Associate Alumnae Extern Program

This program for sophomores, juniors, and seniors provides a week's experience working with a sponsor in a career field of interest, ordinarily but not necessarily related to the major field of study. This noncredit program usually does not involve any prerequisites. Externships are offered during winter break and during spring vacation.

Mary I. Bunting Program for Mature Women

This program provides an opportunity for mature women who are beginning or resuming their college education on a full- or part-time matriculated basis. Students are enrolled automatically in the program if they have been graduated from high school for at least five years prior to enrollment at Douglass. Part-time students in the program ordinarily must carry a minimum of 6 credits. Candidates for the baccalaureate program must fulfill the usual entrance requirements for admission to Douglass College. They are not, however, required to take the Scholastic Aptitude Test. More information may be obtained from the Bunting Program adviser.

New Jersey Educational Opportunity Fund (EOF)

Grants for students eligible for the program are provided under the New Jersey Educational Opportunity Fund Act of 1968. The program includes services that enhance the capacity of students to earn a college degree, such as the Summer Achievers Institute for incoming first-year students; tutorial programs; skills and orientation workshops; and counseling on academic and career choices, finances, and personal problems.

Educational Foundations Program (EFP)

The Educational Foundations Program provides special services for students with specific needs. Among these services are academic and personal counseling, and a one-week residential orientation program for incoming first-year students in June.

Course Listing

See the Programs of Study for Liberal Arts Students section for course offerings available to Douglass College students. The following are specifically Douglass College courses:

06:090:101. SHAPING A LIFE (3)
Limited to first-year Douglass College students.
Study of the ways women's lives are shaped as they are lived and as they are told in autobiography, biography, and oral history. Analysis and discussion of presentations by a broad spectrum of speakers, with accompanying readings.

06:090:130. INTRODUCTION TO SCIENTIFIC RESEARCH (3)
Pre- or corequisites: 01:640:112 or 115; one course in the natural sciences. Enrollment limited to students in Project SUPER.
How research projects are developed and what skills are needed to undertake research projects. Lectures, discussions, and small-group activities. Serves as a prerequisite for the research-oriented internship of Project SUPER.

06:090:198,199. SCHOLARS PROGRAM SEMINAR (3,3)
Open only to first- or second-year students in the Douglass Scholars Program.
Research-oriented interdisciplinary seminar. Scholars choose from among four seminars each term.

06:090:248,249. SCHOLARS PROGRAM TUTORIAL (3,3)
By arrangement. Open only to second-year students in the Douglass Scholars Program.
Individualized study within or outside the student's intended major aimed at in-depth analysis of some major concerns of the field.

06:090:273,274. AFRICANA CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass Africana House. May not be used in satisfaction of major requirements; may be repeated for credit.
Cultural, social, and political life of peoples of Africa. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:275,276. FRENCH CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass French House. May not be used in satisfaction of major requirements; may be repeated for credit.
Cultural, social, and political life of peoples of France and other French-speaking countries. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events. Development of active communication skills through immersion in the daily foreign-language activities of the French House.

06:090:277,278. CHINESE CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass East Asian or Chinese House. May not be used in satisfaction of major requirements; may be repeated for credit.
Cultural, social, and political life of peoples of China. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:279,280. JAPANESE CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass East Asian or Japanese House. May not be used in satisfaction of major requirements; may be repeated for credit.
Cultural, social, and political life of peoples of Japan. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:281,282. GERMAN CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass German House. May not be used in satisfaction of major requirements; may be repeated for credit.
Cultural, social, and political life of peoples of Germany. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events. Development of active communication skills through immersion in the daily foreign-language activities of the German House.

06:090:283,284. ITALIAN CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass Italian House. May not be used in satisfaction of major requirements; may be repeated for credit.
Cultural, social, and political life of peoples of Italy. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events. Development of active communication skills through immersion in the daily foreign-language activities of the Italian House.

06:090:285,286. SLAVIC CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass Slavic House. May not be used in satisfaction of major requirements; may be repeated for credit.
Cultural, social, and political life of Slavic-speaking peoples of Eastern and Central Europe. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:287,288. SPANISH CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass Spanish House. May not be used in satisfaction of major requirements; may be repeated for credit.
Cultural, social, and political life of peoples of Spanish-speaking countries. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events. Development of active communication skills through immersion in the daily foreign-language activities of the Spanish House.

06:090:289,290. PUERTO RICAN AND HISPANIC CARIBBEAN CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass Casa Boricua. May not be used in satisfaction of major requirements; may be repeated for credit.
Cultural, social, and political life of Puerto Rico and Spanish-speaking Caribbean countries. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:291,292. KOREAN CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass East Asian or Korean House. May not be used in satisfaction of major requirements; may be repeated for credit.
Cultural, social, and political life of peoples of Korea. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:293,294. EAST ASIAN CULTURAL EXPERIENCE (1.5,1.5)
Limited to and required of residents of the Douglass East Asian House. May not be used in satisfaction of major requirements; may be repeated for credit.
Cultural, social, and political life of peoples of East Asia. Emphasis placed on learning through direct contact with resource persons, audiovisuals, field trips, and programming of cultural events.

06:090:298,299. SCHOLARS PROGRAM SOPHOMORE-JUNIOR SEMINAR (3,3)
Open only to students in the Douglass Scholars Program.
Interdisciplinary seminar, oriented either to research or to community service. Students enrolled in sections designated Citizenship and Service Education (CASE) may be required to enroll concurrently in 06:090:300 Women in Community Service.

06:090:300. WOMEN IN COMMUNITY SERVICE (1)
Corequisite: Enrollment in 06:090:298 or 299. Open only to students in the Douglass Scholars Program.
Community service internship taken in conjunction with a designated Citizenship and Service Education (CASE) course offered through the Douglass Scholars Program.

06:090:361. COLLOQUIUM (3)
Lecture series with recitation. Title announced as offered.

06:090:395,396. SCHOLARS PROGRAM: INDEPENDENT STUDY (3,3)
By arrangement. Open only to third-year students in the Douglass Scholars Program. May not be taken P/NC.
Independent study, usually in student's major department. Students develop, under faculty supervision, their own research design and work on the project for one or both terms.

06:090:410,411. GENERAL HONORS INTERDISCIPLINARY PROJECT (3,3)
Open only to seniors in the Douglass Scholars Program. Degree credit not given for both these courses and 06:090:497,498.
Supervised independent research project leading to an interdisciplinary senior honors thesis or its equivalent.

06:090:497,498. MABEL SMITH DOUGLASS HONORS PROJECT (BA,BA)
Open to Douglass College seniors by application. Degree credit granted only after completion of two terms.
Independent research and preparation of a written thesis under the direction of a faculty member. Taken in lieu of two courses in each term of senior year.

06:090:499. SUPERVISED RESEARCH (3)
By permission only. Open only to seniors.

Administration and Fellows

Barbara A. Shailor, Dean of Douglass College
Joan Apple Lemoine, Dean, Academic and Student Affairs
Linda Ballan, Assistant Dean, Administration
Suzan Armstrong-West, Associate Dean, Academic Programs
Jocelyn Briddell, Associate Dean, Student Life
S. Beth Howard, Acting Associate Dean, Academic Services
Marjorie W. Munson, Associate Dean, Research, Evaluation, and Scholarships
Elizabeth O'Connell-Ganges, Associate Dean, Community Development
Rebecca Reynolds, Assistant Dean, Academic Affairs
Prabha K. Trivedi, Assistant Dean, Academic Services
C. Maxene Vaughters-Summey, Assistant Dean and Director, Educational Opportunity Fund
Gail Wittman, Assistant Dean, Student Life
Joanne Aguglia, Director, College Center
Katherine Birckmayer, Director, College Mission Programs
Mary Ann Jensen, Director, Psychological Services
Deirdre Kramer, Director, Douglass Scholars Program
Ellen Mappen, Director, Douglass Project for Rutgers Women in Math, Science, and Engineering
Jennifer O'Neill, Director, Recruitment
Kimberly Owens, Acting Director, New Student and Diverse Communities Programs
Rossanna Taal Punzalan-Winn, Director, Residence Life
Cheryl F. Wilson, Director, Campus Activities
Ella Mae Blocker, Assistant Director, Educational Opportunity Fund
Michelle O. Rosynsky, Assistant Director, Residence Life
Diane O. Simmons, Assistant Director, Psychological Services
Terri Boyer Tillbrook, Assistant Director, Douglass Project for Rutgers Women in Math, Science, and Engineering
Susan Klau, Registrar

FELLOWS

Members of the faculty and staff at Rutgers–New Brunswick who have a particular interest in the mission of Douglass College serve as fellows. The fellows constitute the governing body of the college. Among their broad areas of responsibility are curricular matters, such as the establishment and implementation of college admissions policy and general education, distribution, and graduation requirements; establishment of standards for the awarding of college scholarship money; recommendation of the professional courses and programs available in the college; teaching of college honors, interdisciplinary, and mission-related courses; serving as general academic advisers; and overseeing student life.

LIVINGSTON COLLEGE

Information on the following subjects may be found in the General Information section at the back of this catalog: Student Life and Services, Admission, Tuition and Fees, Financial Aid, and University Policies and Procedures.

History and Aims of the College

Livingston College was founded in 1969 with the mission of bringing together a diverse group of students, faculty, and staff in a shared-learning community committed to the pursuit of excellence and academic innovation. Today, that mission is embraced by the entire university, and Livingston College distinctively emphasizes building community through leadership and understanding.

Dedicated to expanding opportunities for its students, the college fulfills its mission through its core curriculum, its minor in organizational leadership, its internship programs, and its student life activities. Livingston offers its students the personal attention of a small college community in the midst of a major research institution rich in outstanding opportunities.

Its original motto, "Strength through Diversity," particularly comes to life in the college's special lecture series on global futures. Livingston's goal is to offer an undergraduate education that prepares every student to think critically and to act responsibly in the contemporary world. The college offers the broadest possible choice of more than sixty majors. The academic program is designed to give students an excellent foundation in the liberal arts and an in-depth understanding of their chosen specialty. Courses in fulfillment of distribution requirements give students experience in the humanities, natural and social sciences, and quantitative and analytical studies. Students also are introduced to the diversity of world cultures and develop insight into the origins and character of significant contemporary issues.

At Livingston, students may minor in organizational leadership. Unifying the theoretical and practical elements of organizational dynamics, the minor ensures that the student's academic background contains a component that potential employers recognize immediately as valuable to their organizations. The program complements the instruction offered in Rutgers' professional schools and offers important curricular options to students pursuing degrees in arts and sciences.

The college is committed to providing an open forum where ideas and values may be examined and restructured in the light of newly acquired knowledge both in and beyond the classroom.

Academic Policies and Procedures

Note: See also the University Policies and Procedures section for regulations that pertain to all the undergraduate colleges at Rutgers, The State University of New Jersey, in New Brunswick.

STUDENT RESPONSIBILITY TO KEEP INFORMED

In addition to the information provided in this catalog, Livingston College students are responsible for learning information posted in the Undergraduate Schedule of Classes, the Livingston College Student Rights and Responsibilities Handbook, the official notices printed in the Daily Targum, the notices sent to campus post office boxes, and all official announcements sent or posted electronically.

ACADEMIC CREDIT

Students may receive academic credit through Advanced Placement, the College Level Examination Program, and Proficiency Examinations. A maximum of 30 credits from the first two programs combined is accepted toward graduation.

Advanced Placement. Students entering Livingston College from secondary school are awarded advanced placement college credit for scores of 4 or 5 on the College Board Advanced Placement Examinations. Credit earned in this manner does not count as in-class work. Credit earned in this manner counts as nonclassroom credits toward graduation. High school seniors interested in taking one or more of these examinations are advised to consult their guidance counselors.

College Level Examination Program (CLEP). Students who have taken the College Level Examination Program tests receive 3 credits for each exam, for a combined total of no more than 18 credits. Scores must be at or above the seventy-fifth national percentile.

Requests for credit must be submitted to the appropriate department for evaluation. Students do not receive credit for language examinations in their native language.

Proficiency Examinations. Students may take a proficiency examination in a subject when they believe they have mastered appropriate course material. Application for such examinations must be made to the Office of the Dean with approval of the head of the department in which the subject is offered. Credit or advanced placement is awarded for satisfactory performance in examinations as determined by the appropriate department. Proficiency examinations are

not allowed ordinarily after failures in a course or in a case where the primary value of the course lies in active student participation. Course credit by equivalence examinations is not given for required writing courses or for 01:640:025 Elementary Algebra and 01:640:026 Intermediate Algebra.

Transfer Credit

Students transferring from an accredited institution are required to submit an official transcript of work completed. Credit is not granted for courses taken at any other university or college if the grade earned is below a C or its equivalent. "Pass" grades are accepted from students transferring from a school where the pass/fail symbol is used, unless the pass includes a grade of D. Credit is not granted for nonacademic or skill courses, including some physical education, recreation, health education, typing, military science, basic skills, developmental, and vocational courses such as computer programming, data processing, engineering technology, fire science, police science, and X-ray technician. A maximum of 8 credits is granted for nursing courses or military medical corps training. No transfer credit is granted for courses taken while a student is on disciplinary suspension from Livingston College or while enrolled at the college during the academic year.

Official evaluation of transfer credits takes place after the student has indicated his or her intent to enroll at Livingston College. Most students receive their evaluations on the day of registration.

Continuing students should receive prior approval for courses they intend to take for credit at another university.

REGISTRATION AND COURSE INFORMATION

Academic Advising

It is important that all students consult with an academic adviser prior to the registration period each term in order to plan their programs. For more information on advising, see Academic Support Services in the Programs of Study chapter later in this section.

Registration

Registration for matriculated students begins in November for the following spring term and in April for the following fall term. Matriculated students register through the Rutgers Touchtone Telephone Registration System (RTTRS). Registration is completed upon full payment of tuition and fees by the announced deadline prior to start of the term. The university reserves the right to restrict registration in all courses offered and, when necessary, to cancel courses previously announced. See the Tuition and Fees section for further information on registration.

Late registration begins on the first day of classes each term and continues for one week, after which students may not register. A late registration fee of $50 is charged.

Adjustment. Students may drop and/or add courses within prescribed periods announced by the Livingston College registrar at the beginning of the term. All students, except for first-term, first-year students, may make adjustments to their course registration using the automated system.

Intercampus Registration. Full- or part-time study at Camden College of Arts and Sciences or Newark College of Arts and Sciences is permitted in unusual situations and for one term only. Approval must be obtained from the Office of the Dean. Livingston College students registered for classes during the academic year are not permitted to register for course work at any other institution.

Confirmation of Registration. At the beginning of each term, students should confirm their registration using the RTTRS. Students are responsible for immediately identifying any errors and bringing these errors to the attention of the registrar.

Deregistration. Preregistrations may be canceled when term bills have not been paid or when a financial obligation from the previous term has not been met. This process is called "deregistration." Students who are deregistered receive a notice to this effect. On receipt of this notice, the student is responsible for clearing all debts. When debts are cleared, the student should present the receipt to the student accounts department and proceed to register for classes. Students who are deregistered through no fault of their own should contact the Office of the Dean.

Course Load

Students at Livingston College are expected to enroll on a full-time basis. Part-time status is conferred only in exceptional circumstances and for a limited time. Full-time students normally should carry an average of 15 credits per term in order to graduate in four years. Registration for at least 12 credits each term is necessary to be considered a full-time student.

Part-Time and Overload Status. Students taking fewer than 12 credits each term are considered part-time; more than 20 credits taken in a given term are considered an overload. Special permission prior to registration must be obtained from the Office of the Dean in either case. To apply for part-time or overload status, students must obtain a request form from the Academic Information Center and meet with the assistant dean for academic policy. Special status is effective for only one term, and reapplication must be made for each registration period.

Students who change from full-time to part-time status after the term begins are obligated to pay full-time tuition costs unless an adjustment is made during the first ten days of classes.

Course Information

Repeated Courses. Repeated courses, which must be taken at Rutgers, may alter the grade-point average, but they do not increase the number of credits earned. Generally, all grades earned remain in the transcript. Within a given subject code, students may not repeat, for degree credit, courses bearing the same course number. Students may not repeat a prerequisite if they have passed with a grade of C or higher the course supported by the prerequisite.

Grades of F. For up to four courses totaling no more than 12 credits, a student may repeat a failed course, improve the grade, and remove the F from the cumulative grade-point average. If a student fails the course a second time, only the second F will enter the cumulative grade-point average.

Grades of D. If a student earns a grade of D and repeats the course, both the original grade and the new grade will count in the cumulative grade-point average. To effect this change, the student must file a Deletion of Grade form at the Academic Information Center.

Grades of C and Higher. Students may not repeat a course in which they earned a grade of C or higher for the purpose of improving their cumulative grade-point average. In such cases, the repeated course is excluded automatically from the grade-point average and from the total of credits earned for the degree.

Graduate Courses. Seniors may register for graduate courses with the approval of the graduate director and the dean of academic affairs of the graduate school in question. Approval generally is not given unless the student has a cumulative grade-point average of 3.0 or better and senior standing. Credits earned may not be double-counted toward an undergraduate degree and a graduate degree.

Pass/No Credit Courses. Students who have earned 60 or more credits may elect one course for a grade of Pass/No Credit in each of two terms. Courses in the major* and minor, business courses, and courses taken to fulfill a college requirement may not be taken on a Pass/No Credit basis. The decision to elect this option can be made no later than the end of the registration adjustment period and once made cannot be changed. Grades of A, B, and C correspond to Pass; grades of D and F (NC) correspond to No Credit. To qualify for the dean's list in any given term, students must take at least 12 credits graded with the alphabetic grading system.

Physical Education Courses. Individual and team activities courses granting 1 or 2 credits each may be taken for degree credit only by students majoring in exercise science and sport studies.

Declaration of Major

Students who intend to declare a major formally are required to have completed a minimum of 30 credits. All students are required to declare a major formally by the end of their sophomore year (60 credits).

An academic review by a Livingston College academic adviser is required prior to the departmental declaration of major. Prior to declaring the major, the student must have completed, with a grade of C or better, courses fulfilling area distribution requirements one through four, the basic skills mathematics requirement, and 01:355:101 Expository Writing. A student's Declaration of Major form is not processed and forwarded to the registrar until the graduation requirement review has taken place.

Majors are officially declared by completing the following steps:

1. Complete a Declaration of Major form and a Graduation Requirement Review form with a general adviser (see Distribution Requirements). Forms are available in the Academic Information Center.
2. Obtain a current transcript from the Administrative Services Building.
3. Have an interview with a faculty member of the appropriate department/discipline and obtain his or her signature indicating approval.
4. Leave the transcript and the departmental copy of the Declaration of Major form with the department.
5. Return all remaining copies of the signed form and the signed Graduation Requirement Review form to the Academic Information Center.

Departure and Readmission

Withdrawal. A student who intends to leave college should apply formally for withdrawal. Because of the seriousness of this decision, it is strongly recommended that family members be informed. In cases where students are uncertain about leaving the college, they should meet with a dean, an academic adviser, or a member of the counseling center staff.

Students in academic difficulty or on probation should meet for an exit interview with the member of the dean's staff responsible for withdrawal and readmission, before submitting the withdrawal form for processing. Those with low cumulative grade-point averages or credit deficiencies may be required to take courses elsewhere before returning to Livingston College.

Students who leave the college for any reason other than graduation must withdraw officially prior to the beginning of the term, or they will remain accountable for academic and financial obligations incurred during the term of registration. Students who submit withdrawal forms after the first day of the term may be eligible for a partial reduction of tuition and other charges. See the Tuition and Fees section for further information.

To withdraw from the college, students should obtain the appropriate forms in Lucy Stone Hall, Room A-224.

Readmission. Students who have discontinued enrollment at the college for at least one term must apply to the Office of the Dean for readmission. Students who withdraw from the college after the twelfth week of the term cannot apply for readmission for the following term. To be considered for acceptance to the college for the fall term, readmission applications must be submitted by May 15; for readmission in January, applications must be received in the dean's office before November 15.

For the college's policy on readmission after dismissal for academic reasons, see Scholastic Standing below.

Readmitted students with 60 or more credits must meet university and college requirements in effect when the withdrawal was granted. Readmitted students with fewer credits must fulfill the current college and university requirements.

SCHOLASTIC STANDING

For information on the computation of the cumulative grade-point average and other grading regulations, see the University Policies and Procedures section.

Dean's List

Each term, outstanding students are honored by inclusion in the Dean's List. In order to qualify, the student must have passed 12 or more degree credits and achieved a term grade-point average of 3.5 or better.

* Except for majors in social work.

Academic Performance

Academic Review. Students of Livingston College are evaluated for academic performance by the Scholastic Standing Committee, comprised of faculty fellows of the college.

Livingston College allows students a maximum of eleven full-time equivalent terms to earn the 120 credits necessary for graduation. Students must maintain a minimum cumulative grade-point average of 1.6 until they have earned 18 degree credits to avoid probation. After that, the cumulative grade-point average requirement rises, as shown on the chart of scholastic standing, which is available in the Academic Information Center, Lucy Stone Hall, Room A-216. A deficiency in cumulative grade-point average places a student in one of the following categories:

1. Probation: A student is in danger of being academically dismissed from the college when written notification of probationary status is received. While on probation, the student is expected to meet regularly with an academic adviser. He or she must complete 12 credits of course work during the term on probation with a minimum grade of C in each course, and grades in all courses that term must yield a minimum term grade-point average of 1.733. Failure to meet these conditions results in dismissal. In addition, the student also should finish the work required to complete any TNC (Temporary No Credit) grades given during the previous term, though this will not result in the student being removed from academic probation.
2. Dismissal: A student is separated from the college.

Appeal. A student placed on academic probation may appeal in writing. Grounds for appeal of probationary status include miscalculation of credits earned or changes in temporary grades. The appeal must state the reasons for the appeal and be submitted to the Scholastic Standing Committee.

A student dismissed from Livingston College by the Scholastic Standing Committee may appeal only by letter to the committee within one week of notification of the dismissal. Grounds for appeal include technical error, extenuating circumstances, and/or additional information not previously available to the committee. The letter of appeal must state the reasons for the appeal and must include documentation in support of the appeal. The committee notifies the student of its decision within one week of reconsideration. The decision of the committee is final.

The letter of appeal of probationary status or of dismissal must be written by the student, although advice in formulating the appeal may be sought from a faculty adviser or a member of the staff in the Office of the Dean.

Academic Amnesty. Students who have been dismissed from the college may elect to be readmitted with academic amnesty. This will be granted for any student only once and only under the following conditions. All grades of D on the transcript at the point of dismissal are E credited. Only students with 81 or fewer credits after the subtraction of credits for grades of D are eligible for amnesty. All grades of C or better are J credited: they remain in the total for graduation but are not counted in the cumulative grade-point average.

Students receiving veterans' benefits do not receive benefits for courses that are E credited under the academic amnesty policy. If they have received benefits for these courses, they are required to repay this money when the courses are E credited.

While dismissed, students must earn a minimum of 12 approved transfer credits (in courses passed with grades of C or better) and at least enough credits to be above the probation category, as defined by the Livingston College chart of Scholastic Standing (available in the college Academic Information Center), at the point of readmission. Students still must complete their programs in a maximum of eleven full-time equivalent terms. The transcript will indicate that the cumulative grade-point average has been calculated from the point of readmission. In determining a student's eligibility for academic honors, the cumulative grade-point average is recalculated to include all courses taken at Rutgers, including those previously E or J credited.

Readmission. A student who has been dismissed from the college for academic reasons and who wishes to seek readmission must earn a minimum of 12 approved transfer credits (in courses passed with grades of C or better) and earn a cumulative grade-point average of 2.5. Readmission applicants must apply by May 15 for the fall term and November 15 for the spring term. In addition, the student must meet all other conditions for readmission set by the Scholastic Standing Committee and explained in the letter of dismissal.

DISCIPLINARY HEARING PROCEDURES

The Board of Governors of Rutgers, The State University of New Jersey, has established a list of offenses that may result in separation from the university. These offenses are handled through the University Code of Student Conduct. (See the University Policies and Procedures section.) In addition, each college has a hearing procedure for use in instances where charges against a student are not of sufficient gravity to lead to separation from the university. The Livingston College hearing procedure is published in the Livingston College Student Rights and Responsibilities Handbook, a publication distributed to all Livingston College students. Lists of the separation and nonseparation offenses and details on the hearing procedures are also available in the Office of the Dean.

Degree Requirements

REQUIREMENTS

Credits and Residency

Degree candidates must complete at least 120 credits, no more than 24 of which can be in courses of 2 or fewer credits. Students matriculated at Livingston College must earn 30 of their last 42 credits while registered at the college and attending classes in New Brunswick. Students have a maximum of eleven full-time equivalent terms to complete their degree work.

Basic Skills Requirement

All Livingston College students must demonstrate proficiency in the basic skills sequences in reading, writing, and mathematics. Through testing, students are placed at the appropriate level in each sequence of courses or are exempted from one or both of the basic skills sequences. Students exempted from the English sequence may be placed immediately in 01:355:101 Expository Writing I. Students exempted from the mathematics sequence may be placed directly into a course that meets the Analytical/Quantitative Skills Area Distribution Requirement. The basic skills sequences are as follows:

English

01:355:098	Composition Skills
01:355:100	Basic Composition

Mathematics

01:640:001	Computation Skills
01:640:025	Elementary Algebra
01:640:026	Intermediate Algebra or 01:640:027 Elements of Algebra

Students are expected to begin with the course in which they are placed their first term and to continue during consecutive terms through each required basic skills sequence. English courses may be taken only at Rutgers–New Brunswick; mathematics courses may be taken outside of Rutgers in summer or winter sessions, with permission of the dean.

Writing Requirements

All Livingston students must satisfactorily complete 01:355:101 Expository Writing I and one additional writing course (01:355:201 Research in the Disciplines or another college-certified course). A list of college-certified writing courses equivalent to 01:355:201 Research in the Disciplines is available each term in the Academic Information Center. The second course should be completed within one year of entering the college or immediately upon completion of 01:355:101 Expository Writing I. Satisfactory completion means earning a grade of C or better in 01:355:201 Research in the Disciplines, or in both components of a faculty-certified writing course (departmental course plus mandatory writing workshop).

Completion of a Major

Qualification for a degree requires the completion of a major. Students are responsible for ensuring that they are qualified to complete their intended major. They should consult with the undergraduate director in the department offering the major. Students wishing to pursue an approved, independently designed interdisciplinary major must make application in writing and receive permission from the associate dean of Livingston College and the dean of the appropriate faculty or school.

Core Requirements

In addition to the proficiency and writing requirements, a major, and 120 credits, Livingston College requires all students to meet Core Distribution Requirements. The purpose of the core requirements is to prepare students to understand the local, national, and global components of the modern world. To meet the challenges of that world, students must be able to think critically, act responsibly, and exercise leadership. The central component of the core requirements is 02:090:101 Building Community through Leadership and Understanding; all first-year students must complete this course with a grade of C or higher.

All students must complete ten courses (nine for transfer students) of 3 or more credits with a grade of C or higher. No more than three of the core courses may be from the same academic department, and no course may be used to fulfill more than one requirement.

Arts and Humanities

Two courses of at least 3 credits in any two of the following disciplines: American studies, art history, classics, comparative literature, English, foreign language,* history, linguistics, music, philosophy, religion, or theater.

Social Science

One course of at least 3 credits in one of the following disciplines: anthropology, communication, economics, geography, labor studies, political science, psychology, social work, sociology, or urban studies.

Natural Science

Two courses of at least 3 credits in any of the following disciplines: biology, chemistry, geology, or physics.

Analytic and Quantitative Sciences

One course of at least 3 credits in one of the following disciplines: computer science, mathematics, or statistics. A current list of additional courses allowed in statistics and research methods may be found on the web site.

Diversity

Two courses of at least 3 credits each in any two of the following departments (foreign languages excluded): Africana studies, history, Jewish studies, Latin American studies, Middle Eastern studies, Puerto Rican and Hispanic Caribbean studies, religion, or women's studies. Additional courses also may be taken in other academic departments. Contact the college web site for a current list of courses offered.

* Only one course may be taken in a foreign language department.

International Issues

One course of at least 3 credits in one of the following disciplines: anthropology, history, Middle Eastern studies, Puerto Rican and Hispanic Caribbean Studies, any Rutgers Study Abroad program, or any literature or history course from a foreign language department. Additional courses also may be taken in other academic departments. Contact the college web site for a current list of courses offered.

Information on changes in Core Distribution Requirements is made available through the Academic Information Center, Lucy Stone Hall, A-216; in the Office of the Dean; and in the advising offices.

Other Requirements

In-Class Work. Each student must complete at least 90 credits of in-class work. This may include transfer credits at appropriate levels. Out-of-class credits (independent study, internships, prior learning, summer work experience, and credit by examination) should not exceed 30 credits.

Upper-Level Work. Each student must complete 30 credits at the 300 or 400 level in classroom courses, independent study, or internships. This requirement specifically excludes prior learning, summer work experience, and credit by examination. It may include transfer credits at appropriate levels.

Independent Study and Fieldwork. No more than 25 percent (30 credits) of total course credit may be taken in internships, independent study, or summer work experience.

GRADUATION

Upon recommendation by the Livingston College faculty fellows, degrees are conferred by the university at the annual commencement at the end of the spring term. Students who expect to graduate are responsible for completing a Diploma Information Card, which must be completed at the registrar's office no later than three months prior to their expected graduation date. Students completing degree requirements in October or January may ask the registrar for a certificate attesting to their completion of degree requirements. Diplomas are available approximately 90 days after certification. A student must meet all graduation requirements by the official commencement date in order to be listed as a graduate for that year and in order to participate in the commencement ceremony.

General Honors

The bachelor's degree is conferred with "Highest Honors" on seniors who obtain a four-year cumulative grade-point average of 3.9 or higher, with "High Honors" on those with an average of 3.7 or higher, and with "Honors" on those with an average of 3.5 or higher.

While honors are calculated on the basis of the student's midyear cumulative grade-point average for the purpose of inclusion in the commencement program, final honors designations for the transcript and diploma are conferred on the basis of the student's cumulative grade-point average at the end of the final term. For the purpose of calculating honors, averages are not rounded to the next highest number.

College Honors

Students who successfully complete the four-year Livingston College Honors Program receive special recognition at graduation.

Departmental Honors

Academic departments may recommend students for departmental honors at graduation, based upon special work and/or examinations. See statements under individual department listings.

Phi Beta Kappa

Each spring, juniors and seniors with outstanding academic records and majors in a liberal arts discipline are elected to Phi Beta Kappa. To be eligible for nomination, students must have completed the study of a foreign language through the intermediate level or demonstrate equivalent competence. They also must have completed 60 credits at Rutgers University. Students who need further information should contact the Office of the Dean.

Programs of Study

MAJORS

All majors offered by the following faculties are available to Livingston College students: the Faculty of Arts and Sciences, the Edward J. Bloustein School of Planning and Public Policy, the School of Business–New Brunswick, the Mason Gross School of the Arts, the School of Social Work, the School of Communication, Information and Library Studies, and the School of Management and Labor Relations. Students interested in Cook College majors should consult the dean's office. See the Programs of Study for Liberal Arts Students section for detailed program information.

- Accounting
- Administration of Justice
- Africana Studies
- American Studies
- Anthropology
- Art History
- Biochemistry *
- Biological Sciences
- Biomathematics
- Cell Biology and Neuroscience
- Chemistry
- Chinese
- Classics
- Communication
- Comparative Literature
- Computer Science *
- Dance
- East Asian Languages and Area Studies
- Economics
- English
- Evolutionary Anthropology
- Exercise Science and Sport Studies
- Finance
- French
- Genetics and Microbiology
- Geography
- Geological Sciences
- German
- History
- History / French
- History / Political Science
- Italian
- Jewish Studies
- Journalism and Media Studies
- Labor Studies
- Latin American Studies
- Linguistics
- Management
- Management Science and Information Systems
- Marine Sciences
- Marketing
- Mathematics
- Medical Technology
- Medieval Studies
- Middle Eastern Studies
- Molecular Biology and Biochemistry
- Music
- Philosophy
- Physics *
- Political Science
- Portuguese
- Psychology
- Public Health
- Puerto Rican and Hispanic Caribbean Studies
- Religion
- Russian
- Russian, Central and East European Studies
- Social Work
- Sociology
- Spanish
- Statistics
- Statistics / Mathematics
- Theater Arts
- Urban Studies
- Visual Arts
- Women's Studies

A Bachelor of Arts degree is conferred for all majors except the following, for which a Bachelor of Science degree is awarded: accounting, administration of justice, evolutionary anthropology, exercise science and sport studies, finance, geological sciences, management, management science and information systems, marine sciences, marketing, medical technology, and public health.

Individualized Major

Students who wish to pursue a major other than those regularly available through the faculties and schools must make application in writing for an individualized major to the Office of the Dean of the appropriate faculty or school, and receive permission from the associate dean and the dean of the appropriate faculty. See Individualized Major in the Programs of Study for Liberal Arts Students section for further information.

MINORS

Minor programs of study are offered by various disciplines and are available to students attending Livingston College as supplements to their major programs of study. Currently these are:

- Agroecology
- American Studies
- Animal Science
- Anthropology
- Art History
- Biological Sciences
- Chemistry
- Chinese
- Classical Humanities
- Cognitive Science
- Communication
- Comparative Literature
- Computer Science
- Economics
- English
- Entomology
- Environmental and Business Economics
- Equine Science
- Food Science
- French
- Geography
- Geological Sciences
- German
- Greek (Ancient)
- Health Care
- History: General
- Human Ecology
- Hungarian
- Italian
- Japanese
- Labor Studies
- Latin
- Linguistics
- Marine and Coastal Sciences
- Mathematics
- Meteorology
- Music
- Natural Resource Management
- Nutrition
- Operations Research
- Philosophy
- Physics
- Plant Science
- Political Science
- Portuguese
- Psychology
- Puerto Rican and Hispanic Caribbean Studies
- Religion
- Russian
- Science and Agriculture Teacher Education
- Sociology
- Spanish
- Statistics
- Theater Arts
- Women's Studies

* Both B.A. and B.S. degrees are available.

Interdisciplinary minors are available in:

- African Area Studies
- Aging
- Asian Studies
- Cinema Studies
- Health Care
- Latin American Studies
- Medieval Studies
- Middle Eastern Studies
- Organizational Leadership
- Professional Youth Work
- Russian, Central and East European Studies
- Science, Technology, and Society

Any other minor approved by a program also will be available to Livingston College students.

Minor in Organizational Leadership

Rutgers University has a rich body of courses that are fundamental to leadership instruction. The minor in organizational leadership gathers these courses into a curriculum that prepares students to assume a leadership role in an organization.

Program Goals

Students who minor in organizational leadership may pursue any major field of study. For its theoretical segments, the minor draws from the Faculty of Arts and Sciences and from departments in the School of Business and the School of Communication, Information and Library Studies. For its practical components, the minor utilizes Career Services and Rutgers' student organizations. All aspects of the minor concentrate on cultivating and enhancing organizational leadership skills.

The theory courses focus on formulating an ethically responsible vision that promotes organizational excellence; understanding change, how it occurs, when it is needed, and how it affects a group; and persuading individuals and groups to work toward a common goal. Course work is supplemented by a series of extracurricular programs that provide an opportunity for students to meet with their cohorts and to apply their knowledge of organizational leadership. The extracurricular component functions much like a laboratory in the physical sciences.

Admission

Admission to the minor is by application. To apply for the minor, students must be in good academic standing and must have passed the following courses with a grade of C or better: 02:090:101 Building Community through Leadership and Understanding and 01:730:101 Logic, Reasoning, and Persuasion. Students should contact the Office of the Dean at Livingston College for application materials.

Requirements

The minor in organizational leadership consists of 21 credits (9 of which must be at the 300 level or above) divided into two foundation courses, three theory courses, and three applications courses. Students must earn a grade of C or better to receive credit, except in those segments specified as Pass/No Credit options.

Required Courses

01:730:101. LOGIC, REASONING, AND PERSUASION (3)
For first-year students only. Prerequisite: 02:090:101 Building Community through Leadership and Understanding.
Explores argument, what makes argument valid, techniques for clarifying meaning, and persuasive presentation; prepares students to become responsible and critical thinkers, effective communicators, and active learners.

02:090:202. INTRODUCTION TO ORGANIZATIONAL LEADERSHIP (3)
For first-year students only; spring term.
Examines nature of leadership, processes that underpin group decisions, basic features of organizational culture, and how leaders prepare themselves to meet challenges. Students develop strategies for integrating and sharing knowledge through extracurricular projects, including designing an interactive web site with students in the program and at other universities.

Leadership Theory I: Formulating an Ethically Responsible Vision

All second-year students must select one 3-credit course from the list below and must participate in two extracurricular events coordinated by the college's academic unit. Early in the term, students will divide into research teams to investigate why leaders must act ethically; after the midterm, they will share their findings. While no additional credit is attached to the extracurricular component, only students who work in research teams receive credit toward the minor.

- 01:730:105 Current Moral and Social Issues (3)
- 01:730:241 Introduction to Moral Theory (3)
- 01:730:249 Medical Ethics (3)
- 01:730:250 Environmental Ethics (3)
- 01:730:251 Ethics and Business (3)
- 01:730:340 History of Ethics (3)
- 01:730:346 Rights, Justice, and Equality (3)
- 01:840:221 Ethical Issues, Religious Responses (3)
- 01:840:349 Ethical Issues in Business (3)

Leadership Theory II: Understanding Organizational Change

All second-year students must select one 3-credit course from the list below to be taken concurrently with 02:090:303 Exercising Leadership in a Student Organization (1).

- 01:070:204 Introduction to Social Evolution (3)
- 03:011:230 The Nature of Leadership (3)
- 01:450:363 Geography of Development (3)
- 01:506:367 Protest and Revolution (3)
- 37:575:312 Conflict in the Workplace (3)
- 37:575:364 Diversity at the Workplace (3)
- 01:790:305 Public Policy Formation (3)
- 01:790:312 Change in Latin America (3)
- 01:790:333 Political Development of American Race Relations (3)
- 01:790:342 Public Administration: Policymaking (3)
- 01:790:355 Women and Public Policy (3)
- 01:790:363 Conflict Resolution in World Politics (3)
- 01:830:371 Group Dynamics (3)*
- 01:830:373 Organizational and Personnel Psychology (3)*
- 01:830:375 Prejudice and Conflict (3)*
- 01:920:280 Collective Behavior and Social Movement (3)
- 01:920:315 Organizations and Bureaucracies (3)*
- 01:920:321 Urban Development and Community Change (3)*
- 01:920:326 Sociology of Communication (3)*

* Course has prerequisite.

02:090:303. EXERCISING LEADERSHIP IN A STUDENT ORGANIZATION (1)
For second-year students only. Corequisite: Leadership Theory II.
Students assume leadership positions or become active members of a university organization and maintain a log of activities. Students write an eight- to ten-page essay analyzing and assessing their impact on the organization, directly supervised and graded (Pass/No Credit) by the organization's adviser. Students are encouraged to find a faculty mentor to guide their process of self-assessment.

Leadership Theory III: Persuading Others to Work for a Common Goal

All third-year students must select one 3-credit course from the list below to be taken concurrently with 01:090:304 Laboratory on Organizational Leadership (1).

04:189:101	Introduction to Communication and Information Systems (3)
01:190:321	Classic Rhetoric (3)
04:192:200	Communication Theory (3)*
04:192:201	Interpersonal Communication Process (3)*
04:192:220	Fundamentals of Speaking and Listening (3)*
01:220:341	Industrial Organization (3)*
33:620:370	Managing Diversity in Organizations (3)*
33:620:410	Organizational Leadership (3)*
33:620:490	Organizational Behavior (3)*
01:790:348	Psychology and Politics (3)
01:830:311	Conditioning and Learning (3)*
01:830:326-327	Small Groups, Small Groups Laboratory (2,1)*
01:830:364	Motivation and Behavior (3)*
01:830:371	Group Dynamics (3)*
01:830:372	Psychological Approaches to Social Problems (3)*

01:090:304. LABORATORY ON ORGANIZATIONAL LEADERSHIP (1)
For third-year students only. Corequisite: Leadership Theory III.
Using interactive electronic models, students analyze group dynamics and learn to anticipate outcomes; focus is on strategies for leadership in organizations outside the university setting. Grading is on Pass/Fail basis.

Advanced Organizational Applications with Capstone Seminar

02:090:404. EXERCISING LEADERSHIP IN THE WORKPLACE (4)
For third- or fourth-year students; fall only.
Coordinated by the instructors of 02:090:202 Introduction to Organizational Leadership, this capstone experience integrates what students have learned through a monthly seminar with leaders from various fields and an internship.

Honors in Organizational Leadership

Many courses required for the minor also satisfy Livingston College core requirements. Students who satisfy core requirements by completing three additional courses from the minor requirements with a B or better qualify for honors in organizational leadership. Students also must complete a thesis. In the fall of their senior year, students enroll in 02:090:945 Paul Robeson Scholars Project and conduct independent research projects. In the spring of their senior year, students present their work. Successful candidates are identified as Paul Robeson Scholars in Leadership.

* Course has prerequisite.

OTHER ACADEMIC PROGRAMS

Honors Program

Initiated in 1980, the Livingston College Honors Program provides a challenging learning experience to exceptional students who demonstrate promise of intellectual or artistic achievement. The honors program comprises a four-year sequential curriculum and is an integral component of a student's academic program. Seminars are interdisciplinary in content and are taught by outstanding faculty who represent major disciplines at the university. For the sequence of courses, see the Course Listing chapter in this section. The fourth-year honors thesis may be combined with a departmental honors thesis or independent study in a department.

Applications for the honors program may be obtained from the Office of the Dean. Qualified sophomores or first-year students who have finished their first term may apply for admission to the program on a space-available basis. Interested students should contact the Office of the Dean. Successful completion of the four-year program is noted on the student's transcript.

Paul Robeson Scholars Project

The Paul Robeson Scholars Project is designed to encourage Livingston College seniors to undertake independent projects of academic merit and humanistic value, ordinarily within their major. Interested students should have a cumulative grade-point average of 2.5, and a 3.0 in their major. Students may register in the fall term of their junior year for 02:090:398 Paul Robeson Junior Seminar, offered during the spring term, which helps them to plan their projects for the senior year. Students whose schedules do not allow participation in the seminar should contact the dean's office for information and advice. Robeson scholars enroll in 02:090:495,496 during their senior year in conjunction with independent study in their majors. The scholars project also may be combined with a departmental honors thesis. Upon successful completion of the project, students are designated Paul Robeson Scholars on their transcripts and receive certificates.

Study Abroad

Rutgers conducts study abroad programs at foreign universities. For more information about study abroad, see Study Abroad in the Programs of Study for Liberal Arts Students section.

Certificate Programs

All certificate programs offered in New Brunswick are available to Livingston College students. Certificates are awarded only with or subsequent to the awarding of a baccalaureate degree in an approved major.

Five-Year Teacher Certification Program

Teacher certification programs in many areas of specialization are offered through the Graduate School of Education to Livingston College students. There is no education major offered at Rutgers; education students specialize in a subject other than education and simultaneously complete course work for teacher certification. For further information, contact the Office of Teacher Education at the Graduate School of Education.

Five-Year, Dual-Degree Program in Engineering and Liberal Arts/Sciences

A five-year, dual-degree program that leads to a B.A. degree from Livingston College and a B.S. degree from the School of Engineering is available. For further information, see the Programs of Study chapter in the School of Engineering section.

Five-Year Bachelor's Degree/M.B.A. Program

Offered jointly by Livingston College and the Graduate School of Management, this is a five-year program leading to both a bachelor's degree in a liberal arts subject and a master's degree in business administration. For further information, contact the M.B.A. program coordinator at the School of Business.

Bachelor's Degree/M.A. in Criminal Justice Program

The bachelor's degree / M.A. in criminal justice program, offered by Livingston College in cooperation with Rutgers' School of Criminal Justice in Newark, permits students pursuing certain majors to accelerate, completing both the baccalaureate and the M.A. degrees in four-and-one-half years. For further information, contact the Academic Information Center, Lucy Stone Hall, A216.

Health Professions

Students planning careers in medicine, dentistry, and other health-related fields are served by the Health Professions Advising Center in A-119, Nelson Biological Laboratories. The health professions adviser schedules regular group meetings and individual consultations with students. The adviser also prepares letters of recommendation.

Physician Assistant Program

The physician assistant program is offered jointly by Livingston College and the University of Medicine and Dentistry of New Jersey–School of Allied Health Professions. The first three years are spent as an undergraduate and the last three years are spent in a professional graduate program. Students may apply to the professional program in the spring of their second year. Applicants should have a cumulative grade-point average of 3.0. The application process includes an interview. For additional information on the required curriculum and the application process, contact the Physician Assistant Program.

Eight-Year Bachelor's Degree/M.D. Program

The bachelor's degree / M.D. program, offered jointly by Livingston College and the University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School, permits selected students to obtain a bachelor's degree and a medical degree in eight years of study. Students are selected for this program at the conclusion of their sophomore year and are granted provisional admission into the medical school. A second review of the student's credentials during the fourth year of the program is required to qualify for formal admission to the medical school. In the junior year, students begin to take medical science courses along with courses in fulfillment of their undergraduate degree. The bachelor's degree is usually awarded by the end of the fifth year, and the medical degree by the end of the eighth year. For further information, contact the Academic Information Center, Lucy Stone Hall, A216.

Independent Study

Some instructional units offer students individual and small-group study under the supervision of faculty members. Students must submit a detailed description of proposed independent projects to faculty members who will supervise the work. A project must be approved by the faculty sponsor and by the appropriate department or discipline head or faculty committee before the student registration can be completed. First-term, first-year students normally are not allowed to take independent study, and no more than 25 percent of a student's work toward a degree may consist of independent study, internship, and summer work experience.

Internships and Field Experiences

Students who have obtained departmental approval may receive degree credit for internships and field experiences. Placements may be in government agencies, businesses, schools, hospitals, or community organizations. Each internship must include preparation for fieldwork, supervised field placement, and an extensive evaluation and analysis of the experience. Internships may be full or part time. First-year students usually are not allowed to participate in internships. Interested students should consult departmental or discipline advisers or the Office of the Dean for details.

Summer Work Experience

Students may receive credit for substantive learning gained through summer work. Students considering summer work experience should contact the dean's office no later than the last day of classes during the spring term. A contract must be filed at that time and the approval of the department chairperson also must be obtained. Credit usually is not given for activities that are considered extracurricular during the academic year. Only 25 percent of the 120 credits required for graduation may be taken in fieldwork and independent study, which includes summer work experience.

Academic Support Services

Advising. The advising system provides general academic advising for all students, but is particularly designed to help students with undeclared majors.

The Academic Information Center distributes and collects most forms (drop / add, declaration and change of major, declaration of minor, deletion of grade, and transfer credit forms). The Academic Information Center also maintains students' permanent academic files.

Educational Opportunity Fund (EOF). The Educational Opportunity Fund Program was established by the New Jersey legislature in 1968 to increase access to higher education by providing financial assistance and support services for needy New Jersey residents attending the state's colleges and universities. Since the college's conception in 1969, the Livingston College EOF Program has played a significant role in meeting the ever-changing needs and challenges of educationally and economically disadvantaged

students. The program enrolled approximately 325 students in 2000. Consistent with EOF regulations, students admitted to the university through the program are required to satisfy stated conditions of admission and financial aid.

Providing comprehensive counseling support in the areas of academic, personal, and financial aid counseling is a fundamental and critical component of the EOF Program. Through individual and group counseling sessions, counselors devote considerable time and attention, ensuring that each student is socially and emotionally centered; enrolled in appropriate courses; registered for tutorial sessions; knowledgeable of all support opportunities and services; and in compliance with state, federal, and university financial guidelines.

Student Support Services. The Academic Resource Center is comprised of two learning laboratories: the microcomputer laboratory and the academic skills laboratory. These laboratories provide tutorial assistance for Educational Opportunity Fund students and those students who meet eligibility requirements of the Student Support Services program. The center is open five days a week. Services offered by the center include tutoring in all academic subjects.

Learning Resource Center. The Learning Resource Center, located in Tillett Hall 111, provides a comprehensive array of academic support services to meet the needs of diverse learners. Students are helped to develop more effective learning strategies. Specific services include academic tutoring, study groups, supplemental instruction, instructional computing, and a learning lab.

Writing Center. The Writing Center functions in conjunction with some required writing courses. Students in required writing courses also may seek assistance on their own from the Writing Center, which is located in Lucy Stone Hall, Room B-103.

Gateway Studies Program. The Gateway Studies Program is a one-year, holistic, academic support program for students who need to develop college-level reading and writing skills. Students enroll in small sections of introductory courses in various academic disciplines such as history, psychology, biology, sociology, and philosophy, as well as in basic skills courses in reading, writing, and mathematics. The class schedules and academic performance of Gateway students are closely monitored by the dean's office. Support services include academic, personal, and career counseling. Tutoring referrals are made on an individual basis.

Course Listing

For a list of courses available to all undergraduate students, see the section entitled Programs of Study for Liberal Arts Students.

The following are specifically Livingston College courses:

Courses

02:090:101. BUILDING COMMUNITY THROUGH LEADERSHIP AND UNDERSTANDING (3)
Open only to first-year students; fall term.
Examines the nature of community and the function of leadership in building community. Mindful of the importance of individual responsibility, the course also analyzes the lure of individualism, the value of getting involved, and the inherent tension between altruism and selfishness. Through readings, discussions, and class projects, students examine the effect of leadership in communities and on personal development. Syllabi and notices are available online, where students also may engage in discussions.

02:090:103. CULTURE, IDENTITY, AND EDUCATION (3)
Open only to first-year students in the Livingston College Educational Opportunity Fund Program.
Examines how personal and cultural identities are constructed, how they change, and the role of education in these processes.

02:090:153,154. FIRST-YEAR HONORS PROSEMINAR (3,3)
Open only to students in the Livingston College Honors Program. Taken concurrently with 02:090:155,156.
Readings, discussions, and written assignments designed to develop analytical and expressive skills. Emphasis on the development of research skills.

02:090:155,156. FIRST-YEAR HONORS (3,3)
Open only to first-year students in the Livingston College Honors Program.
Interdisciplinary seminars in liberal arts or social sciences; content determined by instructor.

02:090:189,190,289,290,389,390,489,490. HONORS COLLOQUIUM
Open to all students in the Livingston College Honors Program.
Ongoing series of meetings, lectures, discussions, and cultural events organized on a term basis.

02:090:202. INTRODUCTION TO ORGANIZATION LEADERSHIP (3)
Open only to students minoring in organizational leadership.
Examines the nature of leadership, the processes that underpin group decisions, and the basic features of organizational culture. Provides a basic understanding of the organizational challenges that leaders must meet in order to guide successfully the course of events in a complex group, and analyzes how leaders must prepare themselves to meet those challenges. Familiarizes students with the basic literature and with fundamental issues that are covered in-depth in other courses within the minor. Students develop strategies for integrating and sharing their knowledge through extracurricular projects, including designing a web site that facilitates and enhances dialogue with one another and with students in other universities.

02:090:214. COMMUNITY AND SOCIAL INVOLVEMENT (3)
Open only to students in the Livingston College Educational Opportunity Fund Program. Primarily designed for sophomores and juniors.
Through theory and practice, the course challenges the students to develop a deep understanding of life in diverse local or global communities. Students work with organizations such as the Paul Robeson School in New Brunswick and the United Nations in New York City.

02:090:303. INTRODUCTORY ORGANIZATIONAL APPLICATIONS (1)
Open only to students minoring in organizational leadership; to be taken with Leadership Theory II.
Students assume positions of leadership or function as active members of a university organization, maintain a log of their activities, and complete an eight- to ten-page essay analyzing each aspect of their participation and assessing their impact in the organization. Work is supervised directly and graded by the organization's adviser.

02:090:304. IMMEDIATE ORGANIZATIONAL APPLICATIONS (1)
Open only to students minoring in organizational leadership; to be taken with Leadership Theory III.
Students learn to simulate organizations electronically. Through interactive models, they analyze group dynamics and learn to anticipate outcomes, as well as gain a clear sense of the impact that their behavior has on organizational outcomes. They implement their vision and effectively engage in problem-solving scenarios in this electronic environment. Laboratory instruction focuses on strategies for leading within organizations outside the university setting.

02:090:308. DIVERSITY IN THE WORKPLACE (3)
Open only to students in the Livingston College Educational Opportunity Fund Program.
Theory, research, and practice in the ways that cultural diversity is managed in organizations and social institutions.

02:090:358. JUNIOR HONORS THESIS WORKSHOP (1)*
Open only to juniors in the Livingston College Honors Program.
Preparation for the senior project; development of topics, compilation of bibliographic material.

02:090:398. PAUL ROBESON JUNIOR SEMINAR (1)*
Overview of research methodology and development of thesis proposals in preparation for the Paul Robeson Scholars Project in the senior year.

02:090:404. ADVANCED ORGANIZATIONAL APPLICATIONS/ CAPSTONE SEMINAR (4)
Open only to students minoring in organizational leadership. Prerequisites: 02:090:202, 303, and 304.
Capstone experience for the minor; designed to integrate what students have learned and to utilize fully every facet of their experience. Coordinated by instructors of the introductory course (02:090:202 Introduction to Organizational Leadership). The same instructors also select and organize the faculty that will grade the students' final work.

02:090:455,456. SENIOR HONORS THESIS WORKSHOP (1,1)*
Open only to seniors in the Livingston College Honors Program.
Taken in conjunction with senior project. May be combined with departmental honors thesis credit, departmental independent study credit, or 02:090:493,494 Honors Independent Study.

02:090:491,492. SENIOR ROBESON THESIS WORKSHOP (1,1)*
Open only to Livingston College seniors designated Paul Robeson Scholars.
Taken in conjunction with 02:090:495,496.

02:090:493,494. SENIOR HONORS INDEPENDENT STUDY (3,3)
Open only to seniors in the Livingston College Honors Program.
Interdisciplinary or cross-curricular senior honors projects; supervised by director of honors program.

02:090:495,496. PAUL ROBESON SCHOLARS PROJECT (3,3)*
Open only to Livingston College seniors designated Paul Robeson Scholars.
Taken in conjunction with independent research project in the senior student's major department.

* Offered on a pass/no credit basis.

Administration and Fellows

ADMINISTRATION

Arnold G. Hyndman, Dean of the College
Anne Freire Ashbaugh, Associate Dean of the College
George D. Jones, Dean of Students
Paula Van Riper, Assistant Dean for First-Year Students
Gregory Metz, Assistant Dean for Academic Policy
Robin Diamond, Assistant Dean for Enrollment and Orientation
Judith Lee, Director of Honors Program
Assistant Dean for Academic Programs
Assistant Dean for Transfer Students
Paul A. Herman, Assistant Dean for Collegiate Program Development
Leroy Haines, Assistant Dean and Director of Residence Life
Tamar Kieval Brill, Assistant Dean for Special Projects
Mahasti Hashemi, Assistant Dean for Budget and Administration
Vernell Dubose, Business Manager
Kenneth Roy, Director of Counseling Services
Counseling Psychologist
Eddie J. Manning, Assistant Dean for Administration and Director of Educational Opportunity Fund Program
Darren Clarke, Assistant Director of Educational Opportunity Fund Program
Jennifer Agosto, Educational Opportunity Fund Program Counselor
William Bradley, Educational Opportunity Fund Program Counselor
Denise Glover, Educational Opportunity Fund Program Counselor
Mary Chayko, Educational Opportunity Fund Program Counselor
Pamela Noakes, Director of Recreation
Susan Beaudrow, Assistant Director of Recreation
Coordinator of Quad I
Jackie Bullard, Coordinator of Quad II
Todd Benson, Assistant Director of Residence Life and Coordinator of Lynton Towers
Kevin Moore, Resident Counselor, Nichols Apartments
Timothy Grimm, Director of College Center
Matthew Winkler, Assistant Director of College Center for Facilities Operations
John Eric Leoniak, Assistant Director for Program Activities
Susan Romano, Assistant Director for Events and Activities
John Martinez, Director, Student Support Services
Moses Kim, Developmental Specialist, Student Support Services
A. Patricia Johnson, Director, Upward Bound Program
Dean Plummer, Coordinator, Upward Bound Program
Casandra McKendall, Full-Time Counselor

FELLOWS

Members of the faculty at Rutgers–New Brunswick who express commitment to the mission of Livingston College serve as fellows. As members of the Livingston College Assembly, the fellows are an integral part of college governance.

Under the college bylaws, the Livingston College Assembly exercises the authority provided to them by university regulations over admissions, curriculum, scholastic standing, degree requirements, and graduation procedures for Livingston students. The voting members of the assembly include the fellows of the college, the president of the university, the dean of the Faculty of Arts and Sciences, the dean of the School of Business–New Brunswick, the dean of the college, the associate dean of the college, the professional librarians of the Kilmer Library, five students selected by the student government, the director of the Educational Opportunity Fund Program, ten staff members elected to two-year terms by the staff of the college, and up to five other members selected by the Executive Council.

Actions taken by the Executive Council of the assembly become the rule of the college. The Livingston College Assembly meets to review and determine the mission of the college, to vote annually on the awarding of degrees, and to review the annual report of the dean. Standing committees of the assembly include Admissions, Honors, Curriculum, and Scholastic Standing. The Executive Council may establish committees ad hoc to further the mission of the college.

RUTGERS COLLEGE

Information on the following subjects may be found in the General Information section at the back of this catalog: Student Life and Services, Admission, Tuition and Fees, Financial Aid, and University Policies and Procedures.

History and Aims of the College

Chartered as Queen's College on November 10, 1766, Rutgers was the eighth institution of higher education founded in the colonies prior to the American Revolution. King George III of Great Britain granted the charter in response to a petition presented by the education-minded Dutch settlers of New Jersey and New York. While no copy of the original document has survived, a second charter granted in 1770 provides for the "education of youth in the learned languages, liberal and useful arts and sciences." The first students were enrolled in 1771 to work under a single tutor, and the first student to graduate received his degree in 1774.

In the years immediately following its founding, Queen's College continued to carry out the charter's provisions, except for brief periods during the Revolutionary War when the two tutors then in residence departed for civil and military service. These were hectic years for the institution as the British troops made periodic forays into the New Brunswick area, forcing faculty and students to find temporary quarters at various points in Somerset County. Continental troops were active in the vicinity as well. On the knoll now occupied by Old Queen's, the university's central administration building, Colonel Alexander Hamilton commanded a battery of artillery that harassed the British during Washington's retreat from New York in 1776.

In the college's early history, religion played a major role. All forms of recreation were forbidden on the Sabbath, and students were confined to their rooms throughout the day except for required attendance at morning and evening church services. They wore black academic robes on such occasions, as they did to all official college functions. Students were required to doff their hats upon meeting the president or a member of the faculty.

In 1825, the name of the school was changed to Rutgers College in honor of Colonel Henry Rutgers, a veteran of the Revolution, "as a mark of respect for his character and in gratitude for his numerous services'' to the institution.

Rutgers is the only institution in the country to include in its heritage the colonial college of the eighteenth century, the land-grant tradition of the nineteenth century, and the development of the modern state university. With its present enrollment of more than 11,000 students, Rutgers College is the largest residential college in the university.

Rutgers College, committed to maintaining its long-standing tradition as a liberal arts institution, has as its mission the promotion of excellence in undergraduate education. The fellows of Rutgers College have developed a distinctive educational design based on breadth and depth in traditional liberal arts disciplines.

General education is that part of the curriculum required of all Rutgers College students—the common denominator of the liberal arts experience. It is knowledge that, as the twenty-first century dawns, continues to provide students with the possibilities for common educated discourse, and that continues to prepare them for citizenship and for leadership in a democratic and pluralistic society.

Rutgers College students are encouraged to explore many different subjects. Its graduates are expected to (1) be able to communicate in the English language; (2) possess the quantitative skills needed to comprehend modern society; (3) be acquainted with the scientific method and have a knowledge of at least one natural science; (4) be familiar with basic concepts of social science and have a knowledge of at least one of its disciplines; (5) have had exposure to the humanities, through either the act of creating or the study of the works of creative individuals; (6) have a knowledge of at least one non-Western culture; and (7) have studied a foreign language.

Academic Policies and Procedures

Note: See also the University Policies and Procedures section for regulations that pertain to all the undergraduate colleges at Rutgers University in New Brunswick.

STUDENT RESPONSIBILITY TO KEEP INFORMED

In addition to the material in this catalog, Rutgers College students are responsible for information in the Undergraduate Schedule of Classes and the Official Notices posted each week on the Rutgers College web site (http://rutgerscollege.rutgers.edu, News for Current Students), notices sent to campus post office boxes, and official announcements sent or posted electronically.

ACADEMIC CREDIT

Advanced Placement

Rutgers College awards degree credit for advanced placement examination scores of 4 and 5. Credit is not given for grades of 3, 2, or 1. Credit earned by advanced placement is not computed in the cumulative grade-point average.

College Level Examination Program (CLEP)

Students who have taken the College Level Examination Program tests may have the scores and essay tests forwarded to the college for evaluation by the appropriate academic departments.

Proficiency Examinations

With the approval of the academic dean and the department concerned, students may pay a fee and take a proficiency examination in courses offered by the faculty. Degree credit is given for grades of A and B. For courses passed by proficiency exam, the grade is not computed in the cumulative grade-point average. Proficiency examinations ordinarily are not allowed after failure in a course or in courses where the principal content is laboratory or creative work. Proficiency examinations may not be taken in English composition, military education, minicourses, or independent study courses.

Transfer Credit from Institutions Other Than Rutgers

Students who transfer from other institutions or who, while matriculated at Rutgers College, take approved courses at other institutions, may receive degree credit for academic courses passed with a grade of C or better. A maximum of 60 credits may be transferred from community colleges.

For students who complete courses in high school that are reported on a college transcript, a maximum of 16 credits may transfer, with no more than two courses in a given term.

Rutgers College does not transfer credit for courses passed by examination at other institutions or for correspondence courses. Transfer credits and grades from institutions other than Rutgers, The State University of New Jersey, are not included in the cumulative grade-point average. However, credits and grades for courses at other divisions of the university are included in the cumulative grade-point average.

Credit for Prerequisites

Students are not permitted to take or repeat courses that are prerequisites to courses already passed with a grade of D or better. For example, a student may not take or repeat Precalculus after having passed Calculus I.

REGISTRATION AND COURSE INFORMATION

Academic Advising

Students are urged to select their program in consultation with an academic adviser. The Office of Academic Services at Rutgers College provides academic advising by faculty members selected from various disciplines in the humanities, social sciences, and science/mathematics areas. The board of general advisers in the Office of Academic Services serves students with undeclared majors. Students with declared majors are advised in the department of their major. Each student is responsible for fulfilling major, minor, and general education requirements of the college. First-year students receive academic advising and select their fall term courses during academic orientation in May.

Registration

Registration for matriculated students begins in October for the following spring term and in March for the following fall term. Matriculated students register through the Rutgers Touchtone Telephone Registration System (RTTRS) or at the registrar's web site (http://webreg.rutgers.edu). Registration is completed upon full payment of tuition and fees by the announced deadline, prior to the start of the term. The university reserves the right to restrict registration in all courses offered and, when necessary, to cancel courses previously announced. See the Tuition and Fees section for further information about registration.

Change of Courses. See the University Policies and Procedures section for drop/add procedures.

Intercollege Registration. Intercollege registration in Camden College of Arts and Sciences or Newark College of Arts and Sciences is allowed in unusual situations and must be approved by the dean of student services and the academic dean.

Course Load

Students may register for between a minimum of 11.5 credits and a maximum of 20.5 credits per term. Students on academic probation may carry a maximum of 16 credits. Only in cases of extreme hardship and with approval of the dean of student services may a student carry a part-time credit load of less than 11.5 credits.

Withdrawal and Readmission

Withdrawal. Students may withdraw from the college with grades of W through the twelfth week of the term. Students wishing to withdraw must speak with the academic dean and the dean of student services and then must submit a withdrawal form to the university registrar.

Readmission. Students who interrupt their registration in the college for whatever reason may seek readmission in the Office of Academic Services. Students who have been dismissed because of poor academic performance are asked to improve their average in the Rutgers–New Brunswick Summer Session before they are considered for readmission. Students usually are not readmitted after a second dismissal action. For readmission deadlines, contact the Office of Academic Services.

Course Information

Foreign Language Courses. Students with two or more years of one foreign language in high school may not receive degree credit for elementary courses (course numbers 101–102) in that language. Degree credit in that language begins with an intermediate course.

Students whose native language is other than English must take a placement test in their native language before continued study in that language. The appropriate-level course at which they may begin receiving academic credit will be determined by the department.

Graduate Courses. Seniors may register for graduate courses with the approval of the graduate director and the dean of academic affairs of the graduate school in question. Approval generally is not given unless the student has a cumulative grade-point average of 3.0 or better and senior standing.

Independent Study Courses. Registration for independent study is limited to juniors and seniors who have completed introductory courses in the discipline and have received faculty approval. Students may take a maximum of 12 credits of fieldwork, independent study, and/or internship exclusive of credit earned for a Henry Rutgers thesis. Students wishing to register for more than 8 credits of independent study in any one term must have the approval of the academic dean.

Internships. Rutgers College does not allow credit for internships that are not part of the major requirements. Students may take a maximum of 12 credits of fieldwork, independent study, and/or internship exclusive of credit earned for a Henry Rutgers thesis.

Minicourses. Minicourses are offered for seven weeks. Students may not register for more than four minicourses in a given term or for more than eight during the full degree program.

Pass/No Credit Courses. Seniors may take one elective course each term on a Pass/No Credit basis. Grades of A, B, and C correspond to Pass; grades of D and F to No Credit. Courses taken in fulfillment of major, minor, and general education requirements of the college may not be taken on a Pass/No Credit basis. Forms to request the Pass/No Credit option are available in the Office of Academic Services and must be submitted by the end of the fourth week of the term.

Physical Education Courses. One- and 2-credit individual and team activities courses may be taken for degree credit only by students majoring in exercise science and sport studies.

Repeated Courses. Within a given subject code, students may not repeat, for degree credit, courses bearing the same course numbers.

Grades of F: In general, when a course is repeated in which the student previously earned a grade of F, both the original grade of F and the new grade remain on the transcript and in the cumulative grade-point average. However, for up to four courses totaling no more than 12 credits, the grade of F will be removed from the cumulative grade-point average if the student repeats a failed course. The original grade of F will remain on the transcript. This policy may be applied anytime during the undergraduate years, but only once for a given course. The course must be repeated at Rutgers University. If the student fails the course a second time, only the second F will enter the cumulative grade-point average. This policy may not be applied to disciplinary grades of F, nor to courses offered by the College of Pharmacy or the School of Engineering. Use of this policy to remove a grade of F from the cumulative grade-point average does not qualify a student for retroactive nomination to the Dean's List.

Grades of D: If a student earns a grade of D and repeats the course, credits and grades are computed in the cumulative grade-point average for both courses, but credit is subtracted from the degree-credit total for the repeated course. If the student receives a grade of D when taking a course for a second time and chooses to repeat the course yet again, all three grades are computed into the cumulative grade-point average, but the student receives degree credit only once.

Grades of C and above: If a student earns a grade of C or better and chooses to repeat the course, it must be repeated for E credit. The E prefix indicates no credit earned toward the degree and no grade computed in the cumulative grade-point average.

Summer Courses. Students in good academic standing may register for the Summer Session at the university through the Rutgers Touchtone Telephone Registration System (RTTRS) or at the registrar's web site. However, it is recommended always that students consult with an adviser when selecting courses. Students wishing to take courses at other institutions must seek prior approval from departments offering similar courses at Rutgers and from an academic dean.

Declaration and Change of Major

Declaration of Major. Students normally declare their major in the second term of their sophomore year.

Change of Major. Students wishing to apply for a change of major should complete the appropriate form in the Office of Academic Services.

SCHOLASTIC STANDING

The student's scholastic standing is determined by his or her cumulative and / or term grade-point average. See the University Policies and Procedures section for information about the computation of the cumulative grade-point average and other grading regulations.

Class Standing

A student's class standing is determined by the predicted year of graduation. Students are classified according to the number of credits they have completed by September: first-year students, 0–21 credits; sophomores, 22–53 credits; juniors, 54–83 credits; and seniors, 84–120 credits.

Dean's List

The Dean's List is determined by a term grade-point average of 3.5 or better based on not fewer than 11.5 credits with letter grades (Pass/No Credit and E credits are excluded).

Poor Academic Performance

Academic Review. At the end of each term, the Committee on Scholastic Standing, composed of faculty fellows and deans' representatives, reviews and may take action on the record of every student whose term or cumulative grade-point average is below 2.0. The committee may dismiss a student from the college or place a student on probation or on continued probation (probation for a second consecutive term). All such students are notified in writing.

Probation. Students are placed on academic probation when the term grade-point average is lower than 2.0 but above 1.349. A student receives written notification of probationary status. While on academic probation, a student is limited to a maximum course load of five courses totaling no more than 16 credits. A student on continued probation (probation for a second consecutive term) may take a maximum of five courses totaling no more than 16 credits.

Dismissal. Students ordinarily are dismissed when their term grade-point average is less than 1.350, regardless of their cumulative grade-point average or preceding term grade-point average. There are no automatic dismissals for first-year students in their first term. Students also may be dismissed if they are placed on probation for a third consecutive term or if their cumulative grade-point average at the end of the academic year is less than the following: first year, 1.5; sophomore year, 1.7; junior year, 1.9; and senior year, 2.0. Dismissed students are notified in writing.

Appeal. Students dismissed from Rutgers College by the Committee on Scholastic Standing may appeal, in writing, within ten days of the date of the letter of dismissal. Grounds for appeal include technical error or extenuating circumstances. Students are allowed to present information to the committee only in writing. The letter of appeal must be written by the student without the assistance of a legal adviser or an attorney, must state the reasons for the appeal, and, when possible, should be accompanied by appropriate documentation. The decision of the committee is final. Students are notified in writing within one week of the committee's decision.

Readmission. Students who have been dismissed are asked to improve their average in the Rutgers–New Brunswick Summer Session before they are considered for readmission. Students who gain readmission by attending Rutgers' Summer Session must earn a 2.0 term grade-point average in a minimum of 12 credits in the next term in attendance. Students ordinarily are not readmitted after a second dismissal action. For readmission deadlines, contact the Office of Academic Services.

Senior Warning. In order to graduate, a student must have a cumulative grade-point average of 2.0 or better and at least a 2.0 average in every term from the eighty-fourth credit on. Seniors who fail to meet these requirements may be asked by the Committee on Scholastic Standing to take additional courses to meet prescribed grade-point averages.

DISCIPLINARY HEARING PROCEDURES

The Board of Governors of Rutgers, The State University of New Jersey, has established a list of offenses that may result in separation from the university. These offenses are handled through the University Code of Student Conduct. (See the University Policies and Procedures section.) In addition, each college has a hearing procedure for use in instances where charges against a student are not of sufficient gravity to lead to separation from the university. The Rutgers College hearing procedure is published in the Student Guide publication distributed to all Rutgers College students. Lists of the separation and nonseparation offenses and details on the hearing procedures also are available in the Office of Judicial Affairs.

Degree Requirements

REQUIREMENTS

Credits and Residency

Students must complete a minimum of 120 credits, including their declared major and minor, and the general education requirements outlined below. Each student is responsible for meeting these requirements and for attending classes, completing all assignments and examinations, and maintaining academic integrity.

Students matriculated at Rutgers College must earn 30 of their last 42 credits while registered at the college and attending classes in New Brunswick. Students who transfer into Rutgers College with senior status must earn a minimum of 30 credits while registered as Rutgers College students in order to receive a bachelor's degree from the college.

General Education Requirements

A. Writing Skills

1. 01:355:101 Expository Writing or its equivalent. Students with a grade of 4 or 5 on the Advanced Placement Test are awarded degree credit for 01:355:101.
2. An additional course, beyond 01:355:101 Expository Writing, of at least 3 credits, with a strong writing component, and selected from a list approved by the Rutgers College Curriculum Committee and distributed to first-year and transfer students.

In addition to 01:355:101 Expository Writing, 01:355:098 Composition Skills and 01:355:100 Basic Composition are graduation requirements for students who, in the judgment of the Department of English, show need for additional work in composition. Beginning with the writing course identified by the Department of English, students must register for and complete composition courses in consecutive terms, with no hiatus, until they have passed 01:355:101 Expository Writing. Students who fail either 01:355:100 or 01:355:101 two times may register only for English 100 or 101 until they successfully complete the course.

English 01:355:098, 100, and 101 do not fulfill any other general education, major, or minor requirements.

B. Quantitative Skills

Two courses of 3 or more credits each selected as follows:

1. One course in college-level mathematics. This requirement may be satisfied by (a) placing into first-term calculus on the Rutgers Math Placement Test; or (b) passing one of the following:
   - 01:640:103 Topics in Mathematics for the Liberal Arts
   - 01:640:104 Elementary Combinatorics and Probability
   - 01:640:105 Introduction to Linear Mathematics
   - 01:640:112 Precalculus II
   - 01:640:115 Precalculus College Mathematics
2. One additional course selected from:
   a. a college-level mathematics course selected from 01:640:103, 104, or 105, or a course numbered 01:640:135 or above
   b. computer science
   c. statistics
   d. 01:730:201 Introduction to Logic
   e. a quantitative methods course offered by the student's major or minor department

Students whose math placement test shows that they need to complete remedial math courses (01:640:025 or 026) must begin remediation in their first term at the college; they must register for and complete remedial courses in consecutive terms, with no hiatus, until they have passed 01:640:026 Intermediate Algebra.

Courses taken in satisfaction of the quantitative skills requirement may be used to fulfill major or minor requirements.

C. Natural Science

Two courses of at least 3 credits each, excluding independent study, in one of the following disciplines: biological sciences, chemistry, geological sciences, or physics.

D. Social Science

Two courses of at least 3 credits each, excluding independent study, in one of the following disciplines: Africana studies*, American studies*, anthropology, economics, geography, history, Jewish studies*, political science, psychology, Puerto Rican and Hispanic Caribbean studies*, sociology, or women's studies*.

E. Humanities

Two courses of at least 3 credits each, excluding independent study, in one of the following disciplines: African languages and literatures, Africana studies*, American studies*, art history, Chinese, classics, comparative literature, English, French, German, Greek, Hebrew, Hindi, Italian, Japanese, Jewish studies*, Korean, Latin, linguistics, music, philosophy, Portuguese, Puerto Rican and Hispanic Caribbean studies*, religion, Slavic languages and literatures, Spanish, or women's studies*.

F. Non-Western Requirement

One course of at least 3 credits about the non-Western world, excluding independent study, selected from a list distributed to all first-year and transfer students. This course also may be used in partial satisfaction of requirements C, D, or E above.

Courses taken in satisfaction of requirements C, D, E, and F above also may be used to fulfill major and minor requirements.

* Courses in these interdisciplinary subjects may fulfill either the humanities or the social science requirement if both courses pertain to either the humanities or the social science area. For example, 01:988:375 Women and the Economy and 01:988:308 Women in the Middle East may be used to fulfill the social science requirement, while 01:563:311 Classical Jewish Philosophy and 01:563:380 German Jewish Culture may be used to fulfill the humanities requirement. Students may not use four courses in the same interdisciplinary subject to fulfill both the humanities and the social science requirements.

Completion of a Major

Students must declare and complete a major from among the disciplines and requirements listed in the Programs of Study chapter in this section.

Completion of a Minor

Students must declare and complete a minor from among the disciplines and requirements listed in the Programs of Study chapter in this section.

Recommendation on Foreign Language Proficiency

Rutgers College recommends that its students establish proficiency in a foreign language in one of the following ways: (1) by completing a fourth-term Rutgers course, or its equivalent at another institution, in one foreign language, or (2) by achieving a placement test result beyond the fourth college term.

If students continue a language previously studied, placement is determined by the language department on the basis of a placement test. Students may not receive degree credit for courses numbered 101–102 in a language they previously studied for two or more years in high school.

Second Baccalaureate Degree

A student seeking a second baccalaureate degree must complete a minimum of 45 credits beyond those required for the initial degree, including all requirements for the new major and three courses in a subject unrelated to the major. A minimum of 30 credits must be completed as a Rutgers College student.

GRADUATION

Degrees are conferred at the annual commencement at the end of the spring term. Only students who have completed all degree requirements and a minimum of 119.5 credits may participate in the graduation ceremony. Students completing degree requirements in October or January may ask for a certificate of completion to be used in lieu of a diploma until the next commencement exercises.

Programs of Study

MAJORS

Students must declare and complete a major from among the following disciplines. Liberal arts disciplines are identified by an asterisk (*).

Accounting
Administration of Justice
Africana Studies *
American Studies *
Anthropology *
Art History *
Biochemistry * †
Biological Sciences * †
Biomathematics *
Cell Biology and Neuroscience * †
Chemistry *
Chinese *
Classics *
Communication
Comparative Literature *
Computer Science *
Dance
East Asian Languages and Area Studies *
Economics *
English *
Evolutionary Anthropology *
Exercise Science and Sport Studies
Finance
French *
Genetics and Microbiology * †
Geography *
Geological Sciences *
German*
History *
History–French *
History–Political Science *
Information Technology and Informatics
Italian *
Jewish Studies *
Journalism and Media Studies
Labor Studies and Employment Relations
Latin American Studies *
Linguistics *
Management
Management Science and Information Systems
Marine Sciences *
Marketing
Mathematics *
Medieval Studies *
Middle Eastern Studies *
Molecular Biology and Biochemistry * †
Music *
Philosophy *
Physics *
Political Science *
Portuguese *
Psychology *
Public Health
Puerto Rican and Hispanic Caribbean Studies *
Religion *
Russian *
Russian, Central and East European Studies *
Sociology *
Spanish *
Statistics *
Statistics–Mathematics *
Theater Arts
Urban Studies
Visual Arts
Women's Studies*

A Bachelor of Arts degree is conferred for all majors except the following, for which a Bachelor of Science degree is awarded: accounting; administration of justice; evolutionary anthropology; exercise science and sport studies; finance; geological sciences; management; management science and information systems; marine sciences; marketing; and public health. Either a Bachelor of Arts degree

* Liberal arts discipline.
† Students may major in only one of the following subjects: biochemistry, biological sciences, cell biology and neuroscience, genetics and microbiology, or molecular biology and biochemistry.

or a Bachelor of Science degree is available in the following subjects: computer science and physics. For subjects offering both a bachelor of arts and a bachelor of science degree, students may not graduate with a bachelor of arts degree, then return to complete the courses necessary for a bachelor of science degree. All courses required for the desired degree must be completed at the time of graduation. For information, see the departmental listing in the Programs of Study section.

Individualized Major

Students who wish to pursue a major other than those regularly available may make application in writing for an individualized major to the dean's office of the appropriate faculty. Information about how to apply is available at the Office of Academic Services. See Individualized Major in the Programs of Study for Liberal Arts Students section for further information.

MINORS

In addition to the major, students must complete a minor from among the disciplines listed below.

1. The major and the minor may not be selected from the same academic department.
2. A maximum of one course may overlap and be used to fulfill both major and minor requirements.
3. If the major is in a liberal arts discipline, identified in the major list by an asterisk, the minor may be in any subject listed below.
4. If the major is in accounting, administration of justice, communication, dance, exercise science and sport studies, finance, information technology and informatics, journalism and media studies, labor studies, management, management science and information systems, marketing, public health, theater arts, urban studies, or visual arts, then the minor must be selected from the liberal arts minors listed below.
5. Students majoring in a subject offered by the School of Business–New Brunswick may not select economics as a minor.
6. Students majoring in biochemistry, biological sciences, cell biology and neuroscience, genetics and microbiology, or molecular biology and biochemistry may not select biological sciences or biochemistry as a minor.

Liberal Arts Minors

African Area Studies
Africana Studies
Aging
American Studies
Anthropology
Art History
Asian Studies
Biochemistry
Biological Sciences
Central and East European Area Studies
Chemistry
Chinese
Cinema Studies
Classical Humanities
Cognitive Science
Comparative Literature
Computer Science
Economics
English
French
Geography
Geological Sciences
German
Greek (Ancient)
Greek (Modern)
History
Hungarian
Italian
Japanese
Jewish Studies
Korean
Latin
Latin American Studies
Linguistics
Marine Sciences
Mathematics
Medieval Studies
Middle Eastern Studies
Music
Operations Research
Philosophy
Physics
Political Science
Portuguese
Psychology
Puerto Rican and Hispanic Caribbean Studies
Religion
Russian
Science, Technology, and Society
Sociology
Spanish
Statistics
Women's Studies

Additional Minors

The Graduate School of Education offers several teacher certification programs that may fulfill the minor requirement.

Cook College, Mason Gross School of the Arts, the School of Communication, Information and Library Studies, and the School of Management and Labor Relations offer a number of minors that may be completed by Rutgers College students in satisfaction of the minor requirement. For program information, see the appropriate section of this catalog.

OTHER ACADEMIC PROGRAMS

Honors Programs and Awards

Rutgers College Honors Program. Entering and matriculated first-year students who show promise of outstanding achievement in the liberal arts and sciences are invited to participate in the Rutgers College Honors Program. Those students selected may take advantage of honors courses and seminars, special lectures and discussions, research experiences, and special cultural and social activities. Rather than imposing a set of curricular requirements, the Rutgers College Honors Program invites high-achieving students to design their own honors experience. Program students complete Rutgers College degree requirements, and must maintain a GPA of 3.5 each term.

Henry Rutgers Scholars Program. This program is designed to give outstanding seniors the opportunity for independent research leading to an interdepartmental thesis or a thesis in the major field. This individualized course of study replaces two academic courses in each term of the senior year. Not more than 6 credits of the thesis sequence may be used in satisfaction of major requirements. Both terms must be completed in order to receive degree credit. Students wishing to apply for the Henry Rutgers thesis must have a cumulative grade-point average of 3.4 in their major and a 3.4 average overall.

General Honors. The bachelor's degree is conferred with "Highest Honors" to graduating seniors with a cumulative grade-point average of 3.850 or better, with "High Honors" to those with a cumulative grade-point average of 3.700 or better, and with "Honors" to those with a cumulative grade-point average of 3.500 or better.

Departmental Honors. Academic departments may recommend students for departmental honors at graduation, based upon special work and/or examinations. See statements under individual department listings.

Phi Beta Kappa. The membership committee elects to Phi Beta Kappa outstanding juniors and seniors who are pursuing a major in a liberal arts discipline and whose competence in a foreign language is equivalent to the fourth college term. To be eligible for consideration, students must have completed 60 credits at Rutgers College prior to beginning their last term in residence.

Prizes and Awards. A list of prizes and awards for which Rutgers College students are eligible is available in the Office of Financial Aid.

Certificate Programs

All certificate programs offered in New Brunswick are available to Rutgers College students. Certificates are awarded only with or subsequent to the awarding of a baccalaureate degree.

Five-Year Teacher Certification Program

Teacher certification programs in many areas of specialization are offered through the Graduate School of Education to Rutgers College students. Education students major in a subject other than education, since the teacher certification programs do not constitute a major. For further information, see Education 300 in the Programs of Study for Liberal Arts Students section.

National Student Exchange

Rutgers College belongs to the National Student Exchange, a group of state colleges and universities that permit students to spend their junior year at a member institution at in-state tuition. Students applying must have a cumulative grade-point average of 2.5 or better. Information about this program is available in the Office of Academic Services.

Study Abroad

The university conducts several study abroad programs at foreign universities. For more information about study abroad, see Study Abroad in the Programs of Study for Liberal Arts Students section.

Five-Year, Dual-Degree Program in Engineering and Liberal Arts/Sciences

A five-year, dual-degree program is available that leads to a B.A. degree from Rutgers College and a B.S. degree from the School of Engineering. For further information, see the Programs of Study chapter in the School of Engineering section.

Eight-Year Bachelor's Degree/M.D. Program

The bachelor's degree/M.D. program, offered jointly by Rutgers College and the University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School, permits selected students to obtain a bachelor's degree and a medical degree in eight years of study. Students are selected for this program at the conclusion of their sophomore year and are granted provisional admission into the medical school, with a second review of the student's credentials during the fourth year of the program required to qualify for formal admission to the medical school. In the junior year, students begin to take medical science courses along with courses in fulfillment of their undergraduate degree. The bachelor's degree normally is awarded by the end of the fifth year, and the medical degree by the end of the eighth year. For more information, contact the Office of Academic Services, Milledoler Hall.

Five-Year Bachelor's Degree/M.B.A. Program

The bachelor's degree/M.B.A. program, offered by Rutgers College in cooperation with the Graduate School of Management in Newark, permits students pursuing a liberal arts major leading to a bachelor's degree to accelerate, completing both the baccalaureate and M.B.A. degrees in a total of five years of study. Students who qualify for the program enroll in undergraduate courses in New Brunswick for the first three years. They then enroll in two years of course work offered by the Graduate School of Management at both the New Brunswick and Newark campuses. More information is available in the Office of Academic Services, Milledoler Hall.

Bachelor's Degree/M.A. in Criminal Justice Program

The bachelor's degree/M.A. in Criminal Justice program, offered by Rutgers College in cooperation with Rutgers' School of Criminal Justice in Newark, permits students pursuing certain majors to accelerate, completing both the baccalaureate and the M.A. degrees in four-and-one-half years. More information is available in the Office of Academic Services, Milledoler Hall.

Bachelor's Degree/Master's Degree Programs with the Edward J. Bloustein School of Planning and Public Policy

Joint-degree programs, offered in cooperation with Rutgers College and the Edward J. Bloustein School of Planning and Public Policy, permit students pursuing certain majors to accelerate, completing both the baccalaureate and a Master of Public Health or a Master of Public Policy in five years. More information is available in the Office of Academic Services, Milledoler Hall.

Health Professions Advising Office

Please see Health Professions in the Student Life and Services section.

Pre-Law Advising

Rutgers College students may meet with pre-law advisers, who help students interested in preparing for a career in law. The advisers counsel students on selection of appropriate courses and majors, and application to law school.

Gateway Program

The university's Gateway Program provides special academic courses to students who, based on their placement test results, show need for remedial work in English and mathematics. The program offers courses in biology, chemistry,

history, philosophy, physics, psychology, and sociology. These courses are designed to strengthen skills and to offer students the best chance of succeeding at Rutgers. Students who place into the program are notified by the dean of first-year students during the summer prior to their first term at the college and are assisted in making appropriate changes to their fall program.

Educational Support Program (ESP)

Through the Educational Support Program, minority students at Rutgers College have available to them a variety of services designed to improve academic performance and retention. The services include academic counseling, peer support and group workshops, and tutoring services.

Educational Opportunity Fund (EOF)

Recipients of an Educational Opportunity Fund grant also have available to them a number of academic services as part of their financial aid package. A staff of full-time trained professionals is assigned to aid with individual problems that may arise in areas ranging from personal to academic to financial. In addition to the counseling program, EOF offers tutorial services to students who need assistance in basic academic skills as well as in more advanced courses. Each summer, EOF offers a five- to six-week residential precollege program of developmental and / or credit-granting courses.

Course Listing

See the Programs of Study for Liberal Arts Students section for course offerings available to Rutgers College students. The following are specifically Rutgers College courses.

12:090:120. First-Year Interest Group Seminar (1)
Open to first-year students only. May not be repeated for credit.
Highly interactive seminars on selected topics focusing on career goals of first-year students. Analysis and discussion of presentations by a broad spectrum of faculty and alumni speakers; introduction to and utilization of university resources.

12:090:131. Library Research (1.5)
Introduction to the collections and services of the Rutgers University libraries and to the skills necessary to define a research topic and develop an effective research strategy.

12:090:170 to 199. Study Improvement Techniques (E1.5)
LSAT, GRE, and GMAT skills; speed reading; and study skills.

12:090:220. Students in Transition Seminar (1)
Open to entering fall or spring transfer students only. May not be repeated for credit.
Introduction to the university and technology services for transfer students. Topics designed to assist students in the adjustment to the university and to facilitate better first-term academic performance; characterized by small-group learning.

12:090:260. Special Topics (1.5)
Exploration of problems and issues relating to a particular theme.

12:090:270 to 299. College Honors Seminar (3)
By invitation of the college honors chairperson. Used in partial satisfaction of the general college honors program requirements.
Selected topics in the arts and sciences. Titles vary from term to term.

12:090:320. Peer Instructor Education for First-Year Interest Group Seminar (3)
Open to selected upper-class students only. May be repeated only once.
Student peer educators learn how to teach a first-year interest group seminar and help new students make transition to university life. Selected topics focus on effective methods of college teaching and program strategies to increase understanding of the first-year and transfer experience. Discussions center on teaching techniques to integrate faculty, current research topics, academic advising, developmental and adjustment issues, and cooperative / group-learning experiences.

12:090:393,394. Independent Study and Research (3,3)
Open only to juniors in the Rutgers College General Honors Program, with permission of the director.
Individual work on a topic designed by the student in conference with an instructor who has agreed to direct the project.

12:090:410,411. General Honors Interdisciplinary Thesis (3,3)
Open only to seniors in the Rutgers College General Honors Program.
Independent research leading to an interdisciplinary senior honors thesis.

12:090:497-498. Henry Rutgers Honors Project (BA,BA)
Both terms must be completed to receive degree credit.
Independent research and preparation of a written thesis under direction of a faculty member. In lieu of two courses in each term of the senior year.

Administration and Fellows

ADMINISTRATION

Carl Kirschner, Dean
Muffin Lord, Associate Director, Rutgers College General Honors Program
Elsa Vineberg, Associate Dean and Director, Office of Academic Services
Erica C. Anderson, Assistant Dean for Retention and Readmission, Office of Academic Services
Charles V. Coogan, Assistant Dean for Transfer and Dean-to-Dean Transfer Students, Office of Academic Services
Justine Hernandez, Assistant Dean for Sophomores, Office of Academic Services; and Assistant Director, Rutgers College Honors Program
Shawn Johnson, Assistant Dean for Scholastic Standing and Readmission, Office of Academic Services
Elizabeth Spear, Assistant Dean for Seniors, Office of Academic Services
Julie A. Traxler, Assistant Dean for First-Year Students, Office of Academic Services
Elizabeth H. Vogel, Assistant Dean for Juniors and Special Advising Concerns, Office of Academic Services
Wally Torian, Assistant Dean and Director, Educational Opportunity Fund Program
Larry D. Miller, Supervisor of Counselors, Educational Opportunity Fund Program
Marie Logue, Associate Dean for Student Services and Academic Policy, Office of Student Development and College Affairs
Pamela Johnston, Assistant Dean for Transfer and Affiliated Students, Office of Student Development and College Affairs
George Suliali, Assistant Dean for Emerging Populations and Special Retention Efforts, Office of Student Development and College Affairs
Tricia Nolfi Torok, Assistant Dean for Student Involvement, Office of Student Development and College Affairs
Joan Carbone, Associate Dean for Residence Life and Judicial Affairs, Office of Student Services
Susan Boyd, Assistant Dean for Student Services and Judicial Affairs, Office of Student Services
Clarence Shive, Assistant Dean for Judicial Programs, Office of Student Services
Mark Shuster, Assistant Dean, Office of Student Services
Michael Tolbert, Assistant Dean for Residence Life and Judicial Affairs, Office of Student Services
Diane Bonanno, Associate Dean for Recreational Services
David Chandler, Director of Counseling

FELLOWS

The Rutgers College fellows consist of about 200 faculty and staff members who have expressed an interest in building an intellectual support environment for the college. The activities of the fellows include the establishment and implementation of college admissions policy and general education, distribution, and graduation requirements; participation on college committees (along with student members); teaching of college courses and honors seminars; general academic advising; and more informal contacts and activities with students.

UNIVERSITY COLLEGE~ New Brunswick

Information on the following subjects may be found in the General Information section at the back of this catalog: Student Life and Services, Admission, Tuition and Fees, Financial Aid, and University Policies and Procedures.

History and Aims of the College

Founded in 1934, University College–New Brunswick has a unique mission and a long and successful history of providing academic opportunities to, and serving the needs of, adult and part-time students. As an integral part of Rutgers, The State University of New Jersey, the college provides access to the outstanding resources of one of the nation's top-ranked public research universities, where the quality and diversity of the curriculum and the research opportunities available to students are among the finest. University College students meet the same standard of excellence required of all Rutgers students and attend classes taught by the same faculty that serves the entire Rutgers–New Brunswick campus, thereby enjoying all the prestige that comes with a Rutgers degree.

University College's goal is to foster academic excellence in adult and part-time learners while at the same time recognizing their scheduling needs. Students come to the college for many reasons—some to update their job skills to keep pace with rapidly changing technologies, some to earn a college degree for career advancement, and some simply to expand their intellectual capacity. University College responds to students' demands with curricular innovations that provide a rich variety of courses, programs, flexible schedules, counseling, and specialized services tailored to adult and part-time students. The college's students may choose from more than sixty-five majors, including degree programs offered jointly with professional schools. Some students pursue a double major or an interdisciplinary individualized major. Although many students enroll in evening classes only, students may take both day and evening classes.

With an enrollment of approximately 3,500 students, University College is proud to serve as the academic home for adult and part-time students, the vast majority of whom are individuals who often must integrate an academic career with their personal and professional lives. The college's students are special in that they enrich the academic environment by bringing their wealth of experiences to the classroom. By providing a forum for intellectual discourse among students from varied backgrounds, the college enhances the learning experience of its students and prepares them for leadership roles in a rapidly evolving global community.

University College takes pride in providing student-specific academic counseling and access to and opportunity for lifelong learning, which is essential for the success of adult and part-time students.

Admission

University College–New Brunswick is interested in all students who are seeking an education of the highest quality. The college receives applications from a wide variety of potential students: from people whose previous schooling has been interrupted, possibly for a long period of time; from those whose credentials are unusual or diversified; and from those who hold demanding full-time or part-time jobs and duties. The college receives applications from people of different ages, interests, and attitudes, as well as from those of widely different racial and ethnic backgrounds.

General Requirements for Admission

University College–New Brunswick students ordinarily are selected from applicants who have graduated from approved high schools, or the equivalent, and from applicants who have attended other colleges. An applicant whose academic potential is not readily ascertained from his or her records, but who exhibits a high degree of talent and motivation, may be admitted by interview. Applicants admitted by interview are subject to scholastic probation. It is recommended strongly that students on probation enroll for no more than two courses per term. Probationary status may be removed upon the satisfactory completion of a minimum of 12 credits as a University College student.

Admission of High School Graduates

Candidates are expected to have completed a minimum of 16 units of high school work that should include 4 units of English; 3 units of college preparatory mathematics; 2 units of a foreign language; and 7 additional units in some combination of foreign languages, history, social sciences, or sciences. Candidates who have not completed the above distribution units also may be admitted. Such students can satisfy the unfulfilled requirements by taking the appropriate courses while enrolled at University College or by demonstrating proficiency through examination.

Admission by Alternative Procedures

An applicant who is not a graduate of an approved high school or the equivalent may, subject to appropriate regulations, be admitted to University College–New Brunswick by completion of the Tests of General Education Development with sufficiently high scores to indicate probable success in college. Transcripts from high schools attended, as well as copies of the equivalency diploma and the test scores, must be filed along with the application prior to the admission deadline for the desired term. Satisfactory completion of a University College admission interview also may be required.

General Transfer

Most students who enter University College–New Brunswick previously attended other universities or colleges. Official transcripts from all prior educational institutions must be submitted before any decision is made on admission. Applicants must state on the application form all previously attended institutions. The omission of such information may be cause for automatic dismissal or denial of transfer credit.

University College ordinarily admits transfer students applying directly from another institution if the applicant's cumulative grade-point average for a minimum of 24 academic credits is 2.5 or better. Special admission interviews may be required of applicants whose cumulative grade-point average is below 2.5 but above 1.9. Ordinarily, applicants with cumulative grade-point averages of 1.9 or less are not admitted.

Applicants whose previous academic records make admission to the college questionable must submit all documents in advance in order to be considered for admission.

Students who have been dropped from another institution, including other colleges of Rutgers, for scholastic reasons, cannot be considered for admission until at least one year has elapsed since the date of dismissal and they have completed at least 12 transferable credits with a cumulative grade-point average of 2.5 or better.

Transfer for Holders of Associate Degrees

An applicant, applying directly from any public New Jersey county or community college, who successfully completes an associate degree transfer program with a minimum cumulative grade-point average of C is automatically admitted to University College–New Brunswick. All credits earned in that degree program (i.e., in course work at the institution conferring the degree and not including credits earned elsewhere but accepted by that institution) are accepted for transfer, with the exception of physical education and precollege-level courses. Credits earned beyond the degree program are evaluated for transfer on a course-by-course basis.

An applicant who attended another college after receiving the associate degree is considered under the policy outlined for the above general transfer.

International Students

Students whose academic credentials were earned in countries in which English is not the primary language may be admitted to University College–New Brunswick through the following procedure: (1) presenting evidence of graduation from an educational institution at least on a comparable level with an American secondary school (the original record and an authorized notarized translation of the original record must be submitted by May 1), and (2) demonstrating competence in English by examination through the Test of English as a Foreign Language (TOEFL) with a minimum score of 550 on the written test or 213 on the computer test. The English test offered by the Rutgers program in English as a Second Language may be used in place of the TOEFL.

A student who wishes to obtain transfer credit for courses taken at a foreign institution may be required to furnish a course-by-course evaluation from a professional evaluation service.

Advanced Standing Policy at University College

Official transcripts must be filed from all institutions attended (including other divisions of Rutgers), even though transfer credit may not be requested. University College–New Brunswick grants advanced standing credit for courses completed at colleges and universities that, at the time of the student's attendance, were either recognized candidates for accreditation or fully accredited members of one of the six regional accrediting associations of higher education.

Credit is not given for any course completed outside of Rutgers in which the grade is lower than C or its equivalent (C– is not acceptable). Courses must be comparable to those offered for credit at Rutgers–New Brunswick and accepted by University College–New Brunswick. Generally, credit for the following courses is not accepted: business mathematics, data processing (except when equivalent to Rutgers–New Brunswick courses in computer science as determined by that department), mathematics courses below the level given for credit at Rutgers–New Brunswick or usually taught at the high school level (elementary and intermediate algebra, geometry, trigonometry), physical education, real estate and insurance, secretarial science, theology, cooperative education, internships or practicums, correspondence courses passed by exam at other colleges, and courses of a developmental or remedial nature, among others.

If an institution attended was on a quarter rather than a term system, each quarter credit normally is equivalent to two-thirds of a term credit.

Despite the number of courses completed elsewhere, students must earn a minimum of 30 credits (including 12 in the major subject) as matriculated students in University College to be eligible for a degree.

A maximum of 60 credits may be accepted from two-year colleges. Students who hold an associate degree in an approved transfer program (Associate in Arts; sometimes Associate in Science, but not Associate in Applied Science) with a minimum cumulative grade-point average of 2.0 can transfer all of the credits earned in that degree program at the college conferring the degree, up to a maximum of 64 credits, not including courses in physical education, developmental or remedial courses, and precollege-level courses including mathematics courses below the level offered for credit at University College. Credit in courses earned elsewhere, but accepted by the college conferring the degree, is evaluated independently.

Transfer credit and grades from institutions other than Rutgers are not included in the cumulative grade-point average.

Except for English composition, credits may be awarded for the College Level Examination Program (CLEP) general examinations if the score is 570 or better in each examination. However, credits may be used only as electives, not to satisfy major or general distribution requirements. CLEP subject matter examinations are accepted by most departments. Usually, the optional essay is required. A detailed statement on CLEP policy is available at the Office of Student Services.

Academic Amnesty

Students admitted to a degree program at University College who left Rutgers five or more years ago with a cumulative grade-point average below 2.0 can request

"academic amnesty," whereby none of their previous Rutgers grades will be calculated in the grade-point average. In other words, the previous college work of these students will be treated as if they transferred from colleges outside Rutgers.

If amnesty is approved, previous Rutgers grades of F and D will be "E-credited"—i.e., credits will not be counted toward the degree and grades will not be counted in the grade-point average. Courses in which a grade of C or better were received will be "J-credited"—i.e., credits will be counted toward the degree but not toward the grade-point average. After receiving amnesty, the student must complete a minimum of 30 graded credits at University College in order to graduate.

A student can apply for amnesty only once; once amnesty has been allowed, the student cannot at a later time ask for the amnesty to be rescinded or modified. For example, once a student has been allowed academic amnesty, he or she cannot at a later time request degree credit for E-credited courses or request that grades from J-credited courses be computed in the grade-point average.

Matriculation Status

University College–New Brunswick students are designated as either matriculated or nonmatriculated. Students who declare their intention to pursue a degree program are classified as matriculated students. Any student not pursuing a degree program is classified as nonmatriculated. Enrollment in some courses may be restricted to students enrolled in approved degree programs. Academic and administrative regulations apply to both classifications of students. Credits earned as a nonmatriculated student may not be used to satisfy the college residency requirement. Ordinarily, a nonmatriculated student may accumulate no more than 30 credits.

Application for Admission

Applicants for admission to University College–New Brunswick are served through the University College Office of Student Services, Miller Hall, 14 College Avenue, New Brunswick, NJ 08901-1252, 732/932-7276, and through the Office of University Undergraduate Admissions.

Application for Readmission

Students who interrupt their enrollment at University College–New Brunswick for one academic year or more must apply for readmission to the college by filing a new application form. Such applicants must also submit official transcripts from all educational institutions attended since last enrolled in University College.

Readmitted students are not required to pay a second application fee.

Ordinarily, a former student who was academically dismissed from University College is not readmitted if it appears unlikely that the applicant will be able to raise his or her cumulative grade-point average to the level required for graduation. Under no circumstances is a former student readmitted if he or she has been dismissed more than once from University College for academic reasons.

Financial Aid

While many University College–New Brunswick students are self-supporting, others may require some financial support in order to achieve their educational objectives. The availability of federal and state funds for students is covered in the Financial Aid section of this catalog. Funds also are available through the dean of University College from the following sources.

Scholarships

Atrion Corporation Endowed Scholarship. For a student pursuing a business major; based on academic merit and need.

Fund for Student Diversity Award. Awarded at the discretion of the dean to enhance the diversity of the student body.

John J. and Regina Heldrich Endowed Scholarship. For students entering their first year at Rutgers University, with preference for graduates of Highland Park High School.

Helen B. Hurd Endowment Award. For outstanding New Jersey community college graduates transferring to University College–New Brunswick, with preference given to part-time students.

Frank J. and Kathleen McGuire Endowed Scholarship. For a student demonstrating academic merit or financial need.

Jason Minken Memorial Award. For students entering University College who have overcome a significant life challenge.

Moms Off-Duty Scholarship. For a female student with a dependent child or children; based on financial need.

Charlotte W. Newcombe Award. For mature women who are pursuing degrees as a means to a new career; based on financial need.

Edward B. Snyder Award. For students who have returned to college after an extended period of time in other life experiences.

Ethan Stein Endowment Award. For students who have completed the Transition Program and are in their first term at University College.

University College Governing Association Transition Program Award. For a Transition Program graduate who has completed at least 15 credits in University College with a GPA of 3.2 or better.

University College Honors Program Award. For students enrolled in the University College Honors Program and taking an honors course.

University College Merit Scholarship. For students who have completed at least 12 credits in University College with a GPA of 3.2 or better.

University College–New Brunswick Alumni Association Endowed Scholarship. Awarded on the basis of a 500-word essay describing how the student has benefited from the uniqueness of University College.

Verizon Foundation Scholarship. For a New Jersey resident; based on academic merit and need.

Veterans Benefits

Veterans and other persons planning to receive educational assistance benefits from the Veterans Administration (VA) are advised to secure VA approval for training prior to enrollment. Inquiries concerning eligibility should be directed to the Office of Student Services, Miller Hall, 14 College Avenue, New Brunswick, NJ 08901-1282, or to the Veterans Administration, 20 Washington Place, Newark, NJ 07102.

A veteran, widow, war orphan, or dependent approved for training should present his or her Veterans Administration's Certificate of Eligibility forms when registering. In order to be certified for Veterans Educational Assistance Benefits, students must request that certification of enrollment be sent to the Veterans Administration at the beginning of each term.

Veterans planning to train under Chapter 32 VEAP, Chapter 30 of the New (Montgomery) GI Bill of 1984, or Chapter 1606 for Reservists, are required by the university to pay cash for tuition, fees, books, and supplies, when due. Veterans, in turn, receive an allowance for each month of schooling based upon credits and the number of dependents.

No veteran may drop a course without approval from the Office of Student Services. The date of withdrawal is the determining date for benefits.

Academic Policies and Procedures

Note: See also the University Policies and Procedures section for regulations that pertain to all the undergraduate colleges at Rutgers–New Brunswick.

STUDENT RESPONSIBILITY TO KEEP INFORMED

In addition to the material in this catalog, essential information about current procedures is provided in the Undergraduate Schedule of Classes, the Academic Success Kit booklet, and the registration material distributed each term. Students are responsible for keeping themselves informed of policies and procedures announced in these publications and in other official notices that are announced or posted electronically via email and on the college's web site.

EXCEPTIONS TO ACADEMIC REGULATIONS

Students matriculated in University College–New Brunswick may request exceptions and waivers to any academic regulations either of the college or of the university through a written petition to the dean of the college. The petition should cite the regulation in question and state the basis for waiver or exception upon which the request rests. Petitions of exceptions and / or waivers of regulations are reviewed by the appropriate committee of the college. Standard forms for requesting exception or waiver of academic regulations are available in the Office of Student Services.

ACADEMIC CREDIT

Credit by Examination

A maximum of 45 credits by examination may be used toward a baccalaureate degree. These credits may not be offered to satisfy the college residency requirement.

Credit by examination can be obtained through the following methods: (1) individual examinations offered by the academic departments of Rutgers, (2) the College Level Examination Program (CLEP) offered by the Educational Testing Service, Princeton, NJ 08541, (3) the Thomas Edison College Examination Program (TECEP) offered by Thomas Edison State College, 101 West State Street, Trenton, NJ 08625, or (4) Portfolio Assessment offered by Thomas Edison State College. Prior approval by University College–New Brunswick is required before seeking credit through

examination; approval by the major department also is required for credit in the major field. Information on eligibility and procedures is available in the Office of Student Services or the Office of the Dean.

Transfer Credit

Courses successfully passed at other divisions of Rutgers or at other approved institutions may entitle a student to credit upon evaluation by the dean. Students may register for courses outside of Rutgers–New Brunswick only with the approval of the Office of Student Services.

For more information on transfer credit and the advanced standing policy, see the Admission chapter in this section.

REGISTRATION AND COURSE INFORMATION

Academic Advising

All students who are admitted into University College–New Brunswick as matriculated (i.e., degree-seeking) students receive a curriculum worksheet that shows the courses that must be completed in order to graduate. The student is urged to update the worksheet each time a course is completed and consult the worksheet when it comes time to register for new courses.

For advising on completing college requirements, students may consult an adviser at the University College Counseling Office. For advice on major requirements, the student may consult with an adviser in the academic department that offers the major.

It is the student's responsibility to register for courses needed to complete the degree requirements as outlined on the curriculum worksheet and to avoid scheduling courses for which credit already has been granted, either in University College or by transfer.

Matriculated students are urged to bring their curriculum worksheets when seeking advising and/or schedule approval.

Registration

Students must be admitted to University College–New Brunswick before they may register for courses. Information about registration is published in the Schedule of Classes. The university reserves the right to restrict registration in all courses offered and, when necessary, to cancel courses previously announced.

Withdrawal from Courses. Students may request withdrawal from courses at any time up to, but not including, the last two weeks of instruction in the term. Terminating class attendance does not constitute withdrawal from courses. A student must inform the Office of Student Services in writing of his or her intention to withdraw. See the University Policies and Procedures section for details of the drop/add policy.

Registration in Institutions Other Than Rutgers University. A University College–New Brunswick student who wishes to enroll in courses at another institution must obtain permission from the Office of Student Services. Departmental approval also must be obtained if the student intends to use the course to satisfy major requirements. Requests must be made in writing well in advance of the deadline for registration at the other institution. No credit is allowed for courses taken without prior permission. The total course load consists of courses carried in University College and those taken concurrently at another institution.

Students who have completed 60 degree credits from any source may take a maximum of 6 of their remaining credits at a two-year college. However, the total number of credits transferred from all two-year colleges may not exceed 64 credits.

Intercampus Registration. Registration at the Camden or Newark campuses of Rutgers is permitted in unusual cases and ordinarily for one term only. Approval must be obtained from the Office of Student Services.

Course Load

Although most students schedule two or three courses per term, they may register for up to 18 credits per term and, in certain cases, may be permitted to carry a larger number of credits. However, students new to University College–New Brunswick who have a demanding work schedule are advised not to schedule more than two courses per term during their first year. Moreover, students on probation or limited enrollment are advised strongly to schedule no more than two courses per term during the regular academic year and to take no more than one course during the Summer Session.

Course Information

Pass/No Credit Courses. A matriculated student may register on a Pass/No Credit grading basis for one course per term up to a maximum of two courses. (The two-course limit does not include courses in which grades are already awarded solely on a Pass/No Credit basis.) Pass/No Credit registration is limited to courses identified in the student's curriculum as liberal arts and sciences electives or free electives. To request Pass/No Credit grading in a particular course, a student should declare his or her intention at the time of registration, have completed 60 degree credits, and have a cumulative grade-point average of 2.0 or better.

A student registering on a Pass/No Credit basis must complete all of the required work in the course, including all examinations and assigned papers or projects. While a course that is completed successfully on a Pass/No Credit basis carries graduation credit, it is not calculated in the cumulative grade-point average.

Courses Taken Not-for-Credit. No student may register for any course on a noncredit basis, except with the approval of the dean, unless a course is being repeated. Students permitted enrollment in a course on a noncredit basis must meet all of the requirements of the course. It is the student's responsibility to indicate at the time of registration whether he or she is enrolling for credit or not-for-credit in a course.

Repeating Courses. A student who wishes to repeat a course must fill out a form for this purpose available in the Office of Student Services. The form must be completed prior to the term in which the course is repeated.

Grades of F. When a course is repeated for which a student previously earned a grade of F, both the original grade of F and the new grade remain on the transcript and in the cumulative grade-point average. However, for up to four

courses repeated at Rutgers, the student may elect to have the original grade of F removed from the cumulative grade-point average, although it will remain on the transcript. A student may exercise this option for any four courses during the undergraduate years, but it may be used only once for a given course. Once the course has been repeated, the first grade is E-credited and the second grade is used in the cumulative grade-point average, even if it is also an F. Election of this option may not be revoked.

Grades of D. If a student earns a grade of D and repeats the course, both grades are computed in the cumulative grade-point average, but the student receives degree credit only the first time. The second grade is K-credited. (The K prefix means the grade is computed in the cumulative grade-point average, but no credit is earned toward the degree.)

Grades of C or Better. If a student earns a grade of C or better and repeats the course, no credit is earned toward the degree and no grade is computed in the cumulative grade-point average. The second grade is E-credited, unless the catalog states that the course may be repeated for credit or the student has obtained written permission of the department to repeat it for credit.

See the University Policies and Procedures section of this catalog for an explanation of the E prefix and K prefix preceding course credits on the transcript.

Summer Courses. Students who wish to register for Summer Session courses at other institutions must obtain prior permission from the Office of Student Services, and, if applicable, from the student's major department. No credit is allowed for unauthorized enrollment.

Graduate Courses. Seniors may register for graduate courses with the approval of the graduate director, the dean of academic affairs of the graduate school in question, and the Office of Student Services. Approval generally is not given unless the student has a cumulative grade-point average of 3.0 or better and senior standing.

Attendance and Cancellation of Classes Policy. In accordance with university regulations, attendance is expected at all regularly scheduled meetings of a course. It is the policy of the university not to cancel classes on religious holidays; any absence due to religious observance is treated as an authenticated absence. For information on the cancellation of classes due to inclement weather, see the University Policies and Procedures section.

SCHOLASTIC STANDING

The student's numerical scholastic standing is determined by his or her cumulative grade-point average, a weighted average of all Rutgers grades in those courses taken for credit. For information on the computation of the cumulative grade-point average and other grading regulations, see the University Policies and Procedures section.

Grades of F received in courses approved for credit are included in the computation of the cumulative grade-point average unless the course is repeated.

Dean's List

Each term, outstanding students are honored by inclusion on the Dean's List. In order to qualify, the student must meet the following requirements at the time the Dean's List is prepared: a) be matriculated, b) have passed 6 or more degree credits with letter grades (Pass/No Credit and E credits are excluded), and c) have attained a term grade-point average of 3.5 or above.

Poor Academic Performance

Academic Review. The Committee on Student Affairs, composed of administrators and appointed faculty fellows, reviews the records of all students at the end of each academic year.

Probation and Dismissal. Students are considered according to the following three categories:

Continuing University College Students: Students whose cumulative grade-point average is less than 2.0 at the end of an academic year are placed on probation and may continue under limitations specified by the Committee on Student Affairs. Students receive written notification of probationary status within four weeks of the term grade report. Students on probation who have not raised their cumulative grade-point average to 2.0 at the end of the academic year ordinarily are dismissed. In addition, students whose cumulative grade-point average is less than 1.2 at the end of any academic year ordinarily are dismissed without necessarily being placed on academic probation first.

Transfer Students from Other Institutions: Students who are admitted on academic probation as a result of unsatisfactory or marginal academic records at other institutions or in secondary school normally are required to maintain a minimum grade-point average of 2.0 at University College–New Brunswick. The records of these students are reviewed at the end of the academic year, and probationary status is removed if a student has completed at least 12 credits with a minimum grade-point average of 2.0. If the student's grade-point average is less than 2.0, the student ordinarily is dismissed.

Transfer Students from Other Colleges within Rutgers: Students admitted to University College–New Brunswick on academic probation because of a poor academic record at another college of Rutgers normally are assigned a minimum grade-point average that must be achieved as a condition of their probation. The records of these students are reviewed at the end of the academic year, and probationary status is removed if a student has completed at least 12 credits with the required average. If the average has not been achieved, the student normally is dismissed.

Appeal. Probationary status may not be appealed, although students may request a review of the limitations imposed by the committee if those limitations appear inappropriate for the individual's circumstances. A request for review may be made at any time during the probationary period and should be made to the Office of Counseling.

Students dismissed from University College–New Brunswick by the Committee on Student Affairs may appeal to the dean of the college within twenty calendar days after the date of the dismissal notice. Grounds for appeal include technical error, extenuating circumstances, additional information not previously available to the committee, and/or other factors the student considers appropriate to support his or her challenge of the dismissal decision. Students must present their appeal in writing only. Letters of appeal must state the reasons for appeal and, when possible, should be accompanied by appropriate documentation. The letter must be written exclusively by

the student, although advice in formulating the appeal may be sought from a faculty adviser or college counselor. Appeals are reviewed by the Committee on Student Affairs. Written notice of the appeal decision is sent to the student at least two weeks prior to the beginning of the next term. The decision of the committee is final.

A student dismissed from University College is not considered for readmission to the college unless that former student has completed at least 12 credits at another accredited college or university and/or the Rutgers University Summer Session with a cumulative grade-point average of 2.5 or better and at least one term, not including summer session, has elapsed since the date of the student's dismissal.

DISCIPLINARY HEARING PROCEDURES

The Board of Governors of Rutgers, The State University of New Jersey, has established a list of offenses that may result in separation from the university. These offenses are handled through the University Code of Student Conduct. (See the University Policies and Procedures section.) In addition, each college has a hearing procedure for use in instances where charges against a student are not of sufficient gravity to lead to separation from the university. Lists of the separation and nonseparation offenses and details on the hearing procedures are also available in the Office of the Dean.

Degree Requirements

Students should be aware that the pertinent curricular requirements are those in effect in the academic year of their admission. Students who change their academic objectives are governed by the curricular requirements and regulations in effect during the academic year in which the change is made. A student who has interrupted a program in University College–New Brunswick for no more than four terms (two academic years) and who has not attended any other college during that period may request readmission as a University College student under the curricular requirements in effect at the time of last attendance.

REQUIREMENTS

A candidate for a bachelor's degree must demonstrate proficiency in English, mathematics, and foreign language and complete a minimum of 120 credits, including the college Liberal Arts and Sciences Distribution Requirements and a major program of study.

Proficiency Requirements

Proficiency in English, mathematics, and foreign language must be demonstrated as follows:

English. By examination. A placement examination in English is required of entering students who have not received transfer credit for a college-level writing course equivalent to 01:355:101 Expository Writing I or 01:355:201 Research in the Disciplines.

Satisfactory completion of 01:355:101 or its equivalent is a requirement for graduation.

Continued evidence of competence in written English is expected of all students. Students whose writing fails to communicate effectively on a level appropriate for a college student may be failed for this reason alone. Faculty regulations direct instructors to report to the Department of English those students who are seriously defective in written expression. In the case of such referral, a student may be required, even though he or she has passed 01:355:101 Expository Writing I and 01:355:201 Research in the Disciplines, to repeat those courses or to enroll for remedial instruction.

Mathematics. By (1) offering 3 units of secondary school work in college preparatory mathematics including Algebra II or higher, or (2) examination, or (3) the completion of one year of noncredit preparatory mathematics. Entry to certain mathematics courses is determined by performance on a mathematics placement test administered by the Department of Mathematics.

Continued evidence of competence in the use of mathematics is expected of all students in those courses in which it is needed. Students who clearly demonstrate a lack of competence are reported to the Department of Mathematics. A student whose mathematics proficiency continues to be unsatisfactory, even though he or she has completed a mathematics course required for the degree, may be required to repeat that course or to enroll for noncredit instruction.

Foreign Language. By (1) offering 2 units of secondary school work in a foreign language, or (2) examination, or (3) the completion with credit of both terms of a first-year, college-level foreign language course.

Students who have not completed the proficiency requirements within two years after admission to University College are restricted to scheduling only those courses that satisfy the proficiency requirements.

Liberal Arts and Sciences Distribution Requirements

A candidate for the bachelor's degree must complete the following liberal arts and sciences requirement (minimum of 33 credits) as part of the 120 credits needed for graduation.

1. English: 01:355:101 Expository Writing I and 01:355:201 Research in the Disciplines. Students must complete satisfactorily these courses as a requirement for graduation. Students are required to enroll in the appropriate writing course each term until they have fulfilled the requirement. In place of 01:355:201, students may substitute one of the following courses: 01:355:301 College Writing and Research, 01:355:302 Scientific and Technical Writing, and 01:355:303 Writing for Business and the Professions.
2. Humanities: Three term courses (minimum of 9 credits) in archaeology, art (except studio art), music (except applied and performance music), classics, English (except writing courses listed in area 1), foreign languages and literatures, linguistics, comparative literature, history, philosophy, or religion. No more than two courses may be taken in any one field.
3. Social Sciences: Three term courses (minimum of 9 credits) in anthropology (except physical anthropology), economics, geography (except physical geography), labor studies, political science, psychology, or sociology. No more than two courses may be taken in any one field.
4. Mathematics and Natural Sciences: Three term courses (minimum of 9 credits) in mathematics, chemistry, computer science, statistics, life sciences, geological sciences, physics, physical anthropology, or physical geography. At least 3 credits must be in areas other than mathematics, computer science, and statistics, and no more than two courses in any one field.
5. Cross-Cultural Perspectives. One course (minimum of 3 credits) involving an examination of interactions among cultural groups, including issues of power, prejudice, inequality, and cultural diversity in both domestic and global contexts, may be used to fulfill the diversity course requirements. This credit also may be counted toward the humanities and social sciences areas.

The liberal arts and sciences requirements must be completed within the first 90 credits.

Information on courses that may be used to satisfy the Liberal Arts and Sciences Distribution Requirements is available from the Office of Student Services, the Office of Counseling, the dean's office, and on the college's web site: http://ucnb.rutgers.edu/.

Completion of a Major

A student also must complete an approved major (ordinarily 30 to 42 credits). Courses in the major also may not be used to satisfy the minimum liberal arts and sciences requirement (1 through 4, above). Majors available to University College–New Brunswick students are listed in the Programs of Study chapter in this section.

A student may elect to pursue a minor field in addition to the major field if a minor program is available in the desired subject.

Other Requirements and Restrictions

Free Electives. The additional credits needed to bring the total to the minimum of 120 credits are taken in free electives. (Physical education courses may not be used toward degree credit.)

Maximum Course Load in a Single Subject. Without special permission, no student may offer more than 48 credits (or sixteen courses) in a single subject.

Residency. Thirty credits, including at least 12 credits in the major subject (or more if specified by the major department) and other courses the major department may prescribe, must be taken in New Brunswick as a matriculated student in University College, and 30 of the last 42 credits must be completed at the Rutgers–New Brunswick campus as a regularly enrolled University College degree candidate.

Cumulative Grade-Point Average. Students must maintain a minimum cumulative grade-point average of 2.0 (letter equivalent C).

Second Baccalaureate Degree

Students matriculating for a second baccalaureate degree need offer only 6 credits (rather than 9) in each of the three distribution areas and must offer at least 54 credits in liberal arts exclusive of the required English courses. A minimum of 30 credits beyond those required for the initial degree must be completed as a University College–New Brunswick student.

GRADUATION

It is a student's responsibility to declare candidacy for the baccalaureate degree by filing a Diploma Information Card with the Office of Student Services at least one term before the expected date of graduation.

Degrees are conferred by the university only at the annual university commencement in May on the recommendation of the faculty fellows of University College. A student who completes the requirements for his or her degree in October or January will receive an interim certificate in lieu of the diploma until the next commencement exercises.

Diplomas are issued in May at the University College Commencement Convocation. A candidate who does not wish to attend the commencement convocation is asked to write to the associate dean of the college requesting that the degree be conferred in absentia and indicating the address to which the diploma may be sent when it is mailed during the month of June or July.

Diplomas are withheld from all students whose university accounts are not clear.

Graduation with Honors

The bachelor's degree is conferred with "Highest Honors" to graduating seniors with a cumulative grade-point average of 3.850 or better, with "High Honors" to those with a cumulative grade-point average of 3.700 or better, and with "Honors" to those with a cumulative grade-point average of 3.500 or better.

Programs of Study

Among the programs available to University College–New Brunswick students are (1) major programs of study leading to a baccalaureate degree, (2) teacher education programs that provide New Jersey approved teacher certification in conjunction with a master's degree, and (3) certificate programs (only awarded in conjunction with a baccalaureate degree). Students not interested in pursuing a degree program may, within prescribed limits, schedule individual courses on a nonmatriculated basis.

MAJORS

The following majors are available to University College–New Brunswick students. They are offered by the Faculty of Arts and Sciences, the Edward J. Bloustein School of Planning and Public Policy, the School of Business–New Brunswick, the Mason Gross School of the Arts, Cook College, the School of Communication, Information and Library Studies, the School of Social Work, and the School of Management and Labor Relations. See the Programs of Study for Liberal Arts Students section for detailed program information. Some majors have specific admission or entry procedures, for example, accounting, communication, computer science, economics, management, marketing, and psychology. Consult the appropriate section for admission requirements to major programs.

Majors Offered in the Evening

Accounting
Administration of Justice
Biological Sciences
Chemistry
Communication
Computer Science
Economics
English
Finance
French
German
History
History / French
History / Political Science
Journalism and Media Studies
Labor Studies and Employment Relations
Management
Marketing
Mathematics
Philosophy
Physics
Political Science
Psychology
Sociology
Spanish
Statistics
Statistics–Mathematics

Additional Majors Requiring Daytime Attendance

Africana Studies
American Studies
Anthropology
Art History
Biochemistry
Biomathematics
Cell Biology and Neuroscience
Chinese
Classics
Comparative Literature
Dance
East Asian Languages and Area Studies
Evolutionary Anthropology
Exercise Science and Sport Studies
Food Science
Genetics and Microbiology
Geography
Geological Sciences
History / French
Information Technology and Informatics
Italian
Jewish Studies
Latin American Studies
Linguistics
Management Science and Information Studies
Marine Sciences
Medical Technology
Medieval Studies
Middle Eastern Studies
Molecular Biology and Biochemistry
Music
Nutritional Sciences
Physics
Portuguese
Public Health
Puerto Rican and Hispanic Caribbean Studies
Religion
Russian, Central, and East European Studies
Theater Arts
Urban Studies
Visual Arts
Women's Studies

The Bachelor of Arts degree is conferred for all majors except the following, for which a Bachelor of Science degree is awarded: accounting, administration of justice, evolutionary anthropology, exercise science and sport studies, finance, food science, geological sciences, management, management science and information systems, marine sciences, marketing, medical technology, nutritional sciences, and public health. Students majoring in computer science or physics can select either a Bachelor of Arts or a Bachelor of Science curriculum.

Individualized Major

Students who wish to pursue a major other than those listed above may make application in writing for an individualized major to the dean's office of the appropriate faculty. See Individualized Major in the Programs of Study for Liberal Arts Students section for further information.

MINORS

All minor programs of study offered by various disciplines in New Brunswick are available to students attending University College–New Brunswick as supplements to their major programs of study. See the Undergraduate Education in New Brunswick chapter in the front of this catalog for a list of current minors.

OTHER ACADEMIC PROGRAMS

Transition Program

The Transition Program is a comprehensive support system for adult students entering the college after several years away from an academic setting. Students participate in a term-long Learning-to-Learn course of instruction called An Introduction to the Liberal Arts. Before, during, and after the program, students receive personal assistance in developing the skills and attitudes necessary for success at the university.

The instructional component includes a preview of college-level course work taught by university faculty. Each lecture imitates as closely as possible an actual class, including assignments, exercises, exams, and readings in a typical first-year course. After each lecture, students learn to learn by observing the strategies employed by the program's staff, who act as model learners. These sessions provide an opportunity to develop study techniques and to apply these in an interdisciplinary learning situation, while developing self-confidence. Academic counseling and self-exploration are also an integral part of the program.

Eligibility for the program is based on a personal interview with an evaluation by program staff. A high school diploma or the equivalent is required, along with a strong commitment to pursuing higher education at University College–New Brunswick. The program is offered in the fall term, in the spring term, and during Summer Session. For more information or to make an appointment to discuss entry into the program, contact the University College Counseling Office.

Postbaccalaureate Program for Prehealth Professions

The University College Postbaccalaureate Program for Prehealth Professions Studies is designed for college graduates who wish to prepare for admission to medical and other health profession schools in a supportive environment. To help students meet the challenges of an intensive course of studies, the program is supplemented with advising and an array of support services. Students enrolled in the program will have special opportunities to participate in a variety of workshops and activities that enrich experience and increase the success rate of participants. A certificate option is available to students who meet an initial minimum GPA requirement of 3.0 and a noncertificate option is available to all eligible students. The program also serves students who wish to improve their grade-point average to enhance their applications to these schools. An optional Medical College Admission Test (MCAT) preparation course also is available to all students. For an application and more information, contact the dean's office.

Pre-Engineering Program

Students interested in engineering may take pre-engineering courses in order to meet the requirements for admission to the School of Engineering. To be eligible to transfer to the School of Engineering on a full-time basis, students must complete the required courses with a minimum grade of C and an overall grade-point average of 2.50 or above. All applicants must complete a Dean-to-Dean Transfer form available from the University College Office of Student Services. For more information, contact the dean's office.

Certificate Programs

All certificate programs offered in New Brunswick are available to University College–New Brunswick students. Some of the certificate programs may require daytime attendance. Certificates are awarded only with or subsequent to the awarding of a baccalaureate degree in an approved major. See the Undergraduate Education in New Brunswick chapter for a list of current certificate programs.

Educational Opportunity Fund Program

The New Jersey Educational Opportunity Fund (EOF) Program is a state-sponsored program designed to assist state residents who might have been denied a college education because of financial and educational disadvantages. The EOF program at University College offers academic, personal, and financial aid counseling. Full-time and part-time students are eligible.

Honors Program

The honors program of University College enables qualified students to enrich their college education by enrolling in challenging, multidisciplinary seminar classes and conducting independent study projects under the direction of Rutgers faculty members. Students enrolled in the program are eligible for the Dean's Honors Scholarship.

To be admitted into the program, a student must have completed 12 credits at University College with a cumulative grade-point average of 3.4 or above. The student also must submit an example of his/her written work to the Honors Committee. To complete the program and receive the designation Honors Scholar on the permanent transcript, the student must a) complete three 3-credit honors seminars (two 1.5-credit mini-seminars may be substituted for one 3-credit seminar), b) complete an independent honors project, and c) maintain a cumulative grade-point average of 3.4 or above.

A student who wishes to enroll in honors courses without being formally admitted into the program may do so, provided the student has completed at least 12 credits either at University College or at his/her previous college with a cumulative grade-point average of 3.4. The student can apply for formal admission into the program at a later date.

Five-Year Teacher Certification Program

Teacher certification programs in many areas of specialization are available through the Graduate School of Education to University College–New Brunswick students. These programs combine undergraduate and graduate study that culminate with an M.Ed. degree and certification of eligibility with advanced standing for the area for which certification is taught. See Education 300 in the Programs of Study for Liberal Arts Students section of this catalog for further information.

Joint Undergraduate/Graduate Degree Programs

University College–New Brunswick offers degree programs that enable a student to obtain a bachelor's degree and a master's degree in an accelerated period of time. Typically, these programs reduce the amount of time needed to complete the two degrees by one year for full-time students

or an equivalent time span for part-time students. The following joint undergraduate / graduate degree programs are offered:

1. Bachelor's / master's program in business administration, offered in cooperation with the Graduate School of Management.
2. Bachelor's / master's program in labor and industrial relations, offered in cooperation with the School of Management and Labor Relations.
3. Bachelor's / master's program in public policy, offered in cooperation with the Edward J. Bloustein School of Planning and Public Policy.
4. Bachelor's / master's program in criminal justice, offered in cooperation with the School of Criminal Justice.
5. Bachelor's / M.D. program in medicine, offered in cooperation with the University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School.
6. Bachelor's / master's program in communication and information studies, offered in cooperation with the School of Communication, Information and Library Studies.

Students interested in these programs should contact the Office of the Dean, University College–New Brunswick, as early in their undergraduate years as possible.

Course Listing

See the Programs of Study for Liberal Arts Students section for course offerings available to University College–New Brunswick students. The following are specifically University College courses.

61:090:298,299. UNIVERSITY COLLEGE MISSION COURSES (3,3)
Open only to University College students.
Opportunity to study, with a senior faculty member, a topic clearly related to the instructor's intellectual interests. Topics and instructors change each term.

61:090:361,362,363,364. HONORS MINI SEMINARS (1.5,1.5,1.5,1.5)
Open only to students in the University College Honors Program.
Selected topics in arts and sciences.

61:090:375,376,377,378. COLLEGE HONORS SEMINARS (3,3,3,3)
Open only to students in the University College Honors Program.
Selected topics in arts and sciences.

61:090:394. HONORS INDEPENDENT PROJECT (1.5)
Open only to students in the University College Honors Program.
Allows students to conduct honors research.

61:090:395. HONORS INDEPENDENT STUDY (3)
Open only to students in the University College Honors Program.
Allows students to conduct honors research.

61:090:401,402. ADVANCED HONORS SEMINAR (3,3)
Open only to students in the University College Honors Program.
Selected topics in arts and sciences.

61:090:493,494. SENIOR HONORS THESIS (3,3)
Open only to students in the University College Honors Program.
Independent research and preparation of a written thesis under the direction of the University College Honors Committee.

Administration and Fellows

ADMINISTRATION

Office of the Dean

Emmet A. Dennis, Dean of the College
Victoria C. Ukachukwu, Vice Dean
Position Vacant, Associate Dean for Academic Development
Position Vacant, Dean of Students/Director of Counseling Services
William Callahan, Assistant Dean/Director of Enrollment Services
Position Vacant, Assistant Dean for Academic Programs
Vicki L. Brooks, Assistant Dean/Director of EOF
Position Vacant, Business Manager/Director of Personnel
William Zee, Director of Recruitment and Admissions
Jean E. Romsted, Counselor
Alison Unger, Counselor
Felicia Smith-Louis, Coordinator of Senior Certification
Yrelis Tapanes, Academic Progress Coordinator
Theresa Ryan-Botello, Office Administrator
Anne McAllister, Supervisor/SAR

FELLOWS

University College–New Brunswick fellows are members of the Rutgers–New Brunswick faculty who wish to devote themselves to the particular aims and mission of University College. The fellows exercise legislative and regulatory authority over all University College matters not specifically reserved to the dean. This includes general curricular requirements, admission policy for University College students, the overseeing of student life, and other activities charged to the standing committees.

COOK COLLEGE

Information on the following subjects may be found in the General Information section at the back of this catalog: Student Life and Services, Admission, Tuition and Fees, Financial Aid, and University Policies and Procedures.

History and Aims of the College

The Land-Grant College

Cook College, a professional school of food, agricultural, marine, and environmental sciences, is the land-grant college of Rutgers, The State University of New Jersey.

Cook College applies the land-grant concept—the integration of teaching, research, and outreach—to its broad range of interdisciplinary, problem-oriented programs for the benefit of all New Jersey residents. In 1862 the Morrill Act, signed by President Abraham Lincoln during the Civil War, provided grants of federal land to support schools that would offer courses of study in mechanized agriculture and begin agricultural research projects. A unique American contribution to higher education, this land-grant concept transferred research technologies to local problems and in New Jersey formed the basis for the state's nickname, "The Garden State.'' Cook College and the New Jersey Agricultural Experiment Station have expanded the traditional land-grant mission to emphasize food science and engineering, nutrition, health and safety, natural resources and the environment, and marine and coastal resources, in addition to agricultural production and competitiveness.

The college is named for George Hammell Cook (1818–1889), a renowned geologist and teacher at the Rutgers Scientific School. Cook's achievements include New Jersey's first geological survey, which became a model for other states, and the first commercial cultivation of the soybean in America. As a result of his activities on behalf of "scientific agriculture" throughout the state, Rutgers Scientific School was named the land-grant college in 1864, and Cook later became the first director of the New Jersey Agricultural Experiment Station.

A strong foundation in the physical and biological sciences supports the college's emphasis on the relationship between people and the environment. The programs offered by the college's predecessors, the College of Agriculture and then the College of Agriculture and Environmental Science, have been broadened into curricula that address the social, biological, physical, economic, and policy dimensions, as well as state, national, and international aspects of food, agricultural, marine, and environmental sciences. Consequently, Cook College students are educated in the humanities and social sciences as well as in the most recent scientific and technological developments.

Cook College Today

The primary activity of Cook College is educational—the professional development of its students in a small college setting within the larger university context. The college has its own faculty and facilities, and 61 percent of its approximately thirty-one hundred undergraduate men (50 percent) and women (50 percent) live on campus. Minority students comprise more than 25 percent of the total undergraduate enrollment. The scope of the college's curricula is broad: four-year programs lead to the bachelor's degree in twenty-four program areas with more than fifty-five options. A sampling of majors ranges from biotechnology to environmental and business economics, from environmental planning and design to environmental sciences, and from food science to nutritional sciences. Fourteen minors and four certificate programs also are offered. Many of these curricular offerings are not available elsewhere at Rutgers or at any other college in New Jersey.

Undergraduate education at Cook College provides a sound basis for further endeavors. Eighty-five percent of the graduates who apply are accepted into professional schools for medicine, dentistry, veterinary science, and law. Cook College graduates serve in legislatures and on planning boards; direct state and federal government departments and agencies; serve as college deans and professors; and occupy executive positions in research, industrial, environmental, biotechnology, agribusiness, pharmaceutical, and food companies.

The executive dean is responsible for the various components of Cook College, which include all instructional programs, the New Jersey Agricultural Experiment Station and its research programs, and outreach through the programs of Rutgers Cooperative Extension, and Continuing Professional Education.

The dean of academic and student affairs directs a variety of programs and services: curriculum planning, academic services, academic advising, counseling, EOF and special programs, honors programs, undergraduate and graduate programs, career development programs, and all student life activities and services. Faculty and peer advisers provide strong support to students during their college years. A cooperative education program offers students the opportunity to gain on-the-job experience related to their majors and career goals.

The Campus

The magnificent campus, with its green spaces, a pond (known fondly as "Passion Puddle"), and outstanding specimens of trees and plants, brings the college's educational philosophy to life. Helyar Woods, the Rutgers Display Gardens, and the college research farm are set amid highly urbanized and industrialized central New Jersey. The area surrounding the campus mirrors the contrasts of the state: the most urban in the nation, yet 60 percent of its land is farm and forest.

Lipman, Bartlett, Martin, Thompson, Waller, and Blake are buildings that preserve the memory of the famous scientists and scholars of the college's past. Among the achievements of Cook College scientists are the antibiotic streptomycin, for which Selman A. Waksman won the Nobel prize; the first effective mosquito repellant; the first study of the effects of air pollution on vegetation; the artificial insemination of dairy cows developed by Enos Perry, after whom the newest residence hall was named; and the development of many successful plant varieties, such as the world-famous Rutgers tomato, turfgrass, and hybrid dogwoods. In 1917 Cook College created the first collegiate department of environmental sciences in the country. The Student Organic Farm, founded in 1993,

provides hands-on instruction in sustainable gardening and practical experience in the operation of a community-supported agricultural enterprise, in addition to providing wholesome produce for the student-farmers, the shareholders, and local food banks and soup kitchens.

Recently completed facilities include Walter E. Foran Hall, a 154,000-square-foot complex housing the Biotechnology Center for Agriculture and the Environment, the Department of Plant Sciences, the Department of Plant Pathology, and a state-of-the-art science library. Other new facilities include the Institute of Marine and Coastal Sciences and the soon-to-be-completed EcoComplex headquarters in Burlington County.

The Agricultural Experiment Station

The New Jersey Agricultural Experiment Station (NJAES), third oldest agricultural experiment station in the nation, is the legislated research and outreach arm of the state dealing with agriculture, renewable natural resources, youth development, and family and consumer sciences. Its mandate is to improve the quality of life of all New Jersey citizens.

The experiment station, a separately budgeted research and outreach unit, is the largest research unit within Rutgers. Balanced programs are part of a nationwide federal-state-county cooperative research and extension system. Specific research responds to identified needs of the state. NJAES conducts generic and applied research designed to meet the challenges posed by New Jersey's extraordinarily diverse economy and environment. The station sponsors programs with faculty from throughout the university who are trained in a wide range of scientific disciplines and who conduct research at the leading edge of their fields. NJAES provides a unique, multidisciplinary structure that fosters innovative solutions to today's complex problems and encourages novel research approaches, such as cooperative research ventures with industry.

Established by the New Jersey legislature in 1880, NJAES has made significant contributions in the development of new strains and breeds of agricultural products; control of human, animal, and plant diseases; formulation of environmentally sound agricultural and management practices; technique development in the management of solid and liquid wastes; policy development relating to land use; and environmental and natural resource management.

In addition to its central New Brunswick location, the experiment station has agricultural research extension centers throughout the state to address local problems and needs.

The land-grant concept enables NJAES to address an expanding agenda in the food, agricultural, marine, biotechnology, and natural resource sciences by developing and linking fundamental knowledge to ongoing applied research programs, technology development, and knowledge-transfer avenues. Adapting the land-grant concept to twenty-first-century needs fueled a revitalization of the experiment station in the late 1980s.

A strategic plan developed in the early 1990s, "Looking Forward," proclaimed the mission of Cook College and NJAES as addressing and resolving—and educating students to address and resolve—the social, economic, physical, biological, and policy dimensions of contemporary and future issues in: 1) agricultural production and competitiveness; 2) food science and engineering; 3) nutrition, health, and safety; 4) marine and coastal resources; and 5) natural resources and the environment.

Rutgers Cooperative Extension

Rutgers Cooperative Extension (RCE) is the "classroom without walls'' in each county, the organization through which the research of the land-grant college reaches people at home and in their communities. Local extension offices are usually found in the seat of county government. Supported by federal, state, and local governments, as well as more than 10,000 trained volunteers, RCE faculty and staff deliver educational programs to residents throughout the state in areas of agriculture and resource management, 4-H youth development, and family and consumer sciences.

Continuing Professional Education

The Office of Continuing Professional Education offers seminars, conferences, symposia, and short courses to professionals involved in biotechnology, food science, marine and coastal sciences, environmental resource management, environmental science, agribusiness, and biological engineering. Some 23,000 professionals participate in these opportunities every year.

Academic Policies and Procedures

Note: See also the University Policies and Procedures section for regulations that pertain to all the undergraduate colleges at Rutgers–New Brunswick.

STUDENT RESPONSIBILITY TO KEEP INFORMED

In addition to the contents of this catalog, important information about Cook College is contained in the Undergraduate Schedule of Classes and the Student Handbook (available from the Office of Academic and Student Affairs), as well as the college web site (http://www.cook.rutgers.edu). Students are responsible for maintaining contact with their academic adviser and keeping themselves informed of policies, procedures, and changes announced in these publications and in official notices printed in Green Print and posted on bulletin boards in the Office of Academic and Student Affairs and the offices of the various departments.

Students also are responsible for checking their email and Cook College Post Office (CPO) box, located in the PAL Building, on a regular basis. College and university correspondence is mailed to the CPO and/or sent to the student's campus email address.

ACADEMIC CREDIT

Advanced Placement

Students may receive advanced placement credit for course work taken at the secondary school level. All requests for advanced placement credit should be forwarded to the Office of University Undergraduate Admissions and are reviewed by the faculty members of the department concerned. Grades of 4 or 5 on the College Board Advanced Placement Examinations receive both credit and placement as determined by the respective department. Students who elect to take courses at or below the level for which they have received advanced placement credits will have the advanced placement credits deleted from the computation of their total degree credits. Credit earned for advanced placement is not included in the cumulative grade-point average.

During New Student Orientation, entering students are tested in mathematical and verbal skills. These examinations are used as guides in determining the proper mathematics and English courses for which a student should be registered.

Proficiency Examinations

With the approval of the dean of academic and student affairs (or designee), the student's academic adviser, and the department concerned, a student may pay a fee and take a proficiency examination in certain courses offered by the college. Degree credit is given when the department evaluating the examination indicates proficiency at a level comparable to passing the course. Proficiency examinations ordinarily are not allowed after failure in a course or in courses where the principal content is laboratory or creative work, since the primary value of these courses lies in the student's continuing and supervised participation.

Transfer Credit

A student who has transferred from another accredited institution receives credit for all courses in which a grade of C (2.000) or better was received. The courses need not conform to courses offered at either Cook College or Rutgers provided they are not designated below the 100 level and are recognized as part of a student's graduation requirements at the college from which the student is transferring. Grades from such courses are not included in the student's cumulative grade-point average. This regulation applies both to transfer credit granted at the time of admission and to any summer or special courses taken outside of Rutgers while the student is a candidate for a degree at Cook College.

University regulations require that at least 30 of the last 42 credits must be completed at Rutgers.

Credit will not be granted for courses taken at another institution during a period of disciplinary suspension from the university.

Students may elect to remove courses taken at Rutgers as nonmatriculating students while enrolled in high school from the computation of their degree credits and cumulative grade-point average. Such courses and grades remain on the student's transcript with an "E-credit" designation and do not fulfill college or program requirements.

None of Cook College's programs of study awards credits on the basis of College Level Entrance Program subject tests administered by the College Entrance Examination Board. However, the college accepts CLEP credits awarded by other colleges as transfer credits or credits for CLEP general test scores at/above the seventy-fifth percentile and evaluates them as unspecified electives. CLEP subject tests may be reviewed by other university departments for course equivalency credit.

An official transcript of all course work taken at other institutions of higher learning is required whether or not transfer credit is requested. Students should be aware that, since some programs at Cook College include courses that may be unique to the college, some transfer credits may be accepted as excess unspecified electives, resulting in the transfer student needing more than the minimum of 128 credits required for graduation. Matriculated students wishing to take courses elsewhere must have prior approval from the Office of Academic and Student Affairs.

The credits and grades for approved courses taken at any division of Rutgers while matriculating at Cook College (including specific courses taken under the auspices of consortium agreements with other colleges and universities) are included in the cumulative grade-point average.

Distance Learning Course Credit

Cook College and Rutgers have entered into partnerships with other colleges and universities to provide courses not available in New Brunswick. In some cases, students participate in the course(s) on the campus of the college offering the course. Other courses are offered on the Internet.

Courses offered in partnership with Rutgers and approved by the appropriate faculty bodies are considered Rutgers courses, with university numbers, credits, and grades. The grades for these courses are included in the student's cumulative grade-point average.

Other distance learning courses taken by the student are considered for approval according to the procedures followed for transfer credits.

REGISTRATION AND COURSE INFORMATION

Academic Advising

Throughout their matriculation at Cook College, students select courses and develop their academic program in close consultation with an academic adviser. During the first year, students are assigned to an academic adviser as well as a student orientation ambassador. In all subsequent years, students are advised by a faculty member in the curriculum of the student's choice. Advising notwithstanding, students must assume full responsibility for meeting all curriculum and college requirements and for being sure they have the proper prerequisites for any course for which they register. **Students are encouraged to meet with their advisers throughout the academic year.**

Cook College uses a system of adviser codes to aid in the advising and registration process. These codes are provided below and in the Programs of Study chapter. The following is a list of those now serving as academic advisers for first-year students. (Faculty advisers for upper-class students in each curriculum are indicated with the major requirements in the Programs of Study chapter.)

Adviser	Code	Office	Phone (Ext.)
Ileana D. Almaguer	(28)	Martin 219	2-3000 (531)
Alan D. Antoine	(51)	Lipman 121	2-9763 (121)
Penny Carlson	(25)	Martin 2nd fl.	2-3000 (512)
Chee-kok Chin	(11)	Foran Hall 263	2-9711 (238)
George F. Clark	(62)	COB 209	2-9153 (311)
Francine Corley	(04)	Cook Center	2-7617
Donn A. Derr	(23)	COB 219	2-9161 (50)
Lee Ann Dmochowski	(33)	Martin 220	2-3000 (529)
Edward F. Durner	(09)	Foran Hall 286	2-9711 (256)
Paul Fischbach	(05)	Loree Gym 110	2-8600
Frager Foster	(22)	Martin 226	2-3000 (530)
Susan K. Fried	(42)	Thompson 132	2-9039
Barbara M. Goff	(06)	Loree 038	2-9266
Al Gomez	(12)	Loree Gym 110	2-8600
Judith P. Grassle	(53)	IMCS, Room 309C	2-6555 (351)
Robert Harnack	(49)	ENR 356	2-9841
Robert M. Hills	(08)	Martin 214	2-3000 (512)
Barry W. Jesse	(19)	Foran 108A	2-8165 (104)
Edward R. Levy	(36)	Loree Gym 146	2-2625
Karl Matthews	(15)	Food Science 209	2-9611 (209)
Kenneth H. McKeever	(29)	Bartlett 003	2-9390
Hubert McQueen	(30)	Martin 210	2-3000 (526)
John Muth	(35)	Martin 222	2-3000 (515)
Lynne Myerson	(31)	Martin 211	2-3000 (521)
Kristin Peacock	(57)	Martin 204	2-3000 (512)
Ed Roberson	(34)	Martin 224	2-3000 (525)
Carol M. Rutgers	(07)	Martin 211	2-3000 (523)
Lee D. Schneider	(17)	Cook Center	2-1095
Marie Siewierski	(18)	ENR 240	2-9804
Leslie E. Small	(59)	Martin 211	2-3000 (512)
Sean Spinello	(63)	Perry Hall	2-9363
Theodorus van Es	(61)	Lipman 129	2-9763 (109)
Joseph Ventola	(44)	Martin 201	2-3000 (512)
James F. White	(50)	Foran Hall 386	2-9375 (357)
John Worobey	(65)	Davison Hall 208	2-6517

Registration

Registration for matriculated students begins in October for the following spring term and in April for the following fall term. Matriculated students register through the Rutgers Touchtone Telephone Registration System (RTTRS) or the online web registration system (webreg.rutgers.edu). Registration is completed upon full payment of tuition and fees by the announced deadline prior to start of the term. The university reserves the right to restrict registration in all courses offered and, when necessary, to cancel courses previously announced. The university also will cancel a student's registration for late payment of term bills or for outstanding debts to the university. See the Tuition and Fees section for further information on registration.

Change of Courses. See the University Policies and Procedures chapter for drop/add procedures. Students are responsible for knowing the dates as well as procedures for changing their registration in a given term.

Course Load

Full-Time Status. A full-time matriculated student may elect to take from 12 to 20 credits of course work per term. No exceptions to this general rule are made without the approval of the student's academic adviser and the dean of academic and student affairs (or designee).

Part-Time Status. A continuing student may matriculate on a part-time basis with the approval of the dean of academic and student affairs (or designee) and the academic adviser. A student applying to matriculate at Cook College for the first time must apply as a full-time student.

Withdrawal and Readmission

Withdrawal. Students who wish to withdraw from the college should consult their faculty adviser and one of the deans in the Office of Academic and Student Affairs. After the interviews, the student must fill out a withdrawal form stating the reasons for withdrawal and submit the withdrawal form to the Office of Academic and Student Affairs. Withdrawal by mail is possible only when illness precludes the possibility of interviews. Students who leave the college without officially withdrawing receive a grade of F in each incomplete course. Official withdrawal from the college with grades of W in all courses is not granted after the twelfth week of the term except in cases of extreme extenuating circumstances (such as serious illness) and with the approval of the Admissions and Scholastic Standing Committee. Students are responsible for knowing the procedures and deadlines for withdrawal from the college or from courses.

Readmission. Any matriculated student who withdraws or takes a leave of absence from college may apply for readmission to the Admissions and Scholastic Standing Committee at Cook College. Readmission customarily is approved for students who submit the application at least

two weeks prior to the beginning of the term in which they wish to return. Readmission applications are available in the Office of Academic and Student Affairs.

For the college's policy on readmission after dismissal for academic reasons, see Scholastic Standing later in this chapter.

Students who have graduated from Cook College may apply for readmission for one year to take additional undergraduate courses as nonmatriculated students in order to enhance employment opportunities, to complete requirements for academic certification, or to take courses that are required for application to a graduate program. Cook College students also may apply for readmission for a second bachelor's degree program.

Course Information

Graduate Courses. Undergraduates with senior standing and a cumulative grade-point average of at least 3.0 may take graduate courses with the approval of the graduate instructor or the director of the graduate program offering the course and the administrator of the school offering the course, and their faculty adviser. Forms for requesting permission are available in the Office of Academic and Student Affairs.

Pass/No Credit Courses. Certain courses are offered on a Pass/No Credit basis. These courses are indicated by the credit prefix P/NC in this catalog and the Schedule of Classes. The credits earned on a Pass/No Credit basis count toward the credits required for graduation but are not included in the calculation of the cumulative grade-point average.

Students who have completed 60 degree credits also may register for two unspecified elective courses (no more than one per term) on a Pass/No Credit basis. A grade of C or better must be achieved in order to convert the instructor's grade to a Pass. Forms are available in the Office of Academic and Student Affairs and must be submitted by the end of the second week of the term. Once elected officially, the Pass/No Credit designation may not be restored to a letter grade.

Seven-Week Courses. Some courses are offered for only the first or second half of a term. These courses may be added or dropped proportionally with full-term courses: i.e., they may be dropped, without a grade of W, or available spaces may be added for the first two weeks of the course and dropped, with a grade of W, only for the first four weeks.

Auditing Courses. Upon obtaining the permission of the instructor of the course and subject to the availability of space, full-time students may audit a course without registration. No academic credit is earned in this manner, and audited courses do not appear on the student's transcript. Senior citizens also are encouraged to audit courses.

Duplication of Courses. If a student has taken courses that duplicate each other in subject matter, degree credit normally is granted for only one. Possible exceptions to this rule are left to the judgment of the Admissions and Scholastic Standing Committee.

Repeated Courses. If a student repeats the same course in which he or she has received a grade of D or F, only the highest grade received is calculated in the cumulative grade-point average. Both grades remain on the university transcript, but the initial credits (if any) and grade are omitted from the calculation of the degree credits and cumulative grade-point average.

It is the student's responsibility to complete a repeated course form, available in the Office of Academic and Student Affairs, in order for this change to be made.

Internships. No more than one term's worth of credit, up to 16 credits, may be awarded for field experience (i.e., internships), except when additional field experience is a required part of a professional accrediting program or a cooperative education program is involved. The Admissions and Scholastic Standing Committee reviews special program needs in individual cases.

Examinations. Final examinations are held at the end of each term. All students enrolled for credit in a course in which a final examination is given must take the examination. During the term, unannounced and announced tests may be held at the discretion of the instructor. Students who miss an examination because of participation in university-sanctioned activities or because of required religious observance either do not have the examination included in the final grade calculation or are given an opportunity to make up the examination without penalty at the discretion of the instructor or department. Students must inform the instructor of the situation prior to the examination. Students missing examinations for medical reasons or other extenuating circumstances must provide written documentation to verify the absence.

Change of Curriculum

A change of curriculum should be discussed with the student's faculty adviser and the coordinator of the curriculum the student plans to enter. Such a change should then be properly recorded on a change of major form available in the Office of Academic and Student Affairs.

SCHOLASTIC STANDING

The cumulative grade-point average required for graduation from Cook College is 2.0. The cumulative grade-point average is based on all grades received in courses taken for graduation credit at Rutgers. See the University Policies and Procedures section for information on the computation of the cumulative grade-point average and other grading regulations.

Dean's List

Each term the college publishes the Dean's List, an honor list of students whose course work is outstanding. In order to qualify, a student must have taken 12 or more credits for letter grades and achieved a term grade-point average of 3.4 or better.

Poor Academic Performance

The Admissions and Scholastic Standing Committee, composed of elected faculty members, considers the scholastic performance of students who are deficient in term work and/or whose overall cumulative grade-point average is less than 2.0. The committee may place students into one of the following three categories based on their current and/or previous scholastic record at the university.

Warning. The student is informed by letter to improve his or her scholastic performance. No restriction is imposed.

Probation. The student is informed by letter early in the next term of the danger of being dismissed from Cook College unless marked scholastic improvement is demonstrated. Students in this category are required to consult regularly with their faculty advisers or a dean to discuss their course load and course selection and to attend all classes and laboratories in the courses for which they are enrolled. A stipulated cumulative grade-point average for the term must be achieved, and no T-grades will be accepted. A maximum load of 13 credits also may be recommended.

Dismissal. A student whose scholastic performance has been consistently below the cumulative grade-point average required to graduate or whose current work indicates that a desired level of academic performance will not be achieved is informed by letter of dismissal from Cook College.

General Policies of the Committee. The following numerical guidelines are generally followed by the committee. They are not absolute, however, since many factors are considered before the committee places a student in one of the three performance categories listed above.

Term Grade-Point Averages

Warning: 1.800–1.999
Probation: 1.500–1.799
Dismissal: Below 1.500 after a term of probation or three consecutive terms of probation with a cumulative grade-point average below 2.0.

Ordinarily, students are not dismissed for academic reasons at the end of their first term. For any student, a minimum average may be stipulated as a condition of future enrollment. The average imposed is based on the average necessary to obtain the overall cumulative grade-point average of 2.0 required for graduation. Students remain on probation until a cumulative grade-point average of 2.0 is achieved, regardless of term average.

Appeal. Students placed on **probationary** status may appeal, in writing only, prior to the conclusion of the term for which the probationary status is being imposed, to the Admissions and Scholastic Standing Committee. Grounds for appeal include technical error, changes in temporary grades, and/or additional information not previously available to the committee. Letters of appeal must state the reasons for the appeal and must be accompanied by appropriate documentation. Letters of appeal must be written by the student, although advice from others may be sought in formulating the appeal, and submitted to the Office of Academic and Student Affairs.

Students who have been **dismissed** from Cook College by the Admissions and Scholastic Standing Committee may submit a written appeal to the committee (in care of the Office of Academic and Student Affairs). Deadlines for appeal are indicated in the dismissal letter. Grounds for appeal include technical error, extenuating circumstances, and/or additional information not previously available to the committee. Letters of appeal must state the reasons for the appeal and must be accompanied by appropriate documentation. Letters of appeal must be written by the student, although members of the committee and the staff of the Office of Academic and Student Affairs are available to assist students in formulating appeals for committee action. The decision of the committee is final. Students are notified in writing within four weeks of the action taken.

Readmission. Cook College students who have been dismissed for academic reasons may make application for readmission after they have demonstrated an ability to complete a minimum of 6 credits of college-level work at a Rutgers' Summer Session with a grade-point average of 2.500 or better or if they have remained out of school for a period of one year. Students should contact the Office of Academic and Student Affairs for specific instructions. Normally a student is not readmitted if he or she has been dismissed more than once.

DISCIPLINARY HEARING PROCEDURES

The Board of Governors of Rutgers, The State University of New Jersey, has established a list of offenses that may result in separation from the university. These offenses are handled through the University Code of Student Conduct. (See the University Policies and Procedures section.) In addition, each college has a hearing procedure for use in instances where charges against a student are not of sufficient gravity to lead to separation from the university. The Cook College hearing procedure is published on the Cook College web pages (http://www.cook.rutgers.edu). Lists of separation and nonseparation offenses and details on the hearing procedures also are available in the Office of Academic and Student Affairs.

Degree Requirements

Cook College, the land-grant unit of Rutgers, is unique within the university system. As a professional college, Cook is engaged in the land-grant mission of educational scholarship designed to develop knowledge and skills that will enable students and the public to address challenges facing society in the areas of food, the environment and natural resources, and agriculture. Cook's undergraduate and graduate programs are designed to promote the study of these challenges by integrating the natural and physical sciences with the social sciences and humanities and by using conceptual frameworks that explore human interactions with the earth's system.

CREDITS AND RESIDENCY

To be awarded a degree, the Cook College student must complete a minimum of 128 credits* of course work with a cumulative grade-point average of 2.0 or better. The student must satisfactorily complete the requirements of a curriculum (major program of study) outlined in the next chapter. In addition, the student must complete 30 of the last 42 credits at Rutgers.

Second Bachelor's Degree (Dual Degrees)

Students seeking two bachelor's degrees must complete a minimum of 30 credits in addition to the credits required for the first degree (i.e., 158 credits). Course requirements for the second degree must comply with the requirements of the second college and program offering the degree.

Students seeking a second bachelor's degree must consult the Office of Academic and Student Affairs for the appropriate procedures to be followed.

Students with a previously earned bachelor's degree from another institution who matriculate at Cook College for the purpose of earning a second degree must complete all program requirements with a minimum of 30 credits from Rutgers. Course requirements for the second degree must comply with the requirements for experience-based education and competence in the field. These requirements may be modified by the undergraduate program director or curriculum coordinator, in consultation with the student, and must be approved by the Admissions and Scholastic Standing Committee.

Double Majors

Students seeking to complete the requirements of a second program of study offered by Cook College and / or another Rutgers faculty must complete a double-major form at the Office of Academic and Student Affairs in order to have the completion of these requirements verified by the curriculum or department offering the program. Satisfactory completion of these requirements is noted on the student's final transcript, but only one Cook College bachelor's degree, indicated by the student, is conferred upon graduation.

MISSION AND GOALS OF THE UNDERGRADUATE PROGRAM

Human impacts on the earth's ecosystem are profound and far-reaching. The faculty of Cook College is committed to educating students to understand and sustain the integrity of this ecosystem, as both specialists within their fields of concentration and well-informed citizens. The programs of study offered by Cook College apply the natural and social sciences to this dynamic system.

The curricula are designed to achieve the following goals for graduates of Cook College:

To understand and appreciate the interaction between the natural and social sciences as they relate to the earth's ecosystem, students master the basic knowledge and approaches of a field of concentration related to the environment, natural resources, food, or agriculture, and are introduced to multidisciplinary perspectives that locate their field and its contributions in this larger context.

Students learn to evaluate issues critically so they may become autonomous, versatile, and productive people who understand that they are inextricably related to the natural world and other people. Mastery of both quantitative and qualitative modes of inquiry develops each student's ability to deal with the complexity and dynamism of real-world issues.

To understand and appreciate human impacts on the earth's ecosystem, students develop a historical, global, and multicultural consciousness in order to expand their bases for decision making.

To sustain the integrity of the global ecosystem, students develop the ethical sensitivity and analytical skills necessary to address questions of social responsibility, environmental ethics, moral choice, and social equity.

Cook College offers bachelor's degree programs in twenty-four curricula, many with several areas of further concentration ("options"). All programs of study are designed to achieve the goals outlined above and specify course requirements that must be satisfactorily completed in each of eight areas: interdisciplinary / ethical analysis, introductory life and physical sciences, the arts, human diversity, economic and political systems, oral and written communication, experience-based education, and competence in a field / concentration. **Credits indicated in the text that follows are the minimum requirements established by the Cook College faculty for all bachelor's degree programs. Many programs further specify and/or exceed the requirements in one or more of these areas. Students should consult the requirements for each program that they are considering before selecting courses.** Lists of courses currently offered that fulfill the various requirements are sent to academic advisers and posted at the Office of Academic and Student Affairs and on the Cook College web site: (http://aesop.rutgers.edu/www/students/requirements/core/).

* 163 credits for students in the five-year B.S. / B.S. bioresource engineering curriculum.

I. Interdisciplinary/Ethical Analysis (5 credits)

The undergraduate program's goals are to help students develop the abilities to think critically, address problems with a variety of modes of inquiry, and recognize and assess ethical problems related to the environment, natural resources, food, and agriculture, in order to make decisions based upon an understanding of the long- and short-term implications of the various choices. As a means of meeting these goals, students are required to complete the following courses:

11:015:101 Perspectives on Agriculture and the Environment (2)
11:___:___ a junior / senior colloquium course (3)

Perspectives on Agriculture and the Environment is offered in the first ten weeks of the fall term only and introduces students entering Cook College with fewer than 36 credits to the range of problems addressed by the programs of the college. The course provides opportunities to address selected problems both individually and in working groups, using a variety of modes of inquiry. The course requirement is waived for transfer students who enter with at least 36 credits.

The junior / senior colloquium course is a capstone, integrative educational experience for students concluding their undergraduate studies, enabling them to synthesize information and techniques gained in previous courses. Working cooperatively with peers who have different capabilities and interests, and using the case study method, students in these courses devise creative, interdisciplinary solutions to multifaceted problems in the college's mission areas.

Fall registration for both courses is initially restricted to first-year students and seniors, respectively. Transfer students and juniors may register for open sections in the weeks before the beginning of the fall term. Current lists of the sections of 11:015:101 and the junior / senior colloquium courses offered are posted in August on the Cook College web site: (http://aesop.rutgers.edu/www/students/requirements/core/).

Students who are unable to register for, who withdraw from, or who fail the Perspectives course are required to substitute another course that meets the objectives of interdisciplinary / ethical analysis of problems in agriculture and / or the environment. Lists of appropriate courses are posted during registration on the Cook College web site. The substituted course may not also be used to fulfill another major requirement.

II. Introductory Life and Physical Sciences

To develop a basis for understanding and evaluating contemporary issues related to the life and physical sciences, students are required to complete courses in each of those areas as follows:

A. Life Sciences (4–8 credits). Introductory courses in plant and animal biology, ecology, and evolution with a laboratory:

01:119:101-102 General Biology (4,4) or
01:119:101 General Biology (4) and 11:067:142 Animal Science (3) or
01:119:101 General Biology (4) and 11:704:351 Principles of Applied Ecology (4) or
01:119:103 Principles of Biology (4)

B. Physical Sciences (3–5 credits). A basic chemistry or physics course or an introductory course that applies the physical sciences to earth systems, such as:

01:160:127 Impact of Chemistry (3)
01:160:161 General Chemistry (4)
11:372:442 Applied Principles of Hydrology (3)
01:460:101 Introduction to Physical Geology (3)
01:460:102 Introduction to Historical Geology (3)
01:460:202 Environmental Geology (3)
01:460:204 The Water Planet (3)
11:628:200 Marine Sciences (4)
11:670:201 Elements of Meteorology (3)
11:670:202 Elements of Climatology (3)
01:750:140 The Greenhouse Effect (3)
01:750:193 Physics for the Sciences (4)
01:750:201 Extended General Physics (5)
01:750:203 General Physics (3)

Many programs of study require specific courses and additional credits in the life and physical sciences. Students should consult the requirements of the specific program(s) of study they are considering before selecting courses from this list.

III. The Arts (6 credits)

To develop an understanding and appreciation of various art forms and modes of critical response and interpretation, students are required to complete a minimum of 6 credits in the following courses or subject areas, of which no more than 3 credits may be applied from courses devoted to the development of craft or performance techniques. Elementary or intermediate foreign language courses do not fulfill this requirement, although literature and arts courses in a foreign language do. Appropriate courses or subject areas include the following:

courses in African literature and arts (01:013)
courses in African-American literature and arts (01:014)
courses in American literature and arts (01:050)
art (visual) (07:080)
art (studio) (07:081)
art history (01:082)
courses in Chinese literature and arts (01:165)
courses in classical literature and arts (01:190)
comparative literature (01:195)
dance (07:203)
courses in English literature (01:350)
English literature and creative writing (01:351)
English: film studies (01:354)
courses in French literature and arts (01:420)
courses in German literature and arts (01:470)
courses in modern Greek literature (01:489)
courses in classical Greek literature (01:490)
courses in Hungarian literature (01:535)
11:550:230 Environmental Design Analysis (3)
11:550:330 History of Landscape Architecture (3)
11:554:346 Environmental Documentation in Photography, Film, and Video (3)
11:554:347 Environmental Photography (4)
interdisciplinary arts and literature courses (01:556,557)
courses in Italian literature (01:560)
courses in Jewish literature and arts (01:563)
courses in Japanese literature and arts (01:565)

courses in Korean literature and arts (01:574)
courses in Latin literature (01:580)
01:590:201 Introduction to Latin American Civilization and Culture (3)
medieval studies (01:667)
courses in Middle Eastern literature and arts (01:685)
courses in music theory / history / analysis (07:700)
music performance (07:701)
courses in Polish literature and arts (01:787)
courses in Portuguese literature and arts (01:810)
courses in Puerto Rican and Hispanic Caribbean literature and culture (01:836)
courses in Russian literature and arts (01:860)
courses in Slavic and Eastern European literature and arts (01:861)
courses in Spanish literature and arts (01:940)
theater arts (07:965)

One or more of these courses may be specified in a particular program of study.

IV. Human Diversity (6 credits)

To develop an understanding of the diversity and variability of institutions, cultures, and individuals, including both cross-cultural and historical perspectives and consideration of complex and changing interplays of biological, cultural, situational, and institutional factors as determinants of human behavior, students are required to complete a minimum of 6 credits in the following courses or subject areas:

courses in the African-American social experience or history (01:014)
courses in the history of American cultural diversity (01:050)
courses in cultural anthropology (01:070)
Asian studies (01:098)
01:165:220 Chinese Classics and Thought (3)
01:190:320 Women in Antiquity (3)
01:190:326 Greek and Roman Religions (3)
04:192:345 International Communication (3)
04:192:346 Intercultural Communication (3)
01:220:375 Women and the Economy (3)
11:300:327 Applications of Psychology in Education (3)
11:374:101 Introduction to Human Ecology (3)
11:374:211 Rural Communities (3)
11:374:269 Population, Resources, and Environment (3)
11:374:312 Environmental Problems in Historical and Cross-Cultural Perspective (3)
11:374:314 Human Dimensions of Natural Resource Management (3)
11:374:331 Culture and Environment (3)
11:374:341 Social / Ecological Aspects of Health and Disease (3)
01:377:324 Movement Experiences for Individuals with Disabilities (3)
01:450:103 Human Geography: Space, Place, and Location (3)
01:450:205 World Cultural Regions (3)
01:450:222 Cultural Geography (3)
01:450:335 Caribbean Borderlands (3)
01:450:336 Latin America (3)
01:450:338 Africa (3)
01:450:341 South Asia and the Middle East (3)
01:450:342 East Asia (3)
01:450:361 Gender Geographies (3)
comparative history (01:506)
African, Asian, Latin American history (01:508)
01:510:253 History of Witchcraft and Magic (3)
01:510:261 History of the Holocaust (3)
courses emphasizing minority / gender issues in American history (01:512)
11:550:460 Culture and Ecology of the Yucatan (3)
11:554:301 The Use of Animals (3)
11:554:305 Ideas of Nature (3)
01:556:300 Afro-Caribbean History and Culture: The View from Limon (3)
04:571:334 Women, Minorities, and Media (3)
Latin American studies (01:590)
Middle Eastern studies (01:685)
11:709:363 World Food Customs and Nutrition (3)
11:709:442 Community Nutrition (4)
01:730:258 Philosophy and the Black Experience (3)
01:730:346 Rights, Justice, and Equality (3)
01:730:347 Philosophical Issues in Feminism (3)
01:730:368 Hindu Philosophy (3)
01:730:371 Philosophies of Death and Dying (3)
01:730:374 Islamic Philosophy (3)
01:730:470 Buddhist Philosophy (3)
01:790:333 Race Relations (3)
01:790:334 Politics of Black America (3)
01:790:335 Women and Public Policy (3)
01:790:365 Gender and Political Theory (3)
01:830:362 Psychology of Sex and Gender (3)
01:830:375 Prejudice and Conflict (3)
01:830:376 Psychology and African-American Experience (3)
01:830:381 Psychology of Women (3)
10:832:415 Women and Health (3)
Puerto Rican and Hispanic Caribbean studies (01:836)
01:840:101 Introduction to Religion: Social Patterns (3)
01:840:102 Introduction to Religion: Patterns of Thought (3)
01:840:112 Death and Afterlife (3)
01:840:176 Zen and Eastern Culture (1.5)
01:840:211 Religions of the Eastern World (3)
01:840:212 Religions of the Western World (3)
01:840:245 Women in Western Religion (3)
01:840:301 Ancient Near Eastern Religions (3)
01:840:306 Religions of the Greco-Roman World (3)
01:840:320 Religion and the American Indian (3)
01:840:321 Women in Eastern Religion (3)
01:840:322 Hinduism (3)
01:840:323 Buddhism (3)
01:840:324 Chinese Religions (3)
01:840:326 Islam (3)
01:840:351 Women in Western Religion (3)
09:910:352 Groups at Risk in Contemporary Society (3)
01:920:108 Minority Groups in American Society (3)
01:920:111 Social Class (3)
01:920:216 Sociology of Women (3)
01:920:270 Sociology of the Third World (3)
01:920:306 Race Relations (3)
01:975:206 Third World Urban Poor (3)
women's studies (01:988)

Several programs of study require specific courses and additional credits in human diversity. Students should consult the requirements of the specific program(s) of study they are considering before selecting courses from this list.

V. Economic and Political Systems

To develop a basic comprehension of economic theory and analytical methods, as well as ways in which public policy is developed and implemented, students are required to complete courses in both economic and political systems as follows:

A. Economic Systems (3–6 credits). Introductory economics courses that include both micro- and macroeconomics, such as:

1. 11:373:101 Economics, People, and Environment (3) or 01:220:200 Economic Principles and Problems (3)

or

2. 11:373:121 Principles and Applications of Microeconomics (3) or 01:220:102 Introduction to Microeconomics and
   01:220:103 Introduction to Macroeconomics (3)

B. Political Systems (3 credits). An introductory political science course focusing on the structure and function of American governmental institutions:

11:532:279 Politics of Environmental Issues (3) or 01:790:105 American Politics: Public and Private (3) or 01:790:201 American Government (3)

Several programs of study require specific courses and additional credits in economics and/or political systems. Students should consult the requirements of the specific program(s) of study they are considering before selecting courses from this list. Students intending to pursue graduate programs in business should note that courses in both microeconomics and macroeconomics usually are required for admission.

VI. Oral and Written Communication (6 credits)

To develop the speaking and writing skills essential for success in both the university and in the professions that students are preparing to enter, written and oral presentations are incorporated into all Cook College courses, where feasible. Students are further required to complete a minimum of 6 credits in the following courses:

01:355:101 Expository Writing I (3) or 01:355:103 Exposition and Argument (3)

and

Intermediate-level courses designed to be taken in the first or second years:

04:192:220 Fundamentals of Speaking and Listening (3)
01:355:201 Research in the Disciplines (3)
04:571:324 News Reporting and Writing (3)

or

Courses intended for advanced students:

04:192:313 Message Design for Public Relations and Organizational Communication (3)
04:192:380 Public Speaking (3)
04:192:407 Health Communication (3)
01:355:301 College Writing and Research (3)
01:355:302 Scientific and Technical Writing (3)
01:355:303 Writing for Business and the Professions (3)
01:355:402 Technical Writing Methods (3)
10:832:339 Public Health Literature (3)

Several programs of study require specific courses and additional credits in oral and written communication. Students should consult the requirements of the specific program(s) of study they are considering before selecting courses from this list.

VII. Experience-Based Education (0–3 credits)

To develop the ability to apply curricular and extracurricular-based learning, including leadership development and personal as well as interpersonal management skills, within settings appropriate to their fields, each of the college's programs of study specifies a course or mechanism of study. Examples of currently available options are cooperative education, practica, internships, independent research, Project P.R.E.P. (for EOF students), and the George H. Cook Scholars Program.

Students completing two major programs offered by Cook College must complete at least one experience-based education course, approved by both curricula.

VIII. Competence in a Field/Concentration

To develop competence in a field/concentration related to the environment, natural resources, food, or agriculture, each curriculum specifies required courses, elective courses, and, where applicable, option requirements. Every program of study also specifies minimum requirements in quantitative skills, computer competence, and professional ethics as they apply to the particular field/concentration for which it prepares its students.

Quantitative Skills. The quantitative skills objective develops mathematical literacy and skills for analytical reasoning, including an understanding of statistical methodologies. All Rutgers graduates, regardless of college or degree program, are required to have attained the mathematical proficiency required for college-level mathematics, as indicated by a placement at the precalculus level or above.

Computer Competence. The computer competence objective develops the ability to use computers and to understand their use in assimilating and interpreting information within the field.

Professional Ethics. The professional ethics objective develops the ability to recognize and assess ethical problems that could be encountered in the careers students are preparing to enter.

Additional Requirements. Each degree program stipulates additional required courses in the field and may require students also to fulfill requirements in more specialized options.

IX. Unspecified Electives

All students must complete a minimum of 128 credits for the bachelor's degree (or 163 credits for the five-year bioresource engineering curriculum). The additional credits required for graduation (beyond those specified for areas I–VIII) may be fulfilled by any courses for which the student has met the prerequisites.

Programs indicating 0.0 unspecified electives may require more than 128 credits to complete, depending on the student's choice of courses, options, and/or minor.

GRADUATION

Degrees are conferred by Rutgers on the recommendation of the Cook College faculty only at the annual commencement in May. Students completing degree requirements in October or January may obtain a letter from the Office of Academic and Student Affairs or ask the university registrar for a certificate attesting to their completion of degree requirements, provided they have filed a Diploma Information Card.

Degrees are conferred *in absentia* when the candidate has advised the Office of Academic and Student Affairs in advance of his or her inability to attend the Cook College graduation ceremony.

Students who complete courses at other institutions or return to Rutgers to complete degree deficiencies must notify the Office of Academic and Student Affairs of their intent to graduate and arrange to have an official transcript forwarded to Cook College, Office of Academic and Student Affairs, 88 Lipman Drive, New Brunswick, NJ 08901-8525. Deadlines for this notification are February 1 for May graduation, August 1 for an October degree date, and November 1 for a January degree date.

Diplomas will be withheld from all students whose financial accounts are not clear.

Graduation with Honors

Academic excellence is recognized by the college faculty's recommendation that the bachelor's degree be conferred with "Highest Honors" to students whose cumulative grade-point average is 3.850 or higher; "High Honors" to those whose cumulative grade-point average is 3.700 to 3.849; and "Honors" to those whose cumulative grade-point average is 3.400 to 3.699.

Programs of Study

SUMMARY

The following curricula (major programs of study) are available to Cook College students.

Cook students may elect to enroll in courses offered by other faculties at the university; however, if they intend to major in a curriculum other than those listed here, they should apply directly to a college within Rutgers where the desired major is offered.

Cook College uses a system of adviser codes to aid in the advising and registration process. Adviser codes are indicated in the lists of faculty advisers for each curriculum.

The number preceding each title indicates the curriculum code for the program.

017 Agricultural Science
- with options in:
- Agricultural Science Teacher Education
- Agroecology
- Animal Science
- Plant Science

067 Animal Science
- with options in:
- Animal Industries (Animal Agribusiness, Livestock Production and Management, and Equine Science)
- Laboratory Animal Science
- Preveterinary Medicine / Research

115 Biochemistry
119 Biological Sciences
129 Bioresource Engineering (Five-Year B.S./B.S. Program)
126 Biotechnology
- with options in:
- Animal Biotechnology
- Applied Microbiology and Microbial Technology
- General Biotechnology
- Plant Biotechnology

160 Chemistry*
192 Communication*
198 Computer Science*
373 Environmental and Business Economics
- with options in:
- Business Economics
- Environmental and Natural Resource Economics
- Food Industry Economics

573 Environmental Planning and Design
- with options in:
- Environmental Geomatics
- Environmental Planning
- Environmental Studies
- Landscape Architecture
- Landscape Industry

* Cook College students electing to major in one of these programs of study, offered by other faculties in New Brunswick, also are required to complete a minor or certificate program offered by the faculty of Cook College. These programs are listed on the following page and outlined at the end of this chapter.

374 Environmental Policy, Institutions, and Behavior
with options in:
Health and Environmental Policy
International Environmental and Resource Policy
United States Environmental and Resource Policy
Individual Option
375 Environmental Sciences
with options in:
Applied Environmental Science
Environmental Biology
Environmental Chemistry
Environmental Physics
377 Exercise Science and Sport Studies*
400 Food Science
with options in:
Food Biological Technologies
Food Chemistry
Food Operations / Management
450 Geography*
460 Geological Sciences*
with options in:
Environmental Geology
Geology
554 Independent Major
571 Journalism and Media Studies*
628 Marine Sciences
with options in:
Marine Biology / Biological Oceanography
Marine Chemistry
Marine Geology
Physical Oceanography
670 Meteorology
704 Natural Resource Management
with options in:
Conservation and Applied Ecology
Ecology and Evolution
Professional Resource Management
709 Nutritional Sciences
with options in:
Dietetics
Food Service Administration
Nutrition
776 Plant Science
with options in:
Horticulture and Turf Industry
Professional Certification
Research
832 Public Health

A Bachelor of Science degree is conferred for all programs of study except the following: chemistry, communication, geography, and journalism and media studies. A Bachelor of Arts degree is conferred for these programs. Computer science offers options leading to either degree.

Premedical, Predental, and Prelaw Programs

Please note that there are no specific programs of study for students interested in medical, dental, or law school. Individuals can major in any of the above programs and complete the necessary admission requirements for these professional programs.

* Cook College students electing to major in one of these programs of study, offered by other faculties in New Brunswick, also are required to complete a minor or certificate program offered by the faculty of Cook College. These programs are listed on this page and outlined at the end of this chapter.

Minors

Agroecology
Animal Science
Biochemistry
Ecology and Evolution
Entomology
Environmental and Business Economics
Environmental Policy, Institutions, and Behavior
Environmental Sciences
Equine Science
Food Science
Marine Sciences
Meteorology
Natural Resource Management
Nutrition
Plant Science
Science and Agriculture Teacher Education

Certificate Programs Offered by Cook College

Environmental Geomatics
Environmental Planning
Fisheries Science
Food Systems Education and Administration
Horticultural Therapy
International Agriculture / Environment
Plant Science
Teacher Preparation Education
Social Strategies for Environmental Protection
Urban / Community Forestry

Other Programs

Cooperative Education
Military Education
Honors Programs
Off-Campus Programs
Special Programs (e.g., EOF)
Preprofessional Programs
Combined Degree Programs

AGRICULTURAL ENGINEERING

(See Bioresource Engineering 129)

AGRICULTURAL SCIENCE 017

Degree: B.S.

Coordinator: James F. White

Adviser	Code	Office	Phone (Ext.)
Michael W. Hamm	(HK)	Thompson 107	2-9224
Louis A. Iozzi	(IA)	Waller 209	2-9164
Richard H. Merritt	(MS)	Foran 272	2-9711 (247)
James F. White	(WQ)	Foran 386	2-9375 (357)
James E. Wohlt	(WH)	Bartlett 306	2-9454

The agricultural science program is designed for students interested in production agriculture, farm management, or a teacher education program that leads to a vocational-technical teaching certificate at the secondary level.

Students may elect to focus on animal or plant agriculture.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior/Senior Colloquium (BA)

II. Introductory Life and Physical Sciences

A. Life Sciences (12 credits)
01:119:101-102 General Biology (4,4)
11:704:351 Principles of Applied Ecology (4)

B. Physical Sciences (12 credits)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:460:101 Introductory Geology (3)

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems

A. Economic Systems (6 credits)
11:373:121 Principles and Applications of Microeconomics (3) or equivalent
01:220:103 Introduction to Macroeconomics (3)

B. Political Systems (3 credits)
See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter.

VII. Experience-Based Education (3 credits)

11:199:200 Cooperative Education I (3–6) or 11:015:483,484 Research Problems (BA,BA) or equivalent

VIII. Competence in Agricultural Science (37–70 credits)

A. REQUIRED COURSES (19–20)

Quantitative Methods (3–4)

01:640:___ At least one term of mathematics (4) or 01:960:___ statistics (3)

Computer Competence (3)

01:198:110 Introduction to Computers and Their Application (3) or equivalent

Professional Ethics (3)

01:730:250 Environmental Ethics (3) or 01:730:251 Ethics and Business (3)

Other Required Courses (10)

11:372:381 Introduction to Systems Thinking and the Systems Approach (3)
11:375:266 Soils and Their Management (4) or 11:375:452 Soil Fertility (3) or 11:375:453,454 Soil Ecology I,II (3,3)
11:776:200 Modern Crop Production (3) or equivalent

B. OPTIONS (18–50)

1. Agricultural Science Teacher Education (18–21)

Students seeking secondary agricultural science teacher certification must fulfill the requirements of the minor program in Science and Agriculture Teacher Education described at the end of this chapter.

2. Agroecology (46–50)

Required courses (18)
11:015:230 Fundamentals of Agroecology (3)
11:015:301 Topics in Agroecology (3)
11:015:350 Agroecology Practicum (3)
11:373:323 Public Policy toward the Food Industry (3) or 11:373:363 Environmental Economics (3)
11:776:221 Principles of Organic Crop Production (3)
11:776:242 Plant Science (3)

At least two courses concerning plant pests and pathogens (6–7):

11:370:350 Agricultural Entomology and Pest Management (3)
11:370:381 Insect Biology (4)
11:770:301 General Plant Pathology (3)
11:770:402 Mycology: Fungi in the Environment (3)
11:776:402 Principles of Weed Science (3)

At least four courses in agricultural production and management (10–13):

11:067:142 Animal Science (3)
11:067:330 Animal Nutrition (3) and 11:067:331 Animal Nutrition Laboratory (1)
11:067:335-336 Livestock Production and Management I,II (3,3)
11:067:337-338 Livestock Production and Management Laboratory I,II (2,2)
11:776:211 Introduction to Horticulture (3)
11:776:310 Plant Propagation (3)
11:776:321 Greenhouse Environmental Control and Crop Production (3)
11:776:341 Fruit Production (3)
11:776:439 Nursery Crop Production (3)

At least two additional courses in economics and business (6):

11:373:231 Agribusiness Marketing I (3)
11:373:241 Agribusiness Management (3)
11:373:363 Environmental Economics (3)

At least two additional courses in ecology (6):

11:704:317 Conservation Ecology (3)
11:704:452 Ecosystems Ecology and Global Change (3)
11:704:488 Restoration Ecology (3)

3. Animal Science (35–37)

Required courses (11–13)
11:067:142 Animal Science (3)
11:067:335 Livestock Production and Management I (3)
11:067:337 Livestock Production and Management Laboratory I (2)
11:067:384 Horse Management (3) or 11:067:336 Livestock Production and Management II (3) and 11:067:338 Livestock Production and Management Laboratory II (2)

Electives (24)
Additional courses, chosen in consultation with the faculty adviser in a variety of areas relevant to agriculture.

4. Plant Science (33)

Required courses (9)
11:370:350 Agricultural Entomology and Pest Management (3)
11:770:301 General Plant Pathology (3) or equivalent
11:776:211 Introduction to Horticulture (3)

Electives (24)
Additional courses, chosen in consultation with the faculty adviser in a variety of areas relevant to agriculture.

IX. Unspecified Electives (1–32 credits)

ANIMAL SCIENCE 067

Degree: B.S.

Coordinator: James E. Wohlt

Adviser	Code	Office	Phone (Ext.)
Juan P. Advis	(AJ)	Bartlett 213D	2-9240
Carol A. Bagnell	(BQ)	Bartlett 102	2-0535
Wendie Cohick	(CP)	Foran 108B	2-8165 (105)
Julie M. Fagan	(FP)	Bartlett 109B	2-8354
Barry W. Jesse	(JE)	Foran 108A	2-8165 (104)
Henry John-Alder	(JH)	Bartlett 213C	2-3229
Larry S. Katz	(KT)	Bartlett 201	2-7426
Karyn Malinowski	(MD)	Bartlett 213F	2-9419
Kenneth H. McKeever	(MG)	Bartlett 003	2-9390
Sarah L. Ralston	(RM)	Bartlett 209	2-9404
Dipak K. Sarkar	(SF)	Bartlett 106	2-1529
Michael V.K. Sukhdeo	(SL)	Bartlett 213A	2-9406
Michael L. Westendorf	(WD)	Bartlett 213E	2-9408
James E. Wohlt	(WH)	Bartlett 306	2-9454

The animal science curriculum provides training and career development for students having an interest in animal production and management or related fields (sales, research, health care). The biological sciences form a basis for the study and management of domesticated animals. Options are offered in animal industries, with specializations in animal agribusiness, livestock production and management, or equine science; laboratory animal science; and preveterinary medicine / research.

Animal Industries. Instruction and practical experience in animal science (selection, breeding / reproduction, nutrition, physiology, behavior) and appropriate courses in business provide students the basic knowledge and skills to manage commercial or research enterprises in the livestock (dairy / beef, poultry, sheep, swine) and horse industries or related fields (breed associations, feed / health-care products). Students may specialize in animal agribusiness, livestock production and management, or equine science.

Laboratory Animal Science. Instruction and practical experience in this option emphasize the use and care of laboratory animals for research. Many graduates choose careers in animal care programs as well as research laboratories of major pharmaceutical and toxicology-related industries, many of which are located in New Jersey.

Preveterinary Medicine/Research. Rigorous instruction and experience are provided in the biological, molecular, and animal sciences in preparation for further education in medical or graduate studies. This option fulfills the academic course requirements of most U.S. veterinary colleges. Students completing this option also may enter medical and dental schools or pursue graduate studies leading to advanced degrees.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

A. Life Sciences (8 credits)
01:119:101-102 General Biology (4,4)

B. Physical Sciences (9 credits)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems

A. Economic Systems
See VIII B below.

B. Political Systems (3 credits)
See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

01:355:101 Expository Writing I (3)
01:355:302 Scientific and Technical Writing (3) or adviser-approved equivalent

VII. Experience-Based Education

A minimum of 9 credits of experienced-based education is stipulated for each option. Appropriate cooperative education placements, subject to approval by the curriculum coordinator, fulfills the requirement. Practica, 11:067:493,494 Animal Science Problems, or equivalent research projects approved by the faculty adviser also may fulfill this requirement.

VIII. Competence in Animal Science (65–80 credits)

A. REQUIRED COURSES (13–16)

Quantitative Methods

Specific courses to meet the quantitative methods requirements are listed under option / specialization requirements below. Completion of precalculus (or placement in calculus) is prerequisite for courses fulfilling this requirement.

Computer Competence (0–3)

01:198:110 Introduction to Computers and Their Application (3) or equivalent

This requirement also may be fulfilled by passing an approved departmental competency test.

Professional Ethics

Ethics in animal production, management, and research are addressed in several required courses.

Other Required Courses (13)

11:067:142 Animal Science (3)
11:067:327 Animal Reproduction (3)
11:067:328 Animal Genetics (3) or equivalent
11:067:330 Animal Nutrition (3)
11:067:331 Animal Nutrition Laboratory (1)

B. OPTIONS (52–64)

1. Animal Industries (52–58)

Required courses (24)
33:010:273 Principles of Accounting I (3)
01:146:356 Systems Physiology (3) or equivalent
01:146:357 Systems Physiology Laboratory (1) or equivalent
01:160:209 Elementary Organic Chemistry (3) or equivalent
01:160:211 Elementary Organic Chemistry Laboratory (1) or equivalent
01:220:103 Introduction to Macroeconomics (3) or equivalent
11:373:121 Principles and Applications of Microeconomics (3) or equivalent
11:373:241 Agribusiness Management (3)
01:640:115 Precalculus College Mathematics (4) or equivalent

One of the following three specializations:

Specialization in Animal Agribusiness (34)
11:067:335-336 Livestock Production and Management I,II (3,3)
11:067:337-338 Livestock Production and Management Laboratory I,II (2,2)
11:067:406 Farm Productivity Analysis in the Animal Sciences (3)
11:373:231 Agribusiness Marketing I (3)
01:960:201 Basic Statistics for Economics (4) or equivalent

At least two of the following courses (9):

11:067:200,204 Large Animal Practicum (P/NC 2,2)
11:067:493,494 Animal Science Problems (BA,BA)
11:199:___ Cooperative Education (3–6)

Electives (6)
At least 6 additional credits approved by the adviser, depending on the student's interests and career goals. See additional courses listed in the Animal Sciences (067) section of the following chapter.

Specialization in Livestock Production and Management (28)
11:067:335-336 Livestock Production and Management I,II (3,3)
11:067:337-338 Livestock Production and Management Laboratory I,II (2,2)
11:067:406 Farm Productivity Analysis in the Animal Sciences (3)

At least two of the following courses (9):

11:067:200,204 Large Animal Practicum (P/NC 2,2)
11:067:493,494 Animal Science Problems (BA,BA)
11:199:___ Cooperative Education (3–6)

Electives (6)
At least 6 additional credits approved by the adviser, depending on the student's interests and career goals. See additional courses listed in the Animal Sciences (067) section of the following chapter.

Specialization in Equine Science (24)
11:067:384 Horse Management (3)
11:067:390 Equine Nutrition (3)
11:067:402 Equine Exercise Physiology (3)

At least two of the following courses (9):

11:067:207 Horse Practicum (P/NC 2)
11:067:493,494 Animal Science Problems (BA,BA), with equine research faculty
11:199:___ Cooperative Education (3–6)

Electives (6)
At least 6 additional credits approved by the adviser, depending on the student's interests and career goals. See additional courses listed in the Animal Sciences (067) section of the following chapter.

2. Laboratory Animal Science (56)

11:067:275 Laboratory Animal Sciences: Management and Techniques (3)
11:067:404 Animal Diseases (3)
11:067:430 Animal Microtechniques and Tissue Culture (4)
01:146:356 Systems Physiology (3) or equivalent
01:146:357 Systems Physiology Laboratory (1) or equivalent
01:160:307-308 Organic Chemistry (4,4)
01:160:311 Organic Chemistry Laboratory (2)
01:220:103 Introduction to Macroeconomics (3) or equivalent
11:373:121 Principles and Applications of Microeconomics (3) or equivalent
01:447:390 General Microbiology (4)
01:640:115 Precalculus College Mathematics (4) or equivalent
01:960:401 Basic Statistics for Research (3)

At least two of the following courses (9):

11:067:205 Laboratory Animal Practicum (P/NC 2)
11:067:493,494 Animal Science Problems (BA,BA)
11:199:___ Cooperative Education (3–6)

Electives (6)
At least 6 additional credits approved by the adviser, depending on the student's interests and career goals. See additional courses listed in the Animal Sciences (067) section of the following chapter.

3. Preveterinary Medicine and Research (60–64)

11:115:403-404 General Biochemistry (3,3) or equivalent
01:146:356 Systems Physiology (3) or equivalent
01:146:357 Systems Physiology Laboratory (1) or equivalent
01:160:307-308 Organic Chemistry (4,4)
01:160:311 Organic Chemistry Laboratory (2)
11:373:101 Economics, People, and Environment (3) or equivalent
01:447:390 General Microbiology (4)
01:640:135 Calculus I (4) or equivalent
01:750:193-194 Physics for the Sciences (4,4) or equivalent
01:960:401 Basic Statistics for Research (3)

Three of the following (9–13):

11:067:404 Animal Diseases (3)
11:067:430 Animal Microtechniques and Tissue Culture (4)
11:067:450 General Endocrinology (3)
11:126:481 Molecular Genetics (3) and 11:126:482 Molecular Genetics Laboratory (3)
01:146:322 Animal Histology (4)
01:146:327 Parasitology (3)
01:146:474 Immunology (3)
01:377:213 Functional Human Anatomy (4)
01:377:424 Human Anatomy (4)
01:640:136 Calculus II (4) or equivalent
01:694:315 Introduction to Molecular Biology and Biochemistry Research (3) or equivalent
11:704:441 Animal Behavior (3) or equivalent

At least two of the following courses (9):

11:067:200,204 Large Animal Practicum (P/NC 2,2)
11:067:493,494 Animal Science Problems (BA,BA)
11:199:___ Cooperative Education (3–6)

IX. Unspecified Electives (5–20 credits)

ATMOSPHERIC SCIENCES

(See Meteorology 670)

BIOCHEMISTRY 115

Degree: B.S.

Coordinator: Theodore Chase, Jr.

Adviser	Code	Office	Phone (Ext.)
Theodore Chase, Jr.	(CH)	Lipman 313	2-9763(313)
Keith R. Cooper	(CK)	Lipman 130	2-9763(130)
Peter C. Kahn	(KA)	Lipman 120	2-9763(120)
Theodorus van Es	(VC)	Lipman 129	2-9763(131)
William W. Ward	(WG)	Lipman 216	2-9763(216)

Biochemistry is a scientific discipline in which living systems, biological and related substances, reactions and processes are studied at the molecular level. The curriculum emphasizes the integration of the foundations of chemistry, physics, and the biological sciences with the contemporary problems of biochemistry. Laboratory courses in biochemistry using modern instrumentation and procedures supplement the lecture instruction and expose students to a wide range of techniques used in biochemical research.

The curriculum prepares students for graduate study in biochemistry or related fields, including multidisciplinary research on problems in agriculture and the environment; professional school (medical or dental); immediate employment in research laboratories in industry or government; or other careers that may not entail continued laboratory work but make use of understanding of science and scientific research. By selecting appropriate electives, a student also can prepare for a career in areas such as genetic engineering and other aspects of biotechnology.

For Douglass, Livingston, Rutgers, and University College students, the requirements for a B.A. degree are listed below in VIII A, except that these students are not required to take the courses listed under Computer Competence or Professional Ethics, nor are they required to take 11:115:306 Problem Solving in Biochemistry. However, candidates for a B.S. degree must take a Computer Competence course, as well as 11:115:306 and two additional science courses from VIII B.

Entry Requirements for the Major

To declare a major in biochemistry, students must have completed 01:160:161 General Chemistry (4) with a grade of C or higher.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

Specific courses to meet the introductory life and physical sciences requirements are listed under VIII A, required courses for competence in biochemistry.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems (6 credits)

See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter. 01:355:302 Scientific and Technical Writing is strongly recommended.

VII. Experience-Based Education (3 credits)

11:115:493,494 Research Problems in Biochemistry (BA,BA) or equivalent independent research project or adviser-approved placement in cooperative education

VIII. Competence in Biochemistry (87.5–95 credits)

A. REQUIRED COURSES (81.5–87)

Quantitative Methods (12)

01:640:151-152 Calculus for Mathematical and Physical Sciences (4,4) (preferred) or other CALC1 and CALC2 courses
01:640:251 Multivariable Calculus (4)

Computer Competence (1.5)

11:115:305 Data Treatment in Biochemistry (1.5) or equivalent, approved by the instructor

(The course 11:115:305 assumes familiarity with basic computer operations and applications. Students may demonstrate this by completing an introductory course in computers or an approved competency test.)

Professional Ethics (3)

11:015:405 Ethics in Science (3) or 01:119:154 Genetics, Law, and Social Policy (3) or 01:730:249 Medical Ethics (3)

Other Required Courses (65–70.5)

11:115:306 Problem Solving in Biochemistry (1.5)
11:115:403-404 General Biochemistry (3,3)
11:115:413 Experimental Biochemistry (2.5)
11:115:414 Experimental Biochemistry (2.5) or equivalent
11:115:491,492 Seminar in Biochemistry (1,1)
01:119:101-102 General Biology (4,4)
01:160:161-162 General Chemistry (4,4) or equivalent
01:160:171 Introduction to Experimentation (1)
01:160:251 Analytical Chemistry (2.5) or 11:115:493,494 Research Problems in Biochemistry (BA,BA) or adviser-approved equivalent laboratory experience
01:160:307-308 Organic Chemistry (4,4) or 01:160:315-316 Principles of Organic Chemistry (4,4)
01:160:309 or 311 Organic Chemistry Laboratory (2)
01:160:341-342 Physical Chemistry: Biochemical Systems (3,3) or 01:160:323-324 Physical Chemistry (3,3) or 01:160:327-328 Physical Chemistry (4,4)
01:447:380 Genetics (4) or 11:776:305 Plant Genetics (4)
01:750:193-194 Physics for the Sciences (4,4) or 01:750:201-202 Extended General Physics (5,5) or 01:750:203-204 General Physics (3,3) and 01:750:205-206 General Physics Laboratory (1,1)

One of the following (3–4):

11:115:410 Physical Biochemistry (3)
11:115:412 Protein and Enzyme Chemistry (3)
11:115:422 Biochemical Mechanisms of Toxicology (3)
11:115:426 Biotech Start-Up Company (3)
11:115:435 Topics in Biochemistry (3)
11:115:452 Biochemical Separations (3)
11:126:420 Trends in Biotechnology (3)
11:126:427 Methods in Recombinant DNA Technology (4)
11:126:483 Nucleotide Sequence Analysis (3)
11:126:484 High Throughput Screening (3)

B. ELECTIVES (6–8)

Two additional science courses selected in consultation with the faculty adviser, normally at the 300 or 400 level. Students intending to apply to graduate school in biochemistry or a related field are advised to take a cell biology course, e.g. 01:146:470 Advanced Cell Biology (3) or 01:447:495 Cancer (3), and a molecular biology course, e.g., 11:126:413 Plant Molecular Biology or 11:126:481 Molecular Genetics, as preparation for the GRE Subject Test in Biochemistry and Molecular and Cell Biology.

Students may complete a formal minor program in nutrition by taking 11:709:400, 401 Advanced Nutrition I,II (3,3) as their science electives in addition to 11:709:255 Nutrition and Health.

IX. Unspecified Electives (2–7.5 credits)

BIOLOGICAL SCIENCES 119

Degree: B.S.

Coordinator: Alan D. Antoine

Adviser	Code	Office	Phone (Ext.)
Alan D. Antoine	(AH)	Lipman 121	2-9882(121)
Carol A. Bagnell	(BQ)	Bartlett 102	2-0535
Tamar Barkay	(BD)	Lipman 333C	2-9763
Timothy M. Casey	(CD)	ENR 139	2-3213
Theodore Chase, Jr.	(CH)	Lipman 313	2-9763(313)
Keith R. Cooper	(CK)	Lipman 130	2-9763(130)
James C. French	(FD)	Publications Bldg.	2-2982
Judith P. Grassle	(GE)	IMCS 309C	2-6555(351)
Max M. Haggblom	(HQ)	Lipman 326	2-9763(326)
George Hamilton	(HJ)	Blake 217	2-9801
Michael W. Hamm	(HK)	Thompson 107	2-9224
Harry W. Janes	(JA)	Foran 123	2-9711(123)
Barry W. Jesse	(JE)	Foran 108A	2-8165(104)
Larry S. Katz	(KT)	Bartlett 201	2-7426
Stanley E. Katz	(KJ)	Lipman 329	2-9763(329)
Lee Kerkhof	(KC)	IMCS 305C	2-6555(335)
Michael L. May	(MT)	Blake 122	2-9459
John Reinfelder	(RG)	ENR 260	2-8013
John N. Sacalis	(SA)	Foran 382	2-9711(131)
Michael V.K. Sukhdeo	(SL)	Bartlett 213A	2-9406
Robert L. Tate	(TF)	ENR 230	2-9810
Nilgun Tumer	(TD)	Foran 208	2-8165(208)
William W. Ward	(WG)	Lipman 216	2-9763(216)
Malcolm Watford	(WR)	Thompson 130	2-7418
Edward J. Zambraski	(ZC)	Nelson B222	5-2446

The biological sciences curriculum at Cook College is offered in cooperation with the Division of Life Sciences, Faculty of Arts and Sciences (FAS). The curriculum is designed to be in conformance with the current mission of Cook College while fulfilling the requirements for the FAS major, described in detail in the Life Sciences section of this catalog. Completion of the program prepares students for graduate study, for careers in government, industry, or secondary-school teaching, and also satisfies the entrance requirements for medical and dental schools.

Students interested in further concentrations within the biological sciences (animal science, biochemistry, biotechnology, cell biology, ecology and evolution, entomology, environmental biology, genetics, marine biology, microbiology, neurobiology, nutrition, physiology, plant biology, or plant pathology) should contact the curriculum coordinator for the appropriate adviser assignment.

Entry Requirements for the Major

To declare a major in biological sciences, students must have a minimum grade-point average of 2.0 and must have completed 01:119:101-102 General Biology (4,4) or equivalent courses, including laboratory, with grades of C or higher in both courses, or have the permission of the Director of Undergraduate Instruction, Division of Life Sciences.

Degree Requirements for the Major

To graduate with a degree in biological sciences, students must achieve a cumulative grade-point average of 2.0 in all biological sciences courses.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

Specific courses to meet the introductory life and physical sciences requirements are listed under VIII A, required courses for competence in the biological sciences.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems (6 credits)

See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter.

VII. Experience-Based Education (0–3 credits)

This requirement may be fulfilled by an independent study, a research project, or a cooperative education placement of at least 3 credits. Cooperative education placements presented to meet this requirement must be approved in advance by the curriculum coordinator.

VIII. Competence in the Biological Sciences (76–77 credits)

A. REQUIRED COURSES (52–53)

Quantitative Methods (7–8)

01:640:135 Calculus I (4) and 01:640:138 Calculus II for the Biological Sciences (4); or equivalent. Note: 01:960:379 Basic Probability and Statistics (3) or 01:960:401 Basic Statistics for Research (3) may be substituted for the second term of calculus.

Computer Competence (3)

01:198:110 Introduction to Computers and Their Application (3) or 01:146:302 Computers in Biology (3) or equivalent

Professional Ethics (3)

One course in bioethics, such as:

11:015:405 Ethics in Science (3)
01:119:150 Biology, Society, and Biomedical Issues (3)
01:119:152 Biomedical Issues of AIDS (3)
01:119:154 Genetics, Law, and Social Policy (3)
01:119:160 Biology, Society, and Ecological Issues (3)
01:730:249 Medical Ethics (3)
01:730:250 Environmental Ethics (3)

Other Required Courses (39)

01:119:101-102 General Biology (4,4)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:160:307-308 Organic Chemistry (4,4) or 01:160:315-316 Organic Chemistry (4,4)
01:160:311 Organic Chemistry Laboratory (2) or equivalent
01:447:380 Genetics (4) or 11:776:305 Plant Genetics (4)
01:750:193-194 Physics for the Sciences (4,4) or equivalent

B. ELECTIVES (24)

The electives courses must include at least one approved course of 3 credits from each of the following subject areas:

Cell Biology and Neuroscience 146
Genetics and Microbiology 447
Molecular Biology and Biochemistry 694
(11:115:301 Introductory Biochemistry (3) or 11:115:403-404 General Biochemistry (4,4) may be substituted)
Natural Resource Management 704

A list of approved courses in these subject areas is published by the Office of Undergraduate Instruction, Division of Life Sciences. Approved courses generally require 01:119:101-102 as a prerequisite; students are urged to consult the list of approved courses prior to registration. Cooperative education and non-biological sciences research and independent study credits are not eligible as elective credits, without prior approval from the Office of Undergraduate Instruction.

Electives must include a minimum of three laboratory courses of at least 1 credit. Only one of these laboratory courses may be satisfied by Independent Study or Research in Biology credits. General Biology and library research do not satisfy this requirement.

A minimum of six courses (18 credits) must be at the 300 or 400 level, including at least three laboratory courses. The latter may be separate laboratory courses [for example, 01:447:382 Genetics Laboratory (1) [or courses that include a laboratory component, for example, 01:447:390 General Microbiology (4)]. A maximum of 6 credits of independent research may be included in the 24 elective credits, but satisfies only one of the laboratory course requirements.

Courses at the 100 level or courses taken on a P/NC basis may not be used to satisfy elective requirements.

Students should refer to the Life Sciences section of this catalog for additional information concerning limits on biology credits transferred from other institutions, requirements and procedures for Independent Study or Research in Biology, and for information about a minor program in biological sciences.

IX. Unspecified Electives (21–25 credits)

BIORESOURCE ENGINEERING 129
(Five-Year Program)

Degrees: B.S., School of Engineering; B.S., Cook College

Undergraduate Program Director: Christopher Uchrin

Adviser	Code	Office	Phone (Ext.)
Uta Krogmann	(KE)	ENR 246	2-9060
Barbara J. Turpin	(TC)	ENR 234	2-9540
Christopher Uchrin	(UA)	ENR 262	2-9444

Bioresource engineering utilizes the physical and biological sciences in solving problems related to plants, animals, food, wastes, and our natural environment. Graduates of this program have a unique engineering education enabling them to apply the rapid advances being made in the biological and environmental sciences for the benefit of humanity. This program prepares students for immediate employment as practicing engineers with industrial companies, government agencies, and private consulting firms, or for graduate study. The curriculum is fully accredited by the Accreditation Board for Engineering and Technology, thus enabling graduates to take examinations leading to a professional engineering license.

The curriculum is comprised of the following three options:

Bioenvironmental Engineering. This option is concerned with maintaining the quality of the natural environment. It involves the application of physical and biological sciences to land use and waste management problems, air and water pollution, and the conservation of our natural resources. The goal of this option is to gain an understanding of the requirements and tolerances of natural, living ecosystems and the engineering expertise needed to solve serious environmental problems facing our society.

Horticultural Engineering. This option is for students interested in the engineering design and systems analysis of controlled environment plant production (CEPPS) within phytomation systems. It provides a strong scientific understanding of the biological, environmental, and automation aspects of plant growth and production. The students are instructed in engineering systems design and challenged with design problems such as large scale greenhouses, growth chambers, micropropagation, and automatic control systems. Employment opportunities are numerous and varied, ranging from commercial greenhouse plant production to NASA (food production in space), and from biotechnology laboratories (tissue culture propagation) to robotics for transplant automation.

Food Engineering. This option addresses the application of engineering principles to the processing, packaging, storage, and distribution of food products. A knowledge of chemical, microbiological, and biophysical characteristics of foods is combined with engineering and computer technologies to develop systems that produce quality food products for human consumption.

Bachelor of Science degrees from the School of Engineering and Cook College are awarded upon completion of the five-year curriculum. A four-year program of study in bioresource engineering is offered by the School of Engineering and is described in that college's section of this catalog. See also the School of Engineering section for a year-by-year outline of the five-year program.

The five-year bioresource engineering curriculum requires a minimum of 163 credits for graduation.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior/Senior Colloquium (3)

Interdisciplinary problem definition, analysis, synthesis, and evaluation also are taught in several of the required upper level bioresource engineering courses.

II. Introductory Life and Physical Sciences

Specific courses that meet the introductory life and physical sciences requirement are listed under VIII A and B, required courses and options for competence in bioresource engineering.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter. Students are advised to select courses that will simultaneously fulfill the School of Engineering humanities requirement.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter. Students are advised to select courses that will simultaneously fulfill the School of Engineering social sciences requirement.

V. Economic and Political Systems

A. Economic Systems (3 credits)
01:220:200 Economic Principles and Problems (3)

B. Political Systems (3 credits)
11:532:279 Politics of Environmental Issues (3)
or 01:790:201 American Government (3)
or an equivalent course focusing on the structure and function of American governmental institutions

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter.

VII. Experience-Based Education (4 credits)

11:127:488-489 Bioresource Engineering Design I,II (2,2)

VIII. Competence in Bioresource Engineering (122–129 credits)

A. REQUIRED COURSES (62)

Quantitative Methods (16)

01:640:151-152 Calculus for Mathematics and the Physical Sciences (4,4)
01:640:244 Differential Equations for Engineering and Physics (4)
01:640:251 Multivariable Calculus (4)

Computer Competence (3)

14:440:127 Introduction to Computers for Engineers (3)

Professional Ethics

Ethical, social, and safety considerations important in engineering practice are included in several of the required upper-level design courses.

Other Required Courses (43)

11:127:100 Introduction to Bioresource Engineering (1)
11:127:290 Biosystems Engineering Measurements (3)
11:127:450 Applied Instrumentation and Control (4)
11:127:495 Environmental Systems Analysis for Engineers (3)
01:160:159-160 General Chemistry for Engineers (3,3)
01:160:171 Introduction to Experimentation (1)
01:160:209 Elementary Organic Chemistry (3)
01:160:211 Elementary Organic Chemistry Laboratory (1)
14:180:215 Engineering Graphics (1)
14:180:243 Mechanics of Solids (3)
14:332:373 Elements of Electrical Engineering (3)
14:440:221,222 Engineering Mechanics (3,3)
01:750:123,124 Analytical Physics I (2,2)
01:750:227 Analytical Physics IIA (3)
01:750:229 Analytical Physics IIA Laboratory (1)

B. OPTIONS (61–66)

One of the following three options is required. Note that electives in any of the options may be substituted with the approval of the faculty adviser.

1. Bioenvironmental Engineering (64)

Required courses (52)
01:119:101 General Biology (4) or 01:119:103 Principles of Biology (4)
11:127:413-414 Unit Processes in Bioenvironmental Engineering I,II (3,3)
11:127:423-424 Bioenvironmental Unit Processes Laboratory I,II (1,1)
11:127:462 Design of Solid Waste Treatment Systems (3)
11:127:468 Hazardous Waste Treatment Engineering (3)
11:127:474 Air Pollution Engineering (3)
11:127:494 Land and Water Resource Engineering (3)
11:127:496 Planning and Design of Land Treatment Systems (3)
14:180:331 Elements of Environmental Engineering (3)
14:180:387 Fluid Mechanics (3)
14:180:389 Fluid Mechanics Laboratory (1)
14:180:431 Design of Environmental Engineering Facilities (4)
01:447:390 General Microbiology (4)
01:460:101 Introductory Geology (3)
14:650:351 Thermodynamics (3)
11:704:351 Principles of Applied Ecology (4) or equivalent

Electives (12)
11:127:492 Energy Conversion for Biological Materials (3)
14:155:453 Chemical Environmental Engineering (3)
14:180:372 Soil Mechanics (3)
14:180:374 Soil Mechanics Laboratory (1)
14:180:382 Hydraulic and Environmental Engineering (3)
14:180:443 Advanced Hydraulics (3)
14:180:448 Elements of Hydrology (3)
11:375:303 Numerical Methods in Environmental Science (3)
11:375:307 Elements of Solid Waste Management (3)
11:375:312 Environmental Microbiology Laboratory (2)
11:375:345 Environmental Transport Phenomena (3)
11:375:408 Treatment Plant and Receiving Water Surveys (3)
11:375:409 Environmental Statement and Impact (3)
11:375:411 Pollution Microbiology (3)
11:375:421 Principles of Air Pollution Control (3)
11:375:422 Air Sampling and Analysis (3)
11:375:423 Environmental Fate and Transport (3)
11:375:430 Hazardous Wastes (3)
11:375:444 Water Resources-Water Quality (3)
11:375:451 Soil Chemistry (3)
01:460:428 Hydrogeology (3)
14:540:343 Engineering Economics (3)
14:650:481 Heat Transfer (3)
11:670:323 Thermodynamics of the Atmosphere (3)
01:960:401 Basic Statistics for Research (3)

2. Horticultural Engineering (62–66)

Required courses (50–54)
01:119:101-102 General Biology (4,4) or 01:119:103 Principles of Biology (4)
11:127:240 Elements of Horticultural Engineering (3)
11:127:490 Structural Design and Environmental Control (3)
11:127:491 Phytomation (3)
11:127:492 Energy Conversion for Biological Systems (3)
11:127:493 Unit Processes for Biological Materials (3)
11:127:494 Land and Water Resource Engineering (3)
14:180:318 Elements of Structural Analysis (3)
14:180:345 Properties of Materials Laboratory (1)
14:180:387 Fluid Mechanics (3)
14:180:389 Fluid Mechanics Laboratory (1)
11:375:266 Soils and Their Management (4)
14:650:351 Thermodynamics (3)
11:776:211 Introduction to Horticulture (3)
11:776:242 Plant Science (3)
11:776:321 Greenhouse Environment Control and Crop Production (3)
11:776:382 Plant Physiology (4)

Electives (12)
11:115:301 Introductory Biochemistry (3)
11:370:350 Agricultural Entomology and Pest Management (3)
11:375:459 Physical Properties of Soils (3)
01:447:380 Genetics (4) or 11:776:305 Plant Genetics (4)
01:460:101 Introductory Geology (3)
14:540:343 Engineering Economics (3)
14:650:481 Heat Transfer (3)
11:770:301 General Plant Pathology (3)
11:776:221 Principles of Organic Crop Production (3)
11:776:362 Principles of Vegetable Culture (3)
11:776:401 Post-Harvest Physiology of Horticultural Crops (3)
11:776:402 Principles of Weed Science (3)
11:776:439 Nursery Crop Production (3)
11:776:450 Horticultural Topics (3)
11:776:452 Plant Tissue Culture (3)
01:960:401 Basic Statistics for Research (3)

3. Food Engineering (61–64)

Required courses (52–55)
- 01:119:101-102 General Biology (4,4) or 01:119:103 Principles of Biology (4)
- 11:127:492 Energy Conversion for Biological Systems (3)
- 11:127:493 Unit Processes for Biological Materials (3)
- 14:155:201 Chemical Engineering Analysis I (3)
- 14:155:202 Fundamentals of Reactive Transport Phenomena (3)
- 14:155:303,304 Transport Phenomena in Chemical Engineering (3,3)
- 14:155:308 Chemical Engineering Thermodynamics (3)
- 14:155:411 Introduction to Biochemical Engineering (3)
- 14:180:345 Properties of Materials Laboratory (1)
- 11:400:201 Principles of Food Science (3)
- 11:400:202 Principles of Food Science Laboratory (1)
- 11:400:402 Introductory Food Engineering Processes (4)
- 11:400:411 Food Chemistry (3)
- 11:400:419 Food Physical-Systems (3)
- 01:447:390 General Microbiology (4)

Electives (9)
- 11:115:301 Introductory Biochemistry (3)
- 14:150:270 Introduction to Packaging Engineering (3)
- 14:155:422 Process Simulation and Control (3)
- 11:400:304 Food Analysis (4)
- 16:400:510 Food Rheology (3)
- 16:400:515,516 Principles of Food Process Engineering (3,3)
- 16:400:518 Principles of Heat Transfer in Foods (3)
- 16:400:527 Food Process Design (4)
- 14:540:343 Engineering Economics (3)
- 14:540:382 Computer Control of Manufacturing Systems (3)
- 14:540:383 Computer Control of Manufacturing Systems Laboratory (1)
- 11:776:401 Post-Harvest Physiology of Horticultural Crops (3)
- 01:960:401 Basic Statistics for Research (3)

IX. Unspecified Electives (2–7 credits)

BIOTECHNOLOGY 126

Degree: B.S.

Coordinator: Barbara A. Zilinskas

Adviser	Code	Office	Phone (Ext.)
Wendie S. Cohick	(CP)	Foran 108B	2-8165(105)
Barry W. Jesse	(JE)	Foran 108A	2-8165(104)
Donald Y. Kobayashi	(KN)	Foran 337A	2-9375(328)
Thomas Leustek	(LG)	Foran 328A	2-8165(326)
Nilgun Tumer	(TD)	Foran 208	2-8165(215)
Malcolm Watford	(WR)	Thompson 130	2-7418
Barbara A. Zilinskas	(ZB)	Foran 237A	2-9711(232)
Gerben J. Zylstra	(ZA)	Foran 322A	2-8165(320)

The field of biotechnology has emerged as a major contributor to the advancement of agriculture, medicine, and environmental sciences. Recent developments in biotechnology, particularly molecular biology, promise major improvements in agricultural productivity, breakthroughs in human health care, and new solutions to environmental problems.

The biotechnology curriculum is designed to provide students with fundamental knowledge and laboratory skills in biotechnology, including molecular biology, and a firm foundation in biology and the physical sciences. The primary objectives of the program are to broadly educate students for positions in the rapidly developing biotechnology industry and to prepare students for graduate and graduate / professional study in the life sciences. The strong life and physical sciences foundation of the curriculum involves extensive laboratory and course work and research experience, as well as specializations in the following fields: applied microbiology and microbial technology, animal biotechnology, and plant biotechnology.

Entry Requirements for the Major

The biotechnology program is open only to students who have completed 01:119:101 General Biology and 01:160:161 General Chemistry with grades of C or better and who have achieved a cumulative grade-point average of 2.5 or higher.

Degree Requirements for the Major

To graduate with a degree in biotechnology, students must maintain a cumulative grade-point average of 2.5 or higher. Students whose cumulative grade-point average falls below 2.5 will be allowed one term to restore the average to 2.5 or higher.

I. Interdisciplinary/Ethical Analysis (5 credits)

- 11:015:101 Perspectives on Agriculture and the Environment (2)
- 11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

Specific courses that meet the introductory life and physical sciences requirement are listed under VIII A, required courses for competence in biotechnology.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems

A. Economic Systems (3 credits)
- 11:373:101 Economics, People, and Environment (3) or equivalent

B. Political Systems (3 credits)
See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (7 credits)

See suggested courses in the Degree Requirements chapter. 01:355:302 Scientific and Technical Writing (3) is strongly recommended.
- 11:126:401 Seminar in Biotechnology (1)

VII. Experience-Based Education (3 credits)

11:126:497,498 Research in Biotechnology (BA,BA) or equivalent independent research project in biotechnology or appropriate cooperative education placement

VIII. Competence in Biotechnology (87–96.5 credits)

A. REQUIRED COURSES (71–77.5)

Quantitative Methods (8)

01:640:1__-1__ CALC1 and CALC2 (4,4)

Computer Competence (1.5–4)

11:126:483 Nucleotide Sequence Analysis (3) or 11:115:305 Data Treatment in Biochemistry (1.5) or 01:198:110 Introduction to Computers and Their Application (3) or 01:198:111 Introduction to Computer Science (4) or equivalent

Professional Ethics (1.5)

11:126:110 Concepts and Issues in Biotechnology (1.5)

Other Required Courses (60–64)

11:115:403-404 General Biochemistry (3,3)
11:115:413 Experimental Biochemistry (2.5) or 11:115:313 Introductory Biochemistry Laboratory (1)
01:119:101-102 General Biology (4,4)
11:126:427 Methods in Recombinant DNA Technology (4)
11:126:481 Molecular Genetics (3)
11:126:482 Molecular Genetics Laboratory (3)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:160:307-308 Organic Chemistry (4,4)
01:160:311 Organic Chemistry Laboratory (2)* or 01:160:251 Quantitative Chemistry Laboratory (2.5)
01:447:380 Genetics (4) or 11:776:305 Plant Genetics (4) (Plant Biotechnology Option)
01:447:390 General Microbiology (4)
01:750:193-194 Physics for the Sciences (4,4) or equivalent*

B. OPTIONS (16–19)

1. Animal Biotechnology (18–19)

Required courses (9–10)
At least three of the following courses:

11:067:430 Animal Microtechniques and Tissue Culture (4)
11:146:474 Immunology (3)
11:709:400 Advanced Nutrition I (3)
11:709:401 Advanced Nutrition II (3)

Electives (9)
11:067:327 Animal Reproduction (3)
11:115:412 Protein and Enzyme Chemistry (3)
11:115:452 Biochemical Separations (3)
11:126:407 Comparative Virology (3)
11:126:410 Process Biotechnology (3)
11:126:420 Trends in Biotechnology (3)
11:126:483 Nucleotide Sequence Analysis (3)
11:126:484 High Throughput Screening (3)
01:447:480 Topics in Molecular Genetics (3)
01:447:481 Topics in Human Genetics (3)
01:447:495 Cancer (3)
01:694:492 Molecular Biology of Gene Regulation and Development (3)
01:960:401 Basic Statistics for Research (3)

One to three additional credits of research in biotechnology may be substituted for an equal number of credits of elective course work.

2. Applied Microbiology and Microbial Technology (16)

Required courses (7)
11:126:394 Applied Microbiology (4)
11:126:405 Microbial Technology (3)

Electives (9)
11:067:430 Animal Microtechniques and Tissue Culture (4) or 11:126:406 Plant Gene Transfer (4)
11:115:412 Protein and Enzyme Chemistry (3)
11:115:452 Biochemical Separations (3)
11:126:407 Comparative Virology (3)
11:126:410 Process Biotechnology (3)
11:126:420 Trends in Biotechnology (3)
11:126:483 Nucleotide Sequence Analysis (3)
11:126:484 High Throughput Screening (3)
11:126:491 Microbial Ecology and Diversity (4)
01:146:474 Immunology (3)
01:146:475 Laboratory in Immunology (1)
11:375:411 Pollution Microbiology (3)
11:400:416 Food Biotechnology Topics (1)
11:400:419 Food Physical Systems (3)
01:447:392 Pathogenic Microbiology (3)
01:447:480 Topics in Molecular Genetics (3)
01:447:495 Cancer (3)
01:447:498 Bacterial Physiology (3)
11:628:418 Marine Microbiology (4)
01:694:492 Molecular Biology of Gene Regulation and Development (3)

3. General Biotechnology (16–19)

Required courses (7)
11:067:430 Animal Microtechniques and Tissue Culture (4) or 11:126:406 Plant Gene Transfer (4)

One of the following courses (3):

11:115:412 Protein and Enzyme Chemistry (3)
11:115:452 Biochemical Separations (3)
11:126:407 Comparative Virology (3)
11:126:410 Process Biotechnology (3)
11:126:420 Trends in Biotechnology (3)
11:126:483 Nucleotide Sequence Analysis (3)
11:126:484 High Throughput Screening (3)
01:146:474 Immunology (3)

Electives (9–12)
Three additional courses from the lists of required and elective courses listed in the other three biotechnology curriculum options.

One to three additional credits of research in biotechnology may be substituted for an equal number of credits of elective course work.

* Students intending to apply to medical or dental school should be aware that many professional schools require 01:160:311 Organic Chemistry Laboratory and a physics laboratory.

4. Plant Biotechnology (17)

Required courses (11)
- 11:126:406 Plant Gene Transfer (4)
- 11:126:413 Plant Molecular Biology (3)
- 11:776:210 Principles of Botany (4)

Electives (6)
- 11:115:412 Protein and Enzyme Chemistry (3)
- 11:115:452 Biochemical Separations (3)
- 11:126:407 Comparative Virology (3)
- 11:126:410 Process Biotechnology (3)
- 11:126:420 Trends in Biotechnology (3)
- 11:126:483 Nucleotide Sequence Analysis (3)
- 11:126:484 High Throughput Screening (3)
- 11:400:416 Food Biotechnology Topics (1)
- 11:400:419 Food Physical Systems (3)
- 01:447:480 Topics in Molecular Genetics (3)
- 01:447:495 Cancer (3)
- 01:694:492 Molecular Biology of Gene Regulation and Development (3)
- 11:704:351 Principles of Applied Ecology (4) or 11:126:491 Microbial Ecology and Diversity (4)
- 11:770:301 General Plant Pathology (3)
- 11:776:382 Plant Physiology (4)
- 11:776:406 Plant Breeding (3)
- 01:960:401 Basic Statistics for Research (3)

One to three additional credits of research in biotechnology may be substituted for an equal number of credits of elective course work.

IX. Unspecified Electives (0–8 credits)

CHEMISTRY 160

Degree: B.A.

Undergraduate Executive Officer: John R. Krenos

Adviser	Code	Office	Phone (Ext.)
K.Y. Chen	(CM)	Wright Labs A108	5-3739
Lionel Goodman	(GF)	Wright Labs 207	5-2603
Gene S. Hall	(HV)	Wright Labs 282	5-2590
Gregory F. Herzog	(HN)	Wright Labs 180A	5-3955
John R. Krenos	(KF)	Wright Labs 221	5-3048
Heinz Roth	(RK)	Wright Labs 384	5-5664
Ronald R. Sauers	(SC)	Wright Labs 380	5-2626
Harvey Schugar	(SW)	Wright Labs 176	5-2602

The program of study in chemistry, offered in cooperation with the Faculty of Arts and Sciences, provides broad and comprehensive training in all areas of modern chemistry and leads to a bachelor of arts degree in chemistry. The curriculum is designed to permit the student a wide range of career choices, including, but not limited to, chemistry, medicine, law, business, chemical physics, environmental science, and secondary-school teaching.

A core of courses is required for the completion of the major in chemistry, including course work in the four major subdisciplines of chemistry—inorganic, organic, physical, and analytical—as well as work in mathematics and physics. Within the program, several options permit students to select an area of concentration that reflects their particular interests and goals. (See VIII B below and the Chemistry 160 section of the Faculty of Arts and Sciences section.)

Entry Requirements for the Major

To declare a major in chemistry, students must achieve a grade of C or better in 01:160:161 General Chemistry.

A minimum grade-point average of 2.0 in all chemistry courses is required for graduation.

Degree Requirements for the Major

Cook College students majoring in chemistry also must complete a minor or certificate program offered by the Cook College faculty.

I. Interdisciplinary/Ethical Analysis (5 credits)

- 11:015:101 Perspectives on Agriculture and the Environment (2)
- 11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

A. Life Sciences (4 credits)
- 01:119:103 Principles of Biology (4) or equivalent

B. Physical Sciences (8 credits)
- 01:750:203-204 General Physics (3,3)
- 01:750:205-206 General Physics Laboratory (1,1)

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems (6 credits)

See suggested courses in the Degree Requirements chapter. Selection of courses may be determined by the student's choice of minor or certificate program.

VI. Oral and Written Communication (8 credits)

See suggested courses in the Degree Requirements chapter. 01:355:302 Scientific and Technical Writing (3) is strongly recommended.
- 01:160:491-492 Seminar in Chemistry (1,1)

VII. Experience-Based Education (3 credits)

- 01:160:495,496 Senior Research Project (1-6,1-6), or 11:115:493,494 Research Problems in Biochemistry (1-6,1-6) or 11:400:493,494 Research Problems in Food Science (1-4, 1-4) or equivalent independent laboratory research project or appropriate, adviser-approved, placement in cooperative education

VIII. Competence in Chemistry (72.5–90.5 credits)

A. REQUIRED COURSES (72.5)

Quantitative Methods (15)
- 01:640:151-152 Calculus for Mathematics and the Physical Sciences (4,4)
- 01:640:250 Introductory Linear Algebra (3)
- 01:640:251 Multivariable Calculus (4)

Computer Competence (2.5)

01:160:329 Experimental Physical Chemistry (2.5)

Professional Ethics

Issues in professional and scientific ethics are included in 01:160:491-492 Seminar in Chemistry (1,1).

Other Required Courses (37)

01:160:161-162 General Chemistry (4,4) or 01:160:163-164 Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:160:251 Analytical Chemistry Laboratory (2.5)
01:160:315-316 Principles of Organic Chemistry (4,4) or 01:160:307-308 Organic Chemistry (4,4)
01:160:309,310 Organic Chemistry Laboratory (2,2)
01:160:323-324 Physical Chemistry (3,3) or 01:160:341-342 Physical Chemistry: Biochemical Systems (3,3)
01:160:348 Instrumental Analysis (3) or 01:160:344 Introduction to Molecular Biophysics Research (3)
01:160:361 Chemical Bonding (1.5)
01:160:371 Inorganic Chemistry (3)
a minor or certificate program offered by Cook College (18)

B. OPTIONS (0–18)

For currently available areas of further concentration, see the Chemistry 160 section of the Programs of Study for Liberal Arts Students section of this catalog. Options B, C, and D lead to American Chemical Society-certified degrees. Students planning on acquiring secondary teacher certification should consult the requirements for the minor program in science and agriculture teacher education, at the end of this chapter.

IX. Unspecified Electives (0–9.5 credits)

COMMUNICATION 192

Degree: B.A.

Coordinator: Barbara Munson Goff

Adviser	Code	Office	Phone (Ext.)
Advising Office		SCILS 206	2-7375
Lynn Cockett	(CT)	SCILS 209	2-8563
Barbara M. Goff	(GB)	Loree 038	2-9266

Offered in cooperation with the Department of Communication (School of Communication, Information and Library Studies), the undergraduate program emphasizes the role of communication in human affairs. The program prepares students for communication careers in business, education, or government, or for the pursuit of graduate study in communication or other fields. As offered through Cook College, the program allows students to develop a strong background in environmental, scientific, or technical fields, areas in which communication specialists are in high demand.

Entry Requirements for the Major

The Department of Communication faculty seeks highly motivated students and encourages applications from a diverse student population. Admission to the major program is competitive, and students should be advised that meeting the minimum requirements does not guarantee acceptance.

Minimum requirements include the following: a grade point average of 2.0 or higher; a combined average of C+ in 04:189:101 Introduction to Communication and Information Systems and Processes, and 102 Introduction to Media Systems and Processes, with no grade below C; a grade of B or higher in expository writing; and a well-written personal statement.

The department's admissions committee, comprised of faculty from within the department, seeks the following when reviewing student essays: (1) a persuasive statement of purpose, (2) an understanding of issues in communication, (3) strong written communication skills, and (4) evidence that the student will contribute to the community of learners in the department of communication.

Applications are available at the SCILS dean's office or on the department's web site (http://scils.rutgers.edu) and are due by the close of business on October 1 for spring term admission or February 15 for fall term admission. Students are advised to consult the department's handbook, web site, and bulletin boards for up-to-date information regarding admissions procedures.

Degree Requirements for the Major

Cook College students majoring in communication also must complete a minor or certificate program offered by the Cook College faculty.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences (7 credits)

See suggested courses in the Degree Requirements chapter. Selection of courses may be determined by the student's choice of minor or certificate program.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

04:192:346 Intercultural Communication (3) or 04:192:345 International Communication (3) or 04:192:405 Communication and Gender (3) or 04:192:434 Intercultural Communication Workshop (3)
an additional course from those suggested in the Degree Requirements chapter

V. Economic and Political Systems (6 credits)

See suggested courses in the Degree Requirements chapter. Selection of courses may be determined by the student's choice of minor or certificate program.

VI. Oral and Written Communication (6 credits)

01:355:101 Expository Writing I (3) or equivalent
04:192:359 Persuasive Communication (3) or 04:192:380 Public Speaking (3) or 04:192:381 Argumentation (3) or 04:192:407 Health Communication (3)

VII. Experience-Based Education (1–3 credits)

04:192:369 Internship in Communication (3) or 04:192:470 Research in Communication (3) or 04:192:491,492 Independent Study in Communication* (1-3,1-3) or an appropriate cooperative education placement

VIII. Competence in Communication (48 credits)

A. REQUIRED COURSES (42)

Quantitative Methods (3)

04:192:300 Communication Research (3)

Computer Competence (3)

01:198:110 Introduction to Computers and Their Application (3) or equivalent

Professional Ethics (3)

04:192:365 Principles of Public Relations (3)

Other Required Courses (33)

04:189:101 Introduction to Communication and Information Systems and Processes (3)
04:189:102 Introduction to Media Systems and Processes (3)
04:192:200 Communication Theory (3)
04:192:201 Interpersonal Communication Processes (3)

At least one of the following courses (3):

04:192:354 Mediated Communication Theory (3)
04:192:355 Interpersonal Communication (3)
04:192:357 Organizational Communication (3)
a minor or certificate program offered by Cook College (18)

Students should consult the description of the communication program in the School of Communication, Information and Library Studies chapter for a recommended sequence of communication courses.

B. ELECTIVES (6)

At least two additional courses in communication to attain a total of 33 credits in communication. At least two courses at the 400 level (excluding 04:192:491,492) must be included in the total of 33 credits. Students are advised to take no more than 33 credits of courses in communication.

IX. Unspecified Electives (43 credits)

COMPUTER SCIENCE 198

Degree: B.A. or B.S.

Coordinator: Saul Y. Levy

Adviser	Code	Office	Phone (Ext.)
Alex Borgida	(BY)	CORE 315	5-4744
Robert Hills	(HL)	Martin 214	2-3000(512)
Saul Y. Levy	(LV)	CORE 205	5-3523

Computer science is primarily concerned with information processes, the structure and procedures needed to represent them, and the systems needed to implement them. Spanning a broad spectrum of basic and applied subdisciplines, which range from foundations in logic and the computational complexity of algorithms through compilers, operating systems, and databases (software and systems development), the discipline continues to expand in terms of new architectures, networks, parallel algorithms / languages / machines, vision, robotics, computer-aided design, and so forth.

Options leading to either a B.A. or B.S. degree are available, as well as an Internet certificate.

To earn an Internet certificate, students must complete the following five courses with a grade of B or better:

01:198:336 Principles of Database Management Systems (4)
01:198:352 Internet Technology (4)
01:198:415 Compilers (4) or 01:198:431 Software Engineering (4)
01:198:417 Distributed Systems: Concepts and Design (4)
01:198:476 Advanced Web Applications (4)

Entry Requirements for the Major

Students wishing to declare a major in computer science must have completed the following five courses with a grade of C or better in each: 01:640:151-152, 01:198:111,112, and 205. Cook College students who wish to major in computer science but have not yet satisfied these requirements should contact Dean Hills (Office of Academic and Student Affairs) for advisement.

Degree Requirements for the Major

To graduate with a degree in computer science, students must achieve a grade of C or better in all required courses. At least seven of the courses in computer science must be taken at Rutgers–New Brunswick.

Cook College students also must complete a minor or certificate program offered by the Cook College faculty.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

A. Life Sciences (4 credits)
01:119:103 Principles of Biology (4) or equivalent

B. Physical Sciences
See VIII B, Option requirements.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems

A. Economic Systems (3 credits)
11:373:101 Economics, People, and Environment (3)

B. Political Systems (3 credits)
See suggested courses in the Degree Requirements chapter.

* 04:192:491,492 does not count toward the minimum 33-credit communication course requirement.

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter.

VII. Experience-Based Education (3 credits)

Students may complete any adviser-approved independent research project or cooperative education placement involving advanced work in computer science or its applications.

VIII. Competence in Computer Science (72–82 credits)

A. REQUIRED COURSES (60)

Quantitative Methods (11)

01:640:151-152 Calculus for Mathematics and the Physical Sciences (4,4)
01:640:250 Introductory Linear Algebra (3)

Computer Competence

Computer competence requirements are included in the requirements of the curriculum.

Professional Ethics (3)

01:198:405 Computers and Society (3)

Other Required Courses (28)

01:198:111 Introduction to Computer Science (4)
01:198:112 Data Structures (4)
01:198:205,206 Introduction to Discrete Structures I,II (4,4)
01:198:211 Computer Architecture and Assembly Language (4)
01:198:323 Numerical Analysis and Computing (4)
01:198:344 Design and Analysis of Computer Algorithms (4)
a minor or certificate program offered by Cook College (18)

B. OPTIONS (15–28)

1. Bachelor of Arts Degree Program (15–20)

A course in the physical sciences (3–4). (See suggested courses in the Degree Requirements chapter.) Four additional courses in computer science and related disciplines, e.g., electrical engineering, mathematics, at least two of which must be at the 300 or 400 level. A list of current, approved courses is available from the faculty adviser.

2. Bachelor of Science Degree Program (25–28)

Required courses (16)

01:198:314 Principles of Programming Languages (4)
01:198:416 Operating Systems Design (4)
01:750:203-204 General Physics (3,3)
01:750:205,206 General Physics Laboratory or equivalent (1,1)

Electives (9–12)

At least three additional courses in computer science and related disciplines, e.g., electrical engineering, mathematics, at least two of which must be at the 300 or 400 level. A list of current, approved courses is available from the faculty adviser.

IX. Unspecified Electives (4–17 credits)

ENTOMOLOGY

(See the Minor Programs of Study section at the end of this chapter.)

ENVIRONMENTAL AND BUSINESS ECONOMICS 373

Degree: B.S.

Undergraduate Program Director: Maurice P. Hartley

Adviser	Code	Office	Phone (Ext.)
Anthony Artuso	(AR)	COB 108	2-9155(212)
Sanjib Bhuyan	(BC)	COB 104	2-9155(213)
Margaret Brennan	(BB)	Martin 104	2-1000(569)
Penny Carlson	(CE)	Martin 206	2-3000(512)
Donn A. Derr	(DD)	COB 217	2-9155(214)
Ramu Govindasamy	(GQ)	COB 115	2-9171(254)
Maurice P. Hartley	(HM)	COB 112	2-9155(216)
Ferdaus Hossain	(HE)	COB 211	2-9155(217)
Larry Jaffe	(JL)	COB 114	2-1100(412)
Peter J. Parks	(PA)	COB 212	2-9155(218)
Carl E. Pray	(PE)	COB 110	2-9155(219)
Daymon W. Thatch	(TA)	COB 106	2-9155(221)

The environmental and business economics program provides students with a foundation in the principles of economics, a knowledge of practical economic and analytical problem-solving techniques, an ability to apply economic concepts to the analysis of public and private policy issues, and an understanding of the institutional factors underlying and influencing policy decisions. The program qualifies students for a broad spectrum of positions in business and government, or for continued study at the graduate level.

To encourage students to develop depth in their understanding of the applications of economics, the curriculum offers the following three options:

Business Economics. This option emphasizes the application of economics to business management, marketing, and finance issues related to food and agriculture. It familiarizes students both with analytical and decision-making techniques used in the business world, and with the public and private institutional framework within which businesses operate. It is appropriate for students interested in employment in business or who are interested in graduate studies in business management or economics.

Environmental and Resource Economics. This option emphasizes the application of economics to policy issues associated with environmental problems and the utilization of natural resources. It familiarizes students both with analytical and decision-making techniques used in assessing problems of the environment and natural resources, and with the institutional framework within which environmental policy must be developed. It is appropriate for students interested in employment either by private organizations concerned with environmental policies, or by government agencies responsible for policies relating to the environment and natural resources, and for students interested in graduate study in environmental or natural resource economics.

Food Industry Economics. This option emphasizes the application of economics in the areas of food policy, marketing, and finance. It is appropriate for students interested in employment in the food industry or by federal or state departments of agriculture and for students interested in graduate study in agricultural economics.

Entry Requirements for the Major

Although students may declare the major before completing these four courses, official admission to the major is required for completion of introductory courses in micro- and macroeconomics, a term of calculus, and a term of statistics, with grades of C or better. These four courses are prerequisites to junior- and senior-level courses in the required option areas.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences (7 credits)

A. Life Sciences (4 credits)
01:119:103 Principles of Biology (4) or equivalent

B. Physical Sciences (3 credits)
See suggested courses in the Degree Requirements chapter.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems

A. Economic Systems (3–6 credits)
Specific courses that fulfill the economic systems requirement are listed under VIII A, Competence in Environmental and Business Economics.

B. Political Systems (3 credits)
See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (9 credits)

01:355:101 Expository Writing (3)
01:355:303 Writing for Business and the Professions (3) or 01:355:302 Scientific and Technical Writing (3)

and one of the following:

04:192:220 Fundamentals of Speaking and Listening (3)
01:355:201 Discourse in the Professions (3) (See majors' Handbook or adviser for suggested topics.)
04:571:324 News Reporting and Writing (3)

VII. Experience-Based Education (3 credits)

Each student consults with the academic adviser in planning to meet this requirement. Appropriate cooperative education placements, approved internships, 11:373:491,492 Research Problems, or equivalents fulfill this requirement.

VIII. Competence in Environmental and Business Economics (61–64 credits)

A. REQUIRED COURSES (31–34)

Quantitative Skills (10)

33:010:272 Introduction to Accounting (3)
01:640:1__ CALC1 (4), with a grade of C or higher
01:960:285 Introduction to Statistics for Business (3) or 01:960:211 Introduction to Statistics (3) with a grade of C or higher

Computer Competence (3–4)

11:373:210 Business Decision Computer Tools (4) or 01:198:170 Computer Applications for Business (3)

Professional Ethics (3–4)

01:730:105 Current Moral and Social Issues (3) or 01:730:106 Current Moral and Social Issues (4) or 01:750:241 Introduction to Moral Theory (3) or 01:750:250 Environmental Ethics (3) or 01:750:251 Ethics and Business (3)

Other Required Courses (15)

01:220:103 Introduction to Macroeconomics (3), with a grade of C or higher
11:373:121 Principles and Applications of Microeconomics (3) or 01:220:102 Introduction to Microeconomics (3), with a grade of C or higher
11:373:241 Agribusiness Management (3)
11:373:321 Economics of Production (3)
11:373:422 Demand and Price Analysis (3)

B. OPTIONS (31)

1. Business Economics (30–31)

Required courses (9)
11:373:231 Agribusiness Marketing I (3)
11:373:341 Management: Human Systems Development (3)
11:373:351 Agribusiness Finance I (3)

At least three of the following business / economics courses (9):

33:010:452 Cost Accounting for Economics (3)
01:220:300 International Economics (3)
01:220:301 Money and Banking (3)
01:220:302 Labor Economics (3)
01:220:308 Introduction to Managerial Economics (3)
01:220:311 Methods of Cost Benefit Analysis (3)
01:220:394 Economics of Capital Markets (3)
01:220:415 Portfolio Theory (3)
11:373:331 Economics of Food Marketing Systems (3)
11:373:352 Economics of Futures Markets (3)
11:373:425 Applications of Econometrics to Agricultural Economics (3)
11:373:451 Agribusiness Finance II (3)
11:373:465 Agribusiness Marketing Research (4)

At least two of the following policy courses (6):

11:373:323 Public Policy toward the Food Industry (3)
11:373:361 Land Economics (3)
11:373:362 Natural Resource Economics (3)
11:373:363 Environmental Economics (3)
11:373:371 Food Policy (3)
11:374:313 Environmental Policy and Institutions (3)
11:374:314 Human Dimensions of Natural Resource Management (3)
01:790:237 Political Economy and Society (3)
01:790:305 Public Policy Formation (3)
01:790:327 International Political Economy (3)
01:790:337 American Political Economy (3)
01:790:338 Government and Business (3)

Electives (6)

At least two additional courses in environmental and business economics (373), economics (220), or the School of Business.

2. Environmental and Resource Economics (30)

Required courses (9)

11:373:361 Land Economics (3)
11:373:362 Natural Resource Economics (3)
11:373:363 Environmental Economics (3) or 01:220:332 Environmental Economics (3)

At least three of the following courses in problem solving or policy analysis (9):

01:220:311 Methods of Cost Benefit Analysis (3)
01:220:386 Operations Research I (3)
01:220:395 Law and Economics (3)
11:372:232 Fundamentals of Environmental Geomatics (3)
11:373:351 Agribusiness Finance I (3)
11:373:425 Application of Econometrics in Agricultural Economics (3)
11:375:333 Environmental Law I (3)
11:375:409 Environmental Statement and Impact (3)
01:790:305 Public Policy Formation (3)
01:960:337 Managerial Statistics (3)

At least one of the following courses in policy applications (3):

11:372:444 Watershed Management: An Interdisciplinary Perspective (3)
11:373:231 Agribusiness Marketing I (3)
11:374:315 International Environmental Policy (3)
11:375:301 The Environment and Health (3)
11:375:410 Workshop in Environmental Assessment and Impact (3)
11:375:421 Air Pollution (3)
01:450:140 The Greenhouse Effect (3)
01:450:370 Global and Regional Climate Change (3)
11:628:424 Science in Shoreline Management (3)
11:704:310 Forest and Wildlife Conservation (3)
11:704:451 Ecosystems Ecology and Global Change (3)

At least one of the following interdisciplinary courses (3):

11:372:231 Fundamentals of Environmental Planning (3)
11:372:384 A Systems Approach to Environmental and Agricultural Issues (3)
11:375:333,334 Environmental Law I,II (3,3)
01:512:323,324 History of the North American Environment (3,3)
11:704:351 Principles of Applied Ecology (3)
10:975:315 Theory and Methods of Land Use Planning (3)

Electives (6)

At least two additional courses in environmental and business economics (373), economics (220), or the School of Business.

3. Food Industry Economics (30–31)

Required courses (9)

11:373:231 Agribusiness Marketing I (3)
11:373:331 Economics of Food Marketing Systems (3)
11:373:341 Management: Human Systems Development (3)

Four of the following courses, of which at least three must come from group A (12):

A. Courses in business strategy / policy

11:373:323 Public Policy toward the Food Industry (3)
11:373:351 Agribusiness Finance I (3)
11:373:352 Economics of Futures Markets (3)
11:373:371 Food Policy (3)
11:373:425 Applications of Econometrics in Agricultural Economics (3)
11:373:451 Agribusiness Finance II (3)
11:373:465 Agribusiness Marketing Research (4)

B. Courses in environmental / resource economics

11:373:361 Land Economics (3)
11:373:362 Natural Resource Economics (3)
11:373:363 Environmental Economics (3)

Electives (9)

At least 3 credits of courses in one of the following areas: animal science (067), soils (in environmental sciences 375), food science (400), nutritional sciences (709), or plant science (776).

At least two additional courses in environmental and business economics (373), economics (220), or the School of Business.

IX. Unspecified Electives (26–37 credits)

ENVIRONMENTAL PLANNING AND DESIGN 573

Degree: B.S.

Coordinator: Roy H. De Boer

Adviser	Code	Office	Phone (Ext.)
Roy H. De Boer	(DH)	Blake 222	2-9035
William Goldfarb	(GH)	ENR 238	2-1105
Bruce A. Hamilton	(HB)	Blake 228-A	2-8010
Jean Marie Hartman	(HP)	Blake 226	2-6785
Colleen Hatfield	(HT)	ENR 156	2-1577
Richard G. Lathrop	(LP)	ENR 129	2-1580
George H. Nieswand	(NA)	ENR 162	2-1103
Steven Strom	(SV)	Blake 225	2-8488
David Tulloch	(TL)	Blake 220	2-1581

This curriculum provides a broad educational experience emphasizing an understanding of planning as it relates to the physical environment and the management of that environment. Particular attention is given to the interaction

of natural and social systems. The curriculum includes five options: Environmental Geomatics, Environmental Planning, Environmental Studies, Landscape Architecture, and Landscape Industry.

Environmental Geomatics. Environmental geomatics synthesizes a number of concepts and techniques, including remote sensing, spatial analysis, geographic information systems (GIS), and global positioning systems (GPS) that are used to improve the planning and management of natural resource systems. These techniques include the development of complex spatial databases from a wide range of data sources and the application of this information to solve environmental problems. The option is intended for students interested in pursuing professional careers in environmental planning / management, remote sensing, and geomatics, and provides a basis for graduate and professional studies. An environmental geomatics certificate program also is available for students in other programs of study. (See the Minor and Certificate Programs section at the end of this chapter.)

Environmental Planning. Environmental planning requires the integration of environmental information into the planning process and is concerned with the protection and enhancement of environmental systems while meeting demands for growth and development. This option is intended for students who are interested in pursuing professional careers in environmental planning and related areas. It also provides a basis for graduate and professional studies. An environmental planning certificate program also is available for students in other programs of study. (See the Minor Programs of Study section at the end of this chapter.)

Environmental Studies. This option is intended to provide students with the opportunity to obtain a broad-based environmental studies education within a structure that combines flexibility with direction. Students also are provided with the opportunity to develop strength in one or more areas of concentration appropriate to the major.

Landscape Architecture. Landscape architecture is concerned with the harmonious integration of people and nature in the creation of outdoor spaces for a variety of purposes. Emphasis is on sensitive site design using both social and environmental information. Issues addressed by landscape architects range from the design of parks and gardens to the planning, design, and management of entire regions. This option is intended for students who are interested in employment with landscape architecture, architecture, engineering, and planning firms and government agencies concerned with parks, recreation, environmental resources, and urban planning. Landscape architecture is a professional curriculum nationally accredited by the American Society of Landscape Architects. Entrance into the upper level (junior year) is competitive, based on an evaluation of the student's performance at the beginning level (sophomore year).

Landscape Industry. This option provides students with a broad-based education in landscape-related industries such as contracting, maintenance, nursery production, and garden centers.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

A. Life Sciences (4 credits)
01:119:103 Principles of Biology (4) or equivalent

B. Physical Sciences (3 credits)
01:460:101 Introduction to Geology (3)

Students who have completed another course in the list of physical sciences courses in the Degree Requirements chapter may substitute a course in physical geography.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems (6 credits)

See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter.

VII. Experience-Based Education (0–3 credits)

Students in the landscape architecture and landscape industry options fulfill this requirement by way of applied problem-solving projects in upper-level courses.

Students in the environmental geomatics, environmental planning, and environmental studies options may complete the requirement without formal credit through option-related summer employment or volunteer service with an appropriate public agency, private industry, or nonprofit organization. If a student elects to meet this requirement without applying for credit, then it is the student's responsibility to provide the curriculum coordinator with written documentation of work experience for approval prior to graduation. Students also may fulfill the experience-based education requirement by completing at least 3 credits from the following courses:

11:015:497,498 George H. Cook Scholars Program (BA,BA)
11:199:___ cooperative education
11:300:487 Student Teaching (9)
11:372:493,494 Special Problems in Environmental Resources (BA,BA)
11:704:483,484 Research Problems in Applied Ecology (BA,BA)

VIII. Competence in Environmental Planning and Design (54–85 credits)

A. REQUIRED COURSES (18)

Quantitative Methods (4)

01:640:115 Precalculus College Math (4) or equivalent

Computer Competence

See VIII B below.

Professional Ethics

Ethical aspects of environmental planning and design are incorporated into several upper-level courses through the use of case studies and applied problems.

Other Required Courses (14)

11:372:231 Fundamentals of Environmental Planning (3)
11:372:232 Fundamentals of Environmental Geomatics (3)
11:375:251 Soils and Water (4) or 11:375:266 Soils and Their Management (4)
11:704:351 Principles of Applied Ecology (4) or 11:704:332 Plant Ecology (4) or 11:704:330 General Ecology (4)

B. OPTIONS (36–67)

1. Environmental Geomatics (43.5–55)

Required courses (25.5–28)
11:372:362 Intermediate Environmental Geomatics (3)
11:372:369 Analytical Methods for Environmental Geomatics (3)
11:372:371 Air-Photo Interpretation (3)
11:372:374 Global Positioning Systems (1.5) or 01:450:355 Principles of Cartography (4)
11:372:442 Applied Principles of Hydrology (3)
11:372:462 Advanced Environmental Geomatics (3)
11:372:474 Advanced Remote Sensing (3)
11:670:202 Elements of Climatology (3) or 11:670:306 Weather, Climate, and Environmental Design (3)
01:960:401 Basic Statistics for Research (3) or equivalent

An additional concentration, minor, or certificate program selected from the following (18–27):

Concentration in Landscape Architecture (18–21)
Courses selected from the landscape architecture-option requirements (see VIII B4 below), in addition to 11:550:231.

Approved Certificate Programs (18–24)
Environmental Planning (21)
International Agriculture / Environment (21–23)
Real Estate Development (24)
Social Strategies for Environmental Protection (24)
Urban Planning (24)

Approved Minor Programs (18–26)
Agroecology (21–24)
Entomology (19–26)
Environmental and Business Economics (21–23)
Environmental Policy, Institutions, and Behavior (18)
Marine Sciences (18)
Meteorology (18)
Natural Resource Management (20–25)
Plant Science (18–20)
Science and Agriculture Teacher Education (24–27)

Individualized 18–24 credit concentrations may be developed with the approval of the student's adviser. Students must obtain adviser approval for individualized concentrations during the first term of the junior year.

2. Environmental Planning (55–63)

Required courses (22–23)
01:198:110 Introduction to Computers and Their Application (3) or equivalent
11:372:381 Introduction to Systems Thinking and the Systems Approach (3)
11:372:442 Applied Principles of Hydrology (3)
11:550:231 Introduction to Environmental Design I (5)
11:550:232 Introduction to Environmental Design II (5)
or two of the following courses (6): 11:550:230 Environmental Design Analysis (3); 11:550:330 History of Landscape Architecture (3); 10:975:316 Urban Design and Site Planning (3); 10:975:482 Social Aspects of Environmental Design (3)
11:670:202 Elements of Climatology (3) or 11:670:306 Weather, Climate, and Environmental Design (3)

Electives (33–40)

Five additional courses from the following (15):

11:372:409 New Jersey Planning Practice (3)
11:372:411 Environmental Planning and the Development Process (3)
11:375:351 Land Planning and Utilization (3)
10:975:250 Introduction to Urban Housing (3)
10:975:305 U.S. Urban Policy (3)
10:975:306 Introduction to Urban and Environmental Planning (3)
10:975:315 Theory and Methods of Land Use Planning (3)
10:975:316 Urban Design and Site Planning (3)
10:975:335 Administrative Issues in Environmental and Land-Use Planning (3)
10:975:420 Computers in Planning and Management (3)
10:975:434 Municipal Implementation of Planning Programs (3)
10:975:444 American Land (3)
10:975:452 Planning Engineering (3)
10:975:454 Planning Administration (3)
10:975:474 Tourism Planning (3)
10:975:478 History of Planning Thought (3)
10:975:481 Housing and Economic Analysis (3)
Adviser-approved course(s) in planning

An additional concentration, minor, or certificate program selected from the following (18–25):

Concentration in Landscape Architecture (18–21)
Courses selected from the landscape architecture-option requirements (see VIII B4 below), in addition to 11:550:231.

Approved Certificate Programs (18–24)
Environmental Geomatics (18)
International Agriculture / Environment (21–23)
Real Estate Development (24)
Social Strategies for Environmental Protection (24)
Urban Planning (24)

Approved Minor Programs (18–25)
Agroecology (21–24)
Environmental and Business Economics (21–23)
Environmental Policy, Institutions, and Behavior (18)
Marine Sciences (18)
Meteorology (19)
Natural Resource Management (20–25)
Plant Science (18–20)

Individualized 18–24 credit concentrations may be developed with the approval of the student's adviser. Students must obtain adviser approval for individualized concentrations during the first term of the junior year.

3. Environmental Studies (36–44)

Required courses (18)

01:198:110 Introduction to Computers and Their Application (3) or equivalent
11:372:202 Environmental Issues in the United States (3)
11:372:381 Introduction to Systems Thinking and the Systems Approach (3)
11:372:442 Applied Principles of Hydrology (3)
11:550:230 Environmental Design Analysis (3)
11:670:202 Elements of Climatology (3) or 11:670:306 Weather, Climate, and Environmental Design (3)

An additional concentration, minor, or certificate program selected from the following (18–27):

Concentration in Landscape Architecture (18–21)
Courses selected from the landscape architecture-option requirements (see VIII B4 below), in addition to 11:550:231.

Approved Certificate Programs (18–24)
Environmental Geomatics (18)
Environmental Planning (21)
International Agriculture / Environment (21–23)
Real Estate Development (24)
Social Strategies for Environmental Protection (24)
Urban Planning (24)

Approved Minor Programs (18–25)
Agroecology (21–24)
Entomology (19–26)
Environmental and Business Economics (21–23)
Environmental Policy, Institutions, and Behavior (18)
Marine Sciences (18)
Meteorology (19)
Natural Resource Management (20–25)
Plant Science (18–20)
Science and Agriculture Teacher Education (21–27)

Individualized 18–24 credit concentrations may be developed with the approval of the student's adviser. Students must obtain adviser approval for individualized concentrations during the first term of the junior year.

4. Landscape Architecture (67)

11:372:322 Surveying and Mapping (3)
11:550:231-232 Introduction to Environmental Design I,II (5,5)
11:550:237 Design Graphics (2)
11:550:250 Computer-Aided Design (3)
11:550:330 History of Landscape Architecture (3)
11:550:331-332 Intermediate Landscape Architecture I,II (5,5)
11:550:340 Planting Design (4)
11:550:341 Landscape Architecture Construction I: Site Engineering (4)
11:550:342 Landscape Architecture Construction II: Materials and Structures (3)
11:550:431-432 Advanced Landscape Architecture I,II (5,5)
11:550:433 Architectural Design (3)
11:550:441 Landscape Architecture Construction III: Implementation and Practice (3)
11:776:233-234 Landscape Plants (3,3)
11:776:323 Applied Physiology of Horticultural Crops (3)

5. Landscape Industry (45)

Required courses (33)

01:198:110 Introduction to Computers and Their Application (3) or equivalent
11:372:322 Surveying and Mapping (3)
11:550:231 Introduction to Environmental Design I (5)
11:550:233 Herbaceous Plants (3)
11:550:340 Planting Design (4)
11:776:211 Introduction to Horticulture (3)
11:776:233-234 Landscape Plants (3,3)
11:776:237 Planning and Planting the Residential Environment (3)
11:776:238 Landscape Management and Maintenance (3)

Electives (12)

At least two of the following courses (6):

11:370:350 Agricultural Entomology and Pest Management (3)
11:770:301 General Plant Pathology (3)
11:770:391 Tree Diseases (1.5)
11:776:200 Modern Crop Production (3)
11:776:210 Principles of Botany (4)
11:776:242 Plant Science (3)
11:776:301 Plant Propagation (3)
11:776:304 Turfgrass Management (3)
11:776:323 Applied Physiology of Horticultural Crops (3)
11:776:401 Principles of Weed Control (3)
11:776:439 Nursery Crop Production (3)

Two of the following courses (6):

33:010:273 Principles of Accounting I (3)
33:010:274 Principles of Accounting II (3)
11:373:121 Principles and Applications of Microeconomics (3) or equivalent
11:373:231 Agribusiness Marketing I (3)
11:373:361 Land Economics (3) or 11:373:241 Agribusiness Management (3)
10:975:440 Introduction to Real Estate (3)

IX. Unspecified Electives (7–38 credits)

ENVIRONMENTAL POLICY, INSTITUTIONS, AND BEHAVIOR 374

Degree: B.S.

Coordinator: William K. Hallman

Adviser	Code	Office	Phone (Ext.)
Caron Chess	(CA)	Georges Rd. Annex	2-8795
George F. Clark	(CF)	COB 209	2-9153(311)
Peter J. Guarnaccia	(GM)	COB 202	2-9153(312)
William K. Hallman	(HC)	COB 215	2-9153(313)
David Hughes	(HF)	COB 204	2-9153(361)
Bonnie J. McCay	(ME)	COB 210	2-9153(314)
George E.B. Morren	(MM)	COB 208	2-9153(315)
Karen O'Neill	(OC)	COB 213	2-9153(316)
Thomas K. Rudel	(RH)	COB 214	2-9153(317)
Andrew P. Vayda	(VA)	COB 205	2-9153(318)
Neil D. Weinstein	(WB)	COB 206	2-9153(319)

The program in Environmental Policy, Institutions, and Behavior is concerned with the human dimensions of environmental problems. It addresses such issues as how human actions affect the environment; how societies adapt to changes in natural resource availability; and how individuals, nations, and international agencies respond to environmental hazards. Courses in the program deal with local, regional, and national differences in the use of resources; with social and environmental aspects of health and illness; with alternative strategies for environmental management; with the ethical, moral, and legal dimensions of environmental and resources issues; and with the roles of governmental and nongovernmental agencies in environmental affairs.

To understand these topics, students are exposed to a multidisciplinary view of the environment and draw upon concepts from a variety of fields, including anthropology, ecology, economics, geography, sociology, political science, and psychology.

The objectives of the curriculum are to teach basic concepts and methods from the social, biological, and physical sciences as they relate to the interactions among people and the environment; to train students in the techniques of empirical research; to provide opportunities for experiences in "real world" situations; to guide students in acquiring practical skills such as environmental assessment, professional writing, data analysis, and demographic analysis; and to broaden students' knowledge regarding environmental problems and how people cope with them.

Graduates of the program are prepared for a variety of career paths. In addition, graduates are prepared for graduate study in many social science and some natural science disciplines.

The curriculum offers four options:

Health and Environmental Policy. This option focuses on the links between the environment and health. Students learn to understand health and nutrition as both biological phenomena and products of social, behavioral, and cultural influences. Students are prepared for further training in the health professions, as well as for graduate studies in the social sciences or public health.

Individual Option. This option is for students who wish to develop their own specialized program. Their programs must focus on a particular topic, area of application, or body of knowledge concerned with environmental policy, environmental health, institutions, or behavior. Students must identify, in writing and with the aid of a faculty adviser, the specific intellectual and vocational goals of the individualized program.

International Environmental and Resource Policy. This option focuses on the political, scientific, and economic dimensions of global environmental and resource issues. Particular attention is given to the role of international institutions. Students are prepared for careers in government, industry, or nonprofit organizations, as well as for graduate or professional studies in political science, law, and international development.

United States Environmental and Resource Policy. This option encompasses the political, scientific, institutional, and economic dimensions of environmental and resource policy development in the United States. Students are prepared for careers in government, industry, or nonprofit organizations, as well as for graduate or professional studies in political science, law, and public administration.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

A. Life Sciences (8 credits)
01:119:103 Principles of Biology (4) or 01:119:101 General Biology (4)
11:704:351 Principles of Applied Ecology (4)

B. Physical Sciences (3–4 credits)
One of the following courses is recommended.
01:460:101 Introductory Geology (3)
01:460:102 Continents and Oceans (3)
01:628:200 Marine Sciences (4)
11:670:202 Elements of Climatology (3)

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

11:374:101 Introduction to Human Ecology (3)
11:374:102 Global Environmental Processes and Institutions (3)

V. Economic and Political Systems (6–9 credits)

A. Economic Systems (3–6 credits)
01:220:103 Introduction to Macroeconomics (3) or equivalent
11:373:121 Principles and Applications of Microeconomics (3) or equivalent

11:373:101 Economics, People, and Environment (3) may be substituted in the Health and Environmental Policy and Individualized options.

B. Political Systems (3 credits)
11:374:279 Politics of Environmental Issues (3)

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter.

VII. Experience-Based Education (3 credits)

One of the following:

11:374:337 Systems Approaches and Interventions in Human Ecology (3)
11:374:491 or 492 Readings and Practicum in Human Ecology (3)
an appropriate, adviser-approved placement in cooperative education
an appropriate, adviser-approved independent research project

VIII. Competence in Environmental Policy, Institutions, and Behavior (45–67 credits)

A. REQUIRED COURSES (15)

Quantitative Methods (3)

01:960:211 Statistics I (3)

Computer Competence (3)

01:198:110 Introduction to Computers and Their Application (3) or an adviser-approved equivalent

Professional Ethics (3)

11:374:201 Research Methods in Human Ecology (3)

Other Required Courses (6)

One of the following courses on population issues (3):

11:374:269 Population, Resources, and Environment (3)
10:832:417 Introduction to Population Tools and Policy (3) or equivalent

One of the following courses on human responses to the environment (3):

11:374:322 Environmental Behavior (3)
11:374:331 Culture and Environment (3)
11:374:335 Social Responses to Environmental Problems (3)

B. OPTIONS (30–52)

1. Health and Environmental Policy (30)

11:374:341 Social and Ecological Aspects of Health and Disease (3)
11:709:255 Nutrition and Health (3)

A course introducing the biological or physiological dimensions of health (3):

01:119:150 Biology, Society, and Biomedical Issues (3) or 01:146:356 Systems Physiology (3) (recommended for premedical and predental students)

A course presenting the public health perspective (3):

10:832:232 Introduction to Public Health (3) or 10:832:483 Protecting Public Health and the Environment (3)

A course on epidemiology (3):

01:375:403 Environment and Public Health: Epidemiological Aspects (3) or 10:832:355 Epidemiology (3) or adviser-approved equivalent

A course addressing the social dimensions of health issues (3):

01:070:309 Medical Anthropology (3) or 01:920:210 Sociology of Medicine and Health Care (3) or 01:830:377 Health Psychology (3)

One of the following seminars, selected in consultation with the adviser (3):

11:374:420-429 Topics in Environmental and Resource Policy (3)
11:374:430-439 Topics in Health, Food, and Environment (3)
11:709:452 Seminar in Nutrition and Behavior (3)

A planned sequence of three courses on a particular aspect of health, food, and the environment (9):

Suggested areas include public health, environmental / occupational health, the social sciences of health (anthropology, sociology, psychology), food and nutrition, aging. Written approval of the adviser is required.

2. International Environmental and Resource Policy (36–52)

11:373:363 Environmental Economics (3) or 01:220:332 Environmental Economics (3)
11:374:301 Environment and Development (3)
11:374:312 Environmental Problems in Historical and Cross-Cultural Perspective (3)
11:374:313 Environmental Policy and Institutions (3)
11:374:314 Human Dimensions of Natural Resource Management (3)
11:374:315 International Environmental Policy (3)
01:790:327 International Political Economy (3) or 01:790:319 Issues in American Foreign Policy (3)

A course that focuses on a particular geographical area (3):

This course may be selected from anthropology, geography, history, or political science.

A foreign language (0–16):

Students in the option should demonstrate proficiency in a foreign language by completing either a year of intermediate-level courses or by performance of a foreign language proficiency or placement examination.

One of the following seminars, selected in consultation with the adviser (3):

11:374:420-429 Topics in Environmental and Resource Policy (3)
11:374:430-439 Topics in Health, Food, and Environment (3)

A planned sequence of three courses on a specific environmental problem (9):

Suggested areas include sustainable agriculture, air pollution, forest conservation and management, land use, marine pollution, fisheries management, and solid waste management. Written approval of the adviser is required.

3. United States Environmental and Resource Policy (36)

11:373:363 Environmental Economics (3) or 01:220:332 Environmental Economics (3)
11:374:312 Environmental Problems in Historical and Cross-Cultural Perspective (3)
11:374:313 Environmental Policy and Institutions (3)
11:374:314 Human Dimensions of Natural Resource Management (3)
11:375:333 Environmental Law I or 11:704:320 Legal Aspects of Conservation (3)
01:790:201 American Government (3) or adviser-approved equivalent

Two of the following (6):

11:375:334 Environmental Law II (3)
01:512:323 History of the North American Environment (3)
01:790:305 Public Policy Formation (3)
01:790:341 Public Administration: American Bureaucracy (3)

01:790:342 Public Administration: Policy Making (3)
01:920:434 Social Science and Public Policy (3)
10:975:231 Social Public Policy (3)
10:975:305 American Urban Policy (3)
10:975:330 Urban Fiscal Policy (3)
or adviser-approved equivalents (6)

One of the following seminars, selected in consultation with the adviser (3):

11:374:420-429 Topics in Environmental and Resource Policy (3)
11:374:430-439 Topics in Health, Food, and Environment (3)

A planned sequence of three courses on a specific environmental problem (9):

Suggested areas include sustainable agriculture, air pollution, forest conservation and management, land use, marine pollution, fisheries management, and solid waste management. Written approval of the adviser is required.

4. Individual Option (36)

A planned sequence of courses, selected in consultation with a faculty adviser.

The student is required to develop a formal proposal for the individual option that includes the learning goals and lists the specific courses to be taken. This proposal must be approved in writing by the adviser by the beginning of the junior year. The sequence may represent a selection from the courses required for the other three options, or courses from one of the options combined with a Cook College minor (e.g., Science and Agriculture Teacher Education program), or some other well-defined program of study.

IX. Unspecified Electives (10–40 credits)

ENVIRONMENTAL SCIENCES 375

Degree: B.S.

Undergraduate Program Director: Robert L. Tate III

Adviser	Code	Office	Phone (Ext.)
Roni Avissar	(AV)	ENR 252A	2-9185
Marcos Cheney	(CJ)	ENR 233	2-9094
Robert M. Cowan	(CN)	ENR 231	2-8750
Steven J. Eisenreich	(EG)	ENR 348	2-9588
Daniel Gimenez	(GP)	ENR 248	2-9477
William Goldfarb	(GH)	ENR 238	2-1105
Kathleen I. Keating	(KD)	ENR 224	2-8012
Uta Krogmann	(KE)	ENR 246	2-9060
Jerome J. Kukor	(KU)	Foran 318	2-8165 (316)
John Reinfelder	(RG)	ENR 260	2-8013
Marie Siewierski	(SU)	ENR 240	2-9804
Peter F. Strom	(ST)	ENR 228	2-8078
Robert L. Tate	(TF)	ENR 230	2-9810
Barbara J. Turpin	(TC)	ENR 234	2-9540
Christopher Uchrin	(UA)	ENR 262	2-9444
Lily Y. Young	(YA)	Foran 308B	2-8165 (312)

The environmental sciences program is designed to provide students with an understanding of the application of the biological, chemical, and physical sciences to problems in the environment. Options emphasize the chemical, physical, or biological aspects, and electives allow specialization in the study of air, water, or soils, as well as pollution and treatment sciences, environmental or occupational health, or radiological science studies.

With the consultation of a faculty adviser, students can design a program to meet requirements for graduate study and provide the basis for a professional career in government, education, consulting, or industry.

Students also may meet the requirements for the New Jersey License Examination for Sanitarians by including the following courses in their program:

11:375:301 The Environment and Health (3)
11:375:406 Public Health Practice Administration (3)
11:375:409 Environmental Public Health: Epidemiological Aspects (3)
11:375:455,456 Internship in Environmental Health (2,2)

Recommended
11:375:421 Principles of Air Pollution Control (3)
11:375:430 Hazardous Wastes (3)

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior/Senior Colloquium (3)

II. Introductory Life and Physical Sciences

Specific courses that meet the introductory life and physical sciences requirement are listed under VIII A, required courses for competence in environmental sciences.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems

A. Economic Systems (3 credits)
11:373:101 Economics, People, and Environment (3) or equivalent
B. Political Systems (3 credits)
See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

01:355:101 Expository Writing I (3)
01:355:201 Research in the Disciplines (3) or 01:355:302 Scientific and Technical Writing (3)

VII. Experience-Based Education (2–6 credits)

11:375:431,432 Special Problems in Environmental Science/Studies (BA,BA) or 11:375:455,456 Internship in Environmental Health (2,2) or an appropriate cooperative education placement or an independent research project

VIII. Competence in the Environmental Sciences (74–90 credits)

A. REQUIRED COURSES (45–47)

Quantitative Methods (8)

See VIII B, Option requirements.

Computer Competence (3)

11:375:303 Numerical Methods in Environmental Science (3)

Professional Ethics

Ethical problems in environmental and regulatory fields are addressed throughout the program in both introductory- and advanced-level courses.

Other Required Courses (42–44)

01:119:101-102 General Biology (4,4)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
11:375:101 Introduction to Environmental Sciences (3)
11:375:201 Biological Principles of Environmental Science (3)
11:375:202 Chemical Principles of Environmental Science (3)
11:375:203 Physical Principles of Environmental Science (3)
11:704:351 Principles of Applied Ecology (4)
01:750:193-194 Physics for the Sciences (4,4) or 01:750:203-204 General Physics (3,3)
01:960:211 Introduction to Statistics (3) or equivalent

B. OPTIONS (29-43)

1. Environmental Biology (29–37)

Required courses (23-29)
01:160:209 Elementary Organic Chemistry (3) or 01:160:307-308 Organic Chemistry (4,4) (recommended for those considering graduate study)
01:640:1__,1__ CALC1 and CALC2 (4,4)

At least twelve credits from among the following (12-13):

11:115:301 Introductory Biochemistry (3)
11:375:301 Environmental Health (3)
11:375:312 Environmental Microbiology Laboratory (2)
11:375:407 Environmental Toxicology (3)
11:375:411 Pollution Microbiology (3)
11:375:453 Soil Ecology (3)
01:447:390 General Microbiology (4) or equivalent course with laboratory

Electives (6–7)
11:375:251 Soils and Water (4)
11:375:302 Water and Wastewater Treatment (3)
11:375:307 Elements of Solid Waste Management and Treatment (3)
11:375:333-334 Environmental Law I,II (3,3)
11:375:408 Treatment Plant and Receiving Water Surveys (4)
11:375:409 Environmental Statement and Impact (3)
11:375:423 Environmental Fate and Transport (3)
11:375:444 Water Chemistry (3)
11:375:445 Problems in Aquatic Environments (3)
an adviser-approved equivalent course

2. Environmental Chemistry (33–35)

Required courses (27–28)
01:160:307-308 Organic Chemistry (4,4)
11:375:310 Analytical Chemistry Laboratory (2)
11:375:423 Environmental Fate and Transport (3)
11:375:444 Water Chemistry (3)
01:640:1__,1__ CALC1 and CALC2 (4,4)

At least one of the following courses (3-4):

11:127:413 Unit Processes for Bioenvironmental Engineering I (3)
01:160:323-324 Physical Chemistry (3,3)
11:375:421 Air Pollution (3)
11:375:444 Water Chemistry (3)
11:375:451 Soil Chemistry (4)
01:640:252 Elementary Differential Equations (3)

Electives (6–7)
11:375:251 Soils and Water (4)
11:375:302 Water and Wastewater Treatment (3)
11:375:307 Solid Waste Management (3)
11:375:333-334 Environmental Law I,II (3,3)
11:375:408 Treatment Plant and Receiving Water Surveys (4)
11:375:409 Environmental Statement and Impact (3)
11:375:430 Hazardous Waste Management (3)
11:375:453,454 Soil Ecology I,II (3,3)
an adviser-approved equivalent course

3. Environmental Physics (31–38)

Required courses (25–32)
01:160:209 Elementary Organic Chemistry (3) or 01:160:307-308 Organic Chemistry (4,4)
11:375:345 Environmental Transport Phenomena (3)
01:640:1__,1__ CALC1 and CALC2 (4,4)
01:640:251 Multivariable Calculus (4) [01:640:252 Elementary Differential Equations (3) is recommended but not required.]
11:670:323 Thermodynamics of the Oceans and Atmosphere (3)

A measurements laboratory, including Quality Assurance / Quality Control (1-3), such as:

11:127:423 Bioenvironmental Engineering Unit Processes Laboratory I (1)
11:375:422 Air Sampling and Analysis (3)
11:375:460 Soil and Water Physics Laboratory (2)
11:375:494 Radioisotope Laboratory (2)

At least one of the following courses in physical processes (3):

11:127:413 Unit Processes in Bioenvironmental Engineering I (3)
11:127:474 Air Pollution Engineering (3)
11:375:322 Energy Technology and Environmental Impact (3)
11:375:421 Air Pollution (3)
11:375:423 Environmental Fate and Transport (3)
11:375:426 Introduction to Health Physics (3)
11:375:459 Physical Properties of Soils (3)
11:670:431 Physical Meteorology (3)

Electives (6)
11:127:414 Unit Processes in Bioenvironmental Engineering II (3)
11:372:442 Applied Principles of Hydrology (3)
11:375:333-334 Environmental Law I,II (3,3)
11:375:409 Environmental Statement and Impact (3)
11:375:422 Air Sampling and Analysis (3)
11:375:423 Environmental Fate and Transport (3)

11:375:425 Radiation and Environment (3)
11:375:430 Hazardous Waste Management (3)
11:670:201 Elements of Meteorology (3)
11:670:324 Dynamics of the Oceans and Atmosphere (3)
an adviser-approved equivalent course

4. Applied Environmental Science (37–43)

Required courses (28–34)
01:160:209 Elementary Organic Chemistry (3) or 01:160:307-308 Organic Chemistry (4,4) [recommended for those considering graduate study]
11:375:302 Elements of Water and Wastewater Treatment (3)
11:375:307 Solid Waste Management and Treatment (3)
11:375:310 Analytical Environmental Chemistry Laboratory (2) or 11:375:312 Environmental Microbiology Laboratory (2) or 11:375:422 Air Sampling and Analysis (3)
11:375:333 Environmental Law I (3)
11:375:411 Pollution Microbiology (3) or 11:375:453 Soil Ecology (3)
11:375:430 Hazardous Wastes (3)
01:447:390 General Microbiology (4) or equivalent
01:640:1__ CALC1 (4)

Electives (9)

At least 9 credits in one of the following concentrations:

Concentration in Pollution Science

11:375:251 Soils and Water (4)
11:375:334 Environmental Law II (3)
11:375:399 Hazardous Waste Operation and Emergency Response (1)
11:375:421 Air Pollution (3)
11:375:423 Environmental Fate and Transport (3)
11:375:434 Principles of Industrial Hygiene (3)
11:375:444 Water Chemistry (3)
11:375:4__ Pollution Prevention, Environmental Assessments, and Industrial Ecology (3)
01:640:1__ CALC2 (4)
11:670:201 Elements of Meteorology (3) or 11:670:202 Elements of Climatology (3)
11:670:431 Physical Meteorology (3)
an additional environmental science laboratory (2–3)

Concentration in Environmental Health

11:375:251 Soils and Water (4)
11:375:301 Environment and Health (3)
11:375:334 Environmental Law II (3)
11:375:336 Occupational and Community Noise Control (3)
11:375:399 Hazardous Waste Operation and Emergency Response (1)
11:375:403 Environmental and Public Health Epidemiology (3)*
11:375:406 Public Health Practice and Administration (3)*
11:375:407 Environmental Toxicology (3)
11:375:421 Air Pollution (3)
11:375:434 Principles of Industrial Hygiene (3)
11:375:435 Introduction to Occupational Safety and Health (3)
11:375:455,456 Internship in Public Health (2,2)*

Concentration in Environmental Science Policy

11:375:231 Fundamentals of Environmental Planning (3) or 10:975:306 Introduction to Urban and Environmental Planning (3)
11:373:363 Environmental Economics (3)
11:374:301 Environment and Development (3)
11:374:313 Environmental Policy and Institutions (3)
11:374:315 International Environmental Policy (3)
11:374:322 Environmental Behavior (3)
11:374:335 Social Responses to Environmental Problems (3)
11:374:341 Social and Ecological Aspects of Health and Disease (3)
11:375:334 Environmental Law II (3)
11:375:403 Environmental and Public Health Epidemiology (3) or 11:375:406 Public Health Practice and Administration (3)
11:790:305 Public Policy Formation (3) or 01:790:341 Public Administration: U.S. Bureaucracy (3) or 01:790:342 Public Administration: Policy Making (3)
01:790:362 International Law (3)

IX. Unspecified Electives (8–23 credits)

EXERCISE SCIENCE AND SPORT STUDIES 377

Degree: B.S.

Chairperson: David A. Feigley

Adviser	Code	Office	Phone (Ext.)
Neil Dougherty	(DN)	Loree Gym 144	2-8673
David A. Feigley	(FR)	Loree Gym 107	2-9538
Joanne Hunt	(HW)	Loree Gym 113	2-1130
Susan Kaplowitz	(KH)	Loree Gym 110	2-9525
Linda Sharkey	(SS)	Loree Gym 112	2-8672
Robyn Snyder	(S4)	Loree Gym 111	2-8664
Norman Walensky	(WS)	Loree Gym 109	2-8669

Offered in cooperation with the Department of Exercise Science and Sport Studies (Faculty of Arts and Sciences), this program provides a strong science foundation that emphasizes preparation for further specialized study. Career opportunities include biomechanics, exercise physiology, fitness management, prephysical therapy, athletic training, and sports medicine.

Exercise Science: This option provides students with a strong science foundation focusing on human anatomy and physiology, with an emphasis on preparation for graduate study, medicine, physical therapy, certification in athletic training, or entrance into the job market.

Sport Management: This option is designed to meet the growing interest in the management of sports facilities and organizations and high school, collegiate, and professional sport programs.

A general option is available for students electing exercise science as a double major or second degree program.

* Required for New Jersey license examination for sanitarians.

Departmental Honors

To qualify for departmental honors upon graduation, a student must have attained a cumulative grade-point average of at least 3.4 at the end of the junior year, with a cumulative average of at least 3.4 in all courses required for the major. No later than the first week of the senior year, students must apply formally to the department chairperson for admission to the program. In the fall term, students enroll in an honors seminar, in which a research project is designed and developed. In the spring term, students whose projects have been approved register for Honors Research in Exercise Science and carry out the research project. Both terms must be successfully completed to receive departmental honors recognition.

Cook College students who qualify for departmental honors may undertake the George H. Cook Scholars Program in conjunction with departmental honors.

Entry Requirements for the Major

To be admitted to the program, students must have a cumulative grade-point average of at least 2.0 and have completed at least three of the courses listed under VIII A. Students then will be interviewed. The student's general academic record is evaluated at this time to determine if the student will be able to meet successfully all of the curriculum and grade requirements of the program.

Degree Requirements for the Major

In order to graduate with a degree in exercise science and sport studies, students must achieve a grade-point average of at least 2.0 in all required courses.

Cook College students also must complete a minor or certificate program offered by the Cook College faculty.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

Courses that meet the introductory life and physical sciences requirement are listed under VIII B, Option requirements.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

01:377:324 Movement Experiences for Individuals with Disabilities (3) and an additional course from those suggested in the Degree Requirements chapter

V. Economic and Political Systems

A. Economic Systems (3 credits)
Courses that meet the economic systems requirement are listed under VIII B, Option requirements.

B. Political Systems (3 credits)
See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

01:355:101 Expository Writing (3) and at least one intermediate or advanced course suggested in the Degree Requirements chapter.

01:355:303 Writing for Business and the Professions (3) is required in the Sport Management option.

VII. Experience-Based Education (3–6 credits)

01:377:490 Exercise Science and Sport Studies Internship. Seniors in the exercise science option must complete a 3- or 6-credit internship. Seniors in the sport management option must complete 6 credits of internship.

To be eligible for the internships, students must have completed 90 credits with a cumulative grade-point average of at least 2.0 and have completed at least 20 credits in the major with a grade-point average of 2.0 in all option requirements.

VIII. Competence in Exercise Science and Sport Studies (70.5–100.5 credits)

A. REQUIRED COURSES (34.5–38.5)

Quantitative Methods (3–7)

01:640:1__ precalculus (4) or placement in calculus (one term of calculus is required in the exercise science option)
01:377:275 Statistical Approaches to Exercise Science (3)

Computer Competence (3)

01:198:110 Introduction to Computers and Their Application (3) or equivalent

Professional Ethics (3)

01:377:421 Professional Seminar (3) or 01:377:301 Sport Psychology (3) or 01:377:305 Sport Sociology (3)

Other Required Courses (25.5)

01:377:140 Foundations of Exercise Science and Sport Studies (1.5)
01:377:406 Management in Exercise Science and Sport (3)
01:830:101 General Psychology (3)

Cook College students majoring in exercise science and sport studies also must complete a Cook College minor or certificate program (18).

B. OPTIONS (36–62)

1. Exercise Science (62)

Required courses (53)
01:119:101-102 General Biology (4,4)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:146:356 Systems Physiology (3)
01:146:357 Systems Physiology Laboratory (1)
01:373:101 Economics, People, and Environment (3)
01:377:213 Functional Human Anatomy (4)
01:377:303 Neuromechanical Kinesiology (3)
01:377:310 Motor Learning (3)

01:377:410 Applied Fitness Techniques (3)
01:377:452 Exercise Physiology (3)
01:377:453 Exercise Physiology Laboratory (1)
01:640:135 Calculus I or equivalent (4)
01:750:193,194 Physics for the Sciences (4,4) or equivalent (including a laboratory)
01:830:340 Principles of Abnormal Psychology (3)

Electives (6)
01:377:___ at least two additional courses, one of which must be at the 300 or 400 level

2. Sport Management (48–52)

33:010:272 Introduction to Accounting (3)
01:119:103 Principles of Biology (4) or 01:119:101-102 General Biology (4,4)
__:___:___ a course in the physical sciences
04:189:101 Introduction to Communication (3) or 04:192:201 Interpersonal Communication Processes (3) or 04:192:313 Message Design for Public Relations and Organizational Communication (3) or 33:620:300 Principles of Management (3)
04:189:102 Introduction to Media Systems and Processes (3)
04:192:380 Public Speaking (3)
01:220:103 Introduction to Macroeconomics (3)
11:373:121 Principles and Applications of Microeconomics (3) or 01:220:102 Introduction to Microeconomics (3)
11:373:231 Agribusiness Marketing (3) or 33:630:301 Principles of Marketing (3)
01:377:301 Sport Psychology (3)
01:377:305 Sport Sociology (3)
01:377:320 Risk Management in Exercise Science and Sport (3)
01:377:323 Sport and the Law (3)
01:830:373 Organizational and Personnel Psychology (3)
01:920:101 Introduction to Sociology (3)

Electives (6)
01:377:___ Exercise science electives (3,3)

3. General Option (36)

An additional general option is available for Cook College students electing a double-major in exercise science and a Cook College program (e.g., nutritional sciences) or a dual-degree program. This option must be developed in consultation with a departmental chairperson.

IX. Unspecified Electives (1.5–34.5 credits)

FOOD SCIENCE 400

Degree: B.S.

Undergraduate Program Director: Mukund Karwe

Adviser	Code	Office	Phone (Ext.)
George M. Carman	(CS)	Food Science 203	2-9611(217)
Mukund Karwe	(KG)	CAFT 221	2-9611(224)
Tung-Ching Lee	(LL)	CAFT 321-B	2-9611(236)
Richard D. Ludescher	(LM)	Food Science 311	2-9611(231)
Karl Matthews	(MQ)	Food Science 203	2-9611(219)
Karen M. Schaich	(SZ)	Food Science 315A	2-9611(233)
Beverly J. Tepper	(TJ)	Food Science 207	2-9611(221)

Food science is the study of the chemical, biological, and engineering aspects of food and its components. While this curriculum applies principles acquired in biology, chemistry, physics, and mathematics to foods, attention also is given to the development of important problem-solving skills, giving students experience in reasoning and the use of scientific and mathematical techniques. Attention also is devoted to current issues, innovations, and ethical issues in foods and food processing. Finally, students are given an opportunity to utilize their creative abilities in a course devoted to development of new foods and food products.

The program offers three options. Food biological technologies and food chemistry are recommended for students seeking careers in basic or applied food research, as well as for those preparing for graduate or professional study in the sciences. The food operations / management option directly prepares students for careers in the food industry.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

Specific courses that fulfill the introductory life and physical sciences requirement are listed under VIII A and B, required courses for competence in food science.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems

A. Economic Systems (3–6 credits)
See suggested courses in the Degree Requirements chapter. Both 11:373:121 Principles and Applications of Microeconomics (3) and 01:220:103 Introduction to Macroeconomics (3) or equivalents are required of students in the Food Operations / Management option.

B. Political Systems (3 credits)
See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter.

VII. Experience-Based Education (3 credits)

Students are encouraged to seek employment in the food industry, particularly during the summer between junior and senior years. Credit may be obtained for an internship through the Cook College cooperative education program. Students also may fulfill this requirement by working in the laboratory of a professor in the department (11:400:493,494 Research Problems in Food Science).

An additional adviser-approved cooperative education placement may be substituted for an elective course in all options.

VIII. Competence in Food Science (92–100.5 credits)

A. REQUIRED COURSES (71–75.5)

Quantitative Methods (11)

01:640:135 Calculus I (4) and 01:640:136 Calculus II or 01:640:138 Calculus II for the Biological Sciences (4)
01:960:401 Basic Statistics for Research (3) or equivalent

Computer Competence (0–3)

01:198:110 Introduction to Computers and Their Application (3) or equivalent or appropriate experience

Professional Ethics (2)

11:400:413 Food Law (1)
11:400:414 Food Science Forum (1)

Other Required Courses (58–59.5)

11:115:301 Introductory Biochemistry (3) and 11:115:313 Introductory Biochemistry Laboratory (1) or 11:115:403 General Biochemistry (3) and 11:115:413 Experimental Biochemistry (2.5)
11:126:394 Applied Microbiology (4)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
11:400:104 Food and Health (3) or equivalent introductory course in nutrition
11:400:201 Principles of Food Science (3)
11:400:202 Principles of Food Science Laboratory (2)
11:400:304 Food Analysis (4)
11:400:401 Introduction to Food Engineering Fundamentals (4)
11:400:402 Introduction to Food Engineering Processes (4)
11:400:411 Food Chemistry (3)
11:400:412 Food Product Development (3)
11:400:419 Food Physical Systems (3)
01:447:390 General Microbiology (4)
01:750:193-194 Physics for the Sciences (4,4)

B. OPTIONS (21–25)

1. Food Biological Technologies (25)

Required courses (19)
01:119:101-102 General Biology (4,4)
01:160:307-308 Organic Chemistry (4,4)
01:160:311 Organic Chemistry Laboratory (2)
11:400:416 Food Biotechnology Topics (1)

Electives (6)
11:115:404 General Biochemistry (3)
11:115:412 Protein and Enzyme Chemistry (3)
11:115:414 Experimental Biochemistry (2.5)
11:115:421 Biochemistry of Cancer (3)
11:115:422 Biochemical Mechanisms of Toxicology (3)
11:115:452 Biochemical Separations (3)
11:126:406 Plant Gene Transfer (4)
11:126:413 Plant Molecular Biology (3)
11:126:427 Methods in Recombinant DNA Technology (4)
11:126:481 Molecular Genetics (3)
11:126:483 Molecular Genetics Laboratory (3)
01:146:474 Immunology (3)
01:146:475 Immunology Laboratory (1)
11:400:405 Sensory Evaluation of Foods (3)
01:447:380 Genetics (4)
11:776:401 Post-Harvest Physiology of Horticultural Crops (3)
11:776:452 Plant Tissue Culture (3)

2. Food Chemistry (21)

Required courses (15)
01:119:103 Principles of Biology (4) or equivalent
01:160:307-308 Organic Chemistry (4,4)
01:160:311 Organic Chemistry Laboratory (2)
11:400:418 Topics in Food Chemistry (1)

Electives (6)
11:115:404 General Biochemistry (3)
11:115:410 Physical Biochemistry (3)
11:115:412 Protein and Enzyme Chemistry (3)
11:115:414 Experimental Biochemistry (2.5)
11:115:422 Biochemical Mechanisms of Toxicology (3)
11:115:452 Biochemical Separations (3)
11:126:413 Plant Molecular Biology (3)
01:160:251 Analytical Chemistry Laboratory (2.5)
11:400:405 Sensory Evaluation of Foods (3)

3. Food Operations/Management (23)

Required courses (14)
01:119:103 Principles of Biology (4) or equivalent
01:160:209 Elementary Organic Chemistry (3) or equivalent
01:160:211 Elementary Organic Chemistry Laboratory (1) or equivalent
11:400:405 Sensory Evaluation of Foods (3)
11:400:421 Hazard Control of Food Processes (3)

Electives (9)
11:373:231 Agribusiness Marketing I (3)
11:373:241 Agribusiness Management (3)
11:373:331 Agribusiness Marketing II (3)
11:373:341 Management: Human Systems Development (3)
11:373:473 Public Policy and Agribusiness Firms (3)
11:400:410 Nutraceuticals, Nutrition, and Food Processing (3)
14:540:333 Quality Control (3)
01:960:___ statistics (excluding 960:211 and 401) (3)

IX. Unspecified Electives (0–4 credits)

GEOGRAPHY 450

Degree: B.A.

Chairperson: David A. Robinson

Adviser	Code	Office	Phone (Ext.)
David A. Robinson	(RB)	Lucy Stone Hall B230	5-4103

Geography combines aspects of natural and social science to analyze processes that influence, and to resolve problems that arise from, human use or modification of natural and built environments. Offered in cooperation with the Department of Geography (Faculty of Arts and Sciences), the program provides skills for direct entry to jobs in public agencies and private firms concerned with a wide range of environmental and social research, planning, development, and management activities.

The program in geography has no formal options, but students are strongly encouraged to select electives from one of the following areas of emphasis: environmental systems and global change; environment and society; urban and international restructuring.

Degree Requirements for the Major

Cook College students majoring in geography also must complete a minor or certificate program offered by the Cook College faculty.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences (7 credits)

See suggested courses in the Degree Requirements chapter. Selection of courses may be determined by the student's choice of minor or certificate program.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

01:450:205 World Cultural Regions (3)
an additional course from those suggested in the Degree Requirements chapter

V. Economic and Political Systems (6 credits)

See suggested courses in the Degree Requirements chapter. Selection of courses may be determined by the student's choice of minor or certificate program.

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter.

VII. Experience-Based Education (3 credits)

01:450:485,486 Internship in Geography (BA,BA) or 01:450:491,492 Geographic Problems (3,3) or equivalent independent research project or appropriate placement in cooperative education

VIII. Competence in Geography (63–64 credits)

A. REQUIRED COURSES (48–49)

Quantitative Methods (3)

01:960:211 Statistics I (3) or equivalent

Computer Competence (3)

01:450:320 Spatial Data Management and Analysis (3)

Professional Ethics (3)

01:730:250 Environmental Ethics (3)

Other Required Courses (21–22)

01:450:101 Earth Systems (3)
01:450:102 Transforming the Global Environment (3)
01:450:103 Human Geography: Space, Place, and Location (3)
01:450:330 Geographical Methods (3)
01:450:470 History and Theory of Geography (3)

One additional methods course, selected from the following:

01:450:321 Satellite Remote Sensing of Earth Systems (3)
01:450:322 Geographic Information Systems (3)
01:450:355 Principles of Cartography (4)
01:450:356 Advanced Cartography (4)
01:450:357 Spatial Data Representation and Display (3)

One regional geography course elected from the following:

01:450:332 Geography of Newly Independent States and Eastern Europe (3)
01:450:334 Western Europe (3)
01:450:335 Caribbean Borderlands (3)
01:450:336 Latin America (3)
01:450:338 Africa (3)
01:450:341 South Asia and the Middle East (3)
01:450:342 East Asia (3)
a minor or certificate program offered by Cook College (18)

B. ELECTIVES (15)

At least 15 additional credits, with at least three courses at the 300 or 400 level. (See Geography 450 in the Programs of Study for Liberal Arts Students chapter for a complete listing of courses.) Where appropriate, majors are encouraged to substitute independent research projects under faculty supervision for up to 6 elective credits.

IX. Unspecified Electives (25–26 credits)

GEOLOGICAL SCIENCES 460

Degree: B.S.

Chairperson: Kenneth G. Miller

Adviser	Code	Office	Phone (Ext.)
Gail M. Ashley	(AG)	Wright Labs 233B	5-2221
Mark D. Feigenson	(FK)	Wright Labs 339A	5-3149
Claude T. Herzberg	(HH)	Wright Labs 344	5-3154
Roger K. Hewins	(HG)	Wright Labs 343	5-3232
Dennis V. Kent	(KL)	Wright Labs 243A	5-6974
George R. McGhee	(MR)	Wright Labs 242	5-3832
Kenneth G. Miller	(MN)	Wright Labs 246	5-3622
Peter Rona	(RN)	IMCS 204E	2-6555 (241)
Roy W. Schische	(SB)	Wright Labs 234	5-3142
Robert Sheridan	(SE)	Wright Labs 250	5-2015
Robert M. Sherrell	(SI)	IMCS 211D	2-6555 (252)
Martha Withjack	(WL)	Wright Labs 243A	5-6974
James Wright	(WJ)	Wright Labs 238	5-5722

Offered in cooperation with the Department of Geological Sciences (Faculty of Arts and Sciences), this curriculum provides students with the principles that govern the processes that operate within and on the earth. It offers flexibility in the preparation for career objectives, which might include participation in the environmental / hydrogeology area, marine geology, quaternary geology, classical geology, or preparation for graduate studies.

Students planning professional careers in geology, including graduate study, should take at least two additional courses in mathematics and would benefit from additional courses in physics, chemistry, or biology. A list of suggested courses is available in the department office. For more information, see the geological sciences listing in the Programs of Study for Liberal Arts Students section.

Degree Requirements for the Major

Students electing the geology option of the geological sciences major also must complete a minor or certificate program offered by the Cook College faculty.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

A. Life Sciences
Specific courses that fulfill the life sciences requirement are listed under VIII B, Option requirements.

B. Physical Sciences (17 credits)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:750:203-204 General Physics (3,3)
01:750:205-206 General Physics Laboratory (1,1)

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems (6 credits)

See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter.

VII. Experience-Based Education (3 credits)

01:460:305 Field Geology (3)

VIII. Competence in the Geological Sciences (55–69 credits)

A. REQUIRED COURSES (23–24)

Quantitative Methods (8)

01:640:1__ ,1__ CALC1 and CALC2 (4,4)

Computer Competence (3–4)

01:198:221 Numerical Problems and Computer Programming (4) or 01:460:418 Geological Modeling (3)

Professional Ethics

Ethical considerations for professional geologists are addressed throughout the advanced courses.

Other Required Courses (12)

01:460:101 Introductory Geology I: Physical (3)
01:460:103 Introductory Geology Laboratory (1)
01:460:307 Structural Geology (4)
01:460:412 Geophysics (4)

B. OPTIONS (32–45)

1. Environmental Geology (32)

01:119:101-102 General Biology (4,4)
01:160:209 Elementary Organic Chemistry (3)
11:375:201 Biological Principles of Environmental Science (3)
11:375:202 Chemical Principles of Environmental Science (3)
11:375:203 Physical Principles of Environmental Science (3)
01:460:330 Sedimentary Geology (4)
01:460:331 Fundamentals of Mineralogy and Petrology (4)
01:460:428 Hydrogeology (4)

2. Geology (45)

01:119:103 Principles of Biology (4) or equivalent
01:460:102 Introductory Geology II: Historical (3)
01:460:301 Mineralogy (4)
01:460:302 Petrology (4)
01:460:303 Paleontology (4)
01:460:340 Sedimentology (4)
01:460:341 Stratigraphy (4)

A minor or certificate program offered by the Cook College faculty also must be completed (18).

IX. Unspecified Electives (10–24 credits)

INDEPENDENT MAJOR 554

Degree: B.S. or B.A.

Coordinator: Thomas G. Matro: Loree Annex, Room 008, 932-9162

Cook College students may elect to design an independent major program if none of the existing undergraduate programs satisfies their needs. Students considering submitting a proposal for an independent major should initially consult the program coordinator for instructions.

Proposals are submitted through the coordinator to the college's Curriculum and Educational Policy Committee, from which they are forwarded to the Cook College faculty for approval. Proposals must include a rationale for the program, the degree sought, a list of courses taken (and to be taken) in fulfillment of the college's curriculum requirements, and the signature of a faculty member who has agreed to serve as adviser. Students ordinarily should submit proposals prior to the beginning of the junior year.

JOURNALISM AND MEDIA STUDIES 571

Degree: B.A.

Coordinator: Barbara Munson Goff

Adviser	Code	Office	Phone (Ext.)
Marsha Bergman	(BX)	SCILS, Room 108	2-8567
Barbara M. Goff	(GB)	Loree 038	2-9266
Steven A. Miller	(MK)	SCILS, Room 102	2-1515
Linda Steiner	(SX)	SCILS, Room 108	2-8567

Offered by Cook College in cooperation with the Department of Journalism and Media Studies (School of Communication, Information and Library Studies), the curriculum offers a dynamic program of skills and conceptual courses devoted to the practice and social impact of journalism. Course offerings enhance understanding of the historical, legal, political, and critical dimensions of journalism as practiced in a free and democratic society. The program, as offered through Cook College, provides an opportunity for students to develop expertise that will contribute to the public understanding and discussion of issues in the life sciences and environment.

While all majors in journalism and media studies are considered news-editorial students, they may focus their course work in print, broadcast, or the media studies area. Students also may elect to pursue a research thesis and / or internship.

Journalism is a 30-credit major. Students are encouraged to pursue further study of the arts and sciences and more specialized areas of expertise. Cook College students are further required to complete a minor or certificate program offered by the Cook College faculty. Communication and Information Studies courses (04:189) are not included in the 30-credit limit on journalism courses (04:571).

Entry Requirements

To declare a major in journalism and media studies, students must apply for admission to the School of Communication, Information and Library Studies during the term in which they are completing 04:189:101 and 04:189:102. Students also must have successfully completed a term of expository writing (01:355) prior to applying. A personal statement and transcript are necessary to complete the application.

Degree Requirements for the Major

In order to graduate with a degree in journalism and media studies, students must achieve a grade of C or better in all journalism and media studies courses taken for the major. See the Journalism and Media Studies listing in the School of Communication, Information and Library Studies chapter of this catalog for additional department policies.

Cook College students also must complete a minor or certificate program offered by the Cook College faculty.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences (7 credits)

See suggested courses in the Degree Requirements chapter. Selection of courses may be determined by the student's choice of minor or certificate program.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

04:571:334 Women, Minorities, and the Mass Media (3)
an additional course from those suggested in the Degree Requirements chapter

V. Economic and Political Systems (6 credits)

See suggested courses in the Degree Requirements chapter. Selection of courses may be determined by the student's choice of minor or certificate program.

VI. Oral and Written Communication

Specific courses that fulfill the oral and written communication requirement are listed under VIII A, required courses for competence in journalism and media studies.

VII. Experience-Based Education (0–3 credits)

The journalism internship or journalism thesis option fulfills this requirement. Other students may fulfill the requirement with an appropriate, adviser-approved placement in cooperative education or independent research project.

VIII. Competence in Journalism and Media Studies (51–60 credits)

A. REQUIRED COURSES (45)

Quantitative Methods (3)

01:960:___ one term of statistics

Computer Competence

Students receive computer instruction in the journalism skills courses.

Professional Ethics (3)

04:571:480 Media Law and Responsibility (3)

Other Required Courses (39)

04:189:101 Introduction to Communication and Information Systems and Processes (3)
04:189:102 Introduction to Media Systems and Processes (3)
01:355:101 Expository Writing I (3) or equivalent
04:571:324 News Reporting and Writing (3)
04:571:325 News Writing and Editing for Print Media (3) or 04:571:310 Broadcast News Writing (3)

Two of the following conceptual courses, at least one of which must be at the 300 or 400 level (6):

04:571:278 News Media and Government in America (3)
04:571:334 Women, Minorities, and the Mass Media (3)
04:571:335 Mass Communication and the American Image (3)

04:571:350 Development of Mass Media (3)
04:571:379 Media and Politics (3)
04:571:420 Global News (3)
04:571:423 Communication Law (3)
04:571:458 Seminar: Mass Media, Government, and Politics (3)
04:571:464 Mass Media Management (3)
04:571:470 Critical Analysis of News (3)
04:571:475 International Media (3)

A minor or certificate program offered by Cook College (18) also must be completed.

B. OPTIONS (6–15)

1. General (15)

Students may complete the program with fifteen additional credits of journalism and media studies (04:571) courses.

2. Journalism Internship (6)

A professional internship is strongly recommended for students considering careers in journalism and mass media. The internship is limited to students who have completed five courses in journalism, three of which must be in skills courses, with a grade of C or better, have completed at least 75 degree credits with a cumulative grade-point average of 2.5 or better, and have achieved a 2.75 grade-point average in all journalism and media studies courses.

Required courses (6)
04:571:394 Internship in Journalism and Media Studies (BA)

3. Honors Program (6)

Journalism and media studies majors with a cumulative grade-point average of 3.2 or better may apply for the department's honors program. The honors program involves two formal terms of work: an honors seminar (04:571:489), typically in the junior year, and an honors project or thesis (04:571:490) in the senior year. The thesis entails independent original research (qualitative or quantitative).

Students may participate simultaneously in the honors program of their college (the George H. Cook Scholars Program).

IX. Unspecified Electives (35–47)

Unspecified electives may be taken in any area except journalism and media studies.

MARINE SCIENCES 628

Degree: B.S.

Coordinator: Judith P. Grassle

Adviser	Code	Office	Phone (Ext.)
Kenneth W. Able	(AK)	Marine Field Station	609/296-5260(230)
Scott M. Glenn	(GK)	IMCS Room 111C	2-6555(544)
Judith P. Grassle	(GE)	IMCS Room 309C	2-6555(351)
Dale B. Haidvogel	(HD)	IMCS Room 214D	2-6555(256)
Lee Kerkhof	(KC)	IMCS Room 305C	2-6555(335)
James R. Miller	(MJ)	IMCS Room 111D	2-6555(545)
Kenneth G. Miller	(MN)	Wright Labs 246	5-3622
Karl F. Nordstrom	(NC)	IMCS Room 103B	2-6555(502)
Norbert P. Psuty	(PB)	IMCS Room 103D	2-6555(506)
Oscar Schofield	(SH)	IMCS Room 114C	2-6555(548)
Robert M. Sherrell	(S1)	IMCS Room 211D	2-6555(252)
Gary L. Taghon	(TG)	IMCS Room 114D	2-6555(547)

Marine science is the study of the marine environment and its interactions with the earth, the biosphere, and the atmosphere. It is therefore an interdisciplinary science requiring a knowledge of the principles of physics, geology and geophysics, mathematics, chemistry, and biology. A major in marine sciences provides students with a broad curriculum in the sciences, which demonstrates how the different disciplines can be brought to bear on understanding marine processes and managing ocean resources wisely.

The major prepares students for graduate work in oceanography or one of the basic disciplines, civil service careers in environmental management, employment in the many applied environmental and marine science fields, or teaching in the secondary schools.

The marine science courses emphasize improvement of oral and written communication skills and facility in accessing, reading, and understanding the current primary literature in marine sciences. Many of the courses include hands-on, experiential learning in the laboratory or the field. Students also are required to complete the experience-based education requirement with at least one term or summer of supervised, independent research.

The program includes the following options:

Marine Biology/Biological Oceanography. This option prepares students for professional opportunities or graduate study in oceanography or the biological sciences. Concentrations within the option permit students to focus on different levels of biological organization: at the molecular, cellular, organismic, community, or ecosystem level. Depending on their choice of electives, students also may fulfill the requirements of a major in the biological sciences or natural resource management.

Marine Chemistry. This option prepares students for professional opportunities or graduate study in oceanography or chemistry. Students who elect 6.5 additional credits of chemistry and 3 additional credits of mathematics also may fulfill the requirements of a major in chemistry.

Marine Geology. This option prepares students for graduate study in oceanography, geology, environmental science, or an allied field, as well as for immediate employment. Students electing three additional courses in geology also may fulfill the requirements for the major in geology.

Physical Oceanography. This option prepares students for graduate study in physical oceanography, meteorology, fluid dynamics, or a related field, as well as immediate employment in environmental agencies or consulting firms and technical positions in marine sciences.

Entry Requirements for the Major

To declare a major in marine sciences, students must have a cumulative grade-point average of 2.0.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior/Senior Colloquium (3)

II. Introductory Life and Physical Sciences

See VIII A below.

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems (6–9 credits)

See suggested courses in the Degree Requirements chapter. (Students in the Marine Biology / Biological Oceanography option taking a resource economics course must fulfill this requirement with both micro- and macroeconomics.)

VI. Oral and Written Communication (6 credits)

01:355:101 Expository Writing I (3)
01:355:302 Scientific and Technical Writing (3)

VII. Experience-Based Education (6 credits)

11:628:497,498 Special Problems in Marine Sciences (BA,BA) or an equivalent independent research or cooperative education placement which includes both oral and written presentations of scientific results.

VIII. Competence in Marine Sciences (80–88 credits)

A. REQUIRED COURSES (30)

Quantitative Methods

See VIII B, Option requirements.

Computer Competence (3)

01:198:110 Introduction to Computers and Their Application (3) or 14:440:127 Computers for Engineers (3) or equivalent

Professional Ethics

Ethical issues in marine sciences are addressed throughout the program in both introductory and advanced courses, especially within the framework of the experience-based education requirement.

Other Required Courses (27)

01:119:101-102 General Biology (4,4)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
11:628:200 Marine Sciences (4)
11:628:364 Oceanographic Methods and Data Analysis (3)
01:960:401 Basic Statistics for Research (3)

B. OPTIONS (50–58)

1. Marine Biology/Biological Oceanography (50–56)

Required courses (47–53)
01:160:307-308 Organic Chemistry (4,4) or 01:160:315-316 Principles of Organic Chemistry (4,4) or 01:160:209 Elementary Organic Chemistry (3) and 01:694:301 / 11:115:301 Introductory Biochemistry (3) and 01:694:313 / 11:115:313 Introductory Biochemistry Laboratory (1)
01:447:380 Genetics (4) or 11:776:305 Plant Genetics (4)
11:628:462 Biological Oceanography (4)
11:628:472 Chemical Oceanography (4) or 11:628:451 Physical Oceanography (3)
01:640:1__,1__ two terms of calculus (4,4)
11:704:351 Principles of Applied Ecology (4)
01:750:193-194 Physics for the Sciences (4,4) or 01:750:203-204 General Physics (3,3) and 01:750:205-206 General Physics Laboratory (1,1)

One of the following (3–5):

01:146:356 Systems Physiology (3) and 01:146:357 Systems Physiology Laboratory (2)
01:447:498 Bacterial Physiology (3)
11:704:360 Animal Physiological Ecology (3)
11:776:382 Plant Physiology (4)

One of the following (3–4):

01:447:390 General Microbiology (4)
11:628:321 Ichthyology (4)
11:628:418 Marine Microbiology (4)
11:704:323 Ornithology (4)
11:704:324 Invertebrate Zoology (4)
11:704:325 Vertebrate Zoology (4)
11:770:402 Mycology: Fungi in the Environment (3)

One of the following (3–4):

11:628:476 History of the Earth System (3)
11:704:240 Behavioral Biology (4)
11:704:484 Evolution (3)

Electives (3)
An additional adviser-approved course in mathematics, science, environmental policy, or resource economics.

2. Marine Chemistry (54–58)

Required courses (51–54)
01:160:251 Analytical Chemistry Laboratory (2.5)
01:160:307-308 Organic Chemistry (4,4) or 01:160:315-316 Principles of Organic Chemistry (4,4)
01:160:311 Organic Chemistry Laboratory (2)
01:160:323-324 Physical Chemistry (3,3) or 01:160:341-342 Physical Chemistry: Biochemical Systems (3,3)
01:160:329 Experimental Physical Chemistry (2.5)
01:160:348 Instrumental Analysis (3)
01:640:151-152 Calculus for Mathematics and the Physical Sciences (4,4)
01:640:251 Multivariable Calculus (4)
11:628:451 Physical Oceanography (3) or 11:628:462 Biological Oceanography (4)
11:628:472 Chemical Oceanography (4)
01:750:201-202 Extended General Physics (5,5) or 01:750:203-204 General Physics (3,3) and 01:750:205-206 General Physics Laboratory (1,1) or equivalent

Electives (3–4)
01:160:439 Physical Chemistry of the Environment (3)
11:375:416 Chemical Reactions in the Environment (3)
11:375:444 Water Chemistry (3)
11:375:451 Soil Chemistry (4)
01:460:101 Introductory Geology (3)
01:460:301 Mineralogy (3)
01:460:401 Introduction to Geochemistry (4)
01:460:417 Environmental Geochemistry (3)

11:628:110, 111, 211 Topics in Marine Sciences (P/NC 3,3,3)
11:670:323 Thermodynamics of the Atmosphere (3)

3. Marine Geology (56–58)

01:460:101 Introductory Geology (3)
01:460:103 Introductory Geology Laboratory (1)
01:460:301 Mineralogy (4)
01:460:302 Petrology (4)
01:460:312 Introduction to Geophysics (4)
01:460:340 Sedimentology (4)
01:460:341 Stratigraphy (4)
04:460:451 Marine Geology (3)
01:640:151-152 Calculus for Mathematics and the Physical Sciences (4,4)
01:750:193-194 Physics for the Sciences (4,4) or 01:750:203-204 General Physics (3,3) and 01:750:205-206 General Physics Laboratory (1,1)

Two of the following courses (7–8):

11:628:451 Physical Oceanography (3)
11:628:462 Biological Oceanography (4)
11:628:472 Chemical Oceanography (4)

One of the following (3–4):

01:460:303 Paleontology (4)
01:460:307 Structural Geology (4)
01:460:401 Introduction to Geochemistry (4)
01:460:402 Ore Deposits (3)
01:460:428 Hydrogeology (3)
01:460:453 Paleoecology (3)
An adviser-approved equivalent

One of the following (3):

01:450:321 Remote Sensing of the Earth's Resources (3)
01:450:417 Coastal Geomorphology (3)
01:460:417 Environmental Geochemistry (3)
An adviser-approved equivalent

4. Physical Oceanography (52–55)

01:198:323 Numerical Analysis and Computing (4)
14:440:127 Introduction to Computers for Engineers (3)
11:628:110,111,211 Topics in Marine Sciences (P/NC 3,3,3)
11:628:451 Physical Oceanography (3)
11:628:462 Biological Oceanography (4) or 11:628:472 Chemical Oceanography (4)
01:640:151-152 Calculus for Mathematics and the Physical Sciences (4,4)
01:640:250 Introductory Linear Algebra (3)
01:640:251 Multivariable Calculus (4)
01:640:252 Elementary Differential Equations (3) or 01:640:244 Differential Equations for Engineering and Physics (4)
01:640:421 Advanced Calculus for Engineers (3)
14:650:312 Fluid Mechanics (3)
11:670:323 Thermodynamics of the Atmosphere (3)
11:670:324 Dynamics of the Oceans and Atmosphere (3)
01:750:201-202 Extended General Physics (5,5) or 01:750:203-204 General Physics (3,3) and 01:750:205-206 General Physics Laboratory (1,1) or equivalent

IX. Unspecified Electives (5–13 credits)

METEOROLOGY 670

Degree: B.S.

Coordinator: Robert Harnack

Adviser	Code	Office	Phone (Ext.)
Robert Harnack	(HA)	ENR 356	2-9841
Alan Robock	(RP)	ENR 225	2-9478

This curriculum provides a firm foundation in the tools and concepts of the atmospheric sciences. The program prepares students to contribute to the solution of environmental problems, either through immediate employment or through further study at the graduate level.

Entry Requirements for the Major

To declare a major in meteorology, students must achieve a grade of C or better in 01:160:161 General Chemistry and 01:640:151 Calculus for Math and the Physical Sciences.

Degree Requirements for the Major

Students must achieve a grade of C or better in all prerequisite mathematics, physics, and meteorology courses prior to taking the courses required for the major.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

A. Life Sciences (8 credits)
01:119:101-102 General Biology (4,4)

B. Physical Sciences (17 credits)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:750:193-194 Physics for the Sciences (4,4) or equivalent

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems (6 credits)

A. Economic Systems (3 credits)
11:373:101 Economics, People, and Environment (3) or equivalent

B. Political Systems (3 credits)
See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

01:355:101 Expository Writing I (3)
01:355:302 Scientific and Technical Writing (3) or 01:355:201 Research in the Disciplines (3)

VII. Experience-Based Education (6 credits)

11:670:433-434 Synoptic Analysis and Forecasting I,II (3,3)

VIII. Competence in Meteorology (55–56 credits)

Quantitative Methods (18)

01:640:151-152 Calculus for Math and the Physical Sciences (4,4)
01:640:244 Differential Equations for Engineers (3)
01:640:251 Multivariable Calculus (4)
01:960:401 Basic Statistics for Research (3)

Computer Competence (6–7)

01:198:111 Introduction to Computer Science (4) or any advisor approved programming course (3–4)
14:440:127 Introduction to Computers for Engineers (3) or 14:440:125 Introduction to FORTRAN (3) or any advisor approved programming course

Professional Ethics

Ethical problems in environmental, meteorological, and regulatory fields are addressed throughout the program in both introductory and advanced courses.

Other Required Courses (31)

11:372:442 Applied Principles of Hydrology (3)
11:375:203 Physical Principles of Environmental Sciences (3)
11:375:346 Atmospheric Chemistry (3)
11:375:423 Environmental Fate and Transport (3)
01:450:322 Remote Sensing of Earth Resources (3)
11:670:201 Elements of Meteorology (3)
11:670:210 Meteorological Analysis (1)
11:670:323 Thermodynamics of the Atmosphere (3)
11:670:324 Dynamics of the Oceans and Atmosphere (3)
11:670:423 Weather Systems (3)
11:670:431 Physical Meteorology (3)

IX. Unspecified Electives (12–16 credits)

NATURAL RESOURCE MANAGEMENT 704

Degree: B.S.

Coordinator: James E. Applegate

Adviser	Code	Office	Phone (Ext.)
James E. Applegate	(AE)	ENR 146	2-9336
Timothy M. Casey	(CD)	ENR 139	2-3213
David Drake	(DA)	Meteorology Bldg. 112	2-8993(12)
David W. Ehrenfeld	(EC)	ENR 122	2-9553
Joan Ehrenfeld	(EF)	ENR 126	2-1081
Edwin J. Green	(GJ)	ENR 158	2-9152
Colleen Hatfield	(HT)	ENR 156	2-1577
John E. Kuser	(KI)	ENR 132	2-9211
Richard G. Lathrop	(LP)	ENR 129	2-1580
Robert Loveland	(LB)	Blake 118	2-3385
Peter J. Morin	(MP)	ENR 148	2-3214
Harry W. Power	(PC)	Meteorology Bldg. 114	2-0649(14)
Peter E. Smouse	(SR)	ENR 152A	2-1064
Michael V.K. Sukhdeo	(SL)	Bartlett 213A	2-9406
Mark C. Vodak	(VD)	Meteorology Bldg. 110	2-8993(10)
Leonard J. Wolgast	(WF)	ENR 144	2-9236

The natural resource management curriculum provides an understanding of how natural living systems function and how they can be managed to provide benefits to people. Students may pursue course work that prepares them for traditional careers in resource management or they may take a broader array of courses that meets interests related to the conservation of natural resources. Graduates may pursue further study at the graduate level or find career opportunities in public or private organizations involved in the management of natural resources.

Students are encouraged to organize curricular and elective courses to fulfill simultaneously the requirements of a minor or certificate program. Particularly appropriate are the minor in Science / Agriculture Teacher Education and the certificate in Environmental Geomatics.

The curriculum offers the following options:

Conservation and Applied Ecology. This option provides a broad general understanding of the functioning, significance, and conservation of living systems. The flexibility of this option is intended to meet a variety of student interests and needs.

Ecology and Evolution. This option emphasizes scientific aspects of ecology and is intended for students who plan to attend graduate school for further ecological study or who intend to apply for certification as an ecologist or associate ecologist through the Ecological Society of America.

Professional Resource Management. Students selecting this option will pursue course work that has been recommended by professional resource management organizations. Traditional majors in forestry, wildlife, or fisheries can be developed by the selection of specific concentrations within this option. Faculty advisers provide students with a list of courses recommended for specific career directions. However, a broad background in resource management is an appropriate preparation for all resource management professionals.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

A. Life Sciences (8 credits)
01:119:101-102 General Biology (4,4)

B. Physical Sciences (17 credits)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)
01:750:193-194 Physics for the Sciences (4,4) or 01:750:203-204 General Physics (3,3) and 01:750:205-206 General Physics Laboratory (1,1)

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems (6 credits)

See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter.

VII. Experience-Based Education (0–3 credits)

All students are required to obtain practical experience in an area of natural resource management. Students can complete this requirement without formal credit through summer employment or volunteer service with an appropriate public agency, private industry, or nonprofit organization. If the student elects to meet this requirement without applying for credit, then it is the student's responsibility to provide the curriculum coordinator with written documentation of the work experience prior to graduation. Students also may fulfill the practical experience requirement by completing at least 3 credits from among the following courses:

11:015:497,498 George H. Cook Scholars Program (BA,BA)
11:199:___ Cooperative Education (BA)
11:300:487 Student Teaching (6)
11:372:483,484 Research Problems in Environmental Resources (BA,BA)
11:704:375 Practicum in Wildlife Management (BA)
11:704:376 Practicum in Fishery Management (BA)
11:704:377 Practicum in Forest Management (BA)
11:704:483,484 Research Problems in Applied Ecology (BA,BA)

VIII. Competence in Natural Resource Management (59–62 credits)

A. REQUIRED COURSES (11)

Quantitative Methods (7)

01:640:115 Precalculus College Mathematics (4) or 01:640:1__ CALC1 or equivalent
01:960:401 Basic Statistics for Research (3)

Computer Competence

Students are expected to have or develop basic competence in the use of computers and their application in the field of natural resources. If basic computing skills need to be developed at Cook College, students should take 01:198:110 Introduction to Computers and Their Application (3) or equivalent. Students who enter Cook College with basic proficiency in the use of computers will meet the curriculum computing requirement by completing 11:372:369 or 11:704:372. Consult the faculty adviser for the appropriate course selection.

Professional Ethics

Ethical aspects of natural resources are incorporated into many of the advanced courses through case studies.

Other Required Courses (4)

11:704:351 Principles of Applied Ecology (4) or 11:704:330 General Ecology (3) and 11:704:331 General Ecology Laboratory (1)

B. OPTIONS (48–51)

1. Conservation and Applied Ecology (48)

Required courses (8)
11:375:251 Soils and Water (4)
01:460:101 Introductory Geology (3)
01:460:103 Introductory Geology Laboratory (1)

Electives (40)

Courses chosen in consultation with the student's adviser from among those listed under the other options of this curriculum or logical extensions of the subject matter of these courses. Students must have the approval of their adviser or curriculum coordinator to substitute courses other than those indicated above. In general, courses that can be applied to learning about living systems and how they are managed are approved.

2. Ecology and Evolution (49-51)

Required courses (28-30)
01:447:380 Genetics (4)
11:704:484 Principles of Evolution (3) or 11:704:487 Populations and Evolution (3)
01:160:307-308 Organic Chemistry (3,3) and 01:160:311 Organic Chemistry Laboratory (2) or 01:160:209 Elementary Organic Chemistry (3) and 01:160:211 Elementary Organic Chemistry Laboratory (1) and 11:115:301 Introductory Biochemistry (3) and 11:115:313 Introductory Biochemistry Laboratory (1)
01:640:135 Calculus (4) or equivalent

At least one of the following courses in biomathematics (3–4):

01:119:400 Quantitative Biology (3)
01:146:302 Computers in Biology (3)
01:640:136 Calculus or 01:640:138 Calculus for the Biological Sciences (4) or equivalent
01:640:250 Introduction to Linear Algebra (3)
11:704:372 Natural Resource Biometrics (3)

At least one of the following courses in systematics (3–4):

11:370:381 Insect Biology (4)
11:370:402 Aquatic Entomology (4)
11:370:409 Insect Classification (3)
11:628:321 Ichthyology (4)
11:704:272 Dendrology (4)
11:704:323 Ornithology (4)
11:704:324 Invertebrate Zoology (4)
11:704:325 Vertebrate Zoology (4)
11:704:411 Taxonomy of Vascular Plants (4)

At least one of the following courses in environmental pollution and conservation (3):

11:374:431 Topics: New and Reemerging Diseases (3)
11:375:407 Environmental Toxicology (3)
11:375:411 Pollution Microbiology (3)
11:375:421 Air Pollution (3)
11:375:444 Water Chemistry (3)
11:375:445 Problems in Aquatic Environments (3)
11:704:317 Conservation Ecology (3)
11:704:320 Legal Aspects of Conservation (3)
11:704:451 Ecosystems Ecology and Global Change (3)

Electives (21)

Select appropriate courses from the following categories.

Life Sciences (15)

At least 15 credits of courses selected in consultation with an adviser from those offered by Cook College or the Faculty of Arts and Sciences that have 01:119:101-102 General Biology as a prerequisite. At least three of these courses must have a laboratory or field component.

Physical and Quantitative Sciences (6)

At least 6 additional credits of courses selected in consultation with an adviser in Biochemistry (115), Chemistry (160), Environmental Sciences (375), Geography (450), Geological Sciences (460), Marine and Coastal Sciences (628), Mathematics (640), Physics (750), or Statistics (960).

3. Professional Resource Management (Fisheries/ Forestry/Wildlife) (48)

Required courses (23)

11:375:251 Soils and Water (4)
01:460:101 Introductory Geology (3)
01:460:103 Introductory Geology Laboratory (1)
11:704:211 Introduction to the Wildlife Management Profession (1) or 11:704:212 Introduction to the Forestry Profession (1) or 11:704:213 Introduction to the Fishery Management Profession (1)
11:704:272 Dendrology (4)
11:704:372 Natural Resource Biometrics (3)
11:776:210 Principles of Botany (4)
additional course in oral and written communication (3)
01:355:302 Scientific and Technical Writing (3) is recommended

Electives (25)

Select appropriate courses from the following categories. Students placing an emphasis on wildlife, fisheries, or forestry should obtain a list of recommended courses from their adviser or curriculum coordinator. The minimum number of credits is indicated.

Living Systems (16):

01:370:381 Insect Biology (4)
01:447:380 Genetics (4)
11:628:200 Marine Sciences (4)
11:704:240 Behavioral Biology (4)
11:704:321 Ichthyology (4)
11:704:323 Ornithology (4)
11:704:324 Invertebrate Zoology (4)
11:704:325 Vertebrate Zoology (4)
11:704:332 Plant Ecology (4)
11:704:335 Limnology (4)
11:704:356 Forest Ecology and Silvics (3)
11:704:411 Taxonomy of Vascular Plants (4)
11:704:421 Wetland Ecology (3)
11:704:422 Ecology of Soil Organisms (3)
11:704:441 Animal Behavior (3)
11:704:443 Animal Social Behavior (3)
11:770:301 General Plant Pathology (3)
11:776:382 Plant Physiology (4)

Principles and Applications of Resource Management (6):

11:704:317 Conservation Ecology (3)
11:704:373 Silviculture (3)
11:704:374 Wildlife Ecology and Management (3)
11:704:406 Fishery Science (3)
11:704:407 Research Methods of Fishery Science (3)
11:704:472 Forest Finance and Management (3)
11:704:476 Topics in Wildlife Management (3)

Policy/Administration/Law (3):

11:372:231 Fundamentals of Environmental Planning (3)
11:372:303 Natural Resource Administration (3)
11:372:381 Introduction to Systems Thinking and the Systems Approach (3)
11:373:363 Environmental Economics (3)
11:373:461 Natural Resource Economics (3)
11:374:313 Environmental Policy and Institutions (3)
11:374:314 Human Dimensions of Natural Resource Management (3)
11:375:333 Environmental Law (3)
11:704:320 Legal Aspects of Conservation (3)

Complementary courses

The following courses provide knowledge and skills that are complementary to the study of natural resources. No credits are required, but these courses may be used as unspecified electives or as option electives for the conservation and applied ecology option.

11:015:2__ Topics in Agriculture and Environmental Science (1)
11:015:230 Fundamentals of Agroecology (3)
01:115:301 Introductory Biochemistry (3)
01:160:209 Elementary Organic Chemistry (3)
11:370:202 The World of Insects (3)
11:370:309 Forest and Shade-Tree Entomology (1.5)
11:372:322 Surveying and Mapping (3)
11:372:362 Intermediate Environmental Geomatics (3)
11:372:371 Air-Photo Interpretation (3)
11:372:474 Advanced Remote Sensing (3)
11:375:405 Water and Wastewater Analysis (3)
11:670:201 Elements of Meteorology (3)
11:670:202 Elements of Climatology (3)
11:704:274 Forestry Field Practice / Introduction to Forest Resource Measurements (4)
11:704:312 Forest Fire Protection (1.5)
11:704:403 Urban Forestry (3)
11:704:451 Ecosystems Ecology and Global Change (3)
11:704:452 Research Methods in Ecology (3)
11:704:461 Field Ecology (2)
11:704:474 Field Experience in Applied Ecology (BA)
11:704:475 Winter Field Ecology (1)
11:704:486 Principles of Evolution (3)
11:704:488 Restoration Ecology (4)
01:960:4__ a course in statistics (3)
01:960:476 Introduction to Sampling (3)
01:960:490 Introduction to Experimental Design (3)

IX. Unspecified Electives (7–15 credits)

NUTRITIONAL SCIENCES 709

Degree: B.S.

Undergraduate Program Director: Adria R. Sherman

Adviser	Code	Office	Phone (Ext.)
Dawn Brasaelme	(BG)	Thompson 131	2-6524
Hans Fisher	(FC)	Thompson 104	2-9825
Susan K. Fried	(FQ)	Thompson 132	2-9039
Michael W. Hamm	(HK)	Thompson 107	2-9224
Debra Palmer Keenan	(KB)	Davison 208	2-6569
Sue A. Shapses	(SQ)	Thompson 111	2-9403
Adria R. Sherman	(SJ)	Thompson 213	2-6530
Judith Storch	(SN)	Thompson 214	2-1689
Barbara L. Tangel	(TE)	Davison 229B	2-6525
Margaret Varma	(VF)	Davison 213	2-6521
Malcolm Watford	(WR)	Thompson 130	2-7418
Harriet S. Worobey	(WN)	Davison 209	2-8895
John Worobey	(WM)	Davison 208	2-6517

The undergraduate program in nutritional sciences provides students with a strong background in the biological, biochemical, physiological, clinical, behavioral, sociological, and psychological dimensions of human nutrition. Students must maintain a cumulative grade-point average of 2.0 or better in all required courses. The program offers three options.

Dietetics. The option in dietetics meets the American Dietetic Association's (ADA) Approved Didactic Program in Dietetics. Upon completion of this option, students are eligible to apply for an ADA Accredited Dietetic Internship or an Approved Pre-Professional Practice Program (AP4) in preparation for the Registration Examination for dietitians. With appropriate electives, this option also can lead to work in the food industry, and after graduate study, positions in cooperative extension, nutrition education, nutrition counseling, or clinical research.

Food Service Administration. The option in food service administration emphasizes the managerial aspects of food service operation. Entry-level employment opportunities include food service marketing, or managing food services in schools, hotels, restaurants, industrial cafeterias, corporations, hospitals, and child- or long-term-care facilities.

Nutrition. The option in nutrition emphasizes research and prepares students for graduate study in the life sciences and medical, dental, and veterinary studies, as well as for immediate employment in the biomedical industry.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

A. Life Sciences (8 credits)
01:119:101-102 General Biology (4,4)

B. Physical Sciences (9 credits)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6–7 credits)

See suggested courses in the Degree Requirements chapter.

11:709:442 Community Nutrition (4) is required in the dietetics option.

V. Economic and Political Systems

A. Economic Systems (3–6 credits)
11:373:121 Principles and Applications of Microeconomics (3) and 01:220:103 Introduction to Macroeconomics (3) are required in the food service administration option. 11:373:101 Economics, People, and Environment (3) may be substituted in the nutrition and dietetics options.

B. Political Systems (3 credits)
See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter. 01:355:302 Scientific and Technical Writing (3) is required for the nutrition option. 01:355:303 Writing for Business and the Professions (3) is required for the food service administration option.

VII. Experience-Based Education (3–4 credits)

11:709:344 Quantity Food Production (4) is required in the dietetics and food service administration options.

Students in nutrition must complete a minimum of 3 credits of 11:709:493,494 Problems in Nutrition (3,3) or equivalent independent research project in nutritional sciences or adviser-approved placement in cooperative education.

VIII. Competence in the Nutritional Sciences (32–64.5 credits)

A. REQUIRED COURSES (6–7)

Quantitative Methods

See VIII B, Option requirements. Students are required to have placed at the precalculus level or above to take the required biology and chemistry courses.

Computer Competence (3–4)

01:198:110 Introduction to Computers and Their Application (3) or 01:198:111 Introduction to Computer Science (4)

Professional Ethics

Ethical aspects of nutritional sciences are incorporated into several upper-level courses, through the use of case studies, research designs, and applied problems.

Other Required Courses (3)

11:709:255 Nutrition and Health (3)

B. OPTIONS (29–57.5)

1. Dietetics (55)

01:115:301 Introductory Biochemistry (3)
01:119:133 Introduction to Microorganisms (3)
01:119:134 Introduction to Microorganisms Laboratory (1)
01:146:356 Systems Physiology (3)
01:146:357 Systems Physiology Laboratory (1)
01:160:209 Elementary Organic Chemistry (3)
01:160:211 Elementary Organic Chemistry Laboratory (1)
11:373:341 Management: Human Systems Development (3) or 01:830:373 Organizational and Personnel Psychology (3)
01:640:115 Precalculus College Mathematics (4) or equivalent
11:709:201 Introduction to Foods and Nutrition (3)
11:709:202 Laboratory for Introduction to Foods (1)
11:709:349 Management of Food Service Systems (3)
11:709:400 Advanced Nutrition I: Regulation of Macronutrient Metabolism (3)

11:709:401 Advanced Nutrition II: Energy and Micronutrient Metabolism (3)
11:709:405 Professional Issues in Dietetics (P/NC 1)
11:709:441 Nutrition Counseling and Communication (4)
11:709:442 Community Nutrition (4)
11:709:489 Experimental Foods (3)
11:709:498 Nutrition and Disease (3)
01:830:101 General Psychology (3)
01:920:101 Introduction to Sociology (3) or 11:709:452 Nutrition and Behavior (3)
01:960:401 Basic Statistics for Research (3)

2. Food Service Administration (29)

Required courses (17)
33:010:273 Principles of Accounting I (3)
01:119:133 Introduction to Microorganisms (3)
01:119:134 Introduction to Microorganisms Laboratory (1)
11:373:341 Management: Human Systems Development (3) or 01:830:373 Organizational and Personnel Psychology (3)
11:709:201 Introduction to Foods and Nutrition (3)
11:709:202 Laboratory for Introduction to Foods (1)
11:709:349 Management of Food Service Systems (3)

Electives (12)
33:011:201 Introduction to Management for Nonbusiness Majors (3)
33:011:202 Introduction to Marketing for Nonbusiness Majors (3)
33:011:203 Introduction to Finance for Nonbusiness Majors (3)
33:011:204 Principles of Business Law for Nonbusiness Majors (3)
11:373:241 Agribusiness Management (3)
11:373:331 Economics of Food Marketing Systems (3)
11:373:371 Food Policy (3)
11:375:403 Environment and Public Health: Epidemiological Aspects (3)
11:400:304 Food Analysis (4)
11:400:405 Sensory Evaluation of Foods (3)
11:400:410 Nutritional Aspects of Food Processing (3)
11:400:412 Food Product Development (3)
11:709:226 Nutrition and the Young Child (3)
11:709:441 Nutrition Counseling and Communication (4)
11:709:452 Nutrition and Behavior (3)

3. Nutrition (53.5–57.5)

01:115:301 Introduction to Biochemistry (3) or 01:115:403-404 General Biochemistry (3,3) or 01:694:407-408 Molecular Biology and Biochemistry (3,3)
01:146:356 Systems Physiology (3) and 01:146:357 Systems Physiology Laboratory (1) or equivalent
01:160:307-308 Organic Chemistry (4,4)
01:160:311 Organic Chemistry Laboratory (2)
01:447:380 Genetics (4)
01:640:1__-1__ CALC1-CALC2 (4,4)
11:709:400 Advanced Nutrition I: Regulation of Macronutrient Metabolism (3)
11:709:401 Advanced Nutrition II: Energy and Micronutrient Metabolism (3)
11:709:481 Seminar in Nutrition (1.5)
11:709:493,494 Problems in Nutrition (BA,BA) or equivalent
01:750:193-194 Physics for the Sciences (4,4) or 01:750:203-204 General Physics (3,3) and 01:750:205-206 General Physics Laboratory (1,1)
01:960:401 Basic Statistics for Research (3)
an additional, adviser-approved advanced biology course (3–4)

IX. Unspecified Electives (13.5–47 credits)

PLANT SCIENCE 776

Degree: B.S.

Undergraduate Program Director: James F. White

Adviser	Code	Office	Phone (Ext.)
Bruce B. Clarke	(CZ)	Foran 338	2-9375 (331)
Edward F. Durner	(DP)	Foran 286	2-9711 (256)
Joel S. Flagler	(FE)		201 / 599-6162
James French	(FD)		2-2982
Chaim Frenkel	(FL)	Foran 380	2-8977 (353)
C. Reed Funk	(FJ)	Foran 301B	2-9711 (302)
Thomas J. Gianfagna	(GN)	Foran 280	2-9711 (252)
Joseph C. Goffreda	(GG)	Foran 201B	2-9711 (202)
Harry W. Janes	(JA)	Foran 268	2-9711 (243)
Gojko Jelenkovic	(JB)	Foran 201A	2-9711 (201)
Richard H. Merritt	(MS)	Foran 272	2-9711 (247)
James Murphy	(MB)	Foran 180	2-9711 (129)
Elwin R. Orton	(OB)	Foran 172	2-9711 (124)
John N. Sacalis	(SA)	Foran 382	2-9711 (131)
James F. White	(WQ)	Foran 386	2-9375 (357)

The plant science program prepares students for careers or further study in areas related to food, fiber, turfgrass, ornamental plant production, pest management, plant breeding, plant pathology, or agricultural education. The curriculum offers three options: horticulture and turf industry, for students intending to pursue business careers; research, for students intending to pursue careers in laboratories or graduate study; and professional certification, for students intending to pursue careers in education or horticultural therapy.

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior / Senior Colloquium (3)

II. Introductory Life and Physical Sciences

A. Life Sciences (8 credits)
01:119:101-102 General Biology (4,4)

B. Physical Sciences (9 credits)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

See suggested courses in the Degree Requirements chapter.

V. Economic and Political Systems

A. Economic Systems (3–6 credits)
See suggested courses in the Degree Requirements chapter. 11:373:121,122 Principles and Applications of Microeconomics / Macroeconomics (3,3) or equivalents are required of students in the horticulture and turf industry option.

B. Political Systems (3 credits)
See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

See suggested courses in the Degree Requirements chapter.

VII. Experience-Based Education (3 credits)

11:776:495,496 Special Problems in Plant Science (BA,BA) or equivalent or an appropriate placement in cooperative education

VIII. Competence in Plant Science (52–73 credits)

A. REQUIRED COURSES (9–12)

Quantitative Methods

See 01:640:___ in VIII B below.

Computer Competence (0–3)

01:198:110 Introduction to Computers and Their Application (3) or equivalent or satisfaction of an approved departmental computer competency test

Professional Ethics (3)

01:730:250 Environmental Ethics (3) or 01:730:251 Ethics and Business (3)

Other Required Courses (6)

11:776:211 Introduction to Horticulture (3)
11:776:242 Plant Science (3)

B. OPTIONS (43–61)

One of the following three options is required:

1. Horticulture and Turf Industry (51–57)

Required courses (28–29)
11:370:350 Agricultural Entomology and Pest Management (3)
11:373:231 Agribusiness Marketing I (3)
11:373:241 Agribusiness Management (3) or 11:373:341 Management: Human Systems Development (3)
11:375:266 Soils and Their Management (3) or 11:375:452 Soil Fertility (3)
01:460:101 Introduction to Geology (3)
01:460:103 Introduction to Geology Laboratory (1)
01:640:115 Precalculus College Mathematics (4) or 01:960:401 Basic Statistics for Research (3)
11:770:301 General Plant Pathology (3)
11:776:202 Applied Physiology of Horticultural Crops (3)
11:776:406 Plant Breeding (3)

Electives (23–28)

At least eight additional courses selected from the following list:

Plant Science Curriculum Electives
11:015:492 Tropical Agriculture (3)
11:015:494 Tropical Agriculture and Natural Resources Field Study (2)
11:126:406 Plant Gene Transfer (3)
11:126:413 Plant Molecular Biology (3)
11:126:427 Methods in Recombinant DNA Technology (4)
11:370:350 Agricultural Entomology and Pest Management (3)
11:370:381 Insect Biology (3)
01:447:390 General Microbiology (4)
11:550:230 Environmental Design Analysis (3)
11:704:332 Plant Ecology (3)
11:770:402 Mycology: Fungi in the Environment (3)
11:776:200 Modern Crop Production (3)
11:776:221 Principles of Organic Crop Production (3)
11:776:231 Commercial Floral Design (3)
11:776:233-234 Landscape Plants I,II (3,3)
11:776:237 Planning and Planting the Residential Environment (3)
11:776:238 Landscape Management and Maintenance (3)
11:776:3__ Plant Nutrition (3)
11:776:304 Turfgrass Management (3)
11:776:305 Plant Genetics (4)
11:776:310 Plant Propagation (3)
11:776:312 Medicinal Plants (3)
11:776:321 Greenhouse Environment Control and Crop Production (3)
11:776:340 Principles and Practices of Fruit Production (4)
11:776:341 Fruit Production (3)
11:776:362 Principles of Vegetable Culture (3)
11:776:382 Plant Physiology (4)
11:776:401 Post-Harvest Physiology of Horticultural Crops (3)
11:776:402 Principles of Weed Science (3)
11:776:403 Plant Science Techniques (3)
11:776:406 Plant Breeding (3)
11:776:439 Nursery Crop Production (3)
11:776:450 Horticultural Topics (2)
11:776:451 Fine and Sports Turf (3)
11:776:452 Plant Tissue Culture (3)
11:776:495,496 Special Problems in Plant Science (BA,BA)
01:960:401 Basic Statistics for Research (3)

2. Professional Certification: Agricultural Teacher Education, Science Teacher Certification, and Horticulture Therapy Specialization (43–57)

Required courses (3–4)
01:640:115 Precalculus College Mathematics (4) or 01:960:401 Basic Statistics for Research (3)

and one of the following specializations:

A. PLANT SCIENCE TEACHER PREPARATION: EDUCATION CERTIFICATE (40–47)

Required courses (21–24)
11:300:327 Applications of Psychology in Education (3) or an approved educational psychology course

11:300:411 Materials and Methods of Teaching Science (3) or 11:400:425,426 Methods of Teaching Vocational Agriculture (3,3)
11:300:417 Observation Internship (a minimum of 3 credits)
11:300:423,424 Teaching Seminar (1.5,1.5)
11:300:487 Student Teaching (9)

Electives (19–23)

Additional courses from the curriculum electives listed in the horticulture and turf industry option, above, selected in consultation with an adviser.

B. HORTICULTURAL THERAPY SPECIALIZATION (53)

Required courses (40)
11:776:225 Introduction to Horticultural Therapy (3)
11:776:325 Horticultural Therapy Techniques and Programming (3)
11:776:425 Special Topics in Horticultural Therapy (2)
11:776:495,496 Special Problems in Plant Science (a minimum of 8 credits, approved by the adviser)

At least eight of the following human science courses (24–26):

11:300:327 Applications of Psychology in Education (3)
11:373:341 Management: Human Systems Development (3)
01:830:101 General Psychology (3)
01:830:246 Principles of Abnormal Psychology (3)
01:830:303,304 Memory and Attention (3,1)
01:830:321 Social Psychology (3)
01:830:326,327 Small Groups and Laboratory (3,1)
01:830:330 Developmental Psychology (3)
01:830:333 Adolescent Development (3)
01:830:335 Adult Development and Aging (3)
01:830:361 Developmental Psychobiology (3)
01:830:377 Health Psychology (3)
10:832:416 Mental Illness: Social and Public Policy (3)
09:910:313 Theories and Skills of Working with People (3)
01:920:210 Sociology of Medicine and Health Care (3)

Electives (13)

Additional courses selected from the curriculum electives listed in the horticulture and turf industry option, above. Recommended electives are 11:119:332, 11:370:350, 11:770:301, and 11:776:231,310,321,439.

3. Research (56–61)

Required courses (42)
11:115:403-404 General Biochemistry (3,3)
11:126:413 Plant Molecular Biology (3)
01:160:307-308 Organic Chemistry (4,4)
01:640:135-136 Calculus I,II or equivalent (4,4)
01:750:203-204 General Physics (3,3)
11:776:305 Plant Genetics (4)
11:776:382 Plant Physiology (4)
11:776:452 Plant Tissue Culture (3) or 11:126:406 Plant Gene Transfer (3)

Electives (14–19)

At least five additional courses selected from the curriculum electives listed in the horticulture and turf industry option, above.

IX. Unspecified Electives (3–27 credits)

PUBLIC HEALTH 832

Degree: B.S.

Coordinator: Dona Schneider

Adviser	Code	Office	Phone (Ext.)
Dona Schneider	(SD)	CSB 172	2-4101 (682)

The curriculum in public health is designed to fill the need for allied health professionals who have a solid background in public health and/or environmental science. The curriculum includes options in health issues and policy, health analysis and research, and environmental health sciences.

The public health program is an interdepartmental curriculum that utilizes the resources of both the Edward J. Bloustein School of Planning and Public Policy and Cook College.

Students learn qualitative, quantitative, and analytical skills used by health program and facility managers, planning agencies, and education and evaluation organizations. They use computers to develop management information systems and learn statistical methodology, including its public health application in epidemiology.

An internship provides practical job experience and gives students the opportunity to apply theory while testing their technical competence under the direct supervision of a knowledgeable health-care professional.

Graduates are prepared for employment in areas of the health services delivery and regulation field that require policy development, implementation, and evaluation. Graduates also may prepare for the New Jersey Sanitarians License Examination.

Students who intend to prepare for the New Jersey Sanitarians License Examination must complete at least 32 credits of courses in mathematics and sciences.

Entry Requirements for the Major

To declare a major in public health, students must apply to the Bloustein School of Planning and Public Policy after they have completed 40 credits and achieved a 2.5 grade-point average in introductory expository writing, biology, and statistics courses, and 10:832:232 Introduction to Public Health (3).

I. Interdisciplinary/Ethical Analysis (5 credits)

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:400 Junior/Senior Colloquium (3)

II. Introductory Life and Physical Sciences

A. Life Sciences (8 credits)
01:119:101-102 General Biology (4,4)

B. Physical Sciences (9 credits)
01:160:161-162 General Chemistry (4,4)
01:160:171 Introduction to Experimentation (1)

III. The Arts (6 credits)

See suggested courses in the Degree Requirements chapter.

IV. Human Diversity (6 credits)

10:975:206 Third-World Urban Poor (3) or 10:975:222 Urban Poverty (3)
11:374:341 Social and Ecological Aspects of Health and Disease (3) or an additional course from those suggested in the Degree Requirements chapter.

V. Economic and Political Systems

A. Economic Systems (3–6 credits)
See suggested courses in the Degree Requirement chapter. (Students interested in public health administration and intending to take 10:832:332 Public Health Economics (4) or 01:220:316 Health Economics (3) should take both micro- and macroeconomics.)

B. Political Systems (3 credits)
See suggested courses in the Degree Requirements chapter.

VI. Oral and Written Communication (6 credits)

01:355:101 Expository Writing I (3) or equivalent
10:832:339 Public Health Literature (3) or 01:355:302 Scientific and Technical Writing (3) or adviser-approved equivalent

VII. Experience-Based Education (6 credits)

10:832:399 Research or Field Practicum (6)

VIII. Competence in Public Health (44–46 credits)

A. REQUIRED COURSES (29–31)

Quantitative Methods (4–6)

10:975:205 Basic Statistical Methods for Urban Studies and Community Health (4) or 01:960:211,212 Statistics I,II (3,3), or adviser-approved equivalent 4-credit course

Computer Competence (4)

10:832:241 Computer Applications in Health Research (4)

Professional Ethics (3)

10:832:356 Public Health Law and Ethics (3) or 01:119:150 Biology, Society, and Biomedical Issues (3) or an adviser-approved equivalent

Other Required Courses (15–16)

11:375:403 Environmental and Public Health: Epidemiological Aspects (3) or 10:832:335 Epidemiology (3)
10:832:101 Introduction to Urban Studies (3) or equivalent
10:832:232 Introduction to Public Health (3)
10:832:238 Health and Public Policy (3)

At least two of the following:

10:832:332 Public Health Economics (4) or 01:220:316 Health Economics (3)
10:832:334 Introduction to Health Administration (3) or 11:375:406 Public Health Practice and Administration (3)
10:832:345 Health Program Development (3)
10:832:483 Urban Revitalization and Public Health (3) or 11:375:301 The Environment and Health (3)

B. ELECTIVES (15)

11:374:341 Social and Ecological Aspects of Health and Disease (3)
11:375:302 Elements of Waste and Wastewater Treatment (3)
11:375:307 Elements of Solid Waste Management and Treatment (3)
11:375:336 Occupational and Community Noise Control (3)
11:375:407 Environmental Toxicology (3)
11:375:411 Pollution Microbiology (3)
11:375:421 Air Pollution (3)
01:447:390 General Microbiology (4)
10:832:417 Introduction to Population Tools and Policy (3)
10:975:441 U.S. Health and Housing Policy (3)
10:975:447 Immigration, Urban Policy, and Public Health (3)

See adviser for approved alternatives from current offerings.

IX. Unspecified Electives (20–26 credits)

TEACHER EDUCATION

Coordinator: Louis A. Iozzi

Adviser	Code	Office	Phone (Ext.)
Louis A. Iozzi	(IA)	Waller 209	2-9164

Teacher education offerings are available as options under the Agricultural Science 017 and Plant Science 776 curricula. The college also provides a professional education program for students concentrating in biology, chemistry, physics, and geology / earth science.

The professional education course requirements are treated as electives in the student's major program. A minimum of 30 credits in subject-matter requirements must be met in the student's major. Students should consult the appropriate program of study for information about subject-matter requirements. Upon satisfactory completion of one of these state-approved programs, students are recommended for the agriculture, biology, physical sciences, and earth science Certificate of Eligibility with Advanced Standing. Because of the difficulty of scheduling education courses, interested students should seek advice from the curriculum coordinator as early as possible, preferably during the sophomore year.

Teacher certification also may be pursued as a minor program of study. See the Science and Agricultural Teacher Education program described near the end of this chapter.

I. Requirements for All Certificates (21 credits)

11:300:327 Applications of Psychology in Education (3) or an approved educational psychology course (3)
11:300:416 Environmental Education in the School (3)

11:300:417 Observation Internship (BA) *
11:300:423,424 Teaching Seminar (1.5,1.5)
11:300:487 Student Teaching (9)

II. Specific Certificate Requirements (3–6 credits)

Science Teaching Certificates (6 credits)

11:300:411 Materials and Methods of Teaching Science (3)

Agriculture Certificate (6 credits)

11:300:425,426 Methods of Teaching Vocational-Technical Agriculture (3,3)

It is strongly recommended that students have two years of approved agricultural experience or equivalent.

Note: Teacher education students also must complete a course in art or music and a course in computers and / or technology.

MINOR PROGRAMS OF STUDY

The following minor and certificate programs are open to all undergraduate students at Rutgers. Options in several programs indicate either a subject-matter emphasis or a degree of expertise in cognate fields required by the courses suggested.

Agroecology (21–24 credits)

Adviser:

Michael W. Hamm: Thompson Hall, Room 107, 932-9224

Required courses (12–13)
11:015:230 Fundamentals of Agroecology (3)
11:015:350 Agroecology Practicum (3)
01:119:1__ At least one term of introductory biology (3–4)
11:776:221 Principles of Organic Crop Production (3) or 11:776:362 Principles of Vegetable Culture (3) or adviser-approved equivalent

Electives (9–11)
11:015:301 Topics in Agroecology (3)
11:015:492 Tropical Agriculture (3)
11:015:494 Tropical Agriculture and Natural Resources Field Study (2)
11:370:350 Agricultural Entomology and Pest Management (3)
11:370:381 Insect Biology (4)
11:375:251 Soils and Water (4)
11:375:451 Soil Chemistry (4)
11:375:453,454 Soil Ecology (3,3)
11:770:301 General Plant Pathology (3)
11:770:402 Mycology: Fungi in the Environment (3)
11:770:416 Principles of Applied Nematology (3)
11:776:401 Post-Harvest Physiology of Horticultural Crops (3)
11:776:402 Principles of Weed Science (3)

* A minimum of 3 credits is required.

Animal Science (21–23 credits)

Adviser:

James E. Wohlt: Bartlett Hall, Room 306, 932-9454

Prerequisites: 01:119:101-102 or equivalent

Required courses (10)
11:067:142 Animal Science (3)
11:067:327 Animal Reproduction (3)
11:067:330 Animal Nutrition (3)
11:067:331 Animal Nutrition Laboratory (1)

Options (11–13)
1. Livestock Emphasis (13)

11:067:328 Animal Genetics (3) or equivalent
11:067:335-336 Livestock Production and Management I,II (3,3)
11:067:337-338 Livestock Production and Management Laboratory I,II (2,2)

2. Laboratory Animal Emphasis (12–13)

Required courses (5)
11:067:205 Laboratory Animal Practicum (P/NC 2)
11:067:275 Laboratory Animal Science: Management and Techniques (3)

Electives (7–8)
11:067:404 Animal Diseases (3)
11:067:430 Animal Microtechniques and Tissue Culture (4)
01:146:356 Systems Physiology (3) or equivalent and 01:146:357 Systems Physiology Laboratory (1) or equivalent
01:447:390 General Microbiology (4)

3. Science and Research Emphasis (11–13)

Required courses (4)
01:146:356 Systems Physiology (3) or equivalent
01:146:357 Systems Physiology Laboratory (1) or equivalent

Electives (7–9)
11:067:430 Animal Microtechniques and Tissue Culture (4)
01:067:450 Endocrinology (3)
11:067:493,494 Animal Science Problems (BA,BA)
11:126:481 Molecular Genetics (3) and 11:126:482 Molecular Genetics Laboratory (3)
01:694:315 Introduction to Molecular Biology and Biochemistry Research (3) or equivalent

Biochemistry (22–23.5 credits)

Adviser:

Theodore Chase, Jr.: Lipman 313, 932-9763 (313)

Prerequisites: 01:119:101-102; 01:160:161-162.
01:160:307-308 Organic Chemistry (4,4) or equivalent
11:115:403-404 General Biochemistry (3,3)
11:115:313 or 01:694:313 Introductory Biochemistry Laboratory (1) or 11:115:413 Experimental Biochemistry Laboratory (2.5)
01:447:380 Genetics (4) or 11:776:305 Plant Genetics (4)

One additional course from the electives listed under VIII B in the Biochemistry major program of study, excluding 11:126:427.

Ecology and Evolution (19–25 credits)

Adviser:

James E. Applegate, Environmental and Natural Resources Bldg., Room 146, 932-9336

Prerequisites: 01:119:101-102

Required courses (10–13)

11:704:330 General Ecology (3) or 11:740:351 Principles of Applied Ecology (4)
11:704:331 General Ecology Laboratory (1) or 11:704:461 Field Ecology (2) or 11:704:475 Winter Field Ecology (1)
11:704:335 Limnology (4) or 11:704:450 Landscape Ecology (3) or 11:704:451 Ecosystem Ecology and Global Change (3)
11:704:486 Principles of Evolution (3) or 01:070:350 Primatology and Human Evolution (3) or 16:215:560 Evolutionary Biology (3)

Electives (9–12)

Three of the following courses:

11:126:495 Microbial Ecology (4)
11:370:381 Insect Biology (4)
11:370:402 Aquatic Entomology (3)
11:628:321 Ichthyology (4)
11:628:404 Fungi and Ecosystems (3)
11:704:240 Behavioral Biology (4)
11:704:272 Dendrology (4)
11:704:317 Conservation Ecology (3)
11:704:323 Ornithology (4)
11:704:324 Invertebrate Zoology (4)
11:704:325 Vertebrate Zoology (4)
11:704:332 Plant Ecology (4)
11:704:335 Limnology (4)
11:704:403 Urban Forestry (3)
11:704:411 Taxonomy of Vascular Plants (4)
11:704:421 Wetland Ecology (3)
11:704:443 Animal Social Behavior (4)
11:704:456 Forest Ecology and Silvics (3)
11:704:464 Wildlife Ecology and Management (3)
11:770:402 Mycology: Fungi in the Environment (3)
11:776:210 Principles of Botany (4)

Entomology (19–26 credits)

Adviser:

L.B. Brattsten: Blake Hall, Room 114, 932-9774

Prerequisites: 01:119:101-102 General Biology (4,4)

Required courses (7–8)

11:370:350 Agricultural Entomology and Pest Management (3) or 11:370:381 Insect Biology (4)
11:370:409 Insect Classification (4)

Electives (12–18)

Any of the following courses for which prerequisites are fulfilled or instructor's permission is granted:

11:370:308 Apiculture (3)
11:370:350 Agricultural Entomology and Pest Management (3)
11:370:352 Toxicology of Pesticides (3)
11:370:402 Aquatic Entomology (4)
11:370:403-404 Insect Structure and Function (3,3)
11:370:406 Medical and Veterinary Entomology (3)
11:370:493,494 Research Problems in Entomology (1–4,1–4)

Note: In special circumstances, with prior permission of the department, 11:370:202 The World of Insects (3) may be substituted for 11:370:350 or 11:370:381. Juniors and seniors may, with the permission of the instructor and the graduate dean, register for appropriate graduate courses in entomology for elective credits.

Students intending to minor in entomology are urged to contact the department as early in their program as possible, and no later than the middle of their junior year.

Environmental and Business Economics (21–23 credits)

Adviser:

Maurice P. Hartley: Cook Office Building, Room 112, 932-9155 (216)

This program is not open to majors in environmental and business economics (373) or economics (220) or to School of Business students.

Required courses (12)

01:220:103 Introduction to Macroeconomics (3)
11:373:121 Principles and Applications of Microeconomics (3)
11:373:241 Agribusiness Management (3)
11:373:361 Land Economics (3) or 11:373:362 Natural Resource Economics (3) or 11:373:363 Environmental Economics (3)

Electives (9–11)

Any three of the following courses for which prerequisites are fulfilled or instructor's permission is granted:

11:373:210 Business Decision Computer Tools (4)
11:373:231 Agribusiness Marketing I (3)
11:373:331 Economics of Food Marketing Systems (3)
11:373:341 Management: Human Systems Development (3)
11:373:351 Agribusiness Finance I (3)
11:373:352 Economics of Futures Markets (3)
11:373:361 Land Economics (3)
11:373:362 Natural Resource Economics (3)
11:373:363 Environmental Economics (3)
11:373:371 Food Policy (3)
11:373:422 Demand and Price Analysis (3)
11:373:425 Applications of Econometrics in Agricultural Economics (3)
11:373:451 Agribusiness Finance II (3)
11:373:465 Agribusiness Marketing Research (4)

Environmental Policy, Institutions, and Behavior (18 credits)

Adviser:

William K. Hallman: Cook Office Building, Room 215, 932-9153 (313)

Required courses (6)

11:374:101 Introduction to Human Ecology (3)
11:374:201 Research Methods in Human Ecology (3)

Electives (12)

Any four of the following courses, of which at least two must be at the 300 to 400 level:

11:374:269 Population, Resources, and Environment (3)
11:374:279 Politics of Environmental Issues (3)
11:374:301 Environment and Development (3)
11:374:308 Human Ecology of Maritime Regions (3)

11:374:312 Environmental Problems in Historical and Cross-Cultural Perspective (3)
11:374:313 Environmental Policy and Institutions (3)
11:374:314 Human Dimensions of Natural Resource Management (3)
11:374:315 International Environmental Policy (3)
11:374:322 Environmental Behavior (3)
11:374:331 Culture and Environment (3)
11:374:335 Social Responses to Environmental Problems (3)
11:374:341 Social and Ecological Aspects of Health and Disease (3)
11:374:420-429 Topics in Environmental and Resource Policy (3)
11:374:430-439 Topics in Health and Environment (3)

Environmental Sciences (21 credits)

Adviser:

Robert L. Tate: Environmental and Natural Resources Bldg., Room 230, 932-9810

*Required courses (9)
11:375:101 Introduction to Environmental Science (3)

and two of the following:

11:375:201 Biological Principles of Environmental Science (3)
11:375:202 Chemical Principles of Environmental Science (3)
11:375:203 Physical Principles of Environmental Science (3)

Electives (12)
11:375:302 Elements of Water and Wastewater Treatment (3)
11:375:303 Numerical Methods in Environmental Science (3)
11:375:312 Environmental Microbiology Laboratory (2)
11:375:411 Pollution Microbiology (3)
11:375:421 Air Pollution (3)
11:375:422 Air Sampling and Analysis (3)
11:375:430 Hazardous Waste Management (3)
11:375:444 Water Chemistry (3)
11:375:445 Problems in Aquatic Environments (3)
11:375:453 Soil Ecology (3)
11:670:201 Elements of Meteorology (3) or equivalent environmental science (375) course approved by the program adviser

Equine Science (18–21 credits)

Adviser:

Sarah L. Ralston: Bartlett Hall, Room 209, 932-9404

Prerequisites: 01:119:101-102 General Biology (4,4)

Required courses (9)
11:067:142 Animal Science (3)
11:067:327 Animal Reproduction (3)
11:067:384 Horse Management (3)

Electives (9–12)
11:067:207 Horse Practicum (2)
11:067:390 Equine Nutrition (3)
11:067:401 Topics in Equine Science (3)
11:067:402 Equine Exercise Physiology (3)
11:067:493,494 Animal Science Problems (BA,BA) (with equine research faculty)

* Many of the courses require the following prerequisites: 01:119:101-102; 01:160:161-162; two terms of calculus; organic chemistry; two terms of physics.

Food Science (18–21 credits)

Adviser:

Mukund Karwe: Food Science Building, Room 221, 932-9611 (224)

Prerequisite: Many electives in this program require chemistry and/or physics.

Required courses (6)
11:400:103 Science of Food (3)
11:400:104 Food and Health (3)

Electives (12–15)
Any four of the following courses for which prerequisites are fulfilled or instructor's permission is granted. See course descriptions for prerequisites.

11:400:201 Principles of Food Science (3)
11:400:304 Food Analysis (4)
11:400:401 Introduction to Food Engineering Fundamentals (4)
11:400:402 Introductory Food Engineering Processes (4)
11:400:405 Sensory Evaluation of Foods (3)
11:400:410 Nutraceuticals, Nutrition, and Food Processing (3)
11:400:411 Food Chemistry (3)
11:400:412 Food Product Development (3)
11:400:419 Food Physical Systems (3)
11:400:421 Hazard Control in Food Processing (3)

Marine Sciences (18 credits)

Advisers:

Judith Grassle: Marine and Coastal Sciences Building, Room 309C, 932-6555 (351)
Norbert P. Psuty: Marine and Coastal Sciences Building, Room 103F, 932-6555 (500)

A term of introductory geology, two terms of biology, calculus, chemistry, and physics are recommended and/or required for many of the courses in the program.

Required courses (5–7)
11:628:200 Marine Sciences (4)
11:628:300-310 Topics in Marine and Coastal Sciences (1–3)

Electives (11–13)
11:015:401 Colloquium: Earth Systems Science (3)
11:374:308 Human Ecology of Maritime Regions (3)
11:375:445 Problems in Aquatic Environments (3)
01:450:417 Coastal Processes and Geomorphology (3)
01:460:209 Exploration of the Oceans (3)
01:460:303 Paleontology (4)
01:460:330 Sedimentology (4) or 01:460:341 Stratigraphy (4)
01:460:417 Environmental Geochemistry (3)
01:460:451 Marine Geology (3)
11:628:110,111,211 Topics in Marine Sciences (P/NC 3,3,3)
11:628:251 Elements of Oceanography (3)
11:628:300-310 Topics in Marine and Coastal Sciences (1–3)

11:628:321 Ichthyology (4)
11:628:352 Ocean, Coastal, and Estuarine Circulation (3)
11:628:364 Oceanographic Methods and Data Analysis (3)
11:628:401 Applied Shoreline Management (3)
11:628:404 Fungi and Ecosystems (3)
11:628:418 Marine Microbiology (4)
11:628:451 Physical Oceanography (3)
11:628:462 Biological Oceanography (4)
11:628:472 Chemical Oceanography (4)
11:628:497,498 Special Problems in Marine and Coastal Sciences (BA,BA)
11:670:323 Thermodynamics of the Atmosphere (3)
11:670:324 Dynamics of the Oceans and Atmosphere (3)
11:670:458 Air-Sea Interactions (3)
01:704:324 Invertebrate Zoology (4)
11:704:370 Ecosystems Ecology and Global Change (3)
11:704:406 Fishery Science (3)
11:704:407 Research Methods in Fishery Science (3)
11:704:421 Wetland Ecology (3)

Meteorology (18 credits)

Adviser:

Robert Harmack: Environmental Sciences Building, Room 356, 932-9841

Prerequisites: 01:640:151-152; 01:750:193-194 or equivalent
11:670:201 Elements of Meteorology (3)
11:670:202 Elements of Climatology (3)
11:670:323 Thermodynamics of the Atmosphere (3)
11:670:324 Dynamics of the Oceans and Atmosphere (3)

and two of the following:

11:670:423 Weather Systems (3)
11:670:431 Physical Meteorology (3)
11:670:433 Synoptic Analysis and Forecasting I (3)

Natural Resource Management (20–25 credits)

Advisers:

James E. Applegate: Environmental Sciences Building, Room 146, 932-9336
David W. Ehrenfeld: Environmental Sciences Building, Room 122, 932-9553
Edwin J. Green: Environmental Sciences Building, Room 158, 932-9152

Prerequisites: 01:119:101 and approval of a minor adviser

Required courses (11–13)
11:704:211 The Wildlife Management Profession (P/NC 1) or 11:704:212 The Forestry Profession (P/NC 1) or 11:704:213 The Fishery Profession (P/NC 1)
11:704:272 Dendrology (4)
11:704:274 Forestry Field Practice (4) or 11:704:356 Forest Ecology and Silvics (3) or 11:704:461 Field Ecology (2)
11:704:351 Principles of Applied Ecology (4) or 11:704:330 General Ecology (3) and 11:704:331 General Ecology Laboratory (1)

Electives (9–12)
Three additional courses in natural resource management (11:704) at the 300 or 400 level.

Nutrition (20–23 credits)

Adviser:

Michael W. Hamm: Thompson Hall, Room 107, 932-9224

Prerequisites: 01:160:161-162, 171 and organic chemistry
11:115:301 Introductory Biochemistry (3) or 11:115:403, 404 General Biochemistry (3,3) or equivalent
01:119:101-102 General Biology (4,4)
11:709:255 Nutrition and Health (3)
11:709:400 Advanced Nutrition I: Regulation of Macronutrient Metabolism (3)
11:709:401 Advanced Nutrition II: Energy and Micronutrient Metabolism (3)

Plant Science (18–20 credits)

Adviser:

James F. White: Foran, Room 386, 932-9375 (357)

Prerequisite: 01:119:101-102 General Biology (4,4) or equivalent

Required courses (6)
11:776:211 Introduction to Horticulture (3)
11:776:242 Plant Science (3)

Electives (12–14)

Any four of the following courses for which prerequisites have been fulfilled:

11:015:492 Tropical Agriculture (3)
11:776:202 Applied Physiology of Horticultural Crops (3)
11:776:221 Principles of Organic Crop Production (3)
11:776:231 Commercial Floral Design (3)
11:776:233 Landscape Plants (3) or 11:776:234 Landscape Plants (3)
11:776:237 Planning and Planting the Residential Environment (3)
11:776:305 Plant Genetics (4)
11:776:310 Plant Propagation (3)
11:776:312 Medicinal Plants (3)
11:776:321 Greenhouse Environment Control and Crop Production (3)
11:776:340 Principles and Practices of Fruit Production (4)
11:776:341 Fruit Production (3)
11:776:401 Post-Harvest Physiology of Horticultural Crops (3)
11:776:406 Plant Breeding (3)
11:776:439 Nursery Crop Production (3)
11:776:448 Advanced Pomology (3)
11:776:449 Selected Topics in Pomology (3)
11:776:452 Plant Tissue Culture (3)

Science and Agriculture Teacher Education (24–27 credits)

Adviser:

Louis A. Iozzi: Waller Hall, Room 06, 932-9164

Successful completion of program qualifies students for a state teacher certificate of eligibility with advanced standing in science and/or agriculture.

11:300:327 Applications of Psychology in Education (3)
11:300:411 Materials and Methods of Teaching Science (3) and/or 11:300:425,426 Methods of Teaching Vocational-Technical Agriculture (3,3)
11:300:416 Environmental Education in the School (3)
11:300:417 Observation Internship (BA—3 credits required)
11:300:423,424 Teaching Seminar (1.5,1.5)
11:300:487 Student Teaching (9)

CERTIFICATE PROGRAMS

In addition to teacher certification programs in a number of areas, Cook College offers interdisciplinary certificate programs in a number of its mission areas.

Note: Certificates are awarded only with or subsequent to the awarding of a baccalaureate degree in an approved major.

Environmental Geomatics Certificate (18 credits)

The regional and global scope of environmental problems is now well established. Satellite remote sensing provides the only feasible means of monitoring large regions of the earth and its land and water resources in a timely fashion. Remotely sensed data can be combined with other resource data in a computerized geographic information system (GIS). The GIS provides a powerful set of tools to store, integrate, analyze, and graphically display vast amounts of environmental data. The Environmental Geomatics Certificate is designed to give students, regardless of major, an understanding and working knowledge of remote sensing and GIS technology and its application to environmental resource monitoring and management.

The certificate is administered through the Department of Ecology, Evolution, and Natural Resources. For further information, contact Dr. Richard Lathrop in the Environmental and Natural Resource Sciences Building, Room 129 (932-1580).

11:372:232 Fundamentals of Environmental Geomatics (3)
11:372:362 Intermediate Environmental Geomatics (3)
11:372:369 Analytical Methods for Environmental Geomatics (3)
11:372:371 Air-Photo Interpretation (3)
01:960:401 Basic Statistics for Research (3) or equivalent

And one of the following:

11:372:462 Advanced Environmental Geomatics (3)
11:372:471 Digital Photogrammetry (3)
11:372:474 Advanced Remote Sensing (3)

Environmental Planning Certificate (21 credits)

Environmental planning requires the integration of environmental information into the planning process and is concerned with the protection and enhancement of environmental systems while meeting demands for growth and development. The Environmental Planning Certificate Program provides a basic introduction to the challenges of environmental planning and enables students from a variety of disciplines to pursue professional careers in planning.

The certificate is administered through the Department of Ecology, Evolution, and Natural Resources. For further information, contact Dr. George H. Nieswand in the Environmental and Natural Resource Sciences Building, Room 162 (932-1103).

Required courses (12)
11:372:231 Fundamentals of Environmental Planning (3)
11:372:232 Fundamentals of Environmental Geomatics (3)
11:372:409 New Jersey Planning Practice (3)
11:372:411 Environmental Planning and the Development Process (3)

Electives (9)
11:375:351 Land Planning and Utilization (3)
10:975:250 Introduction to Urban Housing (3)
10:975:305 U.S. Urban Policy (3)
10:975:306 Introduction to Urban and Environmental Planning (3)
10:975:315 Theory and Methods of Land Use Planning (3)
10:975:316 Urban Design and Site Planning (3)
10:975:335 Administrative Issues in Environmental and Land-Use Planning (3)
10:975:420 Computers in Planning and Management (3)
10:975:434 Municipal Implementation of Planning Programs (3)
10:975:444 American Land (3)
10:975:452 Planning Engineering (3)
10:975:454 Planning Administration (3)
10:975:474 Tourism Planning (3)
10:975:478 History of Planning Thought (3)
10:975:481 Housing and Economic Analysis (3)
Adviser-approved course(s) in planning

Fisheries Science Certificate (30 Credits)

This certificate program addresses the growing demand for trained fisheries professionals in the region. The certificate provides students from several curricula with courses and practical experience and is modeled on the guidelines of the American Fisheries Society.

The program was developed by faculty from the departments of ecology, evolution, and natural resources; human ecology; and marine sciences. For more information, contact Dr. Judith P. Grassle, Institute for Marine and Coastal Sciences, Room 309C, 932-6555 (351) or jgrassle@imcs.rutgers.edu.

Required courses
11:373:121 Principles and Applications of Microeconomics (3) or equivalent
11:373:363 Environmental Economics (3) or 11:373:362 Natural Resource Economics (3)
11:628:321 Ichthyology (4)
11:628:462 Biological Oceanography (4) or 11:704:335 Limnology (4)
11:704:213 The Fishery Profession (P/NC 1)
11:704:453 Natural Resource Biometrics (3) or 01:960:401 Basic Statistics for Research (3)
11:704:406 Fishery Science (3)
11:704:407 Research Methods in Fishery Science (3)
or an adviser-approved course in population dynamics

Two of the following (6 credits):

11:374:308 Human Ecology of Maritime Regions (3)
11:374:313 Environmental Policy and Institutions (3)
11:374:314 Human Dimensions of Natural Resource Management (3)
11:374:315 International Environmental Policy (3)
11:375:333-334 Environmental Law I,II (3,3)
11:704:320 Legal Aspects of Conservation (3)
an appropriate, adviser-approved practicum in fisheries science (3)

Food Systems Education and Administration Certificate (FSEACP) (21–22 credits)

This certificate program is designed to provide practical skills and experiences appropriate for employment in a wide range of careers involving the development, administration, and delivery of educational programs and services provided by both nonprofit and for-profit organizations. Recognizing that interpersonal skills and business savvy are often as important as solid technical and conceptual foundations in a discipline, the program is intended to supplement a variety of discipline-based major programs.

The program explores communication skills; management skills; experience and skill in the development of proposals and reports; the ability to design, implement, and assess educational programs, activities, and related budgets; and the ability to contribute to a program as both an individual and member of a team. An experience-based education component is an integral requisite for the certificate.

For more information, contact Dr. Maurice P. Hartley: Cook Office Bldg., Room 112, 932-9155 (216).

The program requires at least three credits selected from each of the following areas:

I. Food Systems/Policy (3)

11:015:430 World Food Problems: Scientific Solutions? (3)
11:373:323 Public Policy toward the Food Industry (3)
11:373:331 Economics of Food Marketing Systems (3)

II. Communication (3)

04:192:220 Fundamentals of Speaking and Listening (3)
04:192:380 Public Speaking (3)
01:355:302 Scientific and Technical Writing (3)
01:355:303 Writing for Business and the Professions (3)
01:355:402 Advanced Technical Writing Workshop (3)

III. Management (3)

11:373:241 Agribusiness Management (3)
11:373:341 Management: Human Systems Development (3)

IV. Interpersonal/Intercultural Relations (3)

04:192:345 Intercultural Communication (3)
11:300:327 Applications of Psychology in Education (3)
11:374:101 Introduction to Human Ecology (3)
01:512:___ an American history course emphasizing minority / gender issues (3)
01:830:___ a psychology course emphasizing minority / gender issues (3)
01:910:352 Groups at Risk in Contemporary Society (3)
01:920:306 Race Relations (3)

V. Computer Applications (3–4)

01:198:110 Introduction to Computers and Their Application (3)
11:373:210 Business Decision Computer Tools (4)

VI. Accounting (3)

33:010:272 Introduction to Accounting (3)

VII. On-the-Job Experience (3)

An internship or cooperative education experience for at least one term, enabling the students to learn about organizational structure, teamwork, the work ethic, and leadership. It also should provide experience in program planning and budgeting and expose the students to the technical areas in which they desire to work.

Horticultural Therapy Certificate (29 Credits)

The profession of horticultural therapy employs horticulture to treat mental and physical diseases and disabilities. The profession requires the integration of plant systems and culture techniques with human psychology and health. This program will enable students to pursue professional registration through the American Horticultural Therapy Association.

For additional information contact Prof. Joel Flagler at the Bergen County Extension office 201 / 599-6162 or on campus at Foran Hall, 732 / 932-9711, ext. 248, or by email at flagler@aesop.rutgers.edu, or contact Dr. James F. White, Plant Science Curriculum Coordinator, at 732 / 932-9375, ext. 357.

Required courses (16)
11:776:210 Principles of Botany (3)
11:776:225 Introduction to Horticultural Therapy (3)
11:776:310 Plant Propagation (3)
11:776:325 Horticultural Therapy Techniques and Programming (3)
11:776:495 Special Problems in Plant Science (4)*

Electives (13)
11:770:301 General Plant Pathology (3)
11:776:221 Principles of Organic Crop Production (3)
11:776:231 Commercial Floral Design (3)
11:776:321 Greenhouse Environmental Control and Crop Production (3)
11:776:439 Nursery Crop Production (3)
11:776:496 Special Problems in Plant Science (4)*
01:830:377 Health Psychology (3) or 01:830:246 Abnormal Psychology (3)
__:___:___ adviser-approved electives

International Agriculture/Environment Certificate (21–23 credits)

The International Agriculture / Environment Certificate Program has been designed as a supplement to the various academic majors at Rutgers, especially those at Cook College pertaining to agriculture, food, and the environment. Courses selected from several curricula provide a better understanding of the relationship between these areas and social, cultural, historical, political, and economic factors as they relate to human issues. In short, the academic major provides the knowledge and skill base and the certificate program helps to establish a global perspective. This option should be particularly useful to students in applied science fields who wish to pursue careers in the international arena.

* An approved practical experience in horticultural therapy.

In consultation with their academic advisers and the international environmental studies curriculum coordinator, interested students should select a sequence of courses, one from each of three subject areas (I, II, III), that relate to a particular topic such as agriculture, health, food, or environmental management. The program also requires foreign language training (IV) and practical experience (V). In addition, Cook College courses that offer an international focus are listed following the certificate program. Students are encouraged to consider these as they select courses to fulfill major and elective requirements.

The International Agricultural/Environment Certificate Program is designed to serve Cook College and other Rutgers students who wish to supplement their majors by expanding their understanding of issues and challenges faced in the international arena. The certificate program is administered through the international environmental studies curriculum. Interested students should consult with their advisers and Dr. George E.B. Morren, Cook Office Building, Room 208 (932-9153, ext. 315) or morren@crssa.rutgers.edu.

I. Geography and Physical Environment (3)

Courses whose subject matters focus primarily on environmental and other kinds of physical or biotic systems and problems characteristic of a region, world area, or habitat outside of the United States, or use such bases for assessing human issues.

11:015:401 Colloquium: Earth System Science (3)
11:015:492 Tropical Agriculture (3)
11:374:101 Introduction to Human Ecology (3)
11:374:301 Environment and Development (3)
01:450:101 Earth Systems (3)
01:450:211 Conservation and Use of Natural Resources (3)
01:450:311 Natural Hazards and Disasters (3)
11:670:202 Elements of Climatology (3)

II. Historical-Cultural (3)

Courses that focus primarily on comparative, historical, and/or sociocultural factors in examining issues related to environment, food, health, population, or agriculture.

01:070:309 Medical Anthropology (3)
11:374:211 Rural Communities (3)
11:374:223 Urban Society and Environment (3)
11:374:269 Population, Resources, and Environment (3) or 01:920:275 Introduction to Population (3)
11:374:308 Human Ecology of Maritime Regions (3)
11:374:312 Environmental Problems in Historical and Cross-Cultural Perspective (3)
11:374:314 Human Dimensions of Natural Resource Management (3)
11:374:331 Culture and Environment (3)
11:374:341 Social and Ecological Aspects of Health and Disease (3)
01:450:205 World Cultural Regions (3)

III. Political Economy (3)

Courses that focus primarily on the international or comparative political and/or economic institutions and their dynamics.

11:015:430 World Food Problems: Scientific Solutions (3)
11:373:371 Food Policy (3)
11:374:102 Global Environmental Processes and Institutions (3)
11:374:220 Rural Development (3)
11:374:313 Environmental Policy and Institutions (3)
11:374:315 International Environmental Policy (3)
01:790:102 Introduction to International Relations (3)
01:790:210 Comparative Politics (3)

IV. Foreign Language (6–8)

Completion of at least two terms of foreign language at the intermediate or advanced level.

V. Practical Experience (6)

Relevant research, at home or abroad, overseas work, study and travel, employment or a combination of these focused on international environment, agriculture, food, and the like. Credits are gained through registration for curricular independent study, field study, research, and practicum courses or cooperative education at Cook College.

"International" Courses at Cook College

"International" courses at Cook College are those courses offered by the faculty that consider issues in comparative or global terms and contribute explicitly to international understanding in relation to human welfare.

Such courses may include consideration of: (1) the social, cultural, biological, physical, and other institutional characteristics of nations and societies; and (2) the interrelationships between and among nations and societies.

The following Cook College courses currently meet the definition and criteria, in addition to those listed above:

11:015:101 Perspectives on Agriculture and the Environment (2)
11:015:494 Tropical Agriculture and Natural Resources Field Study (3)
11:067:142 Animal Science (3)
11:370:406 Medical and Veterinary Entomology (3)
11:372:202 Environmental Issues in the United States (3)
11:372:231 Fundamentals of Environmental Planning (3)
11:372:232 Fundamentals of Environmental Geomatics (3)
11:372:371 Air-Photo Interpretation (3)
11:372:384 A Systems Approach to Environmental and Agricultural Issues (3)
11:373:101 Economics, People, and Environment (3)
11:375:321 Environmental Pollution in International Perspective (3)
11:375:462 Soil Classification and Survey (4)
11:554:305 Ideas of Nature (3)
11:670:210 Meteorological Analysis I (1)
11:704:317 Conservation Ecology (3)
11:709:255 Nutrition and Health (3)
11:709:363 World Food Customs and Nutrition (3)
11:776:330 Conservation Vegetation (3)

Social Strategies for Environmental Protection Certificate (24 credits)

Solving environmental problems often requires social intervention skills and not just an understanding of the biophysical environment. This certificate program is designed to give students, regardless of their major, an understanding of individual behavior, social organization and values, politics, law, and communication as these fields relate to environmental intervention. The aim is to provide action-oriented training in skills that strengthen environmental

protection efforts. The program culminates in a practicum experience in which these skills are applied to an environmental issue of current concern.

The certificate is administered jointly through several departments at Cook College. For further information, contact Dr. Neil Weinstein in the Cook Office Building, Room 206 (932-9153, ext. 319), Dr. William K. Hallman, in the Cook Office Building, Room 215 (932-9153, ext. 313), or Dr. William Goldfarb in the Environmental and Natural Resource Sciences Building, Room 238 (932-1105).

Required courses (15)
- 11:374:279 Politics of Environmental Issues (3)
- 11:374:322 Environmental Behavior (3)
- 11:375:333 Environmental Law I (3)
- an independent study project approved by the certificate adviser (3)

One of the following courses in communication skills, in addition to the 6 credits required by the college (3):

- 04:192:220 Fundamentals of Speaking and Listening (3)
- 04:192:359 Persuasive Communication (3)
- 04:192:365 Principles of Public Relations (3)
- 04:192:380 Public Speaking (3)
- 01:355:302 Scientific and Technical Writing (3)
- 01:355:303 Writing for Business and the Professions (3)
- 01:355:402 Technical Writing Methods (3)
- 04:571:324 News Reporting and Writing (3)
- 04:571:327 Public Information and Public Affairs (3)

Electives (9)
- 11:373:363 Environmental Economics (3) or 01:220:332 Environmental Economics (3)
- 11:374:201 Research Methods in Human Ecology (3)
- 11:374:313 Environmental Policy and Institutions (3)
- 11:374:335 Social Responses to Environmental Problems (3)
- 11:374:337 Systems Approaches and Interventions (3)
- 11:375:334 Environmental Law II (3) or 11:704:320 Legal Aspects of Conservation (3)
- 01:790:305 Public Policy Formation (3)
- 01:790:341 Public Administration: American Bureaucracy (3) or 01:790:342 Public Administration: Policy Making (3)
- 01:830:374 Environmental Psychology (3)
- 19:910:666 Social Action Techniques and Methods (3)
- 10:975:482 Social Aspects of Environmental Design (3)
- __:___:___ additional communication skills course from the list above (3)

Other courses approved in advance by the certificate adviser may be substituted.

Urban/Community Forestry Certificate (23.5-25.5 credits)

Urban and community forestry is the fastest growing segment of the forestry profession, especially in the northeast, where the total expenditure of time and money on community forestry (nursery, planting, pruning, removals, and line clearance) exceeds that spent on woodlands. This certificate is designed to provide students with the necessary credentials for employment by providing the fundamental knowledge and expertise required for this field.

The certificate is administered through the Department of Ecology, Evolution, and Natural Resources but is designed for students in several curricula. For further information, contact Dr. Peter E. Smouse, Environmental and Natural Resources Bldg., Room 152-A, 932-1064.

- 11:370:381 Insect Biology (4)
- 11:372:231 Fundamentals of Environmental Planning (3) or 11:374:314 Human Dimensions of Natural Resource Management (3)
- 11:704:311 Diseases of Urban Forest Trees (1.5)
- 11:704:356 Forest Ecology and Silvics (3) or 11:704:332 Plant Ecology (4)
- 11:704:373 Wildlife Damage Management (3) or 11:704:404 Wildlife Ecology and Management (3)
- 11:704:377 Practicum in Forest Management (3)
- 11:704:403 Urban Forestry (3)
- 11:776:202 Applied Physiology of Horticultural Crops (3) or 11:776:382 Plant Physiology (3)

COOPERATIVE EDUCATION

Director: Carol M. Rutgers: Martin 211, 932-3000 (523), rutgers@cook.rutgers.edu

The cooperative education program at Cook College is an academic program designed to supplement campus-based studies through the practical application of theory in full- and part-time field experiences related to students' majors or career interests. This blending of formal study and supervised employment in areas relevant to the educational and professional goals of the student is subject to the same advice and approval by appropriate members of the faculty as is the student's choice of programs and courses.

Cook College students in good academic standing from all curricula may enter the program upon completion of 24 credits. Nonmatriculated, part-time, readmitted, and transfer students who are in good academic standing after completing at least 24 credits, 12 of which must be taken at Cook College, also are eligible. Transfers from within the university are eligible immediately if they have completed the first year and are in good academic standing. Students who fail to maintain good academic standing are declared ineligible.

Students seeking their first term of co-op employment after the summer of their junior year must secure curricular approval or, in some cases, approval of the Scholastic Standing Committee. A student whose first term of co-op employment occurs in the second term of the senior year must commit to continuing a second term of cooperative education, thereby delaying graduation. Students also must be registered for at least six credits in the term prior to cooperative education employment.

It is recommended that students begin their involvement in cooperative education by registering for the 1-credit course 11:015:270 Professional Practices / Introduction to Cooperative Education. This is a self-paced course that follows a video instruction format and prepares the registrant for future employment. Registration for the course is by permission, through the cooperative education director (Martin 211).

Cooperative education typically provides experiences that are relevant to students' career interests and salaries that are commensurate with the position held. However, the emphasis is on the learning experience provided by the job rather than on preparation for a specific job upon graduation or on any single economic factor.

A maximum of 15 credits earned through cooperative education may be applied toward graduation. Credits earned are for the educational benefits of the experience, not for "having a job." Students are required to establish an individualized learning contract under the direction of a faculty sponsor. This memorandum of understanding outlines the student's objectives and scholarly responsibilities, the work plan, the plan for evaluation, and the number of credits to be earned (3 or 6 credits per term).

Cooperative education is one way of fulfilling the Cook College experience-based education requirement. Credit is awarded on a standard letter grade or Pass/No Credit basis. Subject to the approval of the student's faculty adviser and the curriculum coordinator, up to 6 credits earned through a given cooperative education experience may be used to satisfy option electives in the student's program of study.

Kappa Theta Epsilon, founded in 1957, is the national cooperative education honor society. Outstanding cooperative education students are invited to join the society in order to promote distinguished scholarship, industrial ability, integrity, breadth of interest, and adaptability.

Students must apply for admission to the program through the office of the director of cooperative education. Subject to the approval of the director and the student's faculty sponsor, the student registers for cooperative education as follows:

11:199:200. COOPERATIVE EDUCATION I (3–6)
First cooperative education registration.

11:199:300. COOPERATIVE EDUCATION II (3–6)
Second cooperative education registration.

11:199:403. COOPERATIVE EDUCATION III (3–6)
Third and subsequent cooperative education registrations and fall / spring graduate registrations.

A maximum of 6 credits earned through participation in a cooperative education program at another institution may be accepted subject to the usual review of transfer credits.

For more information, see the Cook College web site, http://www.cook.rutgers.edu/~coop.

MILITARY EDUCATION

See Military Education in the Programs of Study for Liberal Arts Students section.

HONORS PROGRAMS

Cook College offers two college-wide honors programs:

1. The Cook College General Honors Program is a four-year program for which university Merit Scholars and selected high school seniors (typically in the top six percent of their graduating class with combined SAT scores of 1260 or better) who apply to Cook College prior to the application deadline are invited to compete. Students who join the program are awarded supplementary merit scholarships. There are approximately seventy students in the program.
2. The George H. Cook Scholars Program is Cook College's senior honors thesis program. Students in the top fifteen percent of their class at the end of the fall term of the junior year are automatically invited to participate, but any Cook College junior who is nominated by a faculty member may join the program prior to the senior year.

Additionally, several departments offer honors in the major program of study to students who fulfill department requirements, which typically include honors courses and / or independent research projects.

Cook College General Honors Program

Director: Thomas G. Matro: Loree, Room 040, 932-9162, matro@aesop.rutgers.edu

The Cook College General Honors Program is designed for highly motivated and promising high school seniors who apply to Cook College. Students who fulfill the admissions criteria are invited to the campus to be interviewed by faculty and students who participate in the four-year program. Students selected as Rutgers Presidential Scholars who have applied to Cook College also are admitted to this program. Successful candidates typically are notified in early April, prior to the deadline for college decision. Several first-year students not in the program, whose first-term performance is outstanding, typically are invited in January to join the program.

The program includes a variety of social and academic activities throughout the year, recommended by both faculty and students in the program. The academic requirements of the program are as follows:

1. First Year: In the first term, students are registered for an honors section of Exposition and Argument and a 1-credit Readings in Biology course, in addition to the courses they request. Students register for the interdisciplinary honors seminar in the spring term. The honors seminars are team-taught and integrate formal presentations by faculty and students, reading, discussions, and individual and / or small group research projects. The additional courses selected in the first year will depend upon the curriculum in which the student intends to major. Qualifying students also may be invited by departments to take first-year honors courses.
2. Sophomore Year: Each term, sophomores register for a 1-credit honors tutorial in which they work with a faculty member on a small independent study project that introduces them to research in their areas of interest. In the spring, sophomores also register for the honors seminar.
3. Junior Year: Students register for a 3-credit honors tutorial each term, an independent study program in which each student works with one faculty member. The remaining courses selected for the junior and senior years are determined by the curriculum in which the student is enrolled.
4. Senior Year: Each term students register for a 3- to 6-credit Honors Tutorial (11:554:497,498) or the George H. Cook Scholars Program (11:015:497, 498).

In order to remain in the Cook College General Honors Program and continue to receive the scholarship award that accompanies participation, honors students must (1) enroll as full-time undergraduates, and (2) maintain a cumulative grade-point average of 3.4 or better.

George H. Cook Scholars Program

Director: Barbara Munson Goff: Loree, Room 038, 932-9266, goff@aesop.rutgers.edu

The George H. Cook Scholars Program is a senior-year honors thesis program administered by the Honors Committee and available to students who have completed a minimum of 24 credits at Rutgers by the end of their junior year. To be eligible, students must have achieved a cumulative grade-point average of 3.0 in the junior year or be recommended to the honors committee by a Cook College faculty member. This program is designed to develop and encourage interest in scientific research or creative projects in all curricula.

Interested students should contact the program director and discuss the program with their faculty adviser prior to preregistration for courses for the first term of the senior year. With the adviser's help, students find an instructor willing to aid in the definition of a project and to supervise the work. In consultation with the honors project adviser, students decide how many credits (from 3 to 6) to assign to each term of the honors course. Students usually submit preliminary project proposals for the approval of the Honors Committee at the end of the junior year.

Students who successfully complete the two-term honors course (11:015:497,498), prepare a thesis or other presentation based on these studies, present their work at an open seminar attended by interested faculty members and others, and maintain a satisfactory academic record through the senior year are designated as George H. Cook Scholars at graduation. Honors theses are kept in the permanent collection of the Chang Science Library.

Independent Study, Special Problems, and Departmental Honors

Specific requirements for participating in departmental honors, special problems, or independent study courses are based upon departmental procedures and individual faculty and program of study requirements. For additional information on these honors programs, contact Dean Robert Hills, Cook College, Office of Academic and Student Affairs.

OFF-CAMPUS PROGRAMS

Study Abroad Programs

Rutgers offers a number of junior-year abroad programs and several summer study abroad programs. Although the majority of the options have been designed for students with majors or interests in the liberal arts, agreements related directly to majors at Cook College have been established with the University of Reading in England and Technion-Israel Institute of Technology in Haifa, Israel.

The Technion program is primarily a junior-year program of study in Agricultural Engineering. However, on a case-by-case basis, opportunities may be developed for students in other disciplines. With advance planning, a reduced course load coupled with a cooperative education placement at Technion may be arranged.

The University of Reading junior-year study program includes options in the sciences and in agriculture and food. Among these are the biological sciences, microbiology, agricultural botany, agricultural economics, soil science, and physiology and biochemistry.

Students interested in the Technion, University of Reading, or other study abroad options may obtain additional information through the Study Abroad Office, Rutgers, The State University of New Jersey, 102 College Avenue, New Brunswick, NJ 08901-8543. In order to assure optimum planning toward fulfilling major and degree requirements, it is strongly recommended that students contemplating study abroad consult with their faculty adviser, preferably in the fall term of the sophomore year.

The Mid-Atlantic Consortium

Through a grant from the W.K. Kellogg Foundation, the university has developed partnerships with regional colleges and universities to strengthen undergraduate education in the agricultural and environmental sciences. The first phase of this partnership, known as the Mid-Atlantic Consortium, involved the establishment of student exchange programs, in which Cook College students take courses that are unavailable at Rutgers at sister institutions and students from sister institutions attend Cook College to take courses unavailable at their campus.

Committees composed of faculty members from each institution determine which courses are appropriate and evaluate student applications to the program. Applicants must state their reasons for wishing to participate in the program and provide transcripts and endorsements from their faculty adviser and curriculum coordinator.

As with Study Abroad programs, students usually spend at least one full term at the sister institution. Courses that have been included in the consortium agreement are treated equally with courses taken at Rutgers (e.g., the title of the course, the credits, and the grade are indicated on the student's transcript and included in the cumulative grade-point average). Other courses that the student may elect to take while attending the sister institution are treated as transfer courses from that institution.

For further information, see Dean Ian L. Maw in the Office of Academic and Student Affairs, Martin Hall, second floor.

OFFICE OF SPECIAL PROGRAMS

The transition from high school to the university is often difficult at best for the academically prepared student and can be disastrous for the economically and academically disadvantaged student. As a result, many capable students become disenchanted with the university and therefore fail to realize their dreams. The Office of Special Programs (formally Educational Opportunity Program—EOP) is designed for students with potential for success in college. This office, with funding from the state and the college, provides students with a network of academic and student support resources that are essential for success at college.

The Cook College Office of Special Programs provides the opportunity for these students to gain access to the university and the opportunity to experience, maybe for the first time, academic success in a competitive environment. The office represents four distinct programs: The Summer Institute, The Academic Year Program, The Solid GEMS (General Education in Mathematics and Science) Program, and PREP (Pre-graduate Research Experience Program).

The Summer Institute is a four-week, residential, academically intensive assessment and orientation program for admitted eligible incoming first-year students. All students who are admitted to The Academic Year Program are required to attend. During the four-week period, students participate in a series of academic and counseling activities. Rather than focusing on improving skill deficiencies, the aim of the program is to diagnose students' academic and nonacademic problem areas. In addition, the program seeks to prepare students to accept and cope with the realities of a competitive college environment. Students take a rigorous course load of English, mathematics, computer applications and operations, methods of scientific learning, and a skills seminar.

This program is free for those who qualify. Failure to attend The Summer Institute for students admitted to Cook College through the Office of Special Programs may result in the student being denied admission to the college. Students who wish to apply to this program must fill out the New Jersey Financial Aid Form (NJFAF). The form is available in the guidance offices of most New Jersey high schools.

The Academic Year Program consists of two sixteen-week terms. This support program offers individual counseling, tutoring, career information, diagnostic testing, and additional services needed for success at college. The program seeks to develop in students the ability to test and assess the reality of a college environment and determine, for themselves, the necessary skills for success. Equally important is that students learn to view themselves realistically: to understand their strengths, limitations, defensive styles, and adaptive capabilities.

Solid GEMS is an academically intensive summer program that takes place prior to the student's second year in college. Building on The Summer Institute and The Academic Year Program, Solid GEMS aims to improve performance in entry level mathematics and science courses. In addition to reducing attrition, the program works to discourage students from changing their science major before they have established a sound academic foundation and experience from which to make that decision. Participants successfully completing the Solid GEMS summer program earn 4 credits in the 01:160:161 General Chemistry (Solid GEMS) course offered in cooperation with the Department of Chemistry. Solid GEMS sections of General Chemistry are offered in the fall and spring terms.

Activities are designed to generate questions, curiosity, and a "feel for the subject." Solid GEMS is offered with a chemistry-related mathematics component and science-related English component. The program is open and available to all students who qualify. Costs for students who qualify for the Solid GEMS summer program are financed by grants received in the Office of Special Programs.

The Pregraduate Research Experience Program (PREP) is designed to encourage undergraduate women and minorities traditionally underrepresented in the sciences to engage in campus-based and off-campus research projects and to persist toward graduate school and subsequent careers in the sciences. Off-campus placements typically are provided through the Cooperative Education Program described elsewhere in this chapter. The campus-based options take the form of projects conducted under the supervision of faculty mentors. The projects must have a scholarly component that qualifies for credit through curricular independent study, the George H. Cook Scholars Program, or other appropriate courses. The projects may take one or two terms. Subject to the availability of funding, small grants averaging up to $500.00 may be obtained through the Office of Special Programs to support the projects.

Inquiries about the Office of Special Programs at Cook College should be addressed to Dean Frager Foster, Assistant Dean for Special Programs, 88 Lipman Drive, New Brunswick NJ, 08901-8525 (732/932-3000, ext. 530).

PREPROFESSIONAL PROGRAMS

Health Professions

All Cook College students are eligible for the services of the Health Professions Advising Center on the Busch campus in Nelson Biological Laboratories A-119. This center advises all Rutgers students interested in careers in medicine, dentistry, and related health professions. In addition to advising, the center maintains the student's file and letters of evaluation, supplies application materials for examinations and professional schools, coordinates workshops, and publishes a monthly newsletter of events and deadlines. The center also maintains a library of materials pertaining to careers in the health professions.

All Cook College students wishing to pursue a career in the health professions must register with the Health Professions Advising Center as early in their academic career as possible, to begin maintaining a file. The Cook College Office of Academic and Student Affairs also provides individual counseling pertaining to health careers. Interested students should make an appointment with Dean Joseph Ventola in Martin Hall 206.

Veterinary Medicine

New Jersey does not have a college of veterinary medicine. New Jersey residents who wish to become doctors of veterinary medicine obtain their professional education in out-of-state universities.

To prepare for admission to a veterinary college, the student must have acquired a strong scientific and liberal arts background, as might be obtained from the following undergraduate subjects: biochemistry, biology, English, genetics, general chemistry, microbiology, and physics. The undergraduate program should provide not only the technical information and skills necessary to complete the study of veterinary medicine, but also a broad background of experience and interest enabling the student to achieve full potential as an individual and a member of society. Experience with a veterinary practice is required by most schools. Special examinations must be taken prior to the submission of applications to veterinary colleges. For example, Graduate Record Examinations are required by most colleges of veterinary medicine. Veterinary Aptitude Tests

are, however, required by a few schools. Applicants must check with the individual schools regarding course and test requirements.

Most colleges of veterinary medicine require a minimum of three years of university-level study prior to admission. Most successful candidates for admission have completed a B.S. degree in biological, animal, or agricultural science programs. Colleges of veterinary medicine do not dictate where or in what degree program applicants should be enrolled for preprofessional study. Most veterinary colleges recommend, however, that applicants pursue a baccalaureate degree in the area of their second choice of vocation. If the candidate is not admitted to a college of veterinary medicine, the time spent in preparatory studies may be applied to careers in related sciences, such as animal science, biotechnology, or laboratory animal science.

The Veterinary Medical Education Act of 1971

The Veterinary Medical Education Act of 1971 provides for contractual agreements between the New Jersey Department of Higher Education and out-of-state schools of veterinary medicine for the acceptance of New Jersey residents who are and have been residents of the state of New Jersey for twelve consecutive months. Under the terms of the act, the schools receive a substantial subsidy toward educational costs in return for a number of guaranteed reserved seats, at in-state tuition and / or reduced fees, for New Jersey residents.

At present, New Jersey has contractual agreements with the following schools: New York State College of Veterinary Medicine of Cornell University, University of Pennsylvania School of Veterinary Medicine, Tufts University, Iowa State University, Kansas State University, University of Illinois, Oklahoma State University, and Tuskegee University School of Veterinary Medicine, all of which reserve seats for New Jersey residents. In a recent survey, twenty-eight spaces were available. Students are encouraged to apply to all of these institutions in order to increase their chances of acceptance. Most schools of veterinary medicine also admit a few out-of-state residents without specific contracts. Noncontract schools such as Purdue, Michigan State, Colorado State, Minnesota, Missouri, Ohio State, and Tennessee have admitted students from Cook College.

Further information on application procedures is available in the Department of Animal Science, Bartlett Hall.

Law

Prelaw is not a curriculum, curricular option, or academic program, because there are no specific prerequisites for law school. The most important factor in determining which area of study a student should undertake is his or her interest outside of law. The traditional view that political scientists and historians are the only candidates with free access to law school is false. Law schools expect and admit candidates with diversified backgrounds ranging from biology to environmental studies, environmental and business economics, human ecology, international environmental studies, and all other Cook College programs.

Certain courses or areas, however, may prove helpful to students who wish to pursue a career in law. Environmental Law (11:372:323-324) and Legal Aspects of Conservation (11:372:325) are courses that provide an introduction to the American legal system, legal reasoning, and legal education. Some background in accounting, government, economics, history, logic, and political science is valuable for prelaw students. Communications skills are vital to lawyers, and courses in speech and expository writing are recommended for students who require improvement in these areas. Another important area is reading comprehension and speed. Students who have average or below average skills should consider taking a course in reading comprehension and skills offered at the university.

Students interested in applying to law school should contact Dr. William Goldfarb, the prelaw adviser for Cook College students only, in the Department of Environmental Sciences (ENR 238, 932-1105).

Combined Degree Programs

Cook College students may participate in several university-wide programs that provide the opportunity to begin advanced degree work while completing a bachelor's degree.

Joint Bachelor/Medical Degree Program

Offered through the Division of Life Sciences in collaboration with the University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School, this eight-year articulated program allows specially selected students to begin medical school courses in their junior year, while completing undergraduate courses and degrees. Students are selected for this program at the conclusion of their fourth term at Rutgers and are granted provisional admission into the medical school, with a second review of the student's credentials during the fourth year of the program. Students maintain affiliation with the undergraduate college until the bachelor's degree requirements are completed.

The program and procedures for admission are outlined in the Division of Life Sciences section of the Programs of Study for Liberal Arts Students. The program is, however, not limited to students majoring in Biological Sciences.

For further information, see Dean Joseph Ventola in the Office of Academic and Student Affairs, Martin Hall, second floor.

Five-Year B.A. or B.S./M.B.A. Program

Offered in cooperation with the Graduate School of Management, this program allows specially selected students to begin M.B.A. courses in their senior year, while completing undergraduate courses and degrees. Students are selected for this program at the end of the junior year. In the senior year, students typically begin M.B.A. courses at the School of Business in New Brunswick, while completing the undergraduate degree. Additional requirements for the M.B.A. are completed in the following year at the Graduate School of Management in Newark.

For further information, see Dean Robert Hills in the Office of Academic and Student Affairs, Martin Hall, second floor.

Five-Year B.A. or B.S./M.P.P. Program

Offered in cooperation with the Bloustein School of Planning and Public Policy, this program allows specially selected students to earn an M.P.P. degree in five years by beginning graduate courses in their senior year and undertaking a summer internship after their fourth year. Students apply for admission in the junior year. They must take the GRE or LSAT in the junior year and have a GPA of at least 3.0.

For further information, see Dean Robert Hills in the Office of Academic and Student Affairs, Martin Hall, second floor.

Course Listing

Explanation of Three-Part Course Numbers

The number preceding each course title is divided into three parts. The first two digits are the administrative code (standing for a faculty or a school), the next three digits are the subject code, and the final three digits are the course code.

Administrative Codes

The Cook College administrative code is 11. For a complete list of administrative codes, see the beginning of the Programs of Study for Liberal Arts Students section in this catalog.

Subject Codes

A subject code comprises the third through fifth digits in all course numbers and indicates the subject matter of the course. Courses with the following subject codes are listed in this chapter. (Subject codes are not necessarily major programs of study and do not always have the same code numbers as the curricula.)

015 Agriculture and Environmental Science
067 Animal Science
115 Biochemistry
126 Biotechnology
127 Bioresource Engineering
199 Cooperative Education
300 Education
370 Entomology
372 Environmental Resources
373 Environmental and Business Economics
374 Environmental Policy, Institutions, and Behavior
375 Environmental Sciences
400 Food Science
550 Landscape Architecture
554 Interdisciplinary Studies
628 Marine Sciences
670 Meteorology
704 Natural Resource Management
709 Nutritional Sciences
770 Plant Pathology
776 Plant Science

Course Codes, Credits, and Hours of Attendance

The sixth, seventh, and eighth digits comprise the course code in all course numbers. Two course codes separated by a comma indicate that each term may be taken independently of the other (example: 11:015:483,484). Two course codes separated by a hyphen indicate that satisfactory completion of the first term is a prerequisite to the second term (example: 01:119:101-102); however, credit may be earned for the first term without registration for the second.

Credits awarded for the successful completion of each course are indicated in parentheses following the course title. The credit-prefix E indicates that the credits are not included in the calculation of credits required for graduation ("degree credits"). The notation BA indicates that the number of credits is determined by arrangement with the department offering the course. The notation P/NC indicates that the course is offered only for Pass/No Credit grading.

Unless otherwise indicated, a course normally meets for a number of lecture hours equal to the number of credits to be earned. Special hours or modes of class, other than lecture, are usually indicated in italics below the course title.

Consult the Undergraduate Schedule of Classes for the name(s) of the faculty member(s) currently offering each course.

AGRICULTURE AND ENVIRONMENTAL SCIENCE 015

11:015:001. ORIENTATION PROGRAM (BA)
Academic and student life orientation.

11:015:095,096. SEMINAR ON ACADEMIC SKILLS I,II (E3.0,E3.0)
Development of cognitive study techniques for course work in mathematics, chemistry, biology, English, and reading.

11:015:097,098. SEMINAR ON ACADEMIC SKILLS III,IV (E3.0,E3.0)
Prerequisite: 11:015:095 or 096.
Further development of cognitive skills required for advanced course work in mathematics, chemistry, biology, and English.

11:015:101. PERSPECTIVES ON AGRICULTURE AND THE ENVIRONMENT (2)
Lec./rec. 3 hrs. for the first ten weeks of fall term. For entering first-year and transfer students with 36 credits or less.
Examines several current issues to introduce the land-grant mission of the college and the multidisciplinary nature of both the problems and solutions it addresses.

11:015:230. FUNDAMENTALS OF AGROECOLOGY (3)
Introduction to concepts of agroecology, including human interactions with the environment, agricultural plants, and animal-plant interactions.

11:015:249. BIOLOGY OF THE NEW JERSEY PINELANDS (2)
Prerequisites: 01:119:101-102 or equivalent. Application and permission required.
Intensive one-week field experience in biodiversity and natural history, based on the unique ecology of the pinelands. Emphasis on modern methods and tools for ecological analysis and the implementation of resource management policy.

11:015:250 THROUGH 299. TOPICS IN AGRICULTURE AND ENVIRONMENTAL SCIENCE (1 EACH)
A variety of 1-credit courses, some of which are offered on a Pass/No Credit basis, covering a wide range of skills and issues relevant to contemporary problems in agriculture and the environment. Topics change from term-to-term and year-to-year. Consult the Schedule of Classes for current offerings. Recurrent topics include the following:

History of New Jersey Agriculture: an internship at the New Jersey Museum of Agriculture (located at the edge of the Cook College campus).

Nutrition Today: A series of lectures and class discussions on current topics of nutritional concern, including faddism, megavitamins, and dietary goals.

Darwin and Darwinisms: The role of domestication and environmental observation in the development of Darwin's theory and its subsequent (mis)applications. Contemporary evolutionary issues and questions.

Thoreau and Modern Environmentalism: A study of Thoreau's work and its influence on contemporary environmental writing and ideologies.

Wildlife in the Modern World: Introduction to the principles underlying the art and science of wildlife conservation. Wildlife needs, predation, sex ratios, productivity, carrying capacity, and environmental factors.

Solar Energy: Fundamentals of solar energy with focus on useful applications.

35mm Photography: An introduction to 35mm photography including exposure, lenses, filters, color temperature, close-ups, flash, and composition.

Edible and Poisonous Mushrooms: An introduction to the fascinating hobby of mushroom hunting; recognition of common, easily identified edible, poisonous, and hallucinogenic mushrooms.

Wine Insights: An introduction to grapes and the wine-making process, with special attention to local wines. Students must be at least twenty-one years old to be registered.

Field Identification of Birds: An introductory course in birding. Six field trips on alternate Friday mornings during the term and an all-day field trip during the exam period.

Cook College CASE courses: Students may add a 1-credit "Citizenship and Service Education" component to an existing course by registering for this course.

11:015:301. TOPICS IN AGROECOLOGY (3)
Prerequisites: 11:015:230, 11:370:350, 11:776:221 or equivalent.
Issues in ecological agriculture related to such topics as biological control, disease, soil fertility, crop maintenance, and animal husbandry. Emphasis on current scientific literature.

11:015:350. AGROECOLOGY PRACTICUM (3–5)
Prerequisites: 11:015:230, 11:776:221 or equivalent.
A broad range of internship experiences with an academic orientation, approved in advance by the program adviser, such as state regulatory or private agroecology programs, organic farms, master gardening and individual gardens, research programs.

11:015:370. HUMAN RELATIONS FOR SCIENCE PROFESSIONALS (3)
Open to juniors and seniors.
Basic workplace skills such as attitude development, effective communication, conflict resolution, diversity, and strategies for career success, with emphasis on differences between the academic, laboratory, and business cultures.

11:015:390. GEORGE H. COOK HONORS PROJECT PREPARATION (P/NC 1)
Open only to junior year candidates for the George H. Cook Scholars Program. Students will be registered by the program director.
April evening workshops in library research methods, proposal writing, and oral presentation, culminating in an approved honors-project proposal at the end of the May examination period.

11:015:400 THROUGH 450. JUNIOR/SENIOR COLLOQUIUM (3)
Prerequisite: Open only to students who have completed 90 credits.
A capstone, integrative experience for Cook College students concluding their undergraduate studies. Groups of students with a broad range of disciplinary backgrounds seek interdisciplinary solutions to selected problems in the college's mission areas. Courses fulfilling this requirement are announced in advance of registration for the term. A complete listing can be found at the web site (http://aesop.rutgers.edu/~colloquium/).

11:015:483,484. RESEARCH PROBLEMS: AGRICULTURE AND ENVIRONMENTAL SCIENCE (BA,BA)
Credits and hours by arrangement with a faculty adviser, the appropriate curriculum coordinator, and the Office of Academic and Student Affairs.
Original work in the student's major field.

11:015:492. TROPICAL AGRICULTURE (3)
Pre- or corequisites: 01:119:101; 11:776:200 or 11:776:211 or permission of instructor.
Analysis of tropical agriculture systems: climatic parameters, major and important crops, animals, cropping systems, social and technical constraints, and methods of analysis.

11:015:494. TROPICAL AGRICULTURE AND NATURAL RESOURCES FIELD STUDY (3)
Lec. 55 min. Field experience during spring break. Pre- or corequisites: 11:015:492 or equivalent and permission of instructor.
An intensive, ten-day field experience in a tropical country; visits to and analyses of tropical agricultural production and natural resource systems.

11:015:495. TROPICAL AGRICULTURE AND NATURAL RESOURCES INTERNSHIP (BA)
Prerequisite: Open to juniors with permission of instructor. Recommended: 11:015:494.
Supervised research experience in a tropical environment, working with scientists in crop production, aquaculture, and forest management. Offered in Puerto Rico for at least six weeks during the summer.

11:015:497,498. GEORGE H. COOK HONORS PROGRAM (3–6,3–6)
Open only to George H. Cook Scholar candidates.
A two-term independent research project, culminating in an oral presentation to the faculty and a thesis preserved in the Chang Science Library.

AGRICULTURAL ENGINEERING

(See Bioresource Engineering 127)

AGRONOMY

(See Plant Science 776)

ANIMAL SCIENCE 067

11:067:101. CAREERS IN ANIMAL SCIENCE (1)
Career opportunities in the field of animal science, with emphasis on goal-setting, decision-making strategies, and professional-skills development. Offered in cooperation with several regional animal science programs.

11:067:142. ANIMAL SCIENCE (3)
Fundamental principles and functions important in animal science and zoology; emphasis on growth, nutrition, reproduction, lactation, and heredity in domestic animals.

11:067:175. ANIMAL HANDLING, FITTING, AND EXHIBITION (P/NC 1)
Experience in the handling (using a halter, leading, displaying), fitting (clipping, grooming, cleanliness), and exhibiting (showmanship) of large animals.

11:067:200, 204. LARGE ANIMAL PRACTICUM (P/NC 2,2)
Practical experience in the daily care of cattle, goats, sheep, or swine.

11:067:205. LABORATORY ANIMAL PRACTICUM (2)
Pre- or corequisite: 11:067:275 or permission of instructor.
Practical experience in the principles and practices of laboratory animal care: design of housing and equipment; handling; sexing; restraint; identification and record-keeping; sanitation, hygiene, and safety; animal health; other aspects of proper management.

11:067:207. HORSE PRACTICUM (2)
Pre- or corequisite: 11:067:384 or permission of instructor.
Practical experience in handling, husbandry, feeding, health care, grooming, and other aspects of management.

11:067:275. LABORATORY ANIMAL SCIENCE: MANAGEMENT AND TECHNIQUES (3)
Lec. 2 hrs., lab. 3 hrs.
Principles and practices of laboratory animal science; emphasis on animal care and various animal research techniques.

11:067:322. DAIRY CATTLE ARTIFICIAL INSEMINATION (1)
Three-day workshop, held off campus during spring break. Prerequisite: By permission only.
Anatomy and physiology of the reproductive tract. Training and practical experience in artificial insemination and semen handling.

11:067:327. ANIMAL REPRODUCTION (3)
Prerequisites: 01:119:101-102.
Anatomy and physiology of reproductive organs; reproductive processes including female cycles, pregnancy, parturition, and lactation; fertility control with particular emphasis on domestic animals.

11:067:328. ANIMAL GENETICS (3)
Prerequisites: 01:119:101-102.
Introduction to mechanisms of heredity and evolution. Mendelian inheritance, meiosis, recombination, gene mutation and mapping, and introduction to modern biochemical, molecular, and population genetics. Emphasis on animal models and applications.

11:067:330. ANIMAL NUTRITION (3)
Prerequisites: 01:119:101-102; 11:067:142.
Application of nutritional principles to livestock feeding. Nature of nutrients, their metabolism, and physiological function. Factors influencing nutrient requirements for various aspects of production.

11:067:331. ANIMAL NUTRITION LABORATORY (1)
Pre- or corequisite: 11:067:330.
Laboratory to accompany animal nutrition for on-campus students.

11:067:335. LIVESTOCK PRODUCTION AND MANAGEMENT I (3)
Prerequisites: 11:067:142, 327, 328, 330. Corequisite: 11:067:337.
Contributions of beef, dairy, poultry, sheep / goat, and swine industries to food and fiber production. Breeds and improvements. Production requirements: land, housing, feeds, sanitation, environmental / ethical concerns, marketing.

11:067:336. LIVESTOCK PRODUCTION AND MANAGEMENT II (3)
Prerequisites: 11:067:335, 337. Corequisite: 11:067:338.
Management practices in livestock industries: animal evaluation and selection, reproduction techniques (AI, ET), birthing / newborn care, milking, tail-docking / castration, shearing, health and disease, animal behavior, feed formulation / production studies, record keeping.

11:067:337. LIVESTOCK PRODUCTION AND MANAGEMENT LABORATORY I (2)
Corequisite: 11:067:335.
Laboratory exercises and field trips illustrating the principles of 11:067:335.

11:067:338. LIVESTOCK PRODUCTION AND MANAGEMENT LABORATORY II (2)
Corequisite: 11:067:336.
Laboratory exercises and field trips illustrating the principles of 11:067:336.

11:067:384. HORSE MANAGEMENT (3)
Lec./rec. 2 hrs., lab. 3 hrs. Prerequisite: 11:067:142 or permission of instructor.
Breeding, feeding, and management of horses; physiology, nutrition, anatomy, and evolution.

11:067:390. EQUINE NUTRITION (3)
Prerequisites: 11:067:142, 330, 384 or permission of instructor.
Nutritional requirements and feeding by type and age; evaluation of feedstuffs and rations; feed and pasture management; nutritional diseases and the nutritional management of certain diseases.

11:067:401. TOPICS IN EQUINE SCIENCE (3)
Pre- or corequisites: 11:067:384, 390.
Reports and discussions in selected areas relating to equines.

11:067:402. EQUINE EXERCISE PHYSIOLOGY (3)
Prerequisites: Course in physiology; 11:067:384 or permission.
Survey and critical evaluation of current concepts regarding the physiological and environmental factors associated with exercise in the horse.

11:067:404. ANIMAL DISEASES (3)
Prerequisites: 01:119:101-102; 11:067:142. Recommended: 01:447:390. Open only to juniors and seniors.
The biology of parasites (viruses, bacteria, protozoa, helminths, and arthropods) and the pathogenesis of their associated diseases. Current concepts of prevention and control of common diseases.

11:067:406. FARM PRODUCTIVITY ANALYSIS IN THE ANIMAL SCIENCES (3)
Lec. 80 min. Field trips: Friday afternoons. Prerequisites: 11:067:330; at least two courses in livestock production and business.
Productivity analyses of livestock farms. On-farm visits, problem solving, diagnostic analysis, and development of management recommendations.

11:067:430. ANIMAL MICROTECHNIQUES AND TISSUE CULTURE (4)
Prerequisites: 01:119:101-102; two terms of organic chemistry. Pre- or corequisites: Two terms of biochemistry.
Microscopic, cytological, and cell culture techniques as used in modern research laboratories. Emphasis on aseptic techniques for animal cell culture; requirements for growth in vitro ; mechanisms for cellular differentiation; immunohistochemistry; in situ hybridization; expression of transfected DNA.

11:067:450. ENDOCRINOLOGY (3)
(Formerly 01:119:450)
Prerequisites: 01:119:101-102; Recommended: Courses in physiology and organic chemistry. Open to juniors and seniors.
Endocrinology and neuroendocrinology of animals, including humans. Structure and function of the endocrine glands, including the hypothalamus, and the biosynthesis and chemistry of hormones.

11:067:493,494. ANIMAL SCIENCE PROBLEMS (BA,BA)
Prerequisite: Permission of instructor.
Individual animal science projects with faculty guidance.

ATMOSPHERIC AND OCEANIC SCIENCES 110 (See Marine Sciences 628 and Meteorology 670)

BIOCHEMISTRY 115

11:115:301. INTRODUCTORY BIOCHEMISTRY (3)
Prerequisite: 01:160:209 or 307-308 or 315-316.
The chemistry and metabolism of proteins, carbohydrates, lipids, nucleic acids, and other biologically important compounds.

11:115:305. DATA TREATMENT IN BIOCHEMISTRY (1.5)
Rec. 1 hr., lab. 1.5 hrs. Prerequisite: Familiarity with basic computer operations and applications.
Conversion of raw data into reliable information about biological molecules. Techniques range from pencil, paper, and calculators through sophisticated computer software.

11:115:306. PROBLEM SOLVING IN BIOCHEMISTRY (1.5)
Rec. 1 hr., lab. 1.5 hrs.
Modern instrumentation and analytical techniques used in biochemistry research. Observation of experiments followed by discussion of techniques and problems.

11:115:313. INTRODUCTORY BIOCHEMISTRY LABORATORY (1)
Lab. 3 hrs. Pre- or corequisite: 11:115:301 or 403.
Techniques used in research, clinical, and food laboratories, including tests of biological materials, methods of separations, and determinations of enzyme activities.

11:115:403,404. GENERAL BIOCHEMISTRY (3,3)
Prerequisites: 01:160:307-308 or 315-316.
A comprehensive survey of the chemistry and metabolism of biological compounds, including proteins, polysaccharides, lipids, and nucleic acids. Enzyme kinetics, bioenergetics, organelles, and cellular organization. Expression and processing of biological information, including DNA replication, transcription into RNA, translation into protein, regulation, and recombinant DNA techniques.

11:115:410. PHYSICAL BIOCHEMISTRY (3)
Prerequisites: 01:160:308, 323, 327, or 341; 01:640:251. Pre- or corequisites: 11:115:301 or 404; 01:160:324, 328, or 342.
The physical properties of biological molecules through the study of protein folding, assembly of multimolecular complexes, protein-DNA interactions, and the binding of small ligands by macromolecules as informed by classical thermodynamics, kinetics, and spectroscopy.

11:115:412. PROTEIN AND ENZYME CHEMISTRY (3)
Prerequisites: 11:115:403, 413; or equivalents.
Assay and purification of enzymes and other proteins. Chemical modification, site-directed mutagenesis, and enzyme kinetics as tools in understanding structure-function relationships and enzyme mechanisms.

11:115:413,414. EXPERIMENTAL BIOCHEMISTRY (2.5,2.5)
Lec. 1 hr., lab. 4.5 hrs. Corequisites: 11:115:403,404.
Isolation, characterization, and quantitative determination of biological compounds. Spectrophotometric and titrimetric analysis; chromatography and gel electrophoresis; high performance liquid chromatography. Isolation and characterization of enzymes, nucleic acids, and lipids.

11:115:422. BIOCHEMICAL MECHANISMS OF TOXICOLOGY (3)
Prerequisites: 01:119:101-102; 01:160:307-308 or 315-316. Pre- or corequisites: 11:115:403,404 or equivalent. Recommended: 01:146:356 or equivalent.
General principles and mechanisms of biochemical toxicology, including pharmacokinetics and pharmacodynamics. Examples of metabolism of industrial compounds, organic agrichemicals, and carcinogens.

11:115:426. BIOTECH START-UP COMPANY (3)
Pre- or corequisites: 11:115:403,404.
Actual problems in the establishment of a biotechnology company, including financing, sales and marketing, research and development, and laws and regulations.

11:115:433. SPECIAL TOPICS IN BIOCHEMISTRY (1)
Pre- or corequisite: 11:115:403.
Self-paced computer tutorials in structural biochemistry; designed to supplement courses in molecular biosciences.

11:115:435. TOPICS IN BIOCHEMISTRY (3)
Current research and techniques.

11:115:452. BIOCHEMICAL SEPARATIONS (3)
Prerequisites: 11:115:301 or 403; 11:115:313 or 413.
Basic theory and practice of separating biological molecules. Chromatography, centrifugation, electrophoresis, ultrafiltration, and general methods of extracting and purifying proteins, nucleic acids, carbohydrates, and other biological molecules.

11:115:491,492. SEMINAR IN BIOCHEMISTRY (1,1)
Pre- or corequisites: 11:115:403,404. Open only to senior biochemistry majors.
Practice in techniques for oral presentation of scientific reports and reviews, based on search of research literature in biochemistry and, where applicable, the student's own research results.

11:115:493,494. RESEARCH PROBLEMS IN BIOCHEMISTRY (BA,BA)
Prerequisite: Permission of department.
Research projects under the guidance of faculty members.

11:115:497-498. HONORS IN BIOCHEMISTRY (6,6)
Lab. 18 hrs. Open only to majors; others by permission of department. Both terms must be completed to receive credit.
Laboratory research project, reported as an honors thesis.

BIOTECHNOLOGY 126

11:126:110. CONCEPTS AND ISSUES IN BIOTECHNOLOGY (1.5)
One 80-min. lec.
Applications and implications of molecular biology, including ethical and social controversies.

11:126:394. APPLIED MICROBIOLOGY (4)
(Formerly 11:126:302)
Two 80-min. lecs., one 180-min. lab. Prerequisite: 01:447:390 or equivalent.
Microorganisms in foods; their applications in industry, agriculture, environment, and medicine; physical and chemical factors of growth and control in relation to industrial and natural processes.

11:126:401. SEMINAR IN BIOTECHNOLOGY (1)
One 55-min. lec. Open only to seniors in the biotechnology curriculum. Offered only during fall term.
Development of communication skills needed by professionals in the field of biotechnology through student oral presentations and facilitated discussion. Topics include current scientific advances in biotechnology and the social impact of biotechnology.

11:126:405. MICROBIAL TECHNOLOGY (3)
Prerequisite: 01:447:390; 11:126:394 or 01:447:394 or 11:126:491.
An integrated discussion of recent genetic, biochemical, and engineering approaches to microbial processing, from antibiotics, biomass, and citric acid to Zymomonas.

11:126:406. PLANT GENE TRANSFER (4)
One 80-min. lec., one 55-min. lab preparation, one 180-min. lab. Prerequisite: 01:447:380 or 11:776:305.
Principles and experimental techniques of nonsexual gene transfer in plants. Application of gene-transfer techniques in crop improvement and research in gene expression.

11:126:407. COMPARATIVE VIROLOGY (3)
Prerequisites: 01:119:101-102; organic chemistry.
Biology of viruses and approaches to control through antivirals and genetic engineering. Genome organization, gene expression, replication, movement, and transmission across kingdoms.

11:126:410. PROCESS BIOTECHNOLOGY (3)
Prerequisites: 01:447:390; one term of biochemistry.
Survey of the applications of biotechnology, emphasizing the pharmaceutical industry and the operation of fermentation systems. Case studies of downstream separation and purification protocols employed on an industrial scale.

11:126:413. PLANT MOLECULAR BIOLOGY (3)
Prerequisites: 01:447:380; 01:447:482/11:126:481 or 11:115:404 or 01:694:408.
Fundamental and applied aspects of plant molecular biology: structure, expression, and isolation of plant nuclear genes; molecular biology of plant development, plant organelles, and plant-microbe interactions; and plant biotechnology.

11:126:420. TRENDS IN BIOTECHNOLOGY (3)
Prerequisite: One term of biochemistry.
Current developments in the understanding and application of principles and processes in cellular and chemical biology, evident in contemporary biotechnology literature and / or core interests of the biotechnology industry.

11:126:427. METHODS IN RECOMBINANT DNA TECHNOLOGY (4)
One 80-min. lec., one 55-min. rec., one 300-min. lab. Prerequisites: Organic chemistry and 01:447:380. Strongly recommended: 01:447:390 and 11:126:481.
Introduction to techniques and experimental approaches used in recombinant DNA technology.

11:126:481. MOLECULAR GENETICS (3)
Credit not given for both this course and 01:447:482 or 01:119:482.
Principles of genetics at the molecular level, including the chemical nature of hereditary material. The genetic code, regulatory mechanisms, the molecular basis of mutation, DNA replication and recombination.

11:126:482. MOLECULAR GENETICS LABORATORY (3)
One 240-min. lab., one 80-min. lab., one 55-min. lec. Credit not given for both this course and 01:447:483 or 01:119:483. Prerequisite: 11:126:481.
Biochemical and molecular aspects of gene function and gene recombination.

11:126:483. NUCLEOTIDE SEQUENCE ANALYSIS (3)
Prerequisites: 11:115:403-404 or 01:447:482/11:126:481 or 11:126:427.
Computer analysis of nucleotide sequences: assembly; restriction analysis; gene location and identification; protein sequence analysis and structure prediction; database searching; sequence alignments; and phylogenetic analysis.

11:126:484. HIGH THROUGHPUT SCREENING (3)
One 80-min. lec., 4.5 hrs. lab. Prerequisites: 11:115:403, 413; 11:126:491; 01:447:390.
Application and use of robotic equipment in the analysis of large numbers of samples; assay and protocol design; data collating, analysis and interpretation; applications in various life science industries.

11:126:491. MICROBIAL ECOLOGY AND DIVERSITY (4)
(Formerly 11:126:495)
Two 80-min. lecs., one 180-min. lab. Prerequisite: 01:447:390.
Ecological determinants; characteristics of aquatic and terrestrial ecosystems; nature and activity of microbial populations; biogeochemical cycles and energy flow; microbial interactions and community structures.

11:126:497,498. RESEARCH IN BIOTECHNOLOGY (BA,BA)
Prerequisites: Permission of instructor and faculty adviser.
Independent research projects in biotechnology under the guidance of a faculty member.

BIORESOURCE ENGINEERING 127

11:127:100. INTRODUCTION TO BIORESOURCE ENGINEERING (1)
Overview of specializations within bioresource engineering. Expanding role of biological and environmental sciences in engineering. Analysis of selected problems. Review of professional opportunities.

11:127:240. ELEMENTS OF HORTICULTURAL ENGINEERING (3)
Elements of controlled environment horticulture in crop production systems: greenhouse design, environmental control, intensive production methods, and postharvest handling and storage.

11:127:290. BIOSYSTEMS ENGINEERING MEASUREMENTS (3)
Prerequisite: 01:750:227 or equivalent. Pre- or corequisite: 14:330:373 or equivalent.
Measurement principles including error analysis and transducers. Statistical analysis of experimental data. Electrical measurements. AC and DC circuits. Frequency response and transient analysis. Measurement and interpretation of physical properties of biological materials.

11:127:413. UNIT PROCESSES IN BIOENVIRONMENTAL ENGINEERING I (3)
Prerequisite: 14:155:303 or 14:180:387 or 14:650:312.
Application of theoretical concepts from mass, momentum, heat transfer and reaction kinetics to the design and analysis of unit processes in environmental engineering, with an emphasis on physicochemical operations.

11:127:414. UNIT PROCESSES IN BIOENVIRONMENTAL ENGINEERING II (3)
Prerequisites: 01:447:390; 11:127:413 or permission of instructor.
Biological principles and operations, including microbial ecology, stoichiometry and kinetics of organic contaminant degradation and biomass growth, modeling of ideal biochemical reactors, design criteria for several named biochemical operations used for wastewater treatment.

11:127:423. BIOENVIRONMENTAL ENGINEERING UNIT PROCESSES LABORATORY I (1)
Prerequisite: 01:160:171 or equivalent. Corequisite: 11:127:413.
Demonstration of physicochemical operations used in the treatment of municipal and industrial wastewater, including coagulation, flocculation, sedimentation, filtration, carbon adsorption, chemical oxidation, heat transfer, oxygen transfer, and residence time distribution.

11:127:424. BIOENVIRONMENTAL ENGINEERING UNIT PROCESSES LABORATORY II (1)
Prerequisite: 01:160:171 or equivalent. Corequisite: 11:127:414.
Demonstration of biochemical operations used in the treatment of municipal and industrial wastewater, including biodegradability and biodegradation kinetics, energy balance in a biological reactor, respirometry, activated sludge, anaerobic toxicity, and aerobic digestion.

11:127:450. APPLIED INSTRUMENTATION AND CONTROL (4)
Two 80-min. lecs., one 180-min. lab. Prerequisite: 11:127:290.
Digital electronics, advanced sensing techniques, signal conditioning. Computer-based data acquisition, analysis, and control applications.

11:127:462. DESIGN OF SOLID WASTE TREATMENT SYSTEMS (3)
Prerequisite: Open only to junior and senior engineering students.
Design of integrated solid waste management systems, including waste minimization, collection, composting, materials recovery, recycling, incineration, and landfilling.

11:127:468. HAZARDOUS WASTE TREATMENT ENGINEERING (3)
Prerequisites: 01:447:390; 11:127:413; 01:160:209; 14:180:331; or permission of instructor.
Engineering and process design aspects of hazardous waste management. Waste reduction and recovery, waste treatment, and site remediation. Case studies and engineering solutions to model hazardous waste problems.

11:127:474. AIR POLLUTION ENGINEERING (3)
Prerequisite: 14:155:303 or 14:180:387 or 14:650:312 or permission of instructor.
Engineering design techniques for air quality control. Control of particulate and gas emissions from stationary sources. Control of mobile source emissions. Design for indoor air quality and regional air quality control.

11:127:488. BIORESOURCE ENGINEERING DESIGN I (2)
Open only to seniors in bioresource engineering.
Design morphology. Case studies and special design problems. Solutions developed using creative design processes that include analysis, synthesis, and iterative decision making. Safety and professional ethics.

11:127:489. BIORESOURCE ENGINEERING DESIGN II (2)
Prerequisite: 11:127:488.
Completion of bioresource engineering senior design project. Evaluation. Presentation of final report.

11:127:490. STRUCTURAL DESIGN AND ENVIRONMENTAL CONTROL (3)
Prerequisites: 14:180:215, 243.
Functional requirements and design aspects for controlled environment plant production systems including structures, energy flows and balances, and environmental control equipment.

11:127:491. PHYTOMATION (3)
Prerequisites: 14:440:221, 222.
Analysis and design of mechanization and automation for controlled environment plant production systems with special emphasis on flexible automation, machine vision, mechatronics, and knowledge-based systems.

11:127:492. ENERGY CONVERSION FOR BIOLOGICAL SYSTEMS (3)
Prerequisite: 14:650:351.
Principles of energy conversion techniques and their application to various biomechanical systems, including solar energy systems, compostation, methane and alcohol production, and the internal combustion engine.

11:127:493. UNIT PROCESSES FOR BIOLOGICAL MATERIALS (3)
Pre- or corequisite: 14:155:308 or 14:650:351.
Theory and application of unit operations for handling and processing of biological materials, with emphasis on particulate solids separation, comminution, mixing, heat transfer, and dehydration.

11:127:494. LAND AND WATER RESOURCES ENGINEERING (3)
Prerequisite: 14:180:387.
Engineering aspects of land and water conservation: basic hydrology, soil-water-plant relationships, erosion control, surface and subsurface drainage, irrigation, non-point-source pollution, and flood-control.

11:127:495. ENVIRONMENTAL SYSTEMS ANALYSIS FOR ENGINEERS (3)
Prerequisite: Open only to juniors majoring in bioresource engineering or by permission of instructor.
Principles of procedural and heuristic systems analysis. Overview of engineering economics. Techniques of simulation and optimization. Topics of applied intelligence. Solutions for bioresource engineering problems by systems analysis methods.

11:127:496. PLANNING AND DESIGN OF LAND TREATMENT SYSTEMS (3)
Prerequisite: 14:180:387.
Engineering design of land treatment systems for municipal and industrial wastewater, including spray irrigation, overland flow, infiltration / percolation, and subsurface soil adsorption systems. Facilities planning.

11:127:497,498. SPECIAL PROBLEMS IN BIORESOURCE ENGINEERING (BA,BA)
Prerequisite: Permission of department.
Studies of special interest in some selected area of bioresource engineering.

COOPERATIVE EDUCATION 199

11:199:200. COOPERATIVE EDUCATION I (3–6)
Permission of director.
First cooperative education registration.

11:199:300. COOPERATIVE EDUCATION II (3–6)
Prerequisite: 11:199:200 and permission of director.
Second cooperative education registration.

11:199:403. COOPERATIVE EDUCATION III (3–6)
Prerequisite: 11:199:300 and permission of director.
Third and subsequent cooperative education registrations and fall / spring graduate registrations.

EDUCATION 300

11:300:327. APPLICATIONS OF PSYCHOLOGY IN EDUCATION (3)
Prerequisite: Permission of instructor.
Applications of the theoretical constructs and functions of psychology most relevant to education, with emphasis on learning processes, pupil variability, and the role of teachers and parents.

11:300:334. PARTNERSHIPS FOR YOUTH DEVELOPMENT (3)
Process and contextual factors enhancing community cooperation. Integration of youth development research with organizational systems and volunteer management practices for the delivery of youth development programs.

11:300:336. ADMINISTRATION AND MANAGEMENT OF YOUTH AGENCIES (3)
Topics include budgeting, use of computers, program development, marketing, and working with committees, volunteers, and advisory boards.

11:300:409. SUPERVISED TEACHING (6)
Prerequisite: Permission of department.
Support of teachers through classroom visitations in improving instructional materials; development of teaching techniques and improvement in classroom management.

11:300:411. MATERIALS AND METHODS OF TEACHING SCIENCE (3)
Prerequisite: Permission of instructor.
Techniques of science teaching. Exploring materials and methods for K–12 programs. Science as a basic skill. Emphasis on process approach. Laboratory and field trip safety.

11:300:412. SPECIAL PROBLEMS IN TEACHER EDUCATION (BA)
Prerequisite: Permission of instructor.
Conferences, library research, and curriculum development on topics and contemporary problems in education.

11:300:416. ENVIRONMENTAL EDUCATION IN THE SCHOOL CURRICULUM (3)
Development and integration of environmental education programs for use in existing K–12 curricula. Use of audiovisuals, applied research, evaluation, and other pertinent resources.

11:300:417. OBSERVATION INTERNSHIP (BA)
Prerequisite: Permission of instructor.
Supervised observation of teaching techniques and learning activities in approved classrooms and laboratories; opportunities and responsibilities in instruction; assigned readings, projects, and reports.

11:300:420. RECENT DEVELOPMENTS IN AGRICULTURAL EDUCATION (BA)
Prerequisite: Permission of instructor.
Workshop offered annually for in-service and preservice teachers to provide updating on current trends and practices in the field.

11:300:422. MATERIALS AND METHODS IN WELDING IN THE VOCATIONAL-TECHNICAL SCHOOL (3)
Lec./lab. For students in the Agricultural Teaching Certificate Programs.
Principles and techniques of oxyacetylene and arc welding; teaching safety, instructional units, methods of teaching, and evaluation.

11:300:423,424. TEACHING SEMINAR I,II (1.5,1.5)
Alternate weeks. Prerequisite: Permission of instructor.
Guided discussions of contemporary issues and educational problems. Application of theory to classroom and laboratory situations. Program planning and curriculum development.

11:300:438. PRACTICUM IN PROFESSIONAL YOUTH WORK (3)
Prerequisite: 11:300:336. To be taken during final year of minor program in professional youth work. Nine hours per week in field work and occasional class meetings.
Field work experience in student's area of interest. Arranged cooperatively with adviser and organization.

11:300:487. STUDENT TEACHING (9)
Prerequisites: 11:300:411 and permission of instructor.
Full-time student teaching under supervision of members of the faculty in approved schools for one term.

ENTOMOLOGY 370

11:370:202. THE WORLD OF INSECTS (3)
The nature and importance of insects that affect our personal and professional lives through competition for food, nuisance, and the transmission of disease.

11:370:308. APICULTURE (3)
Lec. 2 hrs., lab. 3 hrs. For students with or without a background in science who are interested in keeping bees or pollinating crops.
Management, honey and wax production, bee language, social behavior, and pollination ecology.

11:370:309. FOREST AND SHADE TREE ENTOMOLOGY (1.5)
Lec. 3 hrs., lab. 3 hrs. Prerequisite: 01:119:101 or equivalent. Offered in the second seven weeks of the fall term.
Introductory entomology emphasizing insects inhabiting forest and shade trees of the U.S. Laboratory covers insect classification, recognition of pertinent taxa, and damage recognition.

11:370:350. AGRICULTURAL ENTOMOLOGY AND PEST MANAGEMENT (3)
Recognition and ecology of plant pest species; sampling and survey techniques; pest management methods and the environmental impact of control procedures; integrated control.

11:370:352. TOXICOLOGY OF PESTICIDES (3)
Prerequisites: 01:119:101-102; one term of organic chemistry or permission of instructor.
Effects, side effects, history, hazards, and usefulness of synthetic pesticides essential for the long-term production of food and fiber.

11:370:381. INSECT BIOLOGY (4)
Lec. 2 hrs., lab. 3 hrs. Field trip. Prerequisites: 01:119:101-102.
A survey of insects; their structure, function, behavior, evolution, diversity, and effect on agricultural production, as well as on people and animals.

11:370:402. AQUATIC ENTOMOLOGY (3)
Prerequisite: 11:370:381 or one course in aquatic ecosystems or permission of instructor.
Identification, classification, morphology, and natural history of aquatic insects. Field work emphasizing aquatic insects of New Jersey.

11:370:403-404. INSECT STRUCTURE AND FUNCTION I,II (3,3)
Lec. 2 hrs., lab. 3 hrs. Prerequisite: 11:370:381.
Functional morphology and physiology of insects, with emphasis on evolution and adaptation to the environment.

11:370:406. MEDICAL AND VETERINARY ENTOMOLOGY (3)
Lec. 2 hrs., lab. 3 hrs. Prerequisites: 01:119:101-102.
Insects and other arthropods in relation to human and animal annoyance and disease.

11:370:409. INSECT CLASSIFICATION (4)
Lec. 3 hrs., lab. 3 hrs. Field trips. Prerequisite: 11:370:381 or permission of instructor.
For students interested in insect diversity and evolution. Life histories and sight recognition of major families, especially those of economic or medical importance.

11:370:493,494. RESEARCH PROBLEMS IN ENTOMOLOGY (1–4,1–4)
Prerequisite: Permission of adviser.
Research projects in entomology under the guidance of faculty members.

ENVIRONMENTAL RESOURCES 372

11:372:202. ENVIRONMENTAL ISSUES IN THE UNITED STATES (3)
Major trends in contemporary environmental concerns. Analysis of environment as a system of interrelated natural and man-made resources, people, and social institutions. Public policies designed to cope with environmental-human needs.

11:372:231. FUNDAMENTALS OF ENVIRONMENTAL PLANNING (3)
Principles of environmental planning related to the planning process. Special emphasis on natural principles, policy issues, and social concerns impacting land use outcomes.

11:372:232. FUNDAMENTALS OF ENVIRONMENTAL GEOMATICS (3)
New technologies to make better use of geospatial data for environmental and natural resource analysis and management. Basic concepts, definitions, and examples of different applications used in an environmental planning and management context.

11:372:322. SURVEYING AND MAPPING (3)
Lec./rec. 2 hrs., lab. 3 hrs. Prerequisites: Algebra and trigonometry.
Principles of surveying and mapping. Measurement of distances, angles, and direction. Use of tripod level, transit, compass, plane table, and personal computer.

11:372:362. INTERMEDIATE ENVIRONMENTAL GEOMATICS (3)
Prerequisite: 11:372:232.
Concepts and techniques for the manipulation and analysis of geospatial data. Emphasis on environmental and natural resource management applications. Instruction in desktop geographic information system software.

11:372:369. ANALYTICAL METHODS FOR ENVIRONMENTAL GEOMATICS (3)
Prerequisites: 01:198:110 or equivalent; 01:960:401 or equivalent; or permission of instructor.
Statistical concepts and related quantitative techniques for the analysis of problems in environmental and natural resource management, with emphasis on gathering, processing, and analyzing spatial information.

11:372:371. AIR-PHOTO INTERPRETATION (3)
Prerequisite 11:372:232 or permission of instructor.
Interpretation and analysis of aerial photography and remotely sensed imagery for environmental and natural resource management. Photogrammetry, mapping, geology, land forms, hydrology, soils, vegetation, and cultural features.

11:372:374. GLOBAL POSITIONING SYSTEMS (1.5)
Prerequisite: 11:372:232 or permission of instructor.
Use of Global Positioning Systems (GPS) to capture and integrate field data into a Geographic Information Systems (GIS) database for environmental analysis.

11:372:381. INTRODUCTION TO SYSTEMS THINKING AND THE SYSTEMS APPROACH (3)
Not open to first-year students.
The use of systems thinking and the systems approach for developing comprehensive understandings of and improving complex problem situations. Consideration of both hard and soft systems approaches. Application to a broad range of problemsinvolving environmental and human activity systems.

11:372:382. SYSTEMS ANALYSIS METHODS AND TECHNIQUES (3)
Prerequisite: 11:372:381.
The application of both hard and soft systems methods andtechniques to complex problem situations. Problem conceptualization and formulation; information and data needs; modeling complex problem situations. Application to a broad range of problems involving environmental and human activity systems.

11:372:384. A SYSTEMS APPROACH TO ENVIRONMENTAL AND AGRICULTURAL ISSUES (3)
Prerequisite: 11:372:381 or permission of instructor.
Exploration of the complexities of environmental and agricultural issues, using a systems approach. The use of both hard and soft systems methods in addressing complex problem situations involving the environment and agriculture.

11:372:409. NEW JERSEY PLANNING PRACTICE (3)
Prerequisite: 11:372:231 or equivalent.
Practice of planning, including land use, environmental, transportation, and other planning fields; structure of planning for all levels of government, covering planning history, legislation (with a focus on the Municipal Land Use Law), intergovernmental relationships, and the various participants in the planning process. Includes a team-based field project.

11:372:411. ENVIRONMENTAL PLANNING AND THE DEVELOPMENT PROCESS (3)
Prerequisites: 11:372:231 and 232, or equivalent.
Comprehensive examination of the relationship of environmental planning to land development; fundamental principles of environmental planning and assessment; analysis of environmental considerations critical to the land-development process using case studies. Includes a team-based field project.

11:372:442. APPLIED PRINCIPLES OF HYDROLOGY (3)
Prerequisite: 01:640:115 or equivalent. Not open to first-year students.
Basic hydrologic concepts and processes and related quantitative techniques appropriate to planning, management, and design considerations; hydrologic cycle, hydrology as a quantitative science, probability and statistics, the drainage basin, precipitation, infiltration, evaporation and evapotranspiration, surface water, hydrographs, soil moisture, groundwater, and managing water and watersheds.

11:372:444. WATERSHED MANAGEMENT: AN INTERDISCIPLINARY PERSPECTIVE (3)
Prerequisite: Open only to juniors and seniors.
Problems and challenges of watershed management with respect to particular New Jersey watersheds. Development of a comprehensive watershed management plan.

11:372:462. ADVANCED ENVIRONMENTAL GEOMATICS (3)
Prerequisites: 11:372:362 and 369.
Advanced and applied analysis of geospatial data. Emphasis on environmental- and natural resource-management applications. Instruction in state-of-the-art geographical information system software.

11:372:471. DIGITAL PHOTOGRAMMETRY (3)
Prerequisite: 11:372:371 or permission of instructor.
Making measurements from digital images. Analysis of digital aerial photographs, generation of ortho-images, and the underlying digital terrain models created in the process.

11:372:474. ADVANCED REMOTE SENSING (3)
Prerequisites: 11:372:369 and 371.
Principles of satellite remote sensing and digital image analysis for environmental and natural resource applications. Instruction in state-of-the-art digital image processing / analysis software.

11:372:493,494. SPECIAL PROBLEMS IN ENVIRONMENTAL RESOURCES (BA,BA)
Prerequisite: Permission of chairperson of the Department of Ecology, Evolution, and Natural Resources.
Special problems in environmental resources involving original work.

ENVIRONMENTAL AND BUSINESS ECONOMICS 373

11:373:101. ECONOMICS, PEOPLE, AND ENVIRONMENT (3)
Not open to students who have completed a term of microeconomics or macroeconomics.
Applications of economic concepts to problems related to environmental and other social problems. Topics include opportunitycost, marginal analysis, supply and demand, cost-benefit analysis, fiscal and monetary policies, and international trade.

11:373:121. PRINCIPLES AND APPLICATIONS OF MICROECONOMICS (3)
Economic principles, laws, processes, and institutions of a free-enterprise economy with applications to contemporary economic life. Emphasis on individuals and firms within the economic system that bring about resource allocation.

11:373:210. BUSINESS DECISION COMPUTER TOOLS (4)
Lec. 80 min., lab. 160 min. Prerequisite: 11:373:121 or 01:220:102.
Applied business decision making, using computer technology to set up, analyze, solve, and communicate results, using data bases, spreadsheets, graphics, word processing, and communication techniques.

11:373:231. AGRIBUSINESS MARKETING I (3)
Prerequisite: 11:373:121 or equivalent.
Introduction to business and agricultural marketing, with emphasis on the economics, institutions, and policies of the food marketing system. Consumer behavior, marketing strategies, cooperatives, food markets, and computer applications.

11:373:241. AGRIBUSINESS MANAGEMENT (3)
Prerequisite: 11:373:121 or equivalent.
General application of basic concepts, functions, and tools of management that contribute to success and improve individual performances in decision making and other situations and problems in the field of management.

11:373:321. ECONOMICS OF PRODUCTION (3)
Prerequisites: 11:373:121 or equivalent; a term of calculus or equivalent; or permission of instructor.
Production theory (factor-product, factor-factor, product-product relationships) and its application to farms, business firms, and industries. Derivation of cost functions, product supply functions, and resource demand functions and their use in constructing theories of value, resource pricing, and distribution.

11:373:323. PUBLIC POLICY TOWARD THE FOOD INDUSTRY (3)
Prerequisite: 11:373:121 or equivalent. Open only to juniors and seniors.
Examination of the major public policies influencing the relationships between business and consumers. Appraisal and analysis of antitrust legislation, consumer protection, and state and federal regulations.

11:373:331. ECONOMICS OF FOOD MARKETING SYSTEMS (3)
Prerequisites: 11:373:210, 231.
The structure and workings of the U.S. food marketing system, including effects on farmers, consumers, processors, wholesalers, retailers, and food services, and the forces shaping this dynamic market.

11:373:341. MANAGEMENT: HUMAN SYSTEMS DEVELOPMENT (3)
Prerequisite: 11:373:101 or a term of microeconomics.
Integration and application of behavioral and managerial sciences to promote processes by which individuals, groups, and organizations work together for common goals and mutual success.

11:373:351. AGRIBUSINESS FINANCE I (3)
Prerequisites: A term of microeconomics; a term of accounting; 11:373:210; 01:960:211 or 285.
Concepts and practices of financial management. Analysis of financial position, working capital management and budgeting, cost of funds and capital structure, and financial instruments and institutions, with applications to emerging issues.

11:373:352. ECONOMICS OF FUTURES MARKETS (3)
Prerequisite: 11:373:210. Open only to juniors and seniors.
Development, functions, operation, and importance of futures markets. Mechanics of trading futures contracts for hedging and speculative purposes. Use of futures contracts as instruments of financing business activities.

11:373:361. LAND ECONOMICS (3)
Prerequisite: 11:373:121 or equivalent.
Application of economic principles to utilization of land resources. Physical and institutional factors affecting land use. Emphasis on real property rights, economics of conservation, the valuation process, cash flow analysis, and public policy.

11:373:362. NATURAL RESOURCE ECONOMICS (3)
Prerequisite: 11:373:121 or equivalent.
Market / nonmarket decision making structure regarding natural resource use and policy implications, with emphasis on public choice. Benefit-cost analysis and market failure as these apply to natural resource use.

11:373:363. ENVIRONMENTAL ECONOMICS (3)
Prerequisite: 11:373:121 or equivalent.
The economics of pollution. Socioeconomic origins of environmental problems, failures of market economy and property rights systems, public policies to protect environmental quality. Emphasis on economic incentives as a means of control.

11:373:371. FOOD POLICY (3)
Prerequisite: 11:373:121 or equivalent.
The nature, importance, and economic consequences of U.S. agricultural and food policies. Commodity price supports, supply controls, marketing orders, soil and water conservation, food subsidies, food safety, agricultural research, taxation, and macroeconomic policies.

11:373:422. DEMAND AND PRICE ANALYSIS (3)
Prerequisites: 01:220:103; 11:373:210; a term of calculus; a term of statistics.
Advanced analysis of consumer behavior, market demand, producer behavior, and price determination under alternative market structures. Introduction to empirical price analysis.

11:373:425. APPLICATION OF ECONOMETRICS IN AGRICULTURAL ECONOMICS (3)
Prerequisites: 11:373:210, 231, 422.
Applications of econometrics to problems in environmental and business economics. Estimation techniques, model specification, problem diagnostics, and forecasting.

11:373:451. AGRIBUSINESS FINANCE II (3)
Prerequisites: 11:373:351 or equivalent; Calculus I; a term of statistics.
Efficient capital markets, asset pricing models, risk, return, portfolio theory, equity valuation; fixed-income and derivative investment instruments, with emphasis on practical application of theoretical concepts.

11:373:465. AGRIBUSINESS MARKETING RESEARCH (4)
Two 80-min. lecs., one 55-min. rec. Prerequisites: 11:373:210, 231; a term of statistics.
Marketing research techniques and methods used to aid management decision making; application of concepts and techniques to real-world situations.

11:373:491,492. RESEARCH PROBLEMS IN AGRICULTURAL, ENVIRONMENTAL, AND BUSINESS ECONOMICS (BA,BA)
Prerequisite: Permission of adviser.
Research problems and independent projects under guidance of faculty members.

11:373:495. ISSUES IN AGRICULTURAL, ENVIRONMENTAL, AND BUSINESS ECONOMICS (3)
Prerequisite: Permission of instructor. Open only to juniors and seniors.
Senior seminar on major current issues in environmental and business economics. Emphasis on the total system in evaluating rational approaches to issues. Problem solving using best allocation of resources. Debate and discussion.

ENVIRONMENTAL POLICY, INSTITUTIONS, AND BEHAVIOR 374

11:374:101. INTRODUCTION TO HUMAN ECOLOGY (3)
The study of complex and varied patterns of interaction between people and the environment, with special attention to concepts, concerns, and methods of human ecology.

11:374:102. GLOBAL ENVIRONMENTAL PROCESSES AND INSTITUTIONS (3)
Prerequisite: 11:374:101.
Scientific and policy dimensions of international environmental affairs; problems, response mechanisms, regional and national activities, and alternative strategies.

11:374:175. ENERGY AND SOCIETY (3)
Main sources, transfers, and losses of energy in the biosphere; how they relate to human resources and enter the immediate environments of humans and other organisms.

11:374:201. RESEARCH METHODS IN HUMAN ECOLOGY (3)
The basic research techniques used by social scientists, planners, and others in writing social impact statements, evaluating programs, and carrying out basic research on human problems.

11:374:211. RURAL COMMUNITIES (3)
Investigations of the patterns of social life that prevail in the rural communities of developed and developing countries.

11:374:220. RURAL DEVELOPMENT (3)
Analysis of private and public efforts to make fuller use of human and natural resources in impoverished rural areas of the developed and developing worlds.

11:374:223. URBAN SOCIETY AND ENVIRONMENT (3)
Growth of cities in industrial countries, with emphasis on their physical and social environments and on policies for improvement.

11:374:269. POPULATION, RESOURCES, AND ENVIRONMENT (3)
The interaction between populations, resources, and the environment in the developed and developing worlds.

11:374:279. POLITICS OF ENVIRONMENTAL ISSUES (3)
The content and process of policy making concerning air and water quality, toxic wastes, energy, and other environmental issues.

11:374:301. ENVIRONMENT AND DEVELOPMENT (3)
Prerequisite: 11:374:102.
Conflicts between development objectives and conservation goals. Institutional, scientific, and political factors in international agency activities. Focus on variations in environment-development conflicts according to development sectors.

11:374:308. HUMAN ECOLOGY OF MARITIME REGIONS (3)
The study of sociocultural factors affecting marine resource use, management, and conservation.

11:374:312. ENVIRONMENTAL PROBLEMS IN HISTORICAL AND CROSS-CULTURAL PERSPECTIVE (3)
Historical aspects of environmental use and change in relation to present-day problems in sustaining the productivity of physical and biological systems.

11:374:313. ENVIRONMENTAL POLICY AND INSTITUTIONS (3)
Prerequisite: 11:374:102.
Political, scientific, and economic dimensions of international resource and environmental policy development. Emphasis on the U.S. experience.

11:374:314. HUMAN DIMENSIONS OF NATURAL RESOURCE MANAGEMENT (3)
Prerequisite: 11:374:101.
Application of theory and methods of social science, particularly the study of common property theory, to problems in natural resource management. Focus on water use, forestry, rangelands, and fisheries.

11:374:315. INTERNATIONAL ENVIRONMENTAL POLICY (3)
The creation of international institutions to deal with shared and global environmental problems, such as ocean use and population. Assessment of the effectiveness of existing / proposed regimes, using decision-making simulations.

11:374:322. ENVIRONMENTAL BEHAVIOR (3)
Prerequisite: Sophomore standing or above, or permission of instructor.
Understanding human behavior and attitudes as they relate to environmental protection efforts. Field project conducted by the class to promote environmentally desirable behavior.

11:374:331. CULTURE AND ENVIRONMENT (3)
The interrelationship between culture and the environment among a wide variety of human groups.

11:374:335-336. SOCIAL RESPONSES TO ENVIRONMENTAL PROBLEMS I,II (3,3)
Analysis of people's responses to environmental stresses or disturbances and the ways in which response patterns change. Second term: Individual or group field research.

11:374:337. SYSTEMS APPROACHES AND INTERVENTIONS IN HUMAN ECOLOGY (3)
To be taken concurrently with 11:374:490 or 491. Pre- or corequisite: 11:374:101 or permission.
Systems thinking and social-scientific perspectives for intervention; problem solving; and planning in agricultural, urban, environmental, and related organizational contexts. Field research, group facilitation, simulation, planning, and mediation. Ethics and professional practice.

11:374:341. SOCIAL AND ECOLOGICAL ASPECTS OF HEALTH AND DISEASE (3)
The sociocultural factors affecting health status and disease frequency in human populations.

11:374:343. ADVANCED RESEARCH METHODS AND THEORY (3)
Prerequisite: 11:374:201.
Analysis of modes of explanation in social and ecological sciences: causal and noncausal explanations; the relation of processes and events; their usefulness for understanding behavior in different cultures and time periods.

11:374:420 THROUGH 429. TOPICS IN ENVIRONMENTAL AND RESOURCE POLICY (3)
Open only to juniors and seniors.
Policy issues associated with a selected environmental and / or resource problem, focusing on risk and risk communication, science and policy, institutions, comparative national approaches, and policy implications of environmental change.

11:374:430 THROUGH 439. TOPICS IN HEALTH AND ENVIRONMENT (3)
Open only to juniors and seniors.
Policy issues associated with a selected problem in human health and disease, food and hunger, or environmental and occupational health. The social sources of disease and malnutrition, and interventions to improve health.

11:374:490,491. READINGS AND PRACTICUM IN HUMAN ECOLOGY (3,3)
Advanced interdisciplinary reading and independent research in human ecology under the guidance of a faculty member.

ENVIRONMENTAL SCIENCES 375

11:375:101. INTRODUCTION TO ENVIRONMENTAL SCIENCES (3)
(Formerly 11:375:209)
The impact of physical, chemical, and biological assaults on man and environment in air, water, wastewater, streams, noise, occupational health, and solid wastes.

11:375:201. BIOLOGICAL PRINCIPLES OF ENVIRONMENTAL SCIENCES (3)
Prerequisites: 01:119:101-102; 01:160:161; Calculus.
Hazardous agents, pollution, population interactions and dynamics; biogeochemical cycles in damaged and remediated ecosystems; environmental risk, management, and remediation; human health impacts.

11:375:202. CHEMICAL PRINCIPLES OF ENVIRONMENTAL SCIENCES (3)
Pre- or corequisite: 01:160:209 or 307.
Biogeochemical cycles: mass balances within and among environmental reservoirs; importance of water; chemical properties of water and aquatic chemistry.

11:375:203. PHYSICAL PRINCIPLES OF ENVIRONMENTAL SCIENCES (3)
Prerequisites: CALC2 and two terms of physics.
Physical properties of water, air, and soils; energy and water in the earth system; kinetic and potential energy; and soil / plant / atmosphere relations.

11:375:251. SOILS AND WATER (4)
Lec. 3 hrs., lab. 3 hrs. Prerequisite: 01:460:101 or equivalent.
Physical and chemical properties of soils, soil-water interactions, erosion, etc. Soil properties important to environmental planning. Soil survey interpretation and use.

11:375:266. SOILS AND THEIR MANAGEMENT (4)
Lec./lab. Prerequisites: 01:160:161-162, 171; 01:460:101; or equivalent.
Formation; physical and chemical properties; classification; conservation and management; uses of organic matter, limestone, and fertilizers; suitability for land application of sludge, septage, and hazardous wastes.

11:375:301. THE ENVIRONMENT AND HEALTH (3)
Examination of the relationship between human health and environmental disease agents; exposure and risk assessment of health hazards; origin, evaluation, and control of environmental health problems common to modern societies, such as pesticide use, environmental cancer, indoor air pollution, toxic wastes.

11:375:302. ELEMENTS OF WATER AND WASTEWATER TREATMENT (3)
Prerequisite: Two terms each of general chemistry and calculus.
Introduction to unit operations that constitute the state of the art of water and wastewater treatment.

11:375:303. NUMERICAL METHODS IN ENVIRONMENTAL SCIENCE (3)
(Formerly 11:375:437)
Prerequisite: Two terms of calculus or equivalent.
Formulation and solution of environmental science problems by applying analytical and numerical techniques. Principles of data analysis. Generation and solution of mass and energy balances.

11:375:307. ELEMENTS OF SOLID WASTE MANAGEMENT AND TREATMENT (3)
Prerequisite: 11:375:203. Pre- or corequisite: 11:375:303.
The generation, storage, transport, processing, ultimate disposal, and regulation of municipal solid wastes, including discussion of agricultural and hazardous wastes and recovery of resources.

11:375:310. ANALYTICAL ENVIRONMENTAL CHEMISTRY LABORATORY (2)
Prerequisites: 01:160:162; 11:375:202.
Analysis of environmental samples; environmental sampling procedures; experimental ethics; data analysis; HPLC, gc, and atomic adsorption spectroscopic analysis of organic and inorganic substances.

11:375:312. ENVIRONMENTAL MICROBIOLOGY LABORATORY (2)
Pre- or corequisite: 11:375:411.
Selected laboratory exercises in pollution microbiology.

11:375:321. ENVIRONMENTAL POLLUTION IN INTERNATIONAL PERSPECTIVE (3)
Resolution of problems of environmental pollution by international cooperation. Accomplishments presented through unifying themes.

11:375:322. ENERGY TECHNOLOGY AND ITS ENVIRONMENTAL IMPACT (3)
Environmental consequences of energy utilization (transportation, space heating, etc.) and the production of power; the indirect effects of the isolation, purification, and transportation of primary energy resources.

11:375:333. ENVIRONMENTAL LAW I (3)
Theory and practice of environmental law in the context of common law remedies, constitutional environmental rights, and the public trust doctrine. Emphasis on constitutional "takings" and "preemption" issues, and on public policy and science interactions.

11:375:334. ENVIRONMENTAL LAW II (3)
Prerequisite: 11:375:333.
Administrative agencies and legislatures as sources of environmental law, with emphasis on pollution control law. Topics include judicial review; the National Environmental Policy Act; federal and state statutory control of hazardous substances; and air, water, and land pollution.

11:375:336. OCCUPATIONAL AND COMMUNITY NOISE CONTROL (3)
Fundamentals of sound and sound measurement. The effects of noise, regulations, and enforcement. Field exercises.

11:375:345. ENVIRONMENTAL TRANSPORT PHENOMENA (3)
Prerequisites: 11:375:203; 01:640:252.
Vectoral and Einstein notation and rules; conservation principles; scaling; vorticity, circulation, and flow lines; turbulence; diffusion / conduction; and radiative transfer.

11:375:346. INTRODUCTION TO ATMOSPHERIC CHEMISTRY (3)
Prerequisites: 01:160:161, Calculus I, and two terms of physics.
Principles of atmospheric chemistry. Issues include the Antarctic ozone hole, ozone smog, acid rain, air toxics, greenhouse gases, and aerosols. Environmental implications of changing atmospheric composition.

11:375:351. LAND PLANNING AND UTILIZATION (3)
Lec. 2 hrs., fieldwork 3 hrs. Prerequisite: 11:375:266.
Land as a natural resource; its use, capabilities, and conservation, with particular reference to erosion control.

11:375:399. HAZARDOUS WASTE OPERATION AND EMERGENCY RESPONSE (1)
Offered in the winter session. Prerequisite: Open to junior or senior majors, or by permission.
Classroom instruction and hands-on learning of general skills required for working safely at a hazardous waste site. Meets the forty-hour OSHA requirement for hazardous waste site access certification.

11:375:403. ENVIRONMENTAL AND PUBLIC HEALTH: EPIDEMIOLOGICAL ASPECTS (3)
Prerequisite: 11:375:301 or permission of instructor.
Study of environmental disease patterns in human populations; emphasis on the association between environmental exposures and disease occurrence; analysis of causal relationships and risk estimates.

11:375:405. FUNDAMENTALS OF WATER AND WASTEWATER ANALYSIS (4)
Lec./rec. 3 hrs., lab. 3 hrs. Prerequisites: 01:160:161-162 or equivalent.
Principles of quantitative and qualitative determinations of pollutants in waters, with special emphasis on modern techniques.

11:375:406. PUBLIC HEALTH PRACTICE AND ADMINISTRATION (3)
Identification and control of community health problems. Organization and functions of public health agencies discussed inconjunction with utilization of law in implementing health programs.

11:375:407. ENVIRONMENTAL TOXICOLOGY (3)
Prerequisite: An organic chemistry course or permission of instructor.
Basic principles and applications of toxicology to environmental problems.

11:375:408. TREATMENT PLANT AND RECEIVING WATER SURVEYS (4)
Prerequisite: 11:375:405.
Wastewater treatment plant and receiving water surveys, sampling technology, data interpretation. Field trips to treatment plants and polluted streams with the required chemical, physical, and biological analyses.

11:375:409. ENVIRONMENTAL STATEMENT AND IMPACT (3)
Methods, procedures, and regulations involved with preparation of environmental impact and assessment statements. Critical review of currently issued statements and evaluation of construction impacts.

11:375:410. WORKSHOP IN ENVIRONMENTAL ASSESSMENT AND IMPACT (3)
Prerequisite: 11:375:409.
Firsthand experience in research, preparation, writing, and presentation of an environmental impact statement.

11:375:411. POLLUTION MICROBIOLOGY (3)
Prerequisite: One term of introductory microbiology or bacteriology.
Microorganisms as polluters and purifiers of the environment. Biological cycling of carbon, nitrogen, and other elements; sewage and solid waste treatment; sanitary bacteriology.

11:375:416. CHEMICAL REACTIONS IN THE ENVIRONMENT (3)
Prerequisite: Permission of instructor.
Transformation of toxic environmental chemicals by plants, animals, sunlight, and microorganisms; mechanisms involved inthe formation of cancer-causing materials; analysis and identification of environmental metabolites.

11:375:421. AIR POLLUTION (3)
Prerequisite: Permission of instructor.
Fundamental factors of atmospheric contamination; effect of pollution on man and environment; principles of measurement and survey; methods of control; air cleaning; legal aspects.

11:375:422. AIR SAMPLING AND ANALYSIS (3)
Prerequisite: 11:375:421 or equivalent.
Methods for collection and analysis of particulate and gaseous pollutants. Stack sampling techniques.

11:375:423. ENVIRONMENTAL FATE AND TRANSPORT (3)
Pre- or corequisites: 11:375:444 and 451.
The fate and transport of chemicals to determine chemical exposures in aquatic systems and predict future conditions. Emphasis on water quality problems introduced by addition of nutrients, metals, and toxic organic chemicals to water, soil, and air.

11:375:425. RADIOACTIVITY AND THE ENVIRONMENT (3)
Prerequisite: Permission of instructor.
Atomic and nuclear radioactivity, fission, fusion, interaction of radiation with matter, biological effects. Radiation exposure limits, sources of environmental contamination, radioactive waste treatment and disposal.

11:375:426. INTRODUCTION TO HEALTH PHYSICS (3)
Prerequisites: 01:640:138 and 01:750:203-204, or equivalent.
The protection of people and the environment from unnecessary radiation exposure; principles and practices.

11:375:428. INTRODUCTION TO RADIOISOTOPE TOXICOLOGY (3)
Development of radionuclidic transport and metabolism models. Associated dosimetry and mechanism of induced radiopathological states. Contemporary problems in medical radioisotope toxicology.

11:375:430. HAZARDOUS WASTES (3)
Pre- or corequisite: 11:375:307 or permission.
Hazardous waste management: case studies, RCRA and other legislation and regulations, treatment and disposal technology, sampling and analysis, fate in the environment, site cleanup.

11:375:431,432. SPECIAL PROBLEMS IN ENVIRONMENTAL SCIENCE/ STUDIES (BA,BA)
Prerequisites: Permission of adviser and curriculum coordinator of environmental science.
Conferences; library and laboratory work on assigned topics.

11:375:434. PRINCIPLES OF INDUSTRIAL HYGIENE (3)
Prerequisite: Permission of instructor.
Identification, evaluation, and control of chemical and physical stresses of industrial environment. Gases, aerosols, nonionizing radiation, noise, lighting, ergonomics, industrial ventilation, heat, and health standards.

11:375:435. INTRODUCTION TO OCCUPATIONAL SAFETY AND HEALTH (3)
Systems safety, accident causation and investigation, hazard analysis, and loss control. Safety and risk management, including Worker's Compensation and safety regulations.

11:375:444. WATER CHEMISTRY (3)
Prerequisites: 01:160:161-162 and 01:640:135, 138, or equivalent or permission of instructor.
Chemistry of natural and polluted waters; water quality; equilibrium models for several chemical systems in natural waters; stability of organic compounds.

11:375:445. PROBLEMS IN AQUATIC ENVIRONMENTS (3)
Prerequisites: 01:119:101-102; 01:160:161-162; or permission of instructor.
Effects of chemical and biological pollutants on marine and estuarine environments; demographic stresses.

11:375:451. SOIL CHEMISTRY (3)
Prerequisite: 11:375:266. Offered odd-numbered years.
Chemical behavior in soils as it relates to their preservation, maintenance, and improvement for use by man.

11:375:452. SOIL FERTILITY (3)
Prerequisite: 11:375:266 or permission of instructor.
Soil-plant relationships in the field and methods of diagnosing deficiencies in soils and plants.

11:375:453,454. SOIL ECOLOGY (3,3)
Prerequisites: 01:119:101-102 and a term of organic chemistry.
The impact of soil organic components on total ecosystem function: nutrient cycling, soil organic component analysis, behavior of soil amendments, soil flora and fauna, energy cycling.

11:375:455,456. INTERNSHIP IN ENVIRONMENTAL HEALTH (2,2)
Prerequisite: Written consent of instructor. Open only to environmental and public health students.
A field program in which a student observes the practice of an environmental health department.

11:375:459. PHYSICAL PROPERTIES OF SOILS (3)
Prerequisite: 11:375:266 or permission of instructor.
Characteristics of water, air, and heat movement and retention in soils. Contaminant movement and leaching. Soil mechanical properties, erodibility, and other physical properties.

11:375:462. SOIL CLASSIFICATION AND SURVEY (4)
Prerequisite: 11:375:266.
Formation, development, and classification of natural soil types. Field trips and surveying of selected areas.

11:375:491. RADIOISOTOPE THEORY AND TECHNIQUES (3)
Prerequisite: Permission of instructor.
Theory and use of radioisotopes; principles and operation of radiation-counting systems; selected radiochemical techniques; emphasis on biological and medical applications of radioisotopes.

11:375:493. APPLIED HEALTH PHYSICS (2)
Prerequisite: Permission of instructor.
Basic concepts and practices of radiation protection. Designed for personnel involved with the use of ionizing radiation sources and radioisotopes.

11:375:494. RADIATION LABORATORY (2)
Prerequisite: 11:375:425 or 491, or permission of instructor.
Laboratory practicum, with introductory lectures, in the use and detection of radioactive isotopes. Principles and operation of major radiation measurement systems, sample preparation and protection techniques.

FOOD SCIENCE 400

11:400:103. SCIENCE OF FOOD (3)
Intended for all students; no science required.
Overview of major food components (carbohydrates, fats, proteins, vitamins, and minerals), process of digestion, major food-related diseases in U.S., the bases for food preservation, including processing, food legislation, and current food issues, such as the use of food additives.

11:400:104. FOOD AND HEALTH (3)
Intended for all students; no science required.
Personal nutrition and its relationship to health.

11:400:201. PRINCIPLES OF FOOD SCIENCE (3)
Prerequisites: 01:119:101-102, or 103. Pre- or corequisite: 01:160:209 or 307 or 315.
Overview of food safety, composition, and preservation methods. Structure-function relationships of water, protein, lipid, carbohydrate, minerals, and natural products in food systems.

11:400:202. PRINCIPLES OF FOOD SCIENCE LABORATORY (2)
Lec. 80 mins., lab. 3 hrs. Pre- or corequisite: 11:400:201.
Practical introduction to basic techniques of food ingredient formulation, processing, and preservation. Effects of process variables on physical and chemical properties of selected food components.

11:400:304. FOOD ANALYSIS (4)
Lec. 3 hrs., lab. 4 hrs. Prerequisites: 01:160:307-308.
Modern methods of analytical chemistry, with emphasis on chromatography. Application of analytical methodology to lipids, amino acids, carbohydrates, and other food components. Importance of precision, accuracy, and significance of results.

11:400:401. INTRODUCTION TO FOOD ENGINEERING FUNDAMENTALS (4)
Lec./lab. Prerequisites: Two terms each of calculus and physics.
Engineering principles of processing and preserving food. Laboratory experiments and weekly problem assignments.

11:400:402. INTRODUCTORY FOOD ENGINEERING PROCESSES (4)
Lec. 4 hrs. Prerequisite: 11:400:401.
Unit operations and processes for food manufacture. Three field trips with reports and weekly problem assignments.

11:400:405. SENSORY EVALUATION OF FOODS (3)
Pre- or corequisite: 01:960:401 or equivalent. Open to food science or nutritional sciences majors, or by permission.
Experience in using the senses as analytical tools. Principles of sensory evaluation of foods, including sample presentation, data recording and analysis, and report writing.

11:400:408. FOOD SCIENCE TOPICS (2)
Prerequisite: Permission of instructor. (Taught by visiting professor.)
Special assignments in any field of food science.

11:400:410. NUTRACEUTICALS, NUTRITION, AND FOOD PROCESSING (3)
Prerequisites: 11:400:201 or equivalent; 11:400:104 or 11:709:255 or equivalent.
Principles of food processing reviewed with emphasis on the nutritional and nutraceutical impact of modern food industry practices.

11:400:411. FOOD CHEMISTRY (3)
Lec. 3 hrs. Open only to seniors. Prerequisites: 01:160:209; 11:400:201, 202; 01:447:390.
Basic chemical, biochemical, and physical principles underlying food systems. Factors contributing to the color, flavor, texture, nutrition, and safety of food. Food applications of basic principles.

11:400:412. FOOD PRODUCT DEVELOPMENT (3)
Lec. 2 hrs., lab. 3 hrs. Prerequisites: 11:400:201, 202, 304, 402, 411.
A comprehensive consideration of food product development, including fact finding, prototype and process development, shelf life, technical and financial feasibility, distribution, and consumer acceptance.

11:400:413. FOOD LAW (1)
Open only to majors. Prerequisites: 11:400:201, 202.
Food laws of the U.S. and their impact. The role of federal regulatory agencies in the administration of the law.

11:400:414. FOOD SCIENCE FORUM (1)
Open only to food science majors.
A discussion, lecture, and informal communications course on topics of current interest and concern.

11:400:416. FOOD BIOTECHNOLOGY TOPICS (1)
Prerequisites: 11:115:301 or 403; 01:447:390 or 11:126:302; 11:400:411.
Literature-based overview of state-of-the-art applications of genetic engineering, enzyme technology, and immunology for production of foods and food ingredients. Career opportunities in food biotechnology.

11:400:418. TOPICS IN FOOD CHEMISTRY (1)
Seminar on current topics in food chemistry. Emphasis on development of communication and critical thinking skills through examination of original research articles, discussion of research seminars, and in-class presentations.

11:400:419. FOOD PHYSICAL SYSTEMS (3)
Prerequisites: One term of organic chemistry; two terms of calculus; two terms of physics.
Chemical thermodynamics, kinetics, and macromolecular structure as applied to the complex interactions of molecules in foods. Emphasis on practical problems in food systems and the physical states of biomaterials.

11:400:421. HAZARD CONTROL IN FOOD PROCESSING (3)
Prerequisite: 11:126:394 or 01:447:390.
Principles and application of processing controls to reduce or eliminate hazards in foods; hazard analysis and identification of critical control points; good manufacturing practices: sanitation, monitoring, and risk analysis; regulatory requirements.

11:400:422. FOOD SAFETY: FADS, FACTS, AND POLITICS (3)
Prerequisite: Open only to Cook College juniors and seniors.
Dynamic interactions of science, law, agribusiness interests, and consumer concerns. Case studies and participatory exercises to explore a variety of issues.

11:400:493,494. RESEARCH PROBLEMS IN FOOD SCIENCE (1–4,1–4)
Prerequisite: Permission of adviser.
Research projects in food science under the guidance of the faculty.

LANDSCAPE ARCHITECTURE 550

11:550:230. ENVIRONMENTAL DESIGN ANALYSIS (3)
Analysis of the quality of the physical environment: perception, awareness, design, and planning process. Governmental controls that affect quality. Private, public, urban, rural, and recreational environments considered.

11:550:231. INTRODUCTION TO ENVIRONMENTAL DESIGN I (5)
Lec. 1.5 hrs., studio 6 hrs. Prerequisite: Permission of department. Not open to first-year students.
Design fundamentals and creativity through design process; application to fundamental landscape architecture at small-site scale. Graphic skills and techniques. Impact of environmental design on people and nature.

11:550:232. INTRODUCTION TO ENVIRONMENTAL DESIGN II (5)
Lec. 1 hr., studio 5 hrs. Prerequisites: 11:550:231 and acceptance into landscape architecture program.
Refinement of design process and graphic skills, including perspective and paraline drawing, through projects of increasing complexity and magnitude. Site planning, principles of auto and pedestrian circulation, behavioral aspects of design, basic landform manipulation.

11:550:233. HERBACEOUS PLANTS IN THE LANDSCAPE (3)
Identification, uses, and care of herbaceous plants in private gardens and public spaces: annuals, herbaceous perennials, ornamental grasses, herbs, and plants for ponds and pools.

11:550:237. DESIGN GRAPHICS (2)
Lec. 1 hr., studio 1 hr. Prerequisites: 11:550:231 and acceptance into landscape architecture program.
Development of graphic and visual communication techniques applicable to landscape architecture.

11:550:250. COMPUTER-AIDED DESIGN FOR LANDSCAPE ARCHITECTS (3)
Lec. 2 hrs., lab. 3 hrs. Prerequisite: Open only to majors or by permission of instructor.
Introduction to the use of computer-aided design (CAD) as a design and graphics tool in landscape architecture.

11:550:330. HISTORY OF LANDSCAPE ARCHITECTURE (3)
Historical analysis of landscape theory and practice; design as a physical expression of environmental and cultural determinants; its evolution as a profession in the U.S.

11:550:331. INTERMEDIATE LANDSCAPE ARCHITECTURE I (5)
Lec. 1.5 hrs., studio 6 hrs. Prerequisite: 11:550:232. Open only to students accepted into the landscape architecture program.
Analysis and interpretation of the physical environment with emphasis on methodologies such as GIS, suitability mapping, and visual resource management as applied to land planning, design, and management problems.

11:550:332. INTERMEDIATE LANDSCAPE ARCHITECTURE II (5)
Lec. 1.5 hrs., studio 6 hrs. Prerequisite: 11:550:331.
A continuation of 11:550:331 with an emphasis on the design of public open spaces including plazas, squares, parks, and pedestrian streets.

11:550:340. PLANTING DESIGN (4)
Lec. 2 hrs., studio 3 hrs. Prerequisites: 11:550:231, 232, or permission of instructor.
Plants as design elements affecting function, comfort, energy efficiency, and aesthetic quality. Selection of plants to serve functional and aesthetic purposes. Specification for planting design.

11:550:341. LANDSCAPE ARCHITECTURE CONSTRUCTION I (4)
Lec./rec. 2 hrs., studio 3 hrs. Prerequisite: 11:372:322.
Site engineering principles; grading, drainage, earthwork, and road alignment; their integration with landscape architecture design.

11:550:342. LANDSCAPE ARCHITECTURE CONSTRUCTION II (3)
Lec. 3 hrs. Prerequisite: 11:550:341.
Introduction to properties of construction materials, structural principles, and methods of construction.

11:550:360. INTERNATIONAL STUDIES IN LANDSCAPE ARCHITECTURE (BA)
Prerequisite: Open only to juniors in landscape architecture, with permission.
An opportunity to study in a landscape architecture program abroad with which the department has established an articulated exchange agreement. Course equivalences will be determined upon completion of the program.

11:550:430. ADVANCED LANDSCAPE HISTORY SEMINAR (3)
Prerequisite: 11:550:330 or permission of instructor.
History of gardens in Italy, France, England, or the United States from the Renaissance to the present. Emphasis on form and meaning of garden design and widespread influence of this genre.

11:550:431. ADVANCED LANDSCAPE ARCHITECTURE I (5)
Lec./rec. 2 hrs., studio 6 hrs. Prerequisites: 11:550:332 and 342.
Advanced landscape architecture theory with application to problems of increasing scope and complexity. Social and cultural contexts, with emphasis on design sites for housing and community design.

11:550:432. ADVANCED LANDSCAPE ARCHITECTURE II (5)
Lec./rec. 3 hrs., studio 7 hrs., 3 hrs. by arrangement. Prerequisite: 11:550:431.
Advanced applications focused on complex land planning, design, and management issues.

11:550:433. ARCHITECTURAL DESIGN (3)
Lec. 1 hr., studio 3 hrs. Prerequisites: 11:550:232 and permission of department.
Concepts of architectural and urban design process, systems, and practice. Built environments in relation to human functions, perception, and needs. Space and form design and sketchstudies.

11:550:435. PROFESSIONAL PRACTICE (1)
Lec. 1.5 hrs. Open only to seniors in the landscape architecture program.
Survey of general professional practice, office management, client relationships, collaborative practice, contracts, and specifications.

11:550:437,438. SPECIAL PROBLEMS IN LANDSCAPE ARCHITECTURE (BA,BA)
Open only to majors in the landscape architecture program; others by permission of instructor.
Independent projects. Terminal comprehensive project, research of appropriate scope and complexity, or community involvement in environmental design problems.

11:550:441. LANDSCAPE ARCHITECTURE CONSTRUCTION III (3)
Studio 6 hrs. Prerequisite: 11:550:342.
Introduction to the construction implementation process, development of technical competence, integration of design principles, communication through technical documentation.

11:550:450. ADVANCED COMPUTER-AIDED DESIGN FOR LANDSCAPE ARCHITECTS (3)
Lec. 2 hrs., lab. 3 hrs. Prerequisite: 11:550:250.
Advanced computer-aided design in landscape architecture. The generation of designs from concepts to working drawings.

11:550:460. FIELD STUDY IN LANDSCAPE ARCHITECTURE (1–5 BA)
Open only to landscape architecture majors; others with departmental permission.
Case study and field investigation of landscape planning, design, and management issues.

11:550:497. SENIOR THESIS PREPARATION (1)
Prerequisite: Departmental approval.
Development of independent research and comprehensive design project proposal, including literature review and research methodology, to be submitted to the departmental faculty for approval.

11:550:498. SENIOR THESIS IN LANDSCAPE ARCHITECTURE (4–5)
Prerequisites: 11:550:497 and departmental approval.
Execution of the project proposed in 11:550:497. May not be used in conjunction with the George H. Cook Scholars Program or a cooperative education course.

INTERDISCIPLINARY STUDIES 554

11:554:196. HONORS SEMINAR I (3)
Open only to first-year students in the Cook College General Honors Program.
The topic for each term addresses current issues from the perspectives of the humanities, sciences, and social sciences.

11:554:228. AMERICAN ATTITUDES TOWARD THE LAND (3)
Historical examination of the American conservation movement; perceptions of the environment and their influence on our treatment of the land.

11:554:296. HONORS SEMINAR II (3)
Open only to sophomores in the Cook College General Honors Program.
The topic for each term addresses current issues from the perspectives of the humanities, sciences, and social sciences.

11:554:297,298. HONORS TUTORIAL I,II (1,1)
An independent study project on a topic agreed upon by the student and the cooperating faculty member. Short written report required at the end of each term.

11:554:301. THE USE OF ANIMALS (3)
First-year students by permission only.
Animals as the object of utilitarian relationships: for food, for labor, for pets, for sport, for science. The history and ethics of human attitudes toward animals and the question of animal rights.

11:554:305. IDEAS OF NATURE (3)
First-year students by permission only.
Critical and historical analysis of basic assumptions about the nature of "Nature" (mother, machine, mystery, mathematics, matter) and their relationship to modern attitudes and behavior.

11:554:346. ENVIRONMENTAL DOCUMENTATION IN PHOTOGRAPHY, FILM, AND VIDEO (3)
A study of the use of photographic documentation of environmental issues, as both a record of scientific data and an expression of humanistic concerns. Emphasis on documentary film.

11:554:347. ENVIRONMENTAL PHOTOGRAPHY (4)
Lec. 3 hrs., lab. 3 hrs.
An introductory photo / darkroom course, with emphasis on photographing the landscape environment.

11:554:391,392. INDEPENDENT STUDY (BA,BA)
Individualized research project under the direction of one or more faculty members.

11:554:395,396. HONORS COLLOQUIUM I,II (1.5,1.5)
A series of informal lectures and presentations by and for juniors in the Cook College honors programs.

11:554:397,398. HONORS TUTORIAL III,IV (3,3)
Open only to juniors in the Cook College Honors Scholars Program.
An independent study project in the student's field of interest, carried out with a cooperating faculty member. Written report required at the end of each term.

11:554:424. PRACTICUM IN ENVIRONMENTAL PROTECTION (3)
Prerequisite: Permission of instructor.
Development and implementation of policy on a specific environmental problem. Research conducted under faculty guidance; policy and procedures administered by student-faculty team.

11:554:491,492. INDEPENDENT STUDY (BA,BA)
Individualized research project under the direction of one or more faculty members.

11:554:495,496. HONORS COLLOQUIUM III,IV (1,1)
A series of informal lectures and presentations by and for seniors in the Cook College honors programs.

11:554:497,498. HONORS TUTORIAL V,VI (BA,BA)
Open only to seniors in the Cook College Honors Scholars Program.
An independent study project in the student's field of interest, carried out with a cooperating faculty member.

MARINE SCIENCES 628

11:628:110. TOPICS IN MARINE SCIENCES [MAST] (P/NC 3)
Offered in cooperation with the Marine Academy of Science and Technology at Sandy Hook, an introduction to marine biology, chemistry, and mathematical physics, with opportunities for field and laboratory experience.

11:628:111. TOPICS IN MARINE SCIENCES [BCC I] (P/NC 3)
Offered in cooperation with Brookdale Community College, an introduction to oceanography.

11:628:200. MARINE SCIENCES (4)
Study of the processes governing change in the oceans, with emphasis on basic scientific principles. Does not require strong background in mathematics, chemistry, physics, geology, or biology.

11:628:211. TOPICS IN MARINE SCIENCES [BCC II] (P/NC 3)
Offered in cooperation with Brookdale Community College, an introduction to marine biology or coastal zone management.

11:628:300 THROUGH 310. TOPICS IN MARINE AND COASTAL SCIENCES (1–3 EACH)
Prerequisite: Permission of instructor.
Offered each term by faculty members in the Institute of Marine and Coastal Sciences. Topics, prerequisites, schedule, and credits vary with the topic / instructor.

11:628:321. ICHTHYOLOGY (4)
(Formerly 01:119:321)
Lec. 3 hrs., lab. 3 hrs. Prerequisites: 01:119:101-102.
The biology of fish with emphasis on functional morphology, ecology, and behavior.

11:628:352. OCEAN, COASTAL, AND ESTUARINE CIRCULATION (3)
Major coastal and estuarine processes; coastal upwelling; wave and tidal effects; currents; climatic effects. Types of estuaries. Coastal modification, development, and management.

11:628:364. OCEANOGRAPHIC METHODS AND DATA ANALYSIS (3)
Lec./lab./field. Prerequisite: 11:628:200.
A field and laboratory course in the analytical tools of oceanography. A three-hour laboratory each week and two field trips, one of which is overnight at the Rutgers Field Station at Tuckerton.

11:628:401. SCIENCE IN SHORELINE MANAGEMENT (3)
Prerequisite: Open only to juniors and seniors who have completed a course in biology, earth science, or environmental science.
Examination of coastal environments based on the use of science in the management of shoreline resources, culminating in a student project evaluating the conversion of shoreline by direct and indirect human action.

11:628:404. FUNGI AND ECOSYSTEMS (3)
Prerequisites: 01:119:101-102. Recommended: 01:447:390, 11:375:453, and/or 11:770:402.
Ecophysiology of fungi and their role in the processes of decomposition, pathogenicity, and plant nutrient acquisition. Growth habit, colonization ability, resource availability and requirements, and community structure in terrestrial, aquatic, and marine ecosystems.

11:628:418. MARINE MICROBIOLOGY (4)
Two 80-min. lecs., lab. 3 hrs. Prerequisite: Permission of instructor.
Survey of marine bacteria with emphasis on biochemical adaptations to the ocean realm. Biogeochemical cycling, marine bioremediation, algal mats, and vent symbioses. Characterization of marine samples using recombinant DNA techniques.

11:628:451. PHYSICAL OCEANOGRAPHY (3)
Two 55-min. lecs., one 55-min rec. Prerequisite: 01:750:204.
Physical and chemical properties of sea water. Sound and radiation in the oceans. Heat, water, and momentum exchange at air-sea interface. Tides, waves, and currents.

11:628:462. BIOLOGICAL OCEANOGRAPHY (4)
Two 80-min. lecs., one 55-min. rec. Prerequisites: 01:119:101-102; two terms of calculus; 11:628:200.
Interactions between biological, physical, and chemical components of the marine environment, including primary production and secondary production, biogeochemical cycles, food web interactions, and ecosystem analysis.

11:628:472. CHEMICAL OCEANOGRAPHY (4)
Two 80-min. lecs., one 55-min. rec. Prerequisites: 01:160:161-162; 01:640:151-152; 11:628:200.
Chemical description of the sea and how the distributions of chemical species in the world ocean are related to physical, chemical, biological, and geological processes.

11:628:476. HISTORY OF THE EARTH SYSTEM (3)
Prerequisites: Any three of the following: 01:119:102, 01:160:162, 01:406:101, 01:750:204; or permission of instructor.
The Earth as an evolving physical / biological system; physical and biogeochemical processes that have shaped the environment over geologic time.

11:628:497,498. SPECIAL PROBLEMS IN MARINE AND COASTAL SCIENCES (BA,BA)
Prerequisite: Permission of instructor.
Practical field / laboratory experience with faculty in the Institute of Marine and Coastal Sciences.

METEOROLOGY 670

11:670:201. ELEMENTS OF METEOROLOGY (3)
Overview of current weather maps. Structure of the atmosphere and the role of moisture in the development of dew, clouds, and precipitation. Air masses, fronts, cyclones, thunderstorms, tornadoes, and hurricanes. Elements of forecasting, instrumentation, and communication.

11:670:202. ELEMENTS OF CLIMATOLOGY (3)
Major climatic controls. Climatic classifications and comparisons of major types. Overview of current climate issues, such as global warming and El Niño, and the global climate.

11:670:210. METEOROLOGICAL ANALYSIS (1)
Lec./lab. 1 hr. Pre- or corequisite: 11:670:201 or permission of instructor.
Surface observation codes. Preparation of surface, upper air, and sounding charts. Forecast guidance, weather map interpretation, concepts of stability, and preparation of weather forecasts. Map discussions.

11:670:305. APPLIED METEOROLOGY (3)
Prerequisites: 01:640:251,252; 11:670:201,210.
Atmospheric dispersion modeling; analysis and interpretation of climate statistics; agricultural, hydrological, and biological applications; operational and media meteorology, with applications to transportation and communication systems; forensic and professional meteorology and ethical considerations.

11:670:306. WEATHER, CLIMATE, AND ENVIRONMENTAL DESIGN (3)
May not be taken for credit by meteorology majors.
Weather and climate impact on environmental engineering issues and design applications in agriculture, storm water management, air pollution, coastal management, extreme weather, and global warming.

11:670:307. AGRICULTURAL METEOROLOGY (3)
Prerequisites: 01:640:152 and one term of physics.
Meteorological effects on agriculture; plant growth development and diseases. Soil climate; evaporation; hydrologic cycle. Agricultural forecasts and warning.

11:670:323. THERMODYNAMICS OF THE ATMOSPHERE (3)
Prerequisites: 01:640:152; 01:750:204, or equivalent.
Thermodynamics of the atmosphere, energy conservation, ideal gas law, water and its transformations, moist air, aerosols, hydrostatic stability and convection, vertical motion, cloud formation, and precipitation.

11:670:324. DYNAMICS OF THE OCEANS AND ATMOSPHERE (3)
Prerequisite: 11:670:323.
Hydrodynamics of the oceans and atmosphere. Equations of motion on rotating earth. Vorticity, potential vorticity, and divergence. Boundary layer motion.

11:670:325. SPECIAL TOPICS IN METEOROLOGY (BA)
Topics selected to meet specific needs.

11:670:412. METEOROLOGICAL INSTRUMENTATION (3)
Prerequisite: 11:670:323 or permission of instructor.
Theory of meteorological instrumentation. Use of meteorological instruments for research; maintenance, calibration, and experimental design.

11:670:423. WEATHER SYSTEMS (3)
Prerequisites: 11:670:201 and/or 202; and either both 11:670:323 and 324 or their equivalents. Corequisite: 11:670:433.
Applied dynamics of the atmosphere, including quasi-geostrophic theory. Development of cyclones, vertical motion, jet streams, and fronts. Synoptic-scale weather phenomena.

11:670:424. MESOSCALE WEATHER SYSTEMS (3)
Prerequisite: 11:670:423 or equivalent. Corequisite: 11:670:434.
Convective weather systems, including severe storm structure, evolution, and forecasting.

11:670:431. PHYSICAL METEOROLOGY (3)
Prerequisites: 01:750:204 and 01:640:151-152, or equivalents.
Atmospheric optics and acoustics; radio wave propagation; cloud and precipitation formation; atmospheric electricity; geomagnetic phenomena.

11:670:433. SYNOPTIC ANALYSIS AND FORECASTING I (3)
Lab. 2 hrs. Prerequisite: 11:670:324.
Observation and forecast model data decoding and interpretation. Weather forecast preparation. Use of microcomputers to analyze and display data. Thermodynamic diagrams, cross-section analysis, and wind profiler data.

11:670:434. SYNOPTIC ANALYSIS AND FORECASTING II (3)
Lab. 2 hrs. Prerequisite: 11:670:433.
Case studies and preparation of weather briefings. Observation and forecasting of convection. Winter weather and heavy precipitation forecasting.

11:670:458. AIR-SEA INTERACTIONS (3)
Prerequisite: 11:670:324 or permission of instructor.
Composition and structure of the marine atmosphere; dynamics of the air-sea interface; dynamic and thermodynamic processes of the atmospheric and oceanic boundary layers.

11:670:493,494. RESEARCH PROBLEMS IN METEOROLOGY (BA,BA)
Prerequisite: Permission of instructor.
Independent study on atmospheric projects. Topics and requirements to be determined with the supervising instructor.

NATURAL RESOURCE MANAGEMENT 704

11:704:191. EVOLUTIONARY THEORIES (3)
(Formerly 01:119:191)
Examination of the principles of evolution applying to both animals and plants. Adaptation and speciation, convergence and divergence, and adaptive radiation. Alternative evolutionary theories.

11:704:211. THE WILDLIFE MANAGEMENT PROFESSION (P/NC 1)
One 55-min. lec. Open only to students in the wildlife option; others by permission of instructor.
Survey of the profession of wildlife management. Guest lectures, class discussion, and field experience.

11:704:212. THE FORESTRY PROFESSION (P/NC 1)
One 80-min. lec. Open only to students in the forest management option; others by permission of instructor.
A survey of the fields within the profession. Role of foresters. Urban / community forestry, woodland management, state and federal forests, timber and forest products. Class projects and a day in the field.

11:704:213. THE FISHERY PROFESSION (P/NC 1)
Survey to familiarize students with the freshwater and marine fishery profession. Harvesters, processors, scientists, and managers.

11:704:240. BEHAVIORAL BIOLOGY (4)
(Formerly 01:119:240)
Prerequisites: 01:119:101-102.
Basic principles of animal behavior, including social behavior, animal communication, and physiological mechanisms underlying behavior. Topics include ethology, aggression, displays and communication, territoriality, and ethological view of human behavior. Motion pictures observe the behavior of fish, birds, reptiles, and primates.

11:704:272. DENDROLOGY (4)
One 80-min. lec., one 280-min. lab. Prerequisite: 01:119:101. Not open to first-year students.
Nomenclature, identification, ranges, and habitats of important native and naturalized trees of North America. Shrubs and vines important as wildlife food and cover. Forest regions and types, emphasizing the Middle Atlantic area.

11:704:274. FORESTRY FIELD PRACTICE/INTRODUCTION TO FOREST RESOURCE MEASUREMENTS (4)
Lec. 1 hr. Three weeks of field work at college forest. Prerequisite: 11:704:272.
Forest measurements and field practice in the use of forest instruments; forest surveying and mapping; measurements of natural resources; visits to nearby logging operations.

11:704:275. IDENTIFICATION OF NATIVE TREES AND SHRUBS (2)
Lec. 1 hr., lab. 3 hrs. This course is the same as the laboratory portion of 11:704:272.
Field recognition of species of native and naturalized New Jersey trees, shrubs, and vines, in summer or winter. Use of twig and fruit keys.

11:704:302. OUTDOOR RECREATION RESOURCE MANAGEMENT (3)
Two 80-min. lecs., one 180-min. lab. Open only to juniors and seniors.
An overview of the outdoor recreation system: principles of resource management, program development, management planning and administrative policy, and the influence of user preferences on resource management.

11:704:310. FOREST AND WILDLIFE CONSERVATION (3)
Introduction to some basic principles and applications of forestry and wildlife management and their interrelationships. Forest and wildlife resources examined and related to managerial problems as background in developing a knowledgeable conservation philosophy.

11:704:312. FOREST FIRE PROTECTION (1.5)
Lec./lab.
Prevention, presuppression, and suppression of forest fires. Controlled burning. Enforcement of forest fire policy.

11:704:317. CONSERVATION ECOLOGY (3)
Prerequisites: 01:119:101-102 or equivalent, and permission of instructor.
Effects of technology and population growth on species, ecosystems, and human communities. Environmental impact of agricultural and industrial systems. Global environmental change. Biological and social underpinnings of conservation. Extensive scientific and nonscientific readings.

11:704:320. LEGAL ASPECTS OF CONSERVATION (3)
The role of the law in preserving and regulating our public natural resources: public lands and their uses, wildlife, forests, recreation, and preservation.

11:704:323. ORNITHOLOGY (4)
(Formerly 01:119:323)
Lec. 3 hrs., lab. 3 hrs. Weekly field trips and two all-day field trips. Prerequisites: 01:119:101-102.
The biology, ecology, and field identification of birds of the region.

11:704:324. INVERTEBRATE ZOOLOGY (4)
(Formerly 01:119:324)
Lec. 3 hrs., lab. 3 hrs. Prerequisites: 01:119:101-102.
Comparative study of some representative invertebrates as a basis for understanding the interrelationship between the physiological activity and the structure of organisms.

11:704:325. VERTEBRATE ZOOLOGY (4)
(Formerly 01:119:325)
Lec. 3 hrs., lab. 3 hrs. Seven field trips required, including one two-day weekend trip and one evening trip. Prerequisites: 01:119:101-102.
The classification, evolution, ecology, and life histories of the order and families of the vertebrates, especially of the eastern United States.

11:704:330. GENERAL ECOLOGY (3)
(Formerly 01:119:330)
Lec. 3 hrs. Prerequisites: 01:119:101-102.
Fundamentals of ecology, including biomes and habitats, ecosystem structure and function, and population dynamics. Biomes examined as natural communities and in terms of trophic levels and energy dynamics. Dynamics of plant and animal populations and relation to human population and pollution problems.

11:704:331. GENERAL ECOLOGY LABORATORY (1)
(Formerly 01:119:331)
Lab. 3 hrs., field trips. Corequisite: 11:704:330. Credit not given for both this course and 11:704:351.
Emphasis on field studies and ecological sampling techniques, followed by indoor data analysis and interpretation.

11:704:332. PLANT ECOLOGY (4)
(Formerly 01:119:332)
Lec. 3 hrs., lab. 3 hrs., field trips. Pre- or corequisites: 01:119:101-102; or 103, and a course in organismic biology (some aspect of botany or zoology).
Study of plant life histories, populations, communities, and plant-animal interactions (pollination, dispersal, herbivory). Evolutionary basis for plant ecological traits. Weekly field trips to representative habitats in the state, including a weekend trip. Lab includes greenhouse, field experiments, and library reports.

11:704:335. LIMNOLOGY (4)
(Formerly 01:119:335)
Lec. 3 hrs., lab. 3 hrs. Prerequisites: 01:119:101-102.
Interactions of biological, physical, and chemical factors in lakes and streams. Emphasis is biological.

11:704:351. PRINCIPLES OF APPLIED ECOLOGY (4)
Two 80-min. lecs., one 55-min. rec. Prerequisite: 01:119:101 or equivalent.
Concepts underlying the organization of living systems. Environmental adaptations of species, population, and community dynamics, energetics, nutrient flux. Practical applications of ecological concepts.

11:704:360. ANIMAL PHYSIOLOGICAL ECOLOGY (3)
(Formerly 01:119:359)
Prerequisites: 01:119:101-102.
Organism-environment interactions with emphasis on the limitations that the physical environment places on normal function. Focus on responses of animals, including man, to extreme environments.

11:704:375. PRACTICUM IN WILDLIFE MANAGEMENT (BA)
Graded on a P/NC basis. Open only to professional resource management majors. Five days of fieldwork.
Practical experience in wildlife management under the direction of biologists working for state, federal, or private wildlife management agencies.

11:704:376. PRACTICUM IN FISHERY MANAGEMENT (BA)
Graded on a P/NC basis. Open only to professional resource management majors. Five days of fieldwork.
Practical experience in fishery management under the direction of fishery scientists of N.J. Division of Fish, Game, and Wildlife; National Marine Fisheries Service; or other appropriate state or federal agencies.

11:704:377. PRACTICUM IN FOREST MANAGEMENT (BA)
Graded on a P/NC basis. Open only to professional resource management majors. Five days of fieldwork.
Practical experience in forest management under the direction of foresters working for private industry; local, state, and federal government agencies; and in consulting capacities for landowners.

11:704:403. URBAN FORESTRY (3)
One 80-min. lec., one 180-min. lab. Prerequisite: 11:704:272 or 275; 11:704:456 or permission of instructor.
Benefits and costs of trees, planning and design, soils, tree selection and nursery stock, IPM, composting, removal, wildlife; laws, finance, inventories, maintenance scheduling, planting. Field trips.

11:704:406. FISHERY SCIENCE (3)
Prerequisite: Permission of instructor. Friday all-day field trips.
Social, economic, ecological, and biological aspects of freshwater and marine fisheries. Emphasis on use of science in decision making and problem solving: life history, population dynamics, habitat, and biological basis of management. Review of sport and commercial fisheries.

11:704:407. RESEARCH METHODS IN FISHERY SCIENCE (3)
Prerequisite: 11:704:406.
Research methods used in freshwater and marine fishery science. Not limited to fishery science majors.

11:704:411. TAXONOMY OF THE VASCULAR PLANTS (4)
(Formerly 01:119:411)
Lec. 3 hrs., lab. 3 hrs. Prerequisite: 11:776:210.
Principles, classification, identification, and nomenclature of selected orders, families, genera, and species.

11:704:421. WETLAND ECOLOGY (3)
Prerequisites: 11:704:330 or 351 or equivalent; and permission of instructor.
Ecology, management, and utilization of wetlands. Basic aspects of wetland ecosystems and the nature of major types. Issues and problems of wetlands management and use.

11:704:422. ECOLOGY OF SOIL ORGANISMS (3)
Prerequisites: 01:119:101-102.
Diversity of organisms and complexity of communities in below-ground ecosystems. Range and diversity of soil organisms and their role in the development of soils, soil structure, soil fertility, and ecosystem processes.

11:704:441. ANIMAL BEHAVIOR (3)
(Formerly 01:119:441)
Lec./rec. 3 hrs. Prerequisites: 01:119:101-102; a course in physiology or permission of instructor. Recommended: Vertebrate or invertebrate biology and ecology.
Physiological foundations and principles of animal behavior, with particular emphasis on mechanisms underlying sexual behavior, feeding aggression, and behavioral development.

11:704:442. ANIMAL BEHAVIOR LABORATORY (1)
(Formerly 01:119:442)
Pre- or corequisite: 11:704:441.
A laboratory to accompany 11:704:441.

11:704:443. ANIMAL SOCIAL BEHAVIOR (3)
(Formerly 01:119:443)
Lec./rec. 4 hrs. Prerequisites: Four terms of biology and junior status, or permission of the instructor for students majoring in psychology or anthropology.
An examination of animal social behavior, including the behavior of individuals (agnostic, reproductive, and communicative behavior) and the social organization of groups. Emphasizes the adaptive significance of social systems and concentrates on mammals, birds, and social insects. Animal navigation and orientation.

11:704:444. ANIMAL SOCIAL BEHAVIOR LABORATORY (1)
(Formerly 01:119:444)
Pre- or corequisite: 11:704:443.
A laboratory to accompany 11:704:443.

11:704:450. LANDSCAPE ECOLOGY (3)
Prerequisite: 11:704:351 or equivalent; pre- or corequisite : 01:960:401.
Overview of the concepts, methods, and applications of landscape ecology; causes, development, and importance of spatial patterning; ecological and anthropogenic aspects of landscape pattern and change.

11:704:451. ECOSYSTEMS ECOLOGY AND GLOBAL CHANGE (3)
Prerequisite: 11:704:351 or equivalent.
Analysis of the major global changes based on principles of ecosystems ecology; carbon, nutrient, and pollution cycling mechanisms and budgets; the methods used to study these phenomena.

11:704:452. RESEARCH METHODS IN ECOLOGY (3)
Prerequisite: 11:704:351 or equivalent.
Methods used in ecological research, including methods for the field analyses of plants, animals, and microbes in both terrestrial and aquatic environments; for laboratory experimentation; and for data analysis.

11:704:453. NATURAL RESOURCE BIOMETRICS (4)
Two 80-min. lecs., one 180-min. lab. Prerequisites: 11:704:272, 274; 01:960:401.
Probability and non-probability based sampling schemes for natural resource attributes: traditional random-sampling techniques as well as model-based and probability-proportional-to-size techniques; estimation of parameters of natural resource populations.

11:704:456. FOREST ECOLOGY AND SILVICS (3)
Lec./lab. Prerequisites: 11:704:272, 351.
Basic concepts of forest regeneration, tree growth, succession, fire, autecology, synecology, silvics of selected tree species, and stewardship as presented in lectures and field trips to New Jersey forests.

11:704:461. FIELD ECOLOGY (2)
One 320-min. lab. Prerequisite: 11:704:351.
Concepts of ecological organization developed through field experience in the principal habitat types of New Jersey. Emphasis on field application of ecological knowledge.

11:704:464. WILDLIFE ECOLOGY AND MANAGEMENT (3)
One 80-min. lec., one 280-min. lab. Prerequisite: 11:704:351.
Principles of wildlife management. Emphasis on vertebrates, including nongame and endangered species, waterfowl, upland game, and big game; investigational techniques including identification, age determination, and statistical analyses.

11:704:470. NATURAL RESOURCE POLICY ADMINISTRATION (3)
Prerequisite: 11:704:471.
Evolution of natural resource policies in the United States. Current issues in conservation. Development of leadership, decision making, program design, communication, personnel management, and public relations skills.

11:704:471. SILVICULTURE (3)
Two 80-min. lecs., one 400-min. lab. Seven week course. Prerequisites: 11:704:332 or 351; 11:704:272, 456.
Biological principles applicable to the establishment and manipulation of forests for production of or influence on wood, water, wildlife, and aesthetics.

11:704:472. FOREST FINANCE AND MANAGEMENT (3)
One 80-min. lec., one 260-min. lab. Prerequisites: 11:704:453 and 471.
A synthesis of principles from the biological, mathematical, physical, and social sciences applied to problems encountered in the management of forests.

11:704:473. WILDLIFE DAMAGE MANAGEMENT (3)
Pre- or corequisite: 11:704:464.
Principles of wildlife damage management, with emphasis on integrated approaches to minimize conflict between wildlife, agriculture, and people.

11:704:474. FIELD EXPERIENCE IN APPLIED ECOLOGY (BA)
Prerequisite: Permission of instructor.
Experiential learning opportunities in applied ecology and natural resources. Field experiences may include the natural resources and ecology of such areas as Newfoundland, Canada, Alaska, rainforests, the Alps, and other unique study areas, culminating in the production of learned information to be communicated to others.

11:704:475. WINTER FIELD ECOLOGY (P/NC1)
Prerequisite: Permission of instructor.
A one-week, off-campus field experience in January, exploring the adaptations of temperate plants and animals to the harshness of winter.

11:704:476. TOPICS IN WILDLIFE MANAGEMENT (3)
Prerequisites: 11:704:464 and permission of instructor.
Guided experience in problem solving related to the wildlife resource. Student projects, papers, field trips, and discussions with resource managers.

11:704:483,484. RESEARCH PROBLEMS IN APPLIED ECOLOGY (BA,BA)
Prerequisite: Permission of adviser.
Research projects in applied ecology under the guidance of faculty members.

11:704:486. PRINCIPLES OF EVOLUTION (3)
(Formerly 01:119:484)
Prerequisites: 01:160:161-162; 01:447:380. Not open to students who have taken 01:119:485.
Theories, principles, and mechanisms of the evolution of cellular and organismic systems, with some attention to human evolutionary studies.

11:704:488. RESTORATION ECOLOGY (4)
(Formerly 01:119:488)
Lec. 3 hrs., lab. 3 hrs. Pre- or corequisites: 11:704:330 or 332 or 351; and one course in plant or animal organismic biology (e.g., mammology, principles of botany, insect biology, etc.).
Study of the ecological processes that underlie the re-creation of a natural community. Habitat characteristics, life histories, reproductive ecology, biological invasions, mutualism, societal laws, and attitudes toward restoration. Field trips to representative restored habitats.

NUTRITIONAL SCIENCES 709

11:709:201. INTRODUCTION TO FOODS AND NUTRITION (3)
Nutritional needs of the family. Consumer aspects of food selection and meal preparation.

11:709:202. LABORATORY FOR INTRODUCTION TO FOODS (1)
Pre- or corequisite: 11:709:201.
Application of knowledge of food composition and nutritive values to food preparation.

11:709:224. INDIVIDUAL, MARRIAGE, AND THE FAMILY (3)
Individual development throughout the life cycle. Interactions and relationships within couples, marriages, and families. (Not a nutrition-based course.)

11:709:226. NUTRITION AND THE YOUNG CHILD (3)
Concepts of food and nutrition as applied to the growth and development of the young child. Laboratory included.

11:709:255. NUTRITION AND HEALTH (3)
Introductory nutrition. Nutrients and their functions in the human body throughout the life cycle.

11:709:324. THE PRESCHOOL CHILD (3)
Understanding of the philosophy of early childhood education and discussion of the development of preschool children in relation to their environment. (Not a nutrition-based course.)

11:709:325. LABORATORY FOR THE PRESCHOOL CHILD (1)
Lab. 3 hrs. Not open to first-year students.
Directed observation and participation in the preschool laboratory to develop the understanding and skills essential to work with young children.

11:709:344. QUANTITY FOOD PRODUCTION (4)
Lec./lab. Prerequisites: 11:709:201, 202. White lab coat required.
Planning and organization of work, menus, preparation, and service of food for mass feeding. Evaluation of supervisory techniques, equipment, and cost control.

11:709:345. NUTRITION AND DEVELOPMENT THROUGH THE LIFE SPAN (3)
Prerequisites: 11:709:255; 01:830:101.
Human nutrition across the life span, from both biological and psychosocial perspectives.

11:709:349. MANAGEMENT OF FOOD SERVICE SYSTEMS (3)
Prerequisite: 11:709:344.
Purchasing policies as related to food equipment in the food service industry. Study of quantity kitchen layout; systems approach to resource management and financial control.
Field trip fee.

11:709:363. WORLD FOOD CUSTOMS AND NUTRITION (3)
Open only to juniors and seniors.
Food patterns, food customs, and nutritional status of peoples from various racial, regional, and religious backgrounds of the world.

11:709:400. ADVANCED NUTRITION I: REGULATION OF MACRONUTRIENT METABOLISM (3)
Prerequisites: 01&11:115:301 or 11:115:403, 404 or 01:694:407-408.
Comprehensive study of regulation of carbohydrate, lipid, and protein metabolism at cellular and organismal levels. Integration of metabolism by hormones, diet, and pathophysiological states.

11:709:401. ADVANCED NUTRITION II: ENERGY AND MICRONUTRIENT METABOLISM (3)
Prerequisites: 01&11:115:301 or 11:115:403, 404 or 01:694:407-408.
Intensive study of body composition and energy expenditure. Biological function, requirements, and pathological aspects of vitamins and minerals.

11:709:402. READINGS IN ADVANCED NUTRITION I (1)
Corequisite: 11:709:400.
Discussion of problems set by instructors of Advanced Nutrition I to develop understanding of the topics covered.

11:709:403. READINGS IN ADVANCED NUTRITION II (1)
Corequisite: 11:709:401.
Discussion of problems set by instructors of Advanced Nutrition II to develop understanding of the topics covered.

11:709:405. PROFESSIONAL ISSUES IN DIETETICS (P/NC 1)
Prerequisite: Open only to seniors.
Trends in the field of dietetics and the effects of legislative, health care, marketing, and entrepreneurial issues on the profession.

11:709:440. CONTEMPORARY ISSUES IN NUTRITIONAL SCIENCES (3)
Open only to junior and senior majors; others by permission of instructor.
Investigations of recent trends and issues in nutrition and development.

11:709:441. NUTRITION COUNSELING AND COMMUNICATION (4)
Two 80-min. lecs., one 180-min. rec. Prerequisites: 11:709:201, 202, 255; or permission of instructor.
Assessing client needs; identifying relevant nutrition concepts; application of educational principles, techniques, and evaluation strategies for nutrition educators operating in a variety of settings. Applied nutrition education experience.

11:709:442. COMMUNITY NUTRITION (4)
Two 80-min. lecs., one 3-hour rec. Prerequisite: 11:709:441.
The teaching, science, and philosophy of community nutrition and the programs and agencies designed to improve the nutritional status of various populations.

11:709:452. NUTRITION AND BEHAVIOR (3)
Prerequisites: 11:709:255 and 01:830:101.
The bidirectional relationship between nutrition and behavior, with emphasis on behavioral and social sciences research strategies.

11:709:481. SEMINAR IN NUTRITION (1.5)
Review of nutrition journals, critical reading in topics in the history of nutrition and specific nutrition problems of current interest.

11:709:489. EXPERIMENTAL FOODS (3)
Lec./lab. Prerequisites: 01:160:209, 211; 11:709:201, 202.
Physical and chemical properties of foods; laboratory investigation of effects of alteration in preparation, storage, and preservation on quality and acceptability.

11:709:490. NUTRITION RESEARCH METHODS (3)
Lab. hrs. by arrangement. Prerequisite: 11:709:400 or 401.
Laboratory class including diet preparation and feeding, enzyme activity, urine analysis, and molecular biology (Northern Blot and PCR).

11:709:493,494. PROBLEMS IN NUTRITION (BA,BA)
Prerequisite: Permission of instructor.
Special problems in the field of nutrition.

11:709:498. NUTRITION AND DISEASE (3)
Prerequisite: 11:709:400 or 401.
Nutritional aspects and dietary treatments of diseases in which nutrition plays a major role.

11:709:499. NUTRITION AND DISEASE: CLINICAL CASE STUDIES (1)
Pre- or corequisite: 11:709:498.
Application of scientific knowledge to actual case studies. Techniques for effective nutrition counseling.

PLANT PATHOLOGY 770

11:770:301. GENERAL PLANT PATHOLOGY (3)
Prerequisites: 01:119:101-102.
The occurrence, economic importance, symptoms, causes, and control of plant diseases.

11:770:311. GENERAL PLANT PATHOLOGY LABORATORY (1)
Pre- or corequisite: 11:770:301.
An optional laboratory course utilizing specific techniques and plant diseases to illustrate the basic principles of plant pathology.

11:770:391. DISEASES OF URBAN AND FOREST TREES (1.5)
Prerequisite: 11:770:301.
The pathological and environmentally induced diseases of urban, shade, and forest trees. Lectures, laboratory demonstrations, and field trips to acquaint students with the primary diseases of shade and forest trees.

11:770:402. MYCOLOGY: FUNGI IN THE ENVIRONMENT (3)
Two 55-min. lecs., one 180 min. lab. Prerequisites: 01:119:101-102.
Identification, ecology, and biodiversity of fungi. Laboratory includes sampling techniques, identification and descriptive procedures, culture collections, mycological herbaria, and field trips.

11:770:416. PRINCIPLES OF APPLIED NEMATOLOGY (3)
Lec./lab.
The principles and practices of detection, identification, and control of nematodes causing diseases of plants. Interrelationships between nematodes and other soil borne pathogens.

PLANT SCIENCE 776

11:776:170. PLANTS AND PEOPLE (3)
(Formerly 01:119:170)
The influence of plants on the economic, social, and cultural history of man, especially as sources of food, shelter, clothing, drugs, and industrial raw materials. Current problems of agriculture, plant industry, medicine, and conservation.

11:776:200. MODERN CROP PRODUCTION (3)
Introduction to agronomic crops and their relationship to the environment; importance, classification, production practices and problems, and utilization.

11:776:202. APPLIED PHYSIOLOGY OF HORTICULTURAL CROPS (3)
Prerequisite: 01:119:101 or permission of instructor.
The physiology of plants and regulation of their growth. Emphasis on the environmental and developmental aspects of plant physiology that allow plants to survive, grow, and reproduce despite transient and seasonal periods of environmental stress.

11:776:210. PRINCIPLES OF BOTANY (4)
(Formerly 01:119:210)
Lec. 3 hrs., lab. 3 hrs. Prerequisites: 01:119:101-102. Credit not given for both this course and 11:776:242.
Structure, function, diversity, reproduction, and evolution in the plant kingdom.

11:776:211. INTRODUCTION TO HORTICULTURE (3)
Lec. 2 hrs., lab. 3 hrs. Pre- or corequisite: 01:119:101.
The art and science of horticulture: its historical impact, biology, technology, and industry. Laboratory exercises applying horticultural techniques to growing plants.
Lab. fee.

11:776:221. PRINCIPLES OF ORGANIC CROP PRODUCTION (3)
Prerequisites: 01:119:101-102.
Cultural management practices that form the basis for organic crop production: soil stewardship, plant health, and avoiding competition without synthetic chemicals. Implementation of cropping techniques and emerging technologies.

11:776:225. INTRODUCTION TO HORTICULTURE THERAPY (3)
Brief history of the practice of horticulture therapy and the special needs populations it benefits. Adaptations and modifications enabling individuals to participate. Professional requirements.

11:776:231. COMMERCIAL FLORAL DESIGN (3)
Fundamentals of commercial floral design theory, applied in laboratory sessions. Demonstrations and practice in the development of proper handling techniques and design skills for a variety of occasions, with emphasis on creativity, salability, and vase life.

11:776:232. RETAIL FLOWER SHOP MANAGEMENT (3)
Lec. and lab. Prerequisite: 11:776:231.
Operation and management of the retail florist business. Application of principles of post-harvest physiology. Experience in merchandising and the operation of the college florist shop.

11:776:233-234. LANDSCAPE PLANTS I,II (3,3)
Lec. 2 hrs., lab. 3 hrs.
Identification, environmental requirements, and landscape assets and liabilities of ornamental plants. First term: fall aspects of deciduous trees and shrubs. Second term: the broadleaf and narrow-leaf evergreens and the spring aspect of deciduous trees and shrubs.

11:776:237. PLANNING AND PLANTING THE RESIDENTIAL ENVIRONMENT (3)
Lec. 2 hrs., lab. 3 hrs.
Contact with the living, green environment as provided by the grounds of private residences. Planning, land use, selection, and planting of landscape plants, turf, fruiting plants, and interior plantings.

11:776:238. LANDSCAPE MANAGEMENT AND MAINTENANCE (3)
Maintenance and culture of landscape plantings.

11:776:242. PLANT SCIENCE (3)
Lec. 2 hrs., lab. 3 hrs. Prerequisite: 01:119:101.
Fundamentals of structure, taxonomy, growth and development, metabolism, reproduction, and ecology of plants. Dynamics, manipulation, biotechnology, and the development of new characteristics in plants.

11:776:301. THE GRAIN CROPS (3)
Prerequisite: 11:776:200.
Cereals and other grain crops including legumes grown for seed. Breeding, ecological adaptations, cultural practices, identification, commercial grading, and industrial and agricultural uses.

11:776:304. TURFGRASS MANAGEMENT (4)
Two 80-min lecs., lab. 3 hrs.
Growth, development, adaptation, and selection of the major turfgrass species. Principles of establishment, mowing, nutrition, irrigation, and pest control of home lawn, athletic field, golf, and utility turfs.

11:776:305. PLANT GENETICS (4)
Lec. 2.66 hrs., lab. 3 hrs. Prerequisites: 01:119:101-102.
Heritable variation, strategies, and consequences of sexual / asexual reproduction, inbreeding and outbreeding. Chromosome structure, behavior, and mapping. Uses of tissue culture and recombinant DNA techniques in plant genetic manipulation.

11:776:310. PLANT PROPAGATION (3)
Lec./rec. 2 hrs., lab. 3 hrs. Prerequisite: 11:776:210 or 211 or 242 or permission of instructor.
Theory and practice of multiplying plants by seeds and vegetative means such as cuttings, grafts, buds, and layers.

11:776:312. MEDICINAL PLANTS (3)
Prerequisites: 01:119:101-102; 01:160:161-162.
Use of plants for medicinal and other purposes; poisonous plants; cross-cultural aspects; chemistry and biological significance of natural products; natural products from higher plants in modern medicine.

11:776:321. GREENHOUSE ENVIRONMENT CONTROL AND CROP PRODUCTION (3)
Lec. 2 hrs., lab. 3 hrs. Prerequisite: 11:776:211 or permission of instructor.
The greenhouse environment, its manipulation and control in the production of florist plants. Principles of production of major cut-flower and plant crops.

11:776:325. HORTICULTURE THERAPY TECHNIQUES AND PROGRAMMING (3)
Prerequisite: 11:776:225.
Use of adaptive devices and enabling tools. Methodologies for program evaluation and for documentation of program effectiveness.

11:776:330. CONSERVATION VEGETATION (3)
Prerequisite: 11:776:200 or permission of instructor.
History and theory of vegetative covers and their use in various climates. Environmental significance of defoliation, pollution involvement, and techniques of establishment and maintenance.

11:776:340. PRINCIPLES AND PRACTICES OF FRUIT PRODUCTION (4)
Lec. 2 hrs., rec. 3 hrs., lab. 3 hrs. Prerequisite: 11:776:211.
The culture of tree fruits, including orchard establishment, nutrition, pest control, pruning, fruit development, variety and rootstock selection, and growth regulators.
Field trip fee.

11:776:341. FRUIT PRODUCTION (3)
Prerequisite: 11:776:210 or 211 or permission of instructor.
The growing of small fruits and grapes. Varieties, fruit-growing systems, and harvesting methods involved in grapes, strawberries, blueberries, brambles, and cranberries.

11:776:362. PRINCIPLES OF VEGETABLE CULTURE (3)
Prerequisite: 11:776:211 or permission of instructor.
Cultural practices of growing major vegetable crops examined with particular emphasis on how they affect plant environment interactions. An applied physiological perspective on the optimization of crop yield and quality.

11:776:382. PLANT PHYSIOLOGY (4)
Lec./rec. 3 hrs., lab. 3 hrs. Prerequisites: 01:119:101-102, 11:776:210. Recommended: Organic chemistry.
Water relations, photosynthesis, inorganic nutrition, metabolism of organic materials, and plant growth regulation. Emphasis on environmental factors in the physiology of plants.

11:776:401. POST-HARVEST PHYSIOLOGY OF HORTICULTURAL CROPS (3)
Prerequisite: A course in plant physiology or plant physiology background or permission of instructor.
A study of metabolic processes including aging and stress phenomena in harvested horticultural crops. Post-harvest preservation concepts and technologies, food crops, distribution, and marketing.

11:776:402. PRINCIPLES OF WEED SCIENCE (3)
General principles of weed science; growth, development, and identification of weeds; economic losses; cultural, biological, and chemical methods of control; special weed problems.

11:776:403. PLANT SCIENCE TECHNIQUES (3)
Two 55-min. lecs., lab. 1 hr. by arrangement. Prerequisites: 01:119:101-102; 01:160:161-162.
The use of experimental systems and assays to obtain specific information about plant characteristics and responses. Advantages and limitations of various protocols and instrumentation.

11:776:404. FORAGE CROPS MANAGEMENT (3)
Lec./lab. 3 hrs. Prerequisite: 11:776:200 or permission of instructor.
Culture, management, and utilization of grassland crops for pasture, harvested forage, and turf. Characteristics and performance of forage species for systems of grazing, hay, and silage.

11:776:406. PLANT BREEDING (3)
Prerequisite: 01:119:380 or 11:776:305.
History, theory, and practice of plant breeding.

11:776:408. TURFGRASS PEST SCIENCE (4)
Prerequisites: 01:119:101-102 or 103; 11:776:238 or 304 or permission.
Biology, etiology, and management of major turfgrass pests, including fungal, bacterial, and viral pathogens; insects, nematodes, vertebrates, and weeds. Includes a laboratory in diagnostics.

11:776:421. VEGETABLE PRODUCTION AND MARKETING (6)
Prerequisite: 11:776:211 or permission of instructor.
Production, harvesting, conditions affecting quality; product standards, grading, handling, storage, shipping, and other marketing considerations. Relevant social / cultural / economic practices affecting production and marketing throughout the world.

11:776:425. SPECIAL TOPICS IN HORTICULTURE THERAPY (2)
Prerequisite: 11:776:325 or permission of instructor.
Independent research in the area of people-plant relationships. Several formal class meetings at the beginning and conclusion of the project.

11:776:439. NURSERY CROP PRODUCTION (3)
Prerequisites: 11:776:211 or equivalent, and a course in plant materials.
Principles, practices, and production of temperate-zone woody ornamental plants. Both field and container growing considered.

11:776:450. HORTICULTURAL TOPICS (2)
Prerequisite: 11:776:211. Open only to juniors and seniors.
Conferences with growers, marketers, and other business representatives to learn opinions, insights, and experiences related to their specific fields of horticulture.

11:776:451. FINE AND SPORTS TURF (3)
Prerequisites: 11:375:266; 11:776:200, 304, 402, and 452, or permission of instructor.
Grass identification and selection, the diagnosis and treatment of disease and pests, fertilizer and weed control programs, irrigation, drainage, thatch control, and maintenance.

11:776:452. PLANT TISSUE CULTURE (3)
Lec./rec. 2 hrs., lab. 3 hrs. Prerequisite: 11:776:210 or 242.
Principles and culture techniques of cells, callus, organs, pollen, anthers, embryos, and protoplasts. The applications in clonal propagation and research in breeding, physiology, and pathology.

11:776:495,496. SPECIAL PROBLEMS IN PLANT SCIENCE (BA,BA)
Prerequisites: Permission of instructor and special problems adviser.
Projects in plant science with assigned reading, laboratory work, and conferences.

SOILS 930

(See Environmental Sciences 375)

Administration, Centers, and Faculty

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Robert W. Roundy, Assistant Dean, Personnel
Ralph Lindauer, Director, Business Affairs

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Daniel Rossi, Associate Dean of Research

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Zane R. Helsel, Dean of Outreach
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Ecocomplex

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Eric N. Powell, Director

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Rutgers Blueberry and Cranberry Research and Extension Center, Chatsworth

Nicholi Vorsa, Director

Rutgers Fruit Research and Extension Center, Cream Ridge

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William Meyer, Director

Clifford E. and Melda C. Snyder Research and Extension Farm, Rutgers Center for Sustainable Agriculture, Pittstown

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Associate Professor:

George Markle, IR4

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Daniel Wunderlich, Sussex County

Department of Agricultural, Food, and Resource Economics

Chairperson: Donn A. Derr, Cook Office Building, Room 103

Professors:

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Maurice P. Hartley, B.A., Carson-Newman; M.A., Appalachian State; Ed.D., Rutgers
Carl E. Pray, B.A., Carlton; Ph.D., Pennsylvania
Leslie E. Small, B.S., Ph.D., Cornell
Daymon W. Thatch, B.S., M.S., Rutgers; Ph.D., Maryland

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Pritam Dhillon, B.S., M.A., Punjab; Ph.D., Pennsylvania State
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Ferdaus Hossain, B.A., M.A., Rajshahi; M.S., Ph.D., Iowa State
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Benjamin Onyango, B.S., Nairobi; M.Sc., Manchester; Ph.D., Connecticut
Brian Schilling, B.S., M.S., Rutgers

Lecturers:

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Joseph P. Hughes, A.B., Davidson College; Ph.D., North Carolina
Lawrence H. Jaffe, B.S., M.B.A., M.S., Ed.S., Rutgers
Edward V. Lipman, B.A., Ohio; M.S., Rutgers

Department of Animal Sciences

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Michael Westendorf, B.S., Idaho; M.S., Ph.D., Kentucky

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Nadka I. Boyadjieva, B.S., M.D., Faculty of Medicine (Bulgaria); Dipl.Spec., Minister of Health (Bulgaria); Ph.D., D.Sci., Medical Academy (Bulgaria)

Research Assistant:

Susan E. Becker, B.S., M.S., Rutgers

Visiting Associate Professor:

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Department of Biochemistry and Microbiology

Chairperson: Keith R. Cooper, Lipman Hall, Room 130

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Gerben J. Zylstra, B.S., Calvin College; Ph.D., Michigan

Assistant Professors:

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Department of Ecology, Evolution, and Natural Resources

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Department of Entomology

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Albrecht Koppenhöfer, Ph.D., Giessen

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Adjunct Member:

George Markle, B.S., Cornell; M.S., Rutgers

Department of Environmental Sciences

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Emil Joseph Genetelli, B.C.E., Manhattan College; M.S., Ph.D., Rutgers
William Goldfarb, B.A., Colgate; M.A., Columbia; J.D., Yale Law School; Ph.D., Columbia
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Alan Robock, B.A., Wisconsin; M.S., Ph.D., Massachusetts Institute of Technology
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Lily Young, B.A., M.S., Cornell; Ph.D., Harvard

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Instructor/Extension Staff Meteorologist:

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Wayne Crans, Mosquito Research Unit, Department of Entomology
Stephen A. Garrison, Vegetable Crops, Department of Plant Science
Gerald M. Ghidiu, Entomology, Department of Entomology
Melvin R. Henninger, Vegetable Crops, Department of Plant Science
Harry W. Janes, Horticulture, Department of Plant Science
Stephen A. Johnston, Plant Pathology, Department of Plant Pathology
James H. Lashomb, Entomology, Department of Entomology
Bradley A. Majek, Weed Science, Department of Plant Science
Karyn Malinowski, Equine Management, Department of Animal Sciences
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Theodore B. Shelton, Water Resource Management, Department of Ecology, Evolution, and Natural Resources
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Nicholi Vorsa, Blueberries/Cranberries, Department of Plant Science
James E. Wohlt, Animal Sciences, Department of Animal Sciences
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Ann Brooks Gould, Plant Pathology, Department of Plant Pathology
Bruce A. Hamilton, Landscape Architecture, Department of Landscape Architecture
George C. Hamilton, Statewide Pesticide Coordinator, Department of Entomology

Joseph R. Heckman, Soil Fertility, Department of Plant Science
Larry S. Katz, Animal Sciences, Department of Animal Sciences
James A. Murphy, Turfgrass Management, Department of Plant Science
Sridhar Polavarapu, Entomology, Department of Entomology
Joseph T. Ponessa, Housing and Energy, Department of Human Ecology
Sarah Ralston, Animal Sciences, Department of Animal Sciences
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Edmund Tavernier, Agricultural and Environmental Economic Policy, Department of Agriculture, Food, and Resource Economics (AFRE)
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Mark C. Vodak, Forestry, Department of Environmental Resources

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Raul Cabrera, Nursery Management, Department of Plant Science
David Drake, B.S., Macalaster; M.S., Texas A&M; Ph.D., North Carolina State
Ramu Govindasamy, Agricultural Marketing, Department of Agriculture, Food, and Resource Economics (AFRE)
Debra P. Keenan, Community Nutrition, Department of Nutrition Sciences
Uta Krogmann, Solid Waste Management, Department of Environmental Sciences
Norman Lalancette, Treefruit Pathology, Department of Plant Pathology
Peter Oudemans, Plant Pathology, Department of Plant Pathology
Silvia Ridlen, Human Development
Peter W. Shearer, Treefruit Entomology, Department of Entomology
Jeremy Singer, Field and Forage Crops, Department of Plant Science
Michael Westendorf, Animal Nutrition, Department of Animal Sciences

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Department of Food Science

Chairperson: Jozef L. Kokini, Food Science Building

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Dennis Heldman, B.S., M.S., Ohio State; Ph.D., Michigan State
Chi-Tang Ho, B.S., National Taiwan; M.S., Ph.D., Washington (St. Louis)
Jozef Kokini, B.S., Bosphorus (Turkey); M.S., Ph.D., Carnegie-Mellon
Paul A. Lachance, B.S., St. Michael's College; Ph.D., Ottawa
Tung-Ching Lee, B.S., Tung-Hai (Taiwan); M.S., Ph.D., California (Davis)
Thomas J. Montville, B.S., Rutgers; Ph.D., Massachusetts Institute of Technology
Joseph D. Rosen, B.S., CUNY (City College); Ph.D., Rutgers

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Beverly J. Tepper, B.S., Northeastern; M.S., Ph.D., Tufts
Kit L. Yam, B.S., M.S., Ph.D., Michigan State

Assistant Professors:

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Karl Matthews, B.S., Iowa; M.S., Ph.D., Kentucky
Michael Tchikindas, B.S., M.S., Yerevan (Armenia); Ph.D., All Union Research Institute of Genetics (Moscow)

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Interim Chairperson: Rita Natale-Saathoff, Martin Hall

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Terese Buchanan, Hunterdon County
Annette Devitt, Salem County
Keith Diem, Home Economics House
Jo-Ann Hoffman, Mercer County
Betty Jean Jesuncosky, Cape May County
James Nichnadowicz, Union County
Virginia Powell, Regional 4-H Agent, North
Rita Natale Saathoff, Regional 4-H Agent, South
Betty Ann Smith, Middlesex County
Sherman Tomasino, Sussex County
Carol Ward, Somerset County

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Deborah Cole, Atlantic County
Gloria Kraft, Burlington County
Kevin Mitchell, Passaic County
Jeannette Rea-Keywood, Cumberland County
Lisa Rothenburger, Somerset County
Shelley Stebbins, Morris County
Ellen Williams, Monmouth County

Department of Family and Consumer Sciences

Chairperson: Carol Byrd-Bredbenner

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Rita T. Wood, Burlington County

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Anne-Michelle Marsden, Atlantic County
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Roberta Moseley, Morris County
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Luanne Hughes, Gloucester County
Kathleen Klotzbach-Shimomura, Hunterdon County
Marilou Rochford, Cape May County
Margaret Venuto, Monmouth County

Department of Human Ecology

Chairperson: Thomas K. Rudel, Cook Office Building, Room 202

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George E.B. Morren, Jr., B.A., M.Phil., Ph.D., Columbia
Thomas K. Rudel, B.A., Princeton; M.Phil., Ph.D., Yale
Andrew P. Vayda, B.A., Ph.D., Columbia
Neil D. Weinstein, B.S., Wisconsin; Ph.D., Harvard

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William K. Hallman, B.S., Juniata College; M.A., Ph.D., South Carolina
Joseph T. Ponessa, B.S., Saint Francis College; M.S., North Dakota; Ph.D., Loyola

Assistant Professor:

Karen O'Neill, B.A., San Francisco; M.A., Ph.D., California (Los Angeles)

Assistant Instructor:

George F. Clark, B.A., Rutgers; M.A., Maine; Ph.D., Rutgers

Humanities and Communication Group

Chairperson: Thomas G. Matro, Loree, Room 040

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Lecturer:

Barbara Munson Goff, A.B., Wellesley College; Ph.D., Rutgers

Assistant Writing Director:

Michael J. Goeller, B.A., M.A., Ph.D., Rutgers

IR-4

Executive Director: Robert E. Holm, 681 Route 1 South Technology Centre, North Brunswick

Professor:

Jerry J. Baron, B.S., M.S., Ohio State; Ph.D., North Carolina State

Associate Professor:

George Markle, B.S., Cornell; M.S., Rutgers

Department of Landscape Architecture

Chairperson: Steven Strom, Blake Hall

Professor:

Roy Harvey De Boer, B.S., Cornell; M.S., Rutgers

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Steven Strom, B.S., Rutgers; M.L.A., Massachusetts
David Tulloch, B.S., Kentucky; M.L.A., Louisiana; Ph.D., Wisconsin
Constance A. Webster, A.B., M.L.A., Georgia

Department of Marine and Coastal Sciences

Chairperson: Gary L. Taghon, Marine and Coastal Sciences, Room 114D

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John Dighton, B.Sc. General, North East London Polytechnic; M.Sc., Durham; Ph.D., London (Queen Elizabeth College)
Paul Falkowski, B.S., M.S., CUNY (City College); Ph.D., British Columbia
Susan E. Ford, B.A., Rutgers; Ph.D., Duke
Scott M. Glenn, B.S., Rochester; Ph.D., Massachusetts Institute of Technology and Woods Hole Oceanographic Institution
J. Frederick Grassle, B.S., Yale; Ph.D., Duke
Judith Grassle, B.Sc., Queensland (Australia); Ph.D., Duke
Dale B. Haidvogel, M.S., Massachusetts Institute of Technology; Ph.D., Massachusetts Institute of Technology and Woods Hole Oceanographic Institution
Zbigniew Kolber, M.S., Ph.D., Technical University of Wroclaw, Poland
Richard A. Lutz, B.A., Virginia; Ph.D., Maine
James R. Miller, B.S., Massachusetts Institute of Technology; M.A., Ph.D., Maryland
Karl F. Nordstrom, A.B., M.S., Ph.D., Rutgers
Eric N. Powell, B.S., Washington; M.S., Ph.D., North Carolina
Norbert P. Psuty, B.S., Wayne State; M.S., Miami (Ohio); Ph.D., Louisiana State
Peter A. Rona, A.B., Brown; M.S., Ph.D., Yale
Sybil P. Seitzinger, B.S., Boston; Ph.D., Rhode Island

Associate Professors:

Uwe Kils, B.S., M.S., Ph.D., Christian-Albrechts-Universität (Kiel)
Monica Mazurek, B.S., Ph.D., California (Los Angeles)
Robert M. Sherrell, B.A., Oberlin College; Ph.D., Massachusetts Institute of Technology and Woods Hole Oceanographic Institution
Gary L. Taghon, B.S., Purdue; M.S., Ph.D., Washington (Seattle)

Assistant Professors:

Jennifer A. Francis, B.S., San Jose State; Ph.D., Washington
Yuan Gao, B.S., M.S., NanKai (China); Ph.D., Rhode Island
Maxim Y. Gorbunov, M.S., Ph.D., Moscow State (USSR)
Ximing Guo, B.S., Qingdao Ocean (China); M.S., Ph.D., Washington
Mohamed Iskandarani, B.S., American University of Beirut (Lebanon); M.S., Ph.D., Cornell
Lee J. Kerkhof, B.S., California (Berkeley); Ph.D., California (Scripps Institution of Oceanography)
Yair Rosenthal, B.Sc., M.Sc., Hebrew University of Jerusalem (Israel); Ph.D., Massachusetts Institute of Technology/Woods Hole Oceanographic Institution
Oscar Schofield, B.A., Ph.D., California (Santa Barbara)

Meteorology (See Department of Environmental Sciences)

Microbiology (See Department of Biochemistry and Microbiology)

Department of Nutritional Sciences

Chairperson: Michael W. Hamm, Thompson Hall, Room 107

Professors:

Hans Fisher, B.S., Rutgers; M.S., Connecticut; Ph.D., Illinois
Susan K. Fried, A.B., Barnard; M.S., Ph.D., Columbia
Adria R. Sherman, B.A., Temple; M.S., Ph.D., Pennsylvania State
Judith Storch, B.A., Brooklyn College; M.S., Ph.D., Columbia

Associate Professors:

Dawn Brasaemle, B.S., Maine; Ph.D., Wisconsin (Madison)
Michael W. Hamm, B.A., Northwestern; Ph.D., Minnesota
Sue A. Shapses, B.S., Syracuse; M.S., Ph.D., Columbia
Margaret Varma, B.A., Bombay; M.A., Oregon; Ph.D., Brigham Young
Malcolm Watford, B.S., Trent Polytechnic; D.Phil., Oxford
John Worobey, B.A., Rutgers; M.S., Ph.D., Pennsylvania State

Assistant Professor:

Debra Palmer Keenan, B.S., M.Ed., Cincinnati; Ph.D., Pennsylvania State

Instructors:

Harriet S. Worobey, (Director of Preschool), B.A., Mills College; M.A., Kean College
Barbara L. Tangel, B.S., Rutgers (Douglass College); M.S., Rutgers

Dietetic Director:

Barbara L. Tangel, B.S., Rutgers (Douglass College); M.S., Rutgers

Department of Oyster Culture (See Institute of Marine and Coastal Sciences)

Department of Plant Pathology

Interim Chairperson: Bruce B. Clarke, Foran Hall, Room 363

Associate Professors:

Bradley I. Hillman, B.S., M.S., Ph.D., California (Berkeley)
Donald Y. Kobayashi, B.S., Washington; Ph.D., California (Riverside)
Peter Oudemans, B.S., M.S., Canada; Ph.D., California (Riverside)
Nilgun Tumer, B.A., Agnes Scott; Ph.D., Purdue
James F. White, B.S., M.S., Auburn; Ph.D., Texas

Assistant Professor:

Faith C. Belanger, B.A., Rochester; Ph.D., Illinois

Extension Specialists:

Bruce Clarke, B.S., Ph.D., Rutgers
Ann Brooks Gould, B.S., M.S., Illinois State; Ph.D., Kentucky
Stephen A. Johnston, B.S., M.S., North Carolina State; Ph.D., Rutgers
Norman Lalancette, B.S., Cornell; M.S., Ph.D., Pennsylvania State

Adjunct Professors:

Gerald Bills, B.S., M.S., West Virginia; Ph.D., Virginia Polytechnic
Gwynne David Lewis, B.S., Rutgers; M.S., Purdue; Ph.D., Cornell
Chris C. H. Liao, B.S., M.S., Taiwan; Ph.D., Rutgers
Eugene H. Varney, B.S., Massachusetts; Ph.D., Wisconsin
John M. Wells, B.A., Columbia; M.S., Ph.D., Maryland

Department of Plant Science

Chairperson: Chee-kok Chin, Foran Hall, Room 263

Professors:

Chee-kok Chin, B.S., Nanyang (Singapore); M.S., Manitoba; Ph.D., Alberta
Hugo Dooner, B.S., Notre Dame; Ph.D., Wisconsin
Chaim Frenkel, B.S., Hebrew (Jerusalem); M.S., Massachusetts; Ph.D., Washington State
Cyril Reed Funk, Jr., B.S., M.S., Utah State; Ph.D., Rutgers
Harry W. Janes, B.A., M.S., Ph.D., Rutgers
Gojko Jelenkovic, B.S., Belgrade (Yugoslavia); Ph.D., California (Davis)
Richard H. Merritt, B.S., M.S., Ph.D., Rutgers
William A. Meyer, B.S., M.S., Ph.D., Illinois (Urbana-Champaign)
Elwin R. Orton, Jr., B.S., Pennsylvania State; M.S., Ohio; Ph.D., Wisconsin
Thomas Orton, B.Sc., Ph.D., Michigan State
Ilya Raskin, B.S., Brandeis; Ph.D., Temple
John N. Sacalls, B.S., Ph.D., Rutgers
Nicholi Vorsa, B.S., Rutgers; M.S., Wisconsin; Ph.D., Rutgers
Barbara A. Zilinskas, B.A., Framingham; M.S., Ph.D., Illinois (Urbana-Champaign)

Associate Professors:

Edward F. Durner, B.S., Maryland; M.S., Virginia Polytechnic; Ph.D., North Carolina State
James French, B.S., M.S., California; Ph.D., Cornell
Thomas J. Gianfagna, B.S., Cornell; M.S., Virginia Polytechnic; Ph.D., Cornell
Joseph C. Goffreda, B.S., Rutgers; Ph.D., Cornell
Michael A. Lawton, B.S., Bristol; Ph.D., Oxford (England)
Thomas Leustek, B.S., M.S., Ph.D., Rutgers
James Simon, B.S., Empire State; M.S., Oregon State; Ph.D., Massachusetts

Assistant Professor:

Saratha Kumudini, B.Sc., Concordia; M.Sc., Ph.D., Guelph (Canada)

Extension Specialists:

Stephen A. Garrison, B.S., M.S., Rutgers; Ph.D., Illinois
Melvin Henninger, B.S., M.S., Ph.D., Pennsylvania State
Bradley A. Majek, B.S., Cornell; M.S., Oregon State; Ph.D., Cornell
George J. Wulster, B.A., Hobart College; M.S., Ph.D., Rutgers

Associate Extension Specialists:

Joseph A. Fiola, B.S., M.S., Rutgers; Ph.D., Maryland
Joseph R. Heckman, B.S., Ohio State; M.S., Maryland; Ph.D., North Carolina State
James A. Murphy, B.S., Western Illinois; M.S., Ph.D., Michigan

Assistant Extension Specialist:

Robert Belding, B.S., Rutgers; M.S., Ph.D., North Carolina State
Arend-Jan Both, B.S., M.S., Agricultural University of Wageningen (The Netherlands); Ph.D., Cornell
Stephen Hart, B.S., M.S., Maryland; Ph.D., Michigan State
Jeremy Singer, B.S., M.S., Ph.D., Cornell

MASON GROSS SCHOOL OF THE ARTS

Information on the following subjects may be found in the General Information section at the back of this catalog: Student Life and Services, Admission, Tuition and Fees, Financial Aid, and University Policies and Procedures.

General Information

HISTORY AND AIMS OF THE COLLEGE

The Mason Gross School of the Arts was established in 1976 to provide professional education in the arts to undergraduate and graduate students. It was founded in response to a call from the state to provide greater opportunities within New Jersey for talented students seeking careers as artists.

Studio and performance-based instruction, taught by renowned working artists and master teachers, is the essential component of the school's professional arts curriculum. This curriculum is, in turn, supported by liberal arts electives and core requirements. Mason Gross School of the Arts' location within a major research university offers students unparalleled academic opportunities that expand upon studio-based skills and create the kinds of humanistic cross-references and connections that enrich and deepen artistic practice.

The school offers professional undergraduate programs of instruction in dance, music, theater arts, and visual arts, and graduate programs in music, theater arts, and visual arts. In addition, the faculty of the school is responsible for conducting liberal arts programs in the arts for students at the liberal arts colleges of Rutgers in New Brunswick, as well as offering general elective courses in the arts to those same students. All courses in the arts taught on the campus at New Brunswick are the responsibility of the Mason Gross School of the Arts.

Because of the intimate size of the school and the similarity of interests among students and faculty, the atmosphere is that of a community of artists. The school provides the advantages of a small, closely knit community, while at the same time its location within a major public university provides students with all of the advantages of a larger institution, including a highly diverse population with many perspectives and pursuits, extensive library and research holdings, and a vast array of cocurricular activities.

While attending the Mason Gross School of the Arts, students affiliate with a residential college in the New Brunswick area (Cook, Douglass, Livingston, or Rutgers) for housing and other student services. All the extracurricular activities of the student's chosen college of affiliation and of the larger university are available to Mason Gross students, including concerts, athletics, and social events. In addition, Mason Gross students benefit immeasurably from the school's proximity to New York City with its rich and varied cultural resources.

ADMISSION

In addition to the general undergraduate admission procedures outlined in the Admission section of this catalog, students applying to the Mason Gross School of the Arts must submit a portfolio (visual arts) or be auditioned and/or interviewed (dance, music, theater arts). The portfolio or audition is a principal part of the school's admission procedure. The applicant receives details regarding the audition/interview or submission of a portfolio shortly after the Office of University Undergraduate Admissions receives the student's application.

Dance

Applicants interested in the dance program must be auditioned by a committee of the dance faculty. The Department of Dance is an accredited institutional member of the National Association of Schools of Dance.

Music

Applicants to the music program must audition before a faculty jury.

Theater Arts

Students applying for the theater arts program must be auditioned and/or interviewed. Applicants for the acting concentration should prepare two monologues, one each from a contemporary and a classical play. The monologues should not exceed five minutes (in combined time). The monologues, which must be memorized, should be for roles in which the applicant could expect to be cast. Auditioners should bring a picture and résumé of their theatrical experience. Applicants for the design or production and management concentrations should bring a résumé of their theatrical activities, sketches or renderings of designs they have made, prompt scripts, and any other material that demonstrates the applicant's background in theater. Those interested in design should bring whatever artwork they have available in a portfolio format.

Rutgers is a member of the University/Resident Theater Association (U/RTA).

Visual Arts

Students applying for the visual arts program must attend a portfolio review day. At this time, students submit a portfolio containing a minimum of twenty recent examples of their work in whatever range of media is appropriate to their interests and abilities. Out-of-state applicants may mail in their portfolio.

FACILITIES

The administrative offices of the Mason Gross School of the Arts and those of the visual arts department are centered in the Civic Square Building in New Brunswick. The school also has extensive facilities throughout the campus at New Brunswick.

Dance

The Nicholas Music Center on the Douglass campus contains three large dance studios and five faculty offices, a stage that provides space for both dance rehearsals and performances, and dressing rooms and shower facilities for performers. The proscenium theater on the Douglass campus is available to students performing in major faculty concerts. In addition, the studio and performing facility in the Loree Building is used for dance classes and performances by students, faculty, and visiting artists.

Music

The Department of Music on the Douglass campus is housed in the Marryott Music Building, Music House, Walters Hall, and the fine arts complex consisting of Rehearsal Hall, Music Annex, and the Nicholas Music Center, which has a beautiful concert hall that seats approximately eight hundred people. These buildings contain classrooms, performance and teaching studios, conference and seminar rooms, small, medium, and large multipurpose rehearsal rooms, a small recital hall seating two hundred people, forty-three practice studios, rooms with computer workstations and electronic keyboards, as well as various other faculty offices and studios. The department has approximately 150 pianos, a fortepiano, three harpsichords, two concert organs, and a large collection of instruments. The Blanche and Irving Laurie Music Library, housed adjacent to the department in the Mabel Smith Douglass Library, contains a major collection of books, scores, recordings, and other resources for the scholar and the performing musician.

Theater Arts

The Department of Theater Arts stages approximately eighteen productions a year. These productions include the Rutgers Theater Company's seven play subscription series and the graduate director's studio series, The Jameson Project. Performance facilities include the Philip J. Levin Theater, a three-quarter theater, the New Theater, a state-of-the-art proscenium theater, the Jameson Studio Theater, and two studios equipped with lighting for small audiences. The department has well-equipped production facilities, including: scene shop, property shop with dedicated wood shop for furniture building, costume production shop, and state-of-the-art sound studio. Teaching facilities include costume teaching shop, lighting laboratory, computer-assisted drafting laboratory, two design studios, movement studio, and four acting/rehearsal studios.

Visual Arts

Studio facilities are located in the Civic Square Building and on the Livingston campus. Large studios exist for ceramics and sculpture, film and video, painting and drawing, photography, printmaking, and graphic design. Large informal spaces for performance and intermedia as well as facilities for computer arts are also available. Each of the major studio locations includes separate studios for graduate students as well as shops, media laboratories, general seminar rooms, and lecture halls.

In addition to the Jane Voorhees Zimmerli Art Museum on the College Avenue campus, several art galleries are located in New Brunswick, including the Mason Gross School of the Arts Gallery located in the Civic Square Building. These galleries and the Library Gallery at Douglass College display both student and faculty works as well as invitational exhibitions. Several screening spaces for film and video are available in New Brunswick through the Mason Gross School of the Arts and the other colleges at the university.

Academic Policies and Procedures

Note: See the University Policies and Procedures section for regulations that pertain to all the undergraduate colleges at Rutgers–New Brunswick.

STUDENT RESPONSIBILITY TO KEEP INFORMED

In addition to the material in this catalog, Mason Gross School of the Arts students are responsible for information in the Undergraduate Schedule of Classes and the Official Notices printed every Tuesday in The Daily Targum. Important notices are also posted on the bulletin board in each departmental office.

ACADEMIC CREDIT

Advanced Placement

Degree credit for liberal arts courses is awarded for advanced placement scores of 4 or 5 on the College Board Advanced Placement Examinations. Credit is not given for grades of 1 or 2. Test scores of 3 are evaluated by the appropriate academic department. Credit earned by advanced placement is not computed in the cumulative grade-point average.

Transfer Credit

Students who transfer from other accredited institutions or who, while matriculated at the Mason Gross School of the Arts, take approved courses at other accredited institutions, may receive credit for academic courses passed with a grade of C or better. The courses are evaluated upon receipt of an official transcript from the outside institution. No credit is given for courses passed by examination at other institutions or for correspondence courses. Transfer credits and grades for courses taken outside Rutgers University are not included in the cumulative grade-point average. Approved courses taken at other divisions of Rutgers University are included in the cumulative grade-point average. Students applying for transfer credit must submit a catalog of the institution(s) attended, marked to show the courses taken, in addition to an official transcript from the institution.

REGISTRATION AND COURSE INFORMATION

Academic Advising

Students are assigned an academic adviser within their major department and are urged to meet with the adviser regularly to plan their program and to review progress in the major. Nevertheless, students must assume full responsibility for conforming to the academic regulations of the college, for meeting all degree requirements, and for having the proper prerequisites for any course for which they register.

Registration

Registration for matriculated students begins in October for the following spring term and in March for the following fall term. Matriculated students register through the Rutgers Touchtone Telephone Registration System (RTTRS). Registration is completed upon full payment of tuition and fees by the announced deadline prior to the start of the term. The university reserves the right to restrict registration in all courses offered and, when necessary, to cancel courses previously announced. See the Tuition and Fees section for further information on registration.

Change of Courses. See the University Policies and Procedures section for drop/add procedures.

Course Load

Full-time students normally should carry at least 15 credits per term and in some programs need to carry more than 15 credits in one or more terms in order to graduate within the standard four-year period. Approval of the Office of the Dean is required before a student may take more than 20 credits in a term.

Full-Time and Part-Time Status. All programs in the Mason Gross School of the Arts are full-time programs and only under extenuating circumstances, as determined by the Office of the Dean, can a student attend on a part-time basis. For statistical and billing purposes, a full-time student is defined as one who is taking at least 12 credits per term. Those taking fewer than 12 credits are considered part time. All courses taken, whether on a credit or a noncredit basis, are counted for billing and statistical purposes. In addition, students should realize that they jeopardize receipt of financial aid if they register for fewer than 12 credits since full-time status is required for all financial aid awards.

Leave of Absence, Withdrawal, and Readmission

Leave of Absence. A student may be granted a leave of absence for a period not to exceed one year, if, in the opinion of the faculty, such a leave seems advisable. Medical leaves are granted upon the recommendation of a physician at a Rutgers health facility. All students who request a leave of absence for either personal or medical reasons must complete a Leave of Absence form and meet with the dean of students. If a student wishes to return to school after more than a year has elapsed since registering for classes, he or she may seek readmission through the department and the Office of the Dean.

Withdrawal. Students may withdraw from the school with grades of W through the twelfth week of the term. Students wishing to withdraw must speak with the dean of students, the department chairperson, and their adviser. They then must submit a withdrawal form to the university registrar.

Readmission. Students who interrupt their registration in the school for whatever reason must make formal application to the dean of students for readmission. Application for readmission in September must be submitted with supporting transcripts as necessary prior to August 1. Action cannot be taken on requests after that date. For January readmission, application must be complete prior to December 1. Readmission is subject to space limitations within the school.

For the school's policy on readmission after dismissal for academic reasons, see Scholastic Standing later in this chapter.

Dean-to-Dean Transfer

Any Mason Gross School of the Arts student who wishes to transfer to another undergraduate college at Rutgers in New Brunswick must file a dean-to-dean transfer form, which can be obtained from the Office of the Dean. For the regulations and deadline dates for a dean-to-dean transfer, see the Admission section. Submission of the dean-to-dean transfer application does not guarantee admission into the college or department of the student's choice.

Course Information

Graduate Courses. Qualified undergraduate students who wish to take courses offered by the graduate faculty may do so if they receive the approval of the instructor, the director of the program offering the course, and their undergraduate adviser.

Internships and Fieldwork. Students ordinarily may count no more than 8 credits (12 credits in visual arts and theater arts) of fieldwork or internships toward their degree in addition to any fieldwork or internships considered an integral part of their major program of study.

Pass/No Credit Courses. Mason Gross School of the Arts students are not permitted to register for courses on a Pass/No Credit basis.

Repeated Courses. With the permission of the department, a student may repeat a course taken at Rutgers in which a grade of F was earned.*† If the grade is improved, the student may request that the original grade be removed from the calculation of the cumulative grade-point average. The original grade of F, however, remains on the transcript. The repeated course must be taken at Rutgers.

The option to repeat a course may be used only once for a given course. If a student fails a course a second time, only the second F is computed into the cumulative grade-point average.

In order for a change resulting from the repetition of a course to be made to a student's cumulative grade-point average, a course repeat form, available in the Office of the Dean, must be completed by the student.

* Departmental permission is necessary only for School 07 courses.
† Theater arts majors may repeat only general theater requirements and liberal arts courses.

Attendance. Students are expected to attend all scheduled course meetings. Individual programs may have particular requirements for reporting absences. Students should consult their department. In general, when absences are so excessive as to impair the student's academic achievement in any course, a report is sent by the instructor to the Office of the Dean. Reasons for absences are then investigated and sent to the instructor.

Students are expected to notify the dean's office if they plan to be absent from class for one week or more. Moreover, students on academic probation are required to report the reasons for any class absence to the dean of students within three school days of that absence.

The work missed due to class absences is the responsibility of the student to make up. The extent to which such work is counted toward the student's grade is left to the discretion of the instructor. In the case of a reported absence from a final examination, the dean's office determines whether or not the student is entitled to a makeup final examination.

Studio Course Fees. Some studio courses in the Mason Gross School of the Arts require the payment of an additional fee for items such as materials and tickets.

Declaration of a Second Major

In addition to the B.F.A. or B.Mus. programs, a Mason Gross School of the Arts student can pursue a second major in a liberal arts discipline, provided the requirements of both Mason Gross School of the Arts and the other department are fulfilled. The student must declare the second major through the Office of the Dean and fulfill all conditions required by the second department. The second major is recorded on the student's transcript. The second major does not permit Mason Gross School of the Arts students to complete the liberal arts version of a Mason Gross School of the Arts major. The second major may have to be completed by taking summer classes or an added year.

SCHOLASTIC STANDING

The student's cumulative grade-point average is based on all courses taken for credit at Rutgers. See the University Policies and Procedures section for information on the computation of the cumulative grade-point average and other grading regulations.

Class Standing

The student's class standing is generally classified in September on the basis of the ratio of the number of credits earned to the total required for graduation in a specific curriculum: first-year students, 0 to 17 percent; sophomores, 18 to 44 percent; juniors, 45 to 69 percent; and seniors, 70 to 100 percent.

Dean's List

Each term, Mason Gross School of the Arts recognizes current academic achievement through a Dean's List. In order to qualify, a student must have taken 12 or more credits (Pass/No Credit and E credits are excluded) for letter grades and have achieved a term grade-point average of 3.4 or better.

Time Limit for the Degree

Normally a maximum of eleven terms of full-time enrollment is permitted for completion of the degree requirements. Students may be placed on academic probation at any time that the predicted graduation date exceeds eleven terms.

Poor Academic or Artistic Performance

Academic Review. At the end of each term, the school's Scholastic Standing Committee, composed of elected faculty and the dean of students, reviews the academic records of all students.

Probation. Any student, including first-term first-year students, whose term average is lower than 1.8, is placed on academic probation. Students are notified in writing of probationary status before the start of the next term. While on probation, students must maintain full-time academic status and must complete successfully at least 12 credits per term. (See also guidelines for Academic Dismissal.)

Academic Dismissal. There are no automatic dismissals for first-term first-year students. Students ordinarily are dismissed when their term average is 1.4 or less regardless of their cumulative grade-point average or preceding term average. Students may also be dismissed if their term average falls below probationary level in any three terms or in any two consecutive terms or if their cumulative grade-point average at any time is less than the following: first year, 1.6; sophomore year, 1.8; junior year, 2.0; senior year, 2.0.

Artistic Review. At regular intervals (usually at the conclusion of each term) the work of each student is reviewed by the department to determine if the artistic achievement and commitment to the professional program warrants retention in the program. Students are given an oral and/or written critique and are advised if there is sufficient reason for concern about their qualifications for completing the program. Transfer students in visual arts receive an artistic review during their second term at Mason Gross School of the Arts.

Artistic Dismissal. Students whose dismissal has been recommended by the departmental Scholastic Standing Committee for artistic reasons (deficiency in artistic production and/or quality of work) may request transfer to other programs of the Mason Gross School of the Arts or any other college at Rutgers whose admission requirements they meet. No guarantee of admission to another division or program can be given to students who have received an artistic dismissal, but the dean's office will assist students in completing the necessary transfer forms. Artistic dismissal is not subject to appeal.

Appeal. Students placed on probationary status may appeal in writing to the dean of students within one week of the date of the letter of probation. Grounds for appeal include technical error and/or changes in temporary grades. Letters of appeal must state the reasons for appeal and must be written by the student, although advice from others may be sought in formulating the appeal.

Students dismissed from the Mason Gross School of the Arts by the school's Scholastic Standing Committee may appeal by letter to the Office of the Dean within one

week of notification of the decision. Grounds for appeal include technical error, extenuating circumstances, and/or additional information not previously available to the committee. The letter of appeal must state the reasons for the appeal and must be written by the student, although advice from others may be sought in formulating the appeal.

The Scholastic Standing Committee may determine that the student has presented evidence not previously available and sufficient to require the Scholastic Standing Committee to reconsider the case, or that insufficient evidence has been presented to justify further consideration of the appeal. At the student's and/or committee's request, a student may be present at the meeting of reconsideration, unaccompanied by adviser or attorney, to amplify upon his or her appeal request.

The committee may reinstate the student, with or without conditions, or may deny the appeal. Some of the conditions for reinstatement include a term average of 2.0 or better and no incomplete grades. The committee also may define future courses to be completed. The committee notifies the student of its decision and any conditions within one week of reconsideration. Action by the committee is final.

Readmission. Students who have been dismissed from the school for academic reasons are not considered for readmission until they have given satisfactory evidence that they can further pursue academic work satisfactorily. Mason Gross School of the Arts normally requires that students improve their term or cumulative grade-point average to a level that would have precluded dismissal action. This can be accomplished through work in the Rutgers Summer Session or by earning 12 to 15 credits at another accredited college or university. Each case is considered on its own merit. Students are not usually readmitted after a second dismissal action. Readmission is not automatic.

DISCIPLINARY HEARING PROCEDURES

The Board of Governors of Rutgers, The State University of New Jersey, has established a list of offenses that may result in separation from the university. These offenses are handled through the University Code of Student Conduct. (See the University Policies and Procedures section.) In addition, each college has a hearing procedure for use in instances where charges against a student are not of sufficient gravity to lead to separation from the university. Lists of the separation and nonseparation offenses and copies of the Mason Gross School of the Arts and the university hearing procedures are available in the Office of the Dean.

Degree Requirements

REQUIREMENTS

Credits and Residency

The total number of credits required for graduation varies from 120 to 129 credits, depending on the student's major program. In no instance may a student graduate with fewer than 120 credits and a cumulative grade-point average of less than 2.0.

The residency requirement varies by program. Transfer students normally should expect to spend a minimum of two years in the music and visual arts programs and three years in the dance and theater arts programs. Visual arts transfer students must earn at least 24 credits in studio art courses (081) at Mason Gross School of the Arts.

Each candidate for the bachelor's degree must earn a minimum of 30 of the last 42 credits at Rutgers.

Liberal Arts Requirements

In addition to completing the prescribed program of study in their major as outlined in the Programs of Study chapter later in this section, students must take courses in the following liberal arts categories:

Humanities: Africana studies, American studies, archaeology, art history, Asian studies, comparative literature, classics, English, foreign languages, Hebraic studies, history, linguistics, philosophy, Puerto Rican and Hispanic Caribbean studies, religion, Slavic and East European studies, women's studies

Social and Behavioral Sciences: anthropology, economics, environmental resources, labor studies, political science, psychology, sociology, urban studies and community health

Natural Sciences, Mathematics, and Computer Science: astronomy, biochemistry, biological sciences, chemistry, computer science, entomology, geography, geological sciences, marine and coastal sciences, physics, statistics

Dance

Area I:	01:355:101 Expository Writing I (3) and 01:355:201 Research in the Disciplines (3)	6
Area II:	Mathematics, Natural Sciences, Computer Science, and Social and Behavioral Sciences	6
Area III:	History or Theory of Art, Music, and Theater	9
Area IV:	Humanities	6
Area V:	Liberal arts electives	9
	Total Credits	36

Music

Area I:	01:355:101 Expository Writing I (3) and English Literature or American Literature (3)	6
Area II:	Humanities	6
Area III:	Social and Behavioral Sciences *	6
Area IV:	Mathematics, Natural Sciences, Computer Science *	6
Area V:	Liberal arts electives *	12
	Total Credits	36

Theater Arts

Area I:	01:355:101 Expository Writing I (3) and English Literature or American Literature (6)	9
Area II	01:082:105,106 Art History (6) and Introduction to Music, Music History, or Music Theory (3)	9
Area III:	Humanities, Social and Behavioral Sciences	12
Area IV:	Natural Sciences, Computer Science, and Mathematics	6
	Total Credits	36

Visual Arts

Area I	01:355:101,201 Expository Writing I (3) and Research in the Disciplines (3)	6
Area II:	Humanities (6); Philosophy or English Literature or American Literature (3)	9
Area III:	Social and Behavioral Sciences	9
Area IV:	Mathematics, Natural Sciences, Computer Science	6
Area V:	Liberal arts elective	3
	Total Credits	33

GRADUATION

Degrees are conferred at the annual commencement ceremony at the end of the spring term. Students completing degree requirements in October or January may ask for a certificate of completion to be used in lieu of a diploma until the next commencement exercise.

* For music education students, specific courses for meeting requirements in Areas III, IV, and V are needed for certification. The total liberal arts requirement is 30 credits.

Programs of Study

Mason Gross School of the Arts offers professional programs in dance, theater arts, and visual arts, leading to the Bachelor of Fine Arts degree, and a professional program in music, leading to a Bachelor of Music degree. The curriculum codes for these programs are as follows:

206 Dance
702 Music
966 Theater Arts
081 Visual Arts

The specific program requirements are outlined in this chapter.

DANCE

See Dance in the Programs of Study for Liberal Arts Students section for Bachelor of Arts (B.A.) program information.

The objective of the Bachelor of Fine Arts program in dance is to provide both introductory and advanced professional training, with an emphasis on in-depth study in modern dance, to students seeking careers in dance. The curriculum also requires choreographic training and production experience, both necessary to the preparation of a dancer.

Major Requirements

07:203:115 Seeing Dance: Appreciating the Art of Human Movement (3)
07:206:126 Rhythmic Analysis (2)
07:206:136 Dance Production I (3)
07:206:138-139 Dance Technique IA-IB (3,3)
07:206:142-143 Dance Improvisation IA-IB (2,2)
07:206:175 Ethnic Dance (2) (two terms)
07:206:201 Elementary Labanotation (3)
07:206:215 Music for Movement (2)
07:206:234-235 Dance Choreography IA-1B (2,2)
07:206:237 Dance Production II (3)
07:206:238-239 Dance Technique IIA-IIB (3,3)
07:206:251 Ballet III † (3)
07:206:252 Ballet IV (3)
07:206:311 Ballet V (2)
07:206:325 Kinesiology for Dancers (3)
07:206:327 Percussion Accompaniment for Dance (2)
07:206:334-335 Dance Choreography IIA-IIB (2,2)
07:206:338-339 Dance Technique IIIA-IIIB (3,3)
07:206:361 Production Study (2)
07:206:402 Introduction to Laban Movement Analysis (3)
07:206:438-439 Dance Technique IVA-IVB (3,3)

† Ballet I and Ballet II are also required of all dance majors with no previous experience in ballet or on recommendation of the faculty.

07:206:441 Dance History—World Survey (3)
07:206:442 Dance History—Twentieth Century (3)
07:206:460 Choreographic Study (2)
07:206:___ Dance electives (4)
01:700:101 Introduction to Music (3)*

In addition, students must complete a minimum of 36 credits toward liberal arts requirements (see the Degree Requirements Chapter) for the total 124 credits required for graduation.

MUSIC

See Music in the Programs of Study for Liberal Arts Students section for Bachelor of Arts (B.A.) program information.

The Bachelor of Music (B.Mus.) program offers three areas of concentration: performance, jazz studies, and music education. Students are admitted specifically to one of these three areas. Any change must be made with the approval of the department. All students in the Bachelor of Music program must pass a keyboard competency examination no later than the spring term of the junior year, or upon completion of course sequences 07:701:159-160 and 259-260 (students in the music education concentration must pass the keyboard competency examination prior to the beginning of the term in which they fulfill the student teaching requirement). The course 07:701:100 Music Assembly is required during each term of enrollment; students are also expected to perform in this course at least once a year after the first year.

Major Requirements

Performance Concentration

Students in the performance concentration must take the following courses in music theory (28 credits):

07:700:121-122 Theory I,II (3,3)
07:700:123-124 Fundamentals of Musicianship I (2,2)
07:700:127 Introduction to Music Technology (3)
07:700:221-222 Theory III,IV (3,3)
07:700:223-224 Fundamentals of Musicianship II (2,2)
07:700:322 Music Analysis (3)
07:700:323 Fundamentals of Musicianship III (2)
07:700:329 Introduction to Conducting (2)

Performance students must also take the following courses in music history (12 credits):

07:700:301-302 Music History I,II (3,3)
07:700:303 or 304 Topics in World Music (3)
07:700:419 or 420 Special Studies in Music History (3)

In addition to these requirements, students must also complete the following course of study (40 credits):

07:701:407,408 Twentieth-Century Performance Seminar (1,1)
chamber music courses † (4)
large ensemble courses † (8)
pedagogy courses (2)
performance study courses (24)

Students in the performance concentration must complete a minimum of 36 credits in liberal arts courses (see Degree Requirements chapter) and 4 credits of elective courses, for a total of 120 credits required for graduation. All performance students present a recital in the senior year in partial fulfillment of the requirements for graduation. Acceptability of this recital is determined by a faculty jury in attendance.

Music Education Concentration

Students in the music education concentration take the following courses in music theory (32 credits):

07:700:121-122 Theory I,II (3,3)
07:700:123-124 Fundamentals of Musicianship I (2,2)
07:700:127 Introduction to Music Technology (3)
07:700:221-222 Theory III,IV (3,3)
07:700:223-224 Fundamentals of Musicianship II (2,2)
07:700:322 Music Analysis (3)
07:700:323 Fundamentals of Musicianship III (2)
07:700:329-330 Introduction to Conducting (2,2)
07:700:341 Orchestration I (2)

Music education students must also take the following courses in music history (12 credits):

07:700:301-302 Music History I,II (3,3)
07:700:303 or 304 Topics in World Music (3)
07:700:419 or 420 Special Studies in Music History (3)

In addition to these requirements, students must also complete the following course of study (52 credits):

large and small ensemble courses † (8)
music education courses (29)
performance study courses (15)

Students in the music education concentration must follow one of two streams, instrumental or general/vocal. A total of 30 credits in liberal arts courses is required for music education students. Some of these credits are in courses specified for certification. A total of 126 credits is required for graduation. In order for state certification to be granted, the National Teachers Examination must be passed.

Jazz Concentration

Students concentrating in jazz studies must complete the following course of study (85 credits):

07:700:102 Introduction to Music History (3)
07:700:121-122 Theory I,II (3,3)
07:700:123-124 Fundamentals of Musicianship I (2,2)
07:700:125 Survey of Jazz Styles (2)
07:700:127 Introduction to Music Technology (1)
07:700:223-224 Fundamentals of Musicianship II (2,2)
07:700:247-248 Jazz Theory I,II (3,3)
07:700:251-252 Keyboard Harmony for Jazz Majors (2,2)
07:700:303 or 304 Topics in World Music (3)
07:700:305-306 Evolution of Jazz (3,3)
07:700:329 Introduction to Conducting (2)
07:700:347-348 Jazz Composition and Arranging (2,2)
07:700:371-372 Jazz Improvisation I (3,3)
07:700:471-472 Jazz Improvisation II (3,3)
ensemble courses † (12)
performance study courses (16)

* 07:700:101 Introduction to Music may count toward the Area III liberal arts requirement.
† Bachelor of Music students must enroll in a large ensemble each term. The music department may assign any student to the ensemble of its choice.

Students in the jazz concentration must complete a minimum of 36 credits in liberal arts courses (see the Degree Requirements chapter), for a total of 121 credits required for graduation. All jazz students present a recital in the senior year in partial fulfillment of the requirements for graduation. Acceptability of this recital is determined by a faculty jury in attendance.

THEATER ARTS 966

See Theater Arts in the Programs of Study for Liberal Arts Students section for Bachelor of Arts (B.A.) program information.

The Bachelor of Fine Arts (B.F.A.) degree in theater arts is designed for students seeking intensive training in a setting where they have access to rigorous liberal arts courses and the cultural life and contacts of a major university. Students in the B.F.A. program specialize in acting, design, or production and management specialties. They must be in residence for a minimum of three years. Students are auditioned and/or interviewed as part of the admission process and continue in their program each year by faculty invitation only.

Rutgers is a member of the University/Resident Theater Association (U/RTA).

Major Requirements

Student Responsibility to Keep Informed

The Department of Theater Arts makes special demands on students enrolled in the B.F.A. programs because of the professional and preprofessional nature of the training programs. Specific rules and policies are published in the Guide for Actors in the Theater Arts Department and the Guide for Design and Production Students in the Theater Arts Department. Students are responsible to understand and follow all rules and policies set forth in these documents.

Repeated Courses

Theater Arts B.F.A. students may repeat a liberal arts course taken at Rutgers in accordance with the regulation stated in the Academic Policies and Procedures chapter of the Mason Gross School of the Arts section of this catalog.

Scholastic Standing

For Theater Arts majors, a grade of D or F in a core course is grounds for dismissal. The first C in a core course results in artistic probation, the second C in a core course is grounds for dismissal. In the general theater arts requirements, any F may result in dismissal. A general theater arts requirement in which a D is received must be retaken and a grade of C or better must be achieved. A course may only be retaken once.

Rehearsal Requirements

The Department of Theater Arts requires students, depending on production assignments or casting, to be available for work or rehearsals at times when classes may not be in session.

General Theater Requirements

All students, regardless of concentration, must take the following courses:

07:965:311-312 Theater History (3,3)
07:965:398 Basic Theater Texts (3)
07:965:400 Theater Theory (3)
07:966:123 Theater Practice (1 for each of two terms)
07:966:215-216 Scenic Art (3,3)

The total theater program must consist of at least 84 and as many as 92 credits. Theater arts students must also complete a minimum of 36 credits of liberal arts requirements (see the Degree Requirements chapter) for a minimum of 120 credits required for graduation.

All students begin with an introductory year that provides a foundation in theater and includes expository writing, art history, and other liberal arts courses, as well as a specially designated theater course relating to the student's area of interest. Students begin intensive theater study as sophomores.

Design and Production and Management students in the junior and senior years may not schedule any classes for fourth period on Wednesdays. This period is reserved for departmental production meetings.

In addition to the general theater requirements, students must enroll in and complete one of the three following concentrations.

Acting Concentration Core Requirements

This professional actor training program provides concentrated study in acting and a well-rounded background in theater arts. While some graduates go on to graduate training programs, most enter the profession directly.

The core of the program is five to six hours per week spent in acting, augmented in the first, sophomore, and junior years by four to eight hours per week of voice and movement classes. An acting/directing workshop in the junior year creates a production that often goes to the Fringe Festival in Edinburgh, Scotland, in August. In the fall of the senior year, students participate in one of two options: an internship or a term abroad. Acting internships are available at many regional theaters, casting offices, and talent agencies. The term abroad offers classical acting training in a thirteen-week residency at Rutgers' London Academy of Theater. During the spring term, students produce a senior acting project. B.F.A. acting students are eligible for casting in all departmental productions, including The Rutgers Theater Company's MainStage, Off Main, and The Jameson Project beginning in their second year of study.

First (Introductory) Year

01:082:105,106 Introduction to Art History *	6
01:355:101 Expository Writing I *	3
07:966:123 Theater Practice (two terms)	2
07:966:215,216 Scenic Art	6
07:966:227-228 Voice I	4
07:966:230 Movement I	2
07:966:271,272 Basic Acting	6
liberal arts courses	3
Total Credits	32

* Liberal arts course.

Sophomore Year

07:965:311,312	Theater History	6
07:966:273	Theatrical Makeup	1
07:966:325,326	Acting Technique	6
07:966:333-334	Movement	4
07:966:403,404	Voice II	4
07:966:423	Stage Management	3
liberal arts courses		9
	Total Credits	33

Junior Year

07:965:398	Basic Theater Texts	3
07:965:497	Modern Dance	2
07:966:323	Theater Practice: Stage Managing	3
07:966:400	Theater Theory	3
07:966:403,404	Voice III	4
07:966:405,406	Acting: Scene Study	6
07:966:419,420	Actor / Director Workshop	6
07:966:433	Movement Corporeal Styles	2
liberal arts courses		3
	Total Credits	32

Senior Year

01:350:___	Shakespeare *	3
01:959:393	Study Abroad	3
07:966:359	Internship† or 07:966:490 Acting in London	12
07:966:401	Classical Text	1
07:966:426	Acting: Senior Project	3
07:966:480	Auditioning	1
liberal arts courses		6
	Total Credits	29

Design Concentration Core Requirements

First-year B.F.A. students preparing to specialize in costume, lighting, and scenic design take introductory course work that includes theater and visual arts courses. All design students must take a core drawing class two hours per week. The design program begins in the sophomore year with courses in drafting, costume history, rendering, properties, stagecraft, introduction to lighting, and the history of architecture and decor, providing solid grounding in technical and craft skills. The junior and senior years are devoted to intensive study and practice in design. The program is dedicated to a comprehensive education and practice in all areas of design. Students in the program use New York City museum and theater resources during biweekly field trips as part of their training.

First (Introductory) Year

07:081:121	Drawing Fundamentals	3
01:082:105,106	Introduction to Art History *	6
01:355:101	Expository Writing I *	3
07:966:105	Drawing Practice (two terms)	1
07:966:123	Theater Practice (two terms)	2
07:966:215-216	Scenic Art	6
07:966:300-301	Introduction to Design	6
liberal arts course		6
	Total Credits	33

Sophomore Year

07:965:311,312	Theater History	6
07:966:105	Drawing Practice (two terms)	1
07:966:245,246	History of Architecture and Decorative Arts	4
07:966:247,248	Costume History and Rendering	4
07:966:251,252	Fundamentals of Drafting and Theater Techniques	4
07:966:305	Introduction to Stage Lighting	2
07:966:307	Production Properties	2
07:966:323	Theater Practice (two terms)	2
07:966:339	Stagecraft	2
07:966:390	Costume Construction Techniques	2
liberal arts courses		6
	Total Credits	35

Junior Year

07:965:398	Basic Theater Texts	3
07:966:105	Drawing Practice (two terms)	1
07:966:243,244	Elements of Design	4
07:966:411	Production Techniques (two terms)	2
07:966:422	Production Design Projects	2
Design electives A (listed below)		6
Design electives B (listed below)		1
liberal arts courses		12
	Total Credits	31

Senior Year

07:965:400	Theater Theory	3
07:966:105	Drawing Practice (two terms)	1
07:966:411	Production Techniques (two terms)	4
07:966:422	Production Design Projects (two terms)	4
Design electives C (listed below)		9
liberal arts courses		6
	Total Credits	27

Design Electives

Design Electives A

07:966:309,310 Drawing and Designers (2,2)
07:966:335,336 Costume Design I (3,3)
07:966:343,344 Fundamentals of Lighting Design (2,2)
07:966:345,346 Theatrical Rendering Techniques (2,2)
07:966:361 Sound Technology (2)
07:966:362 Sound Technology Practicum (BA)
07:966:423 Stage Management (3)
07:966:455-456 Seminar in Costume History (3,3)

Design Electives B

07:966:273 Theatrical Makeup (1)
07:966:317 Scene Painting (2)
07:966:389,390 Costume Construction Techniques (1,1)
07:966:447-448 Draping (3,3)
07:966:451 Tailoring (3)
07:966:468 Computer Drafting (2)

Design Electives C

07:966:309,310 Drawing and Designers (2,2)
07:966:313,314 Set Design I (3,3)
07:966:462,463 Costume Design II (3,3)
07:966:464,465 Lighting Design I (3,3)
08:966:563,564 Theater Techniques (2,2)
08:966:637,638 Drafting and Theater Technology: Advanced Project (BA,BA)

All graduating design students must present a portfolio of their work at the penultimate and final portfolio review sessions in their senior year. This portfolio must include

* Liberal arts course.
† A corequisite of 9 liberal arts credits is required for students who take the internship option in their senior year.

current résumé. The portfolio must be prepared with faculty guidance beginning in the second term of the junior year.

Production and Management Concentration
Core Requirements

The production and management program is designed for students interested in preparation for careers in stage management, theater management, costume technology, and technical direction. During the sophomore year of the program, students undertake serious exploration of their special interest areas with courses in stagecraft, stage management, costume history and rendering, or production properties. Intensive study and practice in the student's specialty begins with the junior year, which is individually structured in consultation with a specialty adviser.

First (Introductory) Year

01:082:105,106	Introduction to Art History *	6
01:355:101	Expository Writing I *	3
07:966:123	Theater Practice (two terms)	2
07:966:215-216	Scenic Art	6
07:966:271,272	Basic Acting	6
liberal arts courses		9
	Total Credits	32

Sophomore Year

07:965:311,312	Theater History	6
07:966:323	Theater Practice (two terms)	2
07:966:423	Stage Management	3
Theater arts specialty courses and electives (listed below)		12
liberal arts courses		3
	Total Credits	29

Junior Year

07:965:398	Basic Theater Texts	3
07:965:421	Directing	3
07:966:364	Theater Management	3
07:966:411	Production Techniques (two terms)	2
07:966:424	Stage Management Seminar	3
theater arts specialty courses		10
liberal arts courses		9
	Total Credits	33

Senior Year

07:965:400	Theater Theory	3
07:966:411	Production Techniques (two terms)	2
theater arts specialty courses		21
liberal arts courses		3
	Total Credits	29

Specialty Courses

Students elect a specialty in consultation with a specialty adviser and take courses from those in the following lists. Courses marked with an asterisk are required. Some courses are specified for the sophomore or junior years.

Stage Management Specialty

01:198:110 Introduction to Computers and Their Application (3)
07:206:301 Elementary Labanotation (3)
†07:965:421,422 Directing (3,3)
07:966:300 Introduction to Design (3)
†07:966:305 Introduction to Stage Lighting (2) (sophomore)
†07:966:307 Production Properties (2) (sophomore)
†07:966:339 Stagecraft (2) (sophomore)
†07:966:343,344 Fundamentals of Lighting Design (2,2)
†07:966:361 Sound Technology (2) (sophomore)
†07:966:362 Sound Technology Practicum (BA)
07:966:365 Theater Management Practicum (3)
07:966:389 Costume Construction (1)
07:966:422 Production / Design Projects (BA)
†07:966:424 Stage Management Seminar (three terms) (9)
08:966:609,610 Stage Combat (1,1)

Technical Direction Specialty

01:198:110 Introduction to Computers and Their Application (3)
†07:966:245,246 History of Architecture and Decorative Arts (2,2) (junior)
†07:966:251,252 Fundamentals of Drafting and Theater Techniques (2,2) (junior)
07:966:300 Introduction to Design (3)
†07:966:305 Introduction to Stage Lighting (2) (sophomore)
†07:966:307 Production Properties (2) (sophomore)
07:966:313,314 Set Design I (3,3)
†07:966:316 Scene Painting (2)
†07:966:339 Stagecraft (2) (sophomore)
†07:966:343,344 Fundamentals of Lighting Design (2,2)
07:966:359,360 Directed Study (BA,BA)
†07:966:361 Sound Technology (2) (sophomore)
07:966:362 Sound Technology Practicum (BA)
†07:966:389,390 Costume Construction Techniques (1,1) (sophomore)
07:966:422 Production and Design Projects (BA)
07:966:464,465 Lighting Design I (3,3)

Costume Technology Specialty

07:965:396 Internship (3-6, BA)
†07:966:245,246 History of Architecture and Decorative Arts (2,2) (sophomore)
†07:966:247,248 Costume History and Rendering (2,2) (sophomore)
†07:966:251,252 Fundamentals of Drafting and Theater Techniques (2,2) (sophomore)
†07:966:273 Theatrical Makeup (1)
07:966:300-301 Introduction to Design (3,3) (first year)
07:966:305 Introduction to Stage Lighting (2) (sophomore)
†07:966:307 Production Properties (2) (sophomore)
07:966:316 Scene Painting (2)
07:966:335,336 Costume Design I (3,3)
07:966:339 Stagecraft (2) (sophomore)
†07:966:389,390 Costume Construction Techniques (1,1)
†07:966:422 Production and Design Projects (BA)
†07:966:447,448 Draping (3,3)
†07:966:451 Tailoring (3)
†07:966:455-456 Seminar in Costume History (3,3)
08:966:563,564 Theater Techniques (2,2)

VISUAL ARTS 081

See Art in the Programs of Study for Liberal Arts Students section for the Bachelor of Arts (B.A.) program information.

* Liberal arts course.
† Required course.

The Bachelor of Fine Arts program in visual arts is for students who want to become professional artists and who wish to pursue their specific professional goals within the stimulating intellectual climate of Rutgers University. The training offered by the Mason Gross School of the Arts differs from an art school program that focuses exclusively on studio skills. At the Mason Gross School of the Arts, studios and seminar discussions together confront students with a wide range of techniques, materials, visual languages, and cultural issues. Creation and critical analysis go hand in hand. The program assumes that to be a surviving professional artist in the twenty-first century one should be trained to make informed choices, not only about aesthetic strategies, but also about who to work for and how to serve the demands of society and oneself.

Work toward the B.F.A. degree starts with foundation courses that introduce the techniques and materials as well as the artistic and cultural questions of contemporary art. Intermediate and advanced courses provide concentrated training in six major areas: ceramics and sculpture, film and video, painting and drawing, photography, printmaking, and graphic design. Students are asked to focus in one of these six areas. They may be grouped in agreeable arrangements such as painting and drawing, or design and printmaking. Enrollment in advanced graphic design courses is limited to twenty students.

The B.F.A. program in visual arts is committed to the development of both personal expression and cultural analysis through which a student prepares to face the aesthetic, social, and personal choices involved in being a professional artist.

Major Requirements

1. First-year fundamental courses:
   07:080:200-201 Seminar in Contemporary Art (3,3)
   07:081:101-102 Artmaking (3,3)
   07:081:121 Drawing Fundamentals I (3)
   07:081:122 Drawing Fundamentals II (3)
   Studio art elective (3,3)
2. 07:081:105 Visual Arts Practice (1) (three terms)
3. 07:081:497-498 Thesis and Exhibition (3,3)
4. Studio concentration (18)
5. Studio electives (33)
6. Visual arts critical studies (6)
7. Art History (12)
   01:082:105,106 Introduction to Art History (3,3)
   Non-Western art or 01:082:305 Women and Art (3)
   Any art history elective above 01:082:105,106 (3)

In addition, students must complete a minimum of 33 credits of liberal arts requirements (see the Degree Requirements chapter) for a total of 129 credits required for graduation.

Academic Advising

The department provides all students with close and continuing academic advice. Faculty and staff advisers are readily available for assistance.

Course Listing

Explanation of Three-Part Course Numbers

The number preceding each course title is divided into three parts. The first two digits are the administrative code (standing for a faculty or a school), the next three digits are the subject code, and the final three digits are the course code.

Administrative Codes

The undergraduate code for the Mason Gross School of the Arts is 07. For a complete list of administrative codes used in this catalog, see the beginning of the Programs of Study for Liberal Arts Students section.

Subject Codes

A subject code indicates the subject matter of the course. Courses with the following subject codes are listed in this chapter. (This does not constitute a list of majors.)

080 Art, Critical Studies
081 Art, Studio
203 Dance
206 Dance
700 Music
701 Music, Applied
965 Theater Arts
966 Theater Arts

Course Codes

The course code comprises the sixth, seventh, and eighth digits in all course numbers. Course codes from 100 to 299 indicate introductory and intermediate undergraduate courses. Codes from 300 to 499 indicate advanced undergraduate courses. (Courses coded from 500 to 799 are graduate courses.)

Two course codes separated by a comma indicate that each term may be taken independently of the other (example: 07:700:203,204). Two course codes separated by a hyphen indicate that satisfactory completion of the first term is a prerequisite to the second term (example: 07:206:138-139); the first term may be taken for credit without taking the second, except where a statement is added to indicate that both term courses must be completed in order to receive credit.

Credits awarded for the successful completion of each course are indicated in parentheses following the course title. The notation BA indicates that the number of credits is determined by arrangement with the department offering the course.

ART 080

The following courses serve as critical studies courses for the Bachelor of Arts (B.A.) and the Bachelor of Fine Arts (B.F.A.) curricula.

Courses (080)

07:080:200-201. SEMINAR IN CONTEMPORARY ART (3,3)
Examination of the contemporary artist, architect, designer, filmmaker, media arts, and photographer in relation to modernist movements, socioeconomic institutions, evolving technologies, and ideologies.

07:080:295. WORKS ON PAPER: INVESTIGATIONS (3)
Prerequisite: 07:081:101.
Develops a sound understanding of the developments in contemporary printmaking and issues of multiplicity in photography, sculpture, and book forms. Uses readings, lectures, slides, and film presentations to familiarize students with current ideas, history, criticism, practices, and artists who deal with multiplicity. Visits to collections, studios, and ateliers.

07:080:300. WOMEN ARTISTS (3)
Seminar and workshop focusing on the works of contemporary women artists and on their underlying ideas. Visits to artists' studios.

07:080:301. THIRD-WORLD ARTISTS (3)
Study of artists who approach modernism from a grounding in ancient national, regional, or tribal cultures. Focus on painters, sculptors, and architects within anticolonialist movements.

07:080:309. ISSUES IN DESIGN (3)
B.F.A. and B.A. design majors only.
Develops a critical understanding of postmodern design as change in an information society. Readings cover a broad scope of twentieth-century issues about technology and the impact of digital technology on graphic design and the profession.

07:080:319. ART/CRAFT/DESIGN CONNECTION (3)
Study of the works, history, and movements of artists and designers in glass, clay, metal, wood, paper, fiber, industrial design, public art, city planning, and art education. Oral presentations, written projects, and journals.

07:080:320. ART/CRAFT/DESIGN CONNECTION (3)
Study of artists, designers, history, and works in glass, clay, metal, wood, paper, fiber, fashion, industrial design, city planning, public art, architecture, museums, and education. Oral presentations, written projects, and journals.

07:080:340. FILM/VIDEO AS A VISUAL ART (3)
A critical examination of various artistic applications of film and video technologies from 1960 to the present.

07:080:367. DOCUMENTARY TRADITION (3)
The historical and social roots of the documentary in film and photography, with an emphasis on viewing and discussing documentaries and reading about theoretical issues.

07:080:369. NINETEENTH-CENTURY PHOTOGRAPHY (3)
Photographic processes, theories, and social effects. Technical developments from the camera obscura to daguerreotypes, paper and glass negatives and stereoscopes to the Kodak box camera; genres and trends from portraits of celebrities and Indians to family snapshots, and aesthetics from Pre-Raphaelitism to pictorialism.

07:080:370. TWENTIETH-CENTURY PHOTOGRAPHY (3)
The movements in European and American photographic production and theory—pictorialism and after, up to the present.

07:080:400. VIDEO, ART, AND POLITICS (3)
How artists and other independents have used video in relation to matters of social life. Public events; the workings of race, class, and gender; the politics of private life, including sexuality; the medium of television itself. Formal strategies such as documentary, narrative, soap opera, melodrama, comedy, experimental, image processing, and performance.

07:080:493. CONTEMPORARY ART (3)
Recent developments in two- and three-dimensional media; their impact on creative alternatives for the contemporary artist. Criticism of student work in the context of contemporary possibilities.

ART 081

The following courses serve as studio classes for the Bachelor of Arts (B.A.) and the Bachelor of Fine Arts (B.F.A.) curricula.

07:081:101-102. ARTMAKING (3,3)
Fundamentals of artmaking, using a variety of materials, techniques, styles, and visual ideas. Exploration of a wide range of media; development of the individual's expressive powers and of a critical and formal vocabulary.

07:081:105. VISUAL ARTS PRACTICE (1)
Required of all B.F.A. visual arts majors. Must be repeated for a total of 3 credits.
Crew assignments each term in exhibition techniques and studio mechanics.

07:081:121. DRAWING FUNDAMENTALS I (3)
Examination of the techniques, materials, and ideas of drawing, with emphasis on discovery, experimentation, and personal expression in relation to concepts and images in art.

07:081:122. DRAWING FUNDAMENTALS II (3)
Continues study of the techniques, materials, and ideas taught in Drawing Fundamentals I.

07:081:211-212. CERAMICS I (3,3)
Pre- or corequisite: 07:081:101.
Methods of handling clay centered on development of techniques in conjunction with design skills. Hand building and throwing on the wheel. Experimentation with varied techniques in glazing and firing and with using materials related to clay.

07:081:221-222. DRAWING I (3,3)
Prerequisite: 07:081:121.
Techniques for rendering objects and the human figure as well as the development of notation systems and abstract designs; drawing on a wide variety of materials and formats.

07:081:223-224. FIGURE DRAWING I (3,3)
Prerequisite: 07:081:121.
Intensive study of the human figure using a variety of techniques to develop skill, accuracy, and expressiveness.

07:081:227. DESIGN AND VISUAL THINKING: BLACK AND WHITE (3)
Pre- or corequisite: 07:081:101 or permission of instructor.
All the elements of form except colors as applied to two-dimensional art and low relief: line, shape, texture, volume, and light and dark. Black-grey-white as a range of pigments and as a range of illumination from shadow to light. Light as the medium of vision and as a visual tool in design and the fine arts.

07:081:228. DESIGN AND VISUAL THINKING: COLOR (3)
Pre- or corequisite: 07:081:101.
Color considered primarily as pigment; some attention given to color as light and an introduction to color printing processes. Approaches to color relationship, theories of organization of color on both scientific and aesthetic levels.

07:081:231-232. GRAPHIC DESIGN I (3,3)
Prerequisites: 07:081:101 and permission of instructor. Note that enrollment in 07:081:331-332 Graphic Design II is limited to twenty students.
Introduces the design process. Students develop the ability to generate and develop original design solutions using appropriate hand methods and computer technologies to communicate ideas; analysis of contemporary and historical design.

07:081:237. COMPUTER SKILLS FOR ART AND DESIGN (3)
Pre- or corequisite: 07:081:101.
An introduction to applications for text and image generation and manipulation including Adobe PhotoShop and Illustrator; methods of inputting images and text via scanner, camera, and video; outputting images and text to print and screen.

07:081:241. FILM I (3)
Pre- or corequisite: 07:081:101.
The ideas, methods, and technologies of filmmaking. Basic work with 8mm movie camera in and outside the studio, combined with training in editing and experience with a variety of cameras.

07:081:243. VIDEO I (3)
Pre- or corequisite: 07:081:101.
An introduction to video in both black and white and color, using portable and studio equipment. Examination of the application of video to the contemporary fine arts, to documentation, and to television production.

07:081:251-252. PAINTING I (3,3)
Pre- or corequisite: 07:081:101.
Individualized work that introduces a range of technical and experimental approaches to oils and acrylics. Varied approaches to the problems of structure, shape, and color, and to the development of formal coherence and imagery through individual and group critiques.

07:081:261-262. PHOTOGRAPHY I (3,3)
Pre- or corequisite: 07:081:101.
Introduction to basic black and white photographic processes focusing on the camera, film development and printing techniques, and on the potentiality of photography as an expressive, formal, and documentary medium.

07:081:271. SILKSCREEN I (3)
Prerequisites: 07:081:101, 121.
Techniques of contemporary silkscreen printing including expressive and design possibilities of the print medium; aesthetic and social questions raised by modern printmaking explored. Handmade paper as an extension of the artwork introduced along with computer imaging and photo processes.

07:081:273. LITHOGRAPHY AND MONOPRINTS (3)
Prerequisites: 07:081:101, 121.
Training in the basic techniques of black and white and color lithography and monoprints; investigation of aesthetic and social questions raised by modern printmaking using black and white and color on both stone and aluminum plates. Introduction of computer imaging and photo processes.

07:081:275. INTAGLIO (3)
Prerequisites: 07:081:101, 121.
Training in the expressive and design possibilities of etching, aquatint, dry point, and other etching techniques, with individualized work in both black and white and color; investigation of aesthetic and social questions raised by modern printmaking with an introduction to photo processes and computer images; handmade paper formation for intaglio printing.

07:081:277. RELIEF PRINTMAKING (3)
Prerequisites: 07:081:101, 121.
Training in the expressive and design possibilities of woodcut, linoleum, and other relief processes with individualized work in both black and white and color. Exploratory techniques in photo imaging and experimentation as well as the investigation of aesthetic and social questions raised by modern printmaking.

07:081:281-282. SCULPTURE I (3,3)
Pre- or corequisite: 07:081:101.
Investigation of the materials and concepts of three-dimensional art, focused on various techniques using plaster, wood, and metal and on each individual's expressive and formal ideas.

07:081:311-312. CERAMICS II (3,3)
Prerequisites: 07:081:211-212.
Continuation of the training in techniques and concepts introduced in 07:081:211-212 Ceramics I.

07:081:313-314. CERAMIC SCULPTURE (3,3)
Clay as a sculptural material. How to incorporate the inherent properties of clay into an aesthetic experience or sculptural image. Clay body formation, firing techniques, and surface characteristics, developed on an individual basis.

07:081:317. SCRIPTWRITING FOR FILM, VIDEO, AND PERFORMANCE (3)
Techniques of scriptwriting for various media. Models for conceptualizing and developing ideas aimed at creating productions in film, video, and performance; students develop projects from an initial idea through treatment revisions to the final script.

07:081:321-322. DRAWING II (3,3)
Prerequisites: 07:081:221-222.
Continuation of the training in techniques and concepts introduced in 07:081:221-222 Drawing I.

07:081:323-324. FIGURE DRAWING II (3,3)
Prerequisites: 07:081:223-224.
Continuation of the training in techniques and concepts introduced in 07:081:223-224 Figure Drawing I.

07:081:325-326. FIGURE DRAWING FOR PAINTING (3,3)
Prerequisites: 07:081:121, 251.
Problems of the figure in drawing and painting. Focus on working from the model in a variety of mediums and making the transition from line into paint. Figure / ground relationships. Expressive narrative.

07:081:331-332. GRAPHIC DESIGN II (3,3)
Prerequisites: 07:081:231-232. Corequisites: 07:081:333-334. Course enrollment is limited to twenty students based on portfolio review by faculty committee.
In-depth study of content-based design process. Students explore complex projects with emphasis on text and image; research, experimentation, visual refinement, technical and production skills further developed.

07:081:333-334. TYPOGRAPHY (3,3)
Prerequisites: 07:081:231-232. Corequisites: 07:081:331-332.
Comprehensive introduction to historical and contemporary models of typography developed through practical studio exercises and seminar presentations. Objective development of an aesthetic sensitivity to the organization of type with regard to graphic expression and communication with various contexts.

07:081:337-338. PAINTED CONSTRUCTION AND RELIEF (3,3)
Prerequisite: 07:081:251 or 252.
Focus on artwork, which extends the accepted boundaries of painting, assemblage, and relief. Possibly incorporating light, sound, movement, and the projected image.

07:081:341. INTERMEDIATE FILM (3)
Prerequisite: 07:081:241.
An intermediate workshop in film production and editing. Focus on animation techniques. Students pursue short individual projects in 16mm and supra 8 film.

07:081:342. INTERMEDIATE FILM PRODUCTION (3)
Prerequisite: 07:081:241.
An intermediate workshop in film production and editing. Focus on sync-sound 16mm production. Students pursue individual projects.

07:081:343. INTERMEDIATE VIDEO PRODUCTION (3)
Prerequisite: 07:081:243.
Continuation of training in techniques and concepts introduced in 07:081:243,244 Video I.

07:081:344. INTERMEDIATE MEDIA WORKSHOP (3)
Prerequisites: 07:081:241 and 341 or 07:081:243 and 244.
Students use either film or video for production, learn digital postproduction techniques, and pursue individual projects and participate in group critiques.

07:081:351-352. PAINTING II (3,3)
Prerequisites: 07:081:251-252 or permission of department.
Continuation of the training in techniques and concepts introduced in 07:081:251-252 Painting I.

07:081:355. DIGITAL AUDIO (3)
Prerequisites: 07:081:241 or 243 and basic Macintosh computer skills.
Studio course in digital audio postproduction techniques and their application in independent film and video.

07:081:358. PHOTO BOOKWORKS (3)
Prerequisites: 07:081:261-262.
Design and construction of artists' books that employ photographic imagery. Emphasis on contents and use of a variety of photo processes.

07:081:359. COLOR PHOTOGRAPHY I (3)
Prerequisite: 07:081:261.
Introduction to color with a proficiency in black and white photography assumed. Focus on negative / positive chromogenic (Type C). When mastered, positive / positive cibachrome possible. Emphasis on students' creative work through use of any color process.

07:081:360. COLOR PHOTOGRAPHY II (3)
Prerequisite: 07:081:359.
Continuation of the training in techniques and concepts introduced in 07:081:359 Color Photography I.

07:081:361-362. PHOTOGRAPHY II (3,3)
Prerequisite: 07:081:261.
Continuation of the training in techniques and concepts introduced in Photography I.

07:081:365. SOCIAL DOCUMENTARY PHOTOGRAPHY (3)
Prerequisite: 07:081:261.
Development of documentary photographic techniques using black and white prints and slides, focusing on social, environmental, and personal issues. Training in use of sound, speech, and music in relation to photography and in various documentary formats, sound-slide and books primarily.

07:081:367. ALTERNATIVE PHOTOGRAPHY PROCESSES (3)
Prerequisite: 07:081:261.
Nonsilver processes such as cyanotype and kwikprint. Also VanDyke Brown and Rockland silver emulsions.

07:081:368,369. DIGITAL PHOTO IMAGE I (3,3)
Prerequisite: 07:081:261 or equivalent by permission.
Concepts and tools of photo-based computer-mediated still images. Students originate, appropriate, and manipulate images from a wide range of sources. Assignments and discussion address critical issues in contemporary digital practices.

07:081:370. COMPUTERS IN GRAPHIC DESIGN (3)
Pre- or corequisite: 07:081:331-332.
Explores multimedia design computer technologies; develops skills for designing for the web, motion, and print using a variety of applications.

07:081:371-372. ADVANCED PRINTMAKING I (3,3)
Prerequisites: 6 credits from among 07:081:271, 273, 275, 277, 373, 374, 375, 376, 379.
Continuation of the education in techniques and concepts of aesthetic expression begun in introductory printmaking courses in intaglio, silkscreen, relief, or lithography.

07:081:375-376. ARTISTS' BOOKS: BOOKWORKS (3,3)
Prerequisites: 07:081:101, 121.
Individualized projects on the book as alternative space with concentration on ideas of sequential information either as individual bookworks or installation; some information and technique in book formation and binding and formation of handmade paper for bookworks.

07:081:379. PAPERMAKING (3)
Prerequisites: 07:081:101, 121.
Includes western style formation, working with Japanese fibers, and three-dimensional casting. Coloring of pulps, collaging, gluing, laminating, and designing sheets of paper for book projects.

07:081:381-382. SCULPTURE II (3,3)
Prerequisites: 07:081:281-282.
Continuation of the training in techniques and concepts introduced in 07:081:281-282 Sculpture I.

07:081:386. PAPERMAKING II (3)
Open to all students with a basic knowledge of papermaking and graduate students interested in executing contemporary ideas through this medium.
Development of a personal focus in the paper arts.

07:081:391,392. INDEPENDENT STUDY (B.F.A.,BA)

07:081:393,394. INTERNSHIPS (B.F.A.,BA)

07:081:411-412. CERAMICS III (3,3)
Prerequisites: 07:081:311-312. Primarily for students who have concentrated in this area.
Advanced work in ceramics.

07:081:413-414. ADVANCED CERAMICS (3,3)
Prerequisites: 07:081:411-412. Primarily for students who have concentrated in this area.
Further work in ceramics.

07:081:431-432. GRAPHIC DESIGN III (3,3)
Prerequisites: 07:081:331-332, 333-334.
Students work at an advanced level to develop a personal voice. Technical skills are applied to complex design problems; students produce thesis-level work that demonstrates an awareness of contemporary developments in design. Offered concurrently with 07:081:497-498 Thesis and Exhibition.

07:081:445. DIGITAL EDITING FOR FILM/VIDEO (3)
Prerequisites: 07:081:243 and 343; 341 or 344; and 342.
An in-depth postproduction film /video course on digital editing techniques and editing aesthetics.

07:081:446-447. ADVANCED MEDIA WORKSHOP (3,3)
Prerequisites: 07:081:241 and any two of the following: 07:081:341, 342, 343, or 344. For both film and video students.
Offers more intensive investigations into media art and opportunities for collaborative projects.

07:081:451-452. PAINTING III (3,3)
Prerequisites: 07:081:351-352. Primarily for students who have concentrated in this area.
Advanced work in painting.

07:081:453-454. ADVANCED PAINTING (3,3)
Prerequisites: 07:081:451-452. Primarily for students who have concentrated in this area.
Further work in painting.

07:081:461-462. PHOTOGRAPHY III (3,3)
Prerequisites: 07:081:361-362. Primarily for students who have concentrated in this area.
Advanced work in photography.

07:081:471-472. ADVANCED PRINTMAKING II (3,3)
Prerequisites: 6 credits from among 07:081:271, 273, 275, 277, 373, 375, 376, 379. Intended for students concentrating in printmaking.
Continuation of the education in techniques and concepts of aesthetic expression begun in introductory printmaking courses in intaglio, silkscreen, relief and lithography.

07:081:475. ARTISTS BOOKS: BOOKWORKS II (3)
Prerequisite: 07:081:375.
Continuation of 07:081:375 Artist's Books: Bookworks.

07:081:481-482. SCULPTURE III (3,3)
Prerequisites: 07:081:381-382. Primarily for students who have concentrated in this area.
Advanced work in sculpture.

07:081:483-484. ADVANCED SCULPTURE (3,3)
Prerequisites: 07:081:481-482. Primarily for students who have concentrated in this area.
Further work in sculpture.

07:081:491-492. INDEPENDENT STUDY (B.F.A.,BA)

07:081:493,494. INTERNSHIPS (B.F.A.,BA)

07:081:497-498. THESIS AND EXHIBITION (3,3)
Open only to B.F.A. seniors.
Summary work for art majors combining individual creative work with the planning and production of a senior exhibition and the writing of a senior thesis.

Interdisciplinary Courses

07:557:305. WORD AND PRINT (3)
An interdisciplinary multimedia course aimed at broadening various practical and theoretical dimensions of printing, typography, bookmaking, and related histories of writing and printing. Combines academic studies in history, writing, and print with studio classes in artists' bookmaking and typography. Encourages critical awareness of the relationships between language and society, printing and mass media, writing and education, literacy and democracy, technology and tradition. Includes the history of writing and print, including letterpress printing, bookbinding, and printmaking. Projects combine research and hands-on printing using traditional techniques while simultaneously incorporating computer technology.

DANCE 203

07:203:115. SEEING DANCE: APPRECIATING THE ART OF HUMAN MOVEMENT (3)
Perception, analysis, and description of theater dance. Diverse dance genres with special emphasis on contemporary cross-cultural syntheses.
Field trips: approximately $75.

07:203:123. MODERN DANCE I (2)
Development of fundamental movement skills and body awareness. Exploration of movement as dance.
Field trip: approximately $20.

07:203:124. MODERN DANCE II (2)
Prerequisite: 07:203:123 or permission of instructor. Dance majors may repeat once for credit.
Continued development of movement skills and techniques, problem solving, and improvisation.
Field trip: approximately $20.

07:203:125. MODERN DANCE III (2)
Prerequisite: 07:203:124 or permission of department. Dance majors may repeat for credit.
Practice in intermediate-level skills in modern dance technique.

07:203:126. MODERN DANCE IV (BA)
Prerequisite: 07:203:125. The full course may be taken for 4 credits. After successful completion of the full course, the technique portion may be repeated with the permission of the instructor for 2 credits.
Continued development of intermediate-level skills in modern dance technique. Development of fundamental skills in choreography.

07:203:149. BALLET I (2)
The language of ballet as an art form with emphasis on traditional, academic, technical steps, and vocabulary.
Field trip: approximately $20.

07:203:150. BALLET II (2)
Prerequisite: 07:203:149 or permission of instructor. Dance majors may repeat this course once for credit.
Continued development of technical steps and vocabulary, body alignment, and concepts of ballet aesthetics.
Field trip: approximately $20.

DANCE 206

07:206:126. RHYTHMIC ANALYSIS (2)
Prerequisites: 07:203:123 and 124, or permission of instructor.
Analysis of rhythmic structure relative to movement and dance. Sight-reading note values, movement dictation, composition.

07:206:136. DANCE PRODUCTION I (3)
Open only to dance majors.
Elements of dance production in relation to lighting, sound, stage sets, costume, and makeup.

07:206:137. DANCE TECHNIQUE WORKSHOP (1)
Summer school only. Open only to advanced dancers.
Continued development of advanced skills in modern dance techniques.

07:206:138-139. DANCE TECHNIQUE IA-IB (3,3)
Open only to B.F.A. dance majors.
Practice in the articulation of movement for the improvement of quality in dance skills.

07:206:142-143. DANCE IMPROVISATION IA-IB (2,2)
Open only to dance majors.
Advanced experience in dance improvisation including the use of such stimuli as music, dramatic situations, kinetics, movement design, and spatial sensing as potential sources of movement and partner interaction.

07:206:175. ETHNIC DANCE (2)
Open only to dance majors. May be repeated for credit. Two terms required for B.F.A. students.
A course focusing on the study of traditional dance styles of a given culture, their historical development, performance techniques, and terminology. Each term focuses on a specific culture.

07:206:201. ELEMENTARY LABANOTATION (3)
Prerequisites: 07:206:126, 138-139, or permission of instructor.
Introduction to the structural analysis of movement based on the system of Labanotation.

07:206:215. MUSIC FOR MOVEMENT (3)
Prerequisite: 07:206:126 and 07:700:101 or permission of instructor.
Analysis of the motional and dynamic relationships of music and dance in content, form, and structure. Exploration of the varied stylistic relationships between music and choreography.

07:206:234-235. DANCE CHOREOGRAPHY IA-IB (2,2)
Open only to B.F.A. dance majors. Prerequisites: 07:206:126, 138-139, and 142-143.
Communication through movement and motion in various forms of choreography, both traditional and contemporary. Emphasis on solo forms and development of group choreography.
Field trips: approximately $20.

07:206:237. DANCE PRODUCTION II (3)
Theoretical and practical application of the skills necessary to produce and direct a dance concert.

07:206:238-239. DANCE TECHNIQUE IIA-IIB (3,3)
Prerequisites: 07:206:138-139 or permission of instructor. Open only to B.F.A. dance majors.
Continued development of modern dance movement skills.

07:206:251. BALLET III (3)
Open only to B.F.A. dance majors. May be repeated once for credit.
Combination of ballet terminology with more intensive work on adagio and allegro.

07:206:252. BALLET IV (3)
Open only to B.F.A. dance majors. May be repeated once for credit.
Continued development of technical ballet skills with emphasis primarily on adagio and allegro.

07:206:274. JAZZ DANCE (2)
Open only to dance majors or by permission of instructor.
Various styles, techniques, and vocabulary in the idiom of jazz dance.

07:206:311. BALLET V (2)
Open only to B.F.A. dance majors. May be repeated for credit.
Ballet technique emphasizing advanced barre and center floor work.

07:206:325. KINESIOLOGY FOR DANCERS (3)
Functional human anatomy and the study of the scientific basis of human movement as they relate to dance training.

07:206:327. PERCUSSION ACCOMPANIMENT FOR DANCE (2)
Prerequisite: 07:206:126 or permission of instructor.
Stick and hand techniques for various percussion instruments for self accompaniment in modern dance.

07:206:334-335. DANCE CHOREOGRAPHY IIA-IIB (2,2)
Prerequisites: 07:206:234-235. Open only to B.F.A. dance majors.
Continued development of individual and group choreography with emphasis on organic integrity, movement invention, and experimental forms; opportunity to pursue individual creative interests in depth.
Field trip: approximately $20.

07:206:338-339. DANCE TECHNIQUE IIIA-IIIB (3,3)
Prerequisites: 07:206:238-239. Open only to B.F.A. dance majors.
Practice in advanced modern dance skills.

07:206:340. SOUNDSCAPES FOR DANCE (2)
Prerequisite: Permission of instructor.
Exploration of aesthetic and technical issues in creating recorded sound accompaniment for concert dance.

07:206:344. DANCE VIDEO ART WORKSHOP (3)
Taught only in Summer Session.
Communication through dance as a video art. Emphasis on video shooting and editing techniques, environmental controls, and improvisational dance movement structures used in the creation of video dance projects.

07:206:345. ADVANCED IMPROVISATION (2)
Prerequisite: 07:206:143. Open only to junior and senior dance majors.
Advanced improvisational skill development, with an emphasis on partnering.

07:206:352. DANCE FOR CHILDREN (3)
Not open to first-year students.
Investigation of current trends and teaching processes in children's dance with particular emphasis on the comparison of different theories of technique, improvisation, and composition. Analysis of child development in relation to perception, motor learning, and the creative process in dance. Fieldwork.

07:206:360. PERFORMANCE STUDY (2)
Admission by audition only. B.F.A. students only. May be repeated for credit.
Performance experience in works of faculty, guest, and other selected choreographers. Students give performances, lecture-demonstrations, and workshops as touring company members of University DanceWorks.

07:206:361. PRODUCTION STUDY (BA)
To be repeated for a total of two credits.
Crew assignments in lighting, publicity, and other areas of dance production.

07:206:363. MODERN DANCE REPERTORY (2)
Admission by audition only. B.F.A. students only. May be repeated for credit.
Practical study of specific works from the modern dance repertory, both historical and contemporary, by guest or resident specialists.

07:206:402. INTRODUCTION TO LABAN MOVEMENT ANALYSIS (3)
Open only to seniors, or by permission of instructor.
Notation and description of the dynamics, shape, and spatial forms in movement using Laban Movement Analysis.

07:206:438-439. DANCE TECHNIQUE IVA-IVB (3,3)
Prerequisites: 07:206:338-339. Open only to B.F.A. dance majors. May be repeated once for credit with departmental approval.
Continued practice in advanced modern dance movement skills.

07:206:441. DANCE HISTORY—WORLD SURVEY (3)
Open only to juniors and seniors.
Study of dance in diverse cultures and times through film, video, reading, lectures, and directed research. Activity fee for films and field trips.

07:206:442. DANCE HISTORY—TWENTIETH CENTURY (3)
Open only to juniors and seniors.
Twentieth-century dance artists and dance masterpieces in the Western theater tradition. Influences on contemporary concert dance of diverse cultures and artistic and social movements. Activity fee for films and field trips.

07:206:447-448. INDEPENDENT STUDY IN DANCE (BA,BA)
Open only to juniors and seniors with permission of department.
Reading and / or studio research determined by the student and adviser with the consent of the department committee for independent study.

07:206:460. CHOREOGRAPHIC STUDY (2)
Prerequisites: 07:206:334-335. Open only to B.F.A. dance majors.
Independent research determined by the student and adviser resulting in the completion of a choreographic project.

MUSIC 700

See Music in the Programs of Study for Liberal Arts Students section for course descriptions.

07:700:100. RUDIMENTS OF MUSIC NOTATION (1.5)
07:700:101. INTRODUCTION TO MUSIC (3)
07:700:102. INTRODUCTION TO MUSIC HISTORY (3)
07:700:103. INTRODUCTION TO MUSIC THEORY (3)
07:700:104. INTRODUCTION TO MUSIC ANALYSIS (3)
07:700:110. INTRODUCTION TO MUSIC EDUCATION (1)
07:700:121-122. THEORY I,II (3,3)
07:700:123-124. FUNDAMENTALS OF MUSICIANSHIP I (2,2)
07:700:125. SURVEY OF JAZZ STYLES (2)
07:700:127. INTRODUCTION TO MUSIC TECHNOLOGY (1)
07:700:173,174. STUDIES IN COMPOSITION I (BA,BA)
07:700:203,204. MUSIC THEORY AND ANALYSIS (3,3)
07:700:210. FOUNDATIONS OF MUSIC EDUCATION (3)
Intended for music education majors.
07:700:211. MUSIC OF THE MIDDLE AGES (3)
07:700:212. MUSIC OF THE RENAISSANCE (3)
07:700:213. MUSIC OF THE BAROQUE ERA (3)
07:700:214. MUSIC OF THE CLASSIC ERA (3)
07:700:215. MUSIC OF THE ROMANTIC ERA (3)
07:700:216. MUSIC OF THE TWENTIETH CENTURY (3)
07:700:221-222. THEORY III,IV (3,3)
07:700:223-224. FUNDAMENTALS OF MUSICIANSHIP II (2,2)
07:700:226. AMERICAN MUSIC (3)
07:700:227. AFRICAN-AMERICAN MUSIC (3)
07:700:228. MUSIC AND SOCIETY (3)
07:700:229. KEYBOARD MUSIC (3)
07:700:230. CHAMBER MUSIC (3)
07:700:231. SYMPHONIC MUSIC (3)
07:700:232. THE CONCERTO (3)
07:700:233. CHORAL MUSIC (3)
07:700:235. MUSIC AND THE THEATER I (3)
07:700:236. MUSIC AND THE THEATER II (3)
07:700:237,238. STUDIES IN MAJOR COMPOSERS (3,3)
07:700:247-248. JAZZ THEORY I,II (3,3)
07:700:251-252. KEYBOARD HARMONY FOR JAZZ MAJORS (2,2)
07:700:261. VOCAL TECHNIQUE FOR SCHOOL CHOIRS (1)
Intended for music education majors.
07:700:263. SCHOOL MUSIC: STRING INSTRUMENT TECHNIQUES (1)
Intended for music education majors.
07:700:265. SCHOOL MUSIC: WOODWIND INSTRUMENT TECHNIQUES (1)
Intended for music education majors.
07:700:267. SCHOOL MUSIC: BRASS INSTRUMENT TECHNIQUES (1)
Intended for music education majors.
07:700:269. SCHOOL MUSIC: PERCUSSION INSTRUMENT TECHNIQUES (1)
Intended for music education majors.
07:700:273,274. STUDIES IN COMPOSITION II (BA,BA)
07:700:283. COMPUTER APPLICATIONS IN MUSIC (3)
07:700:301-302. MUSIC HISTORY I,II (3,3)
07:700:303,304. TOPICS IN WORLD MUSIC (3,3)
07:700:305-306. EVOLUTION OF JAZZ (3,3)
07:700:309. MUSIC SINCE 1945 (3)
07:700:321. TOPICS IN MUSIC THEORY (3)
07:700:322. MUSIC ANALYSIS (3)
07:700:323. FUNDAMENTALS OF MUSICIANSHIP III (2)
07:700:329-330. INTRODUCTION TO CONDUCTING (2,2)
07:700:341. ORCHESTRATION I (2)
07:700:342. ORCHESTRATION II (2)
07:700:347-348. JAZZ COMPOSITION AND ARRANGING (2,2)
07:700:369. TECHNIQUES OF ELECTROACOUSTIC COMPOSITION (3)
07:700:370. ELECTROACOUSTIC COMPOSITION (3)
07:700:371-372. JAZZ IMPROVISATION I (3,3)
07:700:373,374. COMPOSITION (BA,BA)
07:700:379-380. THEORY AT THE KEYBOARD (2,2)
07:700:381. MATERIALS AND METHODS IN ELEMENTARY SCHOOL MUSIC (3)
Intended for music education majors.
07:700:382. MATERIALS AND METHODS IN SECONDARY CHORAL MUSIC (3)
Intended for music education majors.
07:700:383. ELEMENTARY INSTRUMENTAL METHODS: INSTRUMENTAL MAJORS (1)
07:700:384. SECONDARY INSTRUMENTAL METHODS: INSTRUMENTAL MAJORS (1)
07:700:385. INSTRUMENTAL METHODS: CHORAL/GENERAL MAJORS (1)
07:700:386. MUSIC EDUCATION LABORATORY (1)
07:700:419,420. SPECIAL STUDIES IN MUSIC HISTORY (3,3)
07:700:421,422. SPECIAL STUDIES IN MUSIC THEORY (3,3)
07:700:471-472. JAZZ IMPROVISATION II (3,3)
07:700:474. SPECIAL TOPICS: TECHNOLOGY IN MUSIC EDUCATION (1)
Intended for music education majors.
07:700:475. SPECIAL TOPICS: MUSIC FOR EXCEPTIONAL LEARNERS (1)
Intended for music education majors.
07:700:476. SPECIAL TOPICS: MULTICULTURAL MUSIC EDUCATION (1)
Intended for music education majors.
07:700:477. SPECIAL TOPICS: STAGED CHORAL PRODUCTIONS (1)
Intended for music education majors.
07:700:478. SPECIAL TOPICS: MARCHING BAND (1)
Intended for music education majors.

07:700:480. SEMINAR FOR STUDENT TEACHERS (1)
Intended for music education majors.

07:700:487. STUDENT TEACHING (11)
Intended for music education majors.

07:700:493,494. INDEPENDENT STUDY (BA,BA)

07:700:495,496. SENIOR HONORS TUTORIAL (3,3)

07:700:497,498. SPECIAL STUDIES IN MUSICIANSHIP (2,2)

APPLIED MUSIC 701

07:701:100. MUSIC ASSEMBLY (N1)
Required of all Bachelor of Music students during each term of enrollment. Grade based on attendance.

Ensembles

All ensembles require an audition or permission of the instructor.

07:701:111,112. RUTGERS KIRKPATRICK CHOIR (1,1)
A select mixed choir that surveys and performs a broad spectrum of music, sacred and secular, from all periods. Occasional performance of large works with orchestra.

07:701:113,114. COLLEGIUM MUSICUM (1,1)
A chamber choir that performs Medieval and Renaissance polyphony.

07:701:115. SALSA (1)
Study and performance of traditional and contemporary salsa styles.

07:701:119,120. JAZZ COMBO I (1,1)
Study and performance of jazz for small mixed instrumental ensembles.

07:701:121,122. JAZZ ENSEMBLE I (1,1)
Exploration and performance of traditional and contemporary jazz for large ensemble.

07:701:123,124. ORCHESTRA I (1,1)
Study and performance of major orchestral repertoire.

07:701:125,126. PERCUSSION ENSEMBLE I (1,1)
Study and performance of music for percussion ensemble.

07:701:127,128. BRASS ENSEMBLE I (1,1)
Study and performance of the literature for brass ensemble. Emphasis is placed on mastering principles of brass playing within an ensemble.

07:701:130. CONCERT BAND I (1)
Study and performance of music for concert band. Emphasis on improving performance skills.

07:701:131,132. CLARINET ENSEMBLE I (1,1)
Study and performance of music for mixed clarinet choir.

07:701:133,134. VOORHEES CHOIR I (1,1)
A women's choir that performs music of all periods and styles; regularly tours.

07:701:137. MARCHING BAND I (1)
Study of precision marching techniques and other skills relating to the football band. Performance at university football games and other events.

07:701:138. PEP BAND I (1)

07:701:139,140. RUTGERS UNIVERSITY CHOIR I (1,1)
A mixed choir that performs music of all periods and styles. Occasional performance of large works with orchestra.

07:701:143,144. SYMPHONY BAND I (1,1)
Open to students of intermediate ability.
Study and presentation in concert of major works for wind band. Emphasis on performance techniques.

07:701:145,146. WIND ENSEMBLE I (1,1)
Open to advanced students.
Study and presentation in concert of major works for wind ensemble. Emphasis on performance techniques.

07:701:147,148. PHILHARMONIA I (1,1)
Open to Rutgers students of intermediate ability and selected students from area high schools.
Study and performance of orchestral repertoire.

07:701:149,150. GLEE CLUB I (1,1)
Study and performance of music for men's voices.

07:701:151-152. ART OF ACCOMPANYING I (1,1)
Study of ensemble techniques for pianists. Performance with singers and instrumentalists.

07:701:153,154. OPERA WORKSHOP I (1,1)
Study and performance of operatic literature.

07:701:155,156. CHAMBER MUSIC I (1,1)
Study and performance of music for small mixed instrumental ensembles.

07:701:211,212. RUTGERS KIRKPATRICK CHOIR II (1,1)

07:701:213,214. COLLEGIUM MUSICUM II (1,1)

07:701:219,220. JAZZ COMBO II (1,1)

07:701:221,222. JAZZ ENSEMBLE II (1,1)

07:701:223,224. ORCHESTRA II (1,1)

07:701:225,226. PERCUSSION ENSEMBLE II (1,1)

07:701:227,228. BRASS ENSEMBLE II (1,1)

07:701:230. CONCERT BAND II (1)

07:701:231,232. CLARINET ENSEMBLE II (1,1)

07:701:233,234. VOORHEES CHOIR II (1,1)

07:701:237. MARCHING BAND II (1)

07:701:238. PEP BAND II (1)

07:701:239,240. RUTGERS UNIVERSITY CHOIR II (1,1)

07:701:243,244. SYMPHONY BAND II (1,1)

07:700:245,246. WIND ENSEMBLE II (1,1)

07:701:247,248. PHILHARMONIA II (1,1)

07:701:249,250. GLEE CLUB II (1,1)

07:701:251,252. ART OF ACCOMPANYING II (1,1)

07:701:253,254. OPERA WORKSHOP II (1,1)

07:701:255,256. CHAMBER MUSIC II (1,1)

07:701:311,312. RUTGERS KIRKPATRICK CHOIR III (1,1)

07:701:319,320. JAZZ COMBO III (1,1)

07:701:321,322. JAZZ ENSEMBLE III (1,1)

07:701:323,324. ORCHESTRA III (1,1)

07:701:325,326. PERCUSSION ENSEMBLE III (1,1)

07:701:327,328. BRASS ENSEMBLE III (1,1)

07:701:330. CONCERT BAND III (1,1)

07:701:331,332. CLARINET ENSEMBLE III (1,1)

07:701:333,334. VOORHEES CHOIR III (1,1)

07:701:337. MARCHING BAND III (1)

07:701:338. PEP BAND III (1)
07:701:339,340. RUTGERS UNIVERSITY CHOIR III (1,1)
07:701:343,344. SYMPHONY BAND III (1,1)
07:701:345,346. WIND ENSEMBLE III (1,1)
07:701:347,348. PHILHARMONIA III (1,1)
07:701:349,350. GLEE CLUB III (1,1)
07:701:351,352. ART OF ACCOMPANYING III (1,1)
07:701:353,354. OPERA WORKSHOP III (1,1)
07:701:355,356. CHAMBER MUSIC III (1,1)
07:701:407,408. TWENTIETH-CENTURY PERFORMANCE SEMINAR (1,1)
Study and performance of contemporary music.
07:701:411,412. RUTGERS KIRKPATRICK CHOIR IV (1,1)
07:701:419,420. JAZZ COMBO IV (1,1)
07:701:421,422. JAZZ ENSEMBLE IV (1,1)
07:701:423,424. ORCHESTRA IV (1,1)
07:701:425,426. PERCUSSION ENSEMBLE IV (1,1)
07:701:427,428. BRASS ENSEMBLE IV (1,1)
07:701:430. CONCERT BAND IV (1)
07:701:431,432. CLARINET ENSEMBLE IV (1,1)
07:701:433,434. VOORHEES CHOIR IV (1,1)
07:701:437. MARCHING BAND IV (1)
07:701:438. PEP BAND IV (1)
07:701:439,440. RUTGERS UNIVERSITY CHOIR IV (1,1)
07:701:443,444. SYMPHONY BAND IV (1,1)
07:701:445,446. WIND ENSEMBLE IV (1,1)
07:701:447,448. PHILHARMONIA IV (1,1)
07:701:449,450. GLEE CLUB IV (1,1)
07:701:451,452. ART OF ACCOMPANYING IV (1,1)
07:701:453,454. OPERA WORKSHOP IV (1,1)
07:701:455,456. CHAMBER MUSIC IV (1,1)

Performance Study

Permission for performance study is by audition only. B.Mus. students, depending on the area of concentration and their class, receive 1, 2, or 3 credits per term. B.A. students receive 1 or 2 credits per term.

First Year

07:701:109,110. SAXOPHONE
07:701:117,118. JAZZ DRUMS
07:701:141,142. GUITAR
07:701:157-158. VOICE CLASS (1,1)
Introductory-level voice.
07:701:159-160. PIANO CLASS I (1,1)
Beginners only. Priority given to music majors.
07:701:161,162. PIANO
07:701:167,168. HARPSICHORD
07:701:169,170. VOICE
07:701:171,172. PERCUSSION
07:701:173,174. VIOLIN
07:701:177,178. VIOLA
07:701:181,182. VIOLONCELLO
07:701:183,184. DOUBLE BASS
07:701:185,186. FLUTE
07:701:187,188. OBOE
07:701:189,190. CLARINET
07:701:191,192. BASSOON
07:701:193,194. FRENCH HORN
07:701:195,196. TRUMPET
07:701:197,198. TROMBONE OR TUBA

Second Year

07:701:201-202. DICTION FOR SINGERS (1,1)
The study of pronunciation of Italian, French, German, and English as applied to singing, utilizing the International Phonetic Alphabet.
07:701:209,210. SAXOPHONE
07:701:217,218. JAZZ DRUMS
07:701:241,242. GUITAR
07:701:259-260. PIANO CLASS II (1,1)
07:701:261,262. PIANO
07:701:267,268. HARPSICHORD
07:701:269,270. VOICE
07:701:271,272. PERCUSSION
07:701:273,274. VIOLIN
07:701:277,278. VIOLA
07:701:281,282. VIOLONCELLO
07:701:283,284. DOUBLE BASS
07:701:285,286. FLUTE
07:701:287,288. OBOE
07:701:289,290. CLARINET
07:701:291,292. BASSOON
07:701:293,294. FRENCH HORN
07:701:295,296. TRUMPET
07:701:297,298. TROMBONE OR TUBA

Third Year

07:701:301,302. GUITAR WORKSHOP
07:701:309,310. SAXOPHONE
07:701:317,318. JAZZ DRUMS
07:701:341,342. GUITAR
07:701:361,362. PIANO
07:701:367,368. HARPSICHORD
07:701:369,370. VOICE
07:701:371,372. PERCUSSION
07:701:373,374. VIOLIN
07:701:377,378. VIOLA
07:701:381,382. VIOLONCELLO
07:701:383,384. DOUBLE BASS
07:701:385,386. FLUTE
07:701:387,388. OBOE
07:701:389,390. CLARINET
07:701:391,392. BASSOON
07:701:393,394. FRENCH HORN
07:701:395,396. TRUMPET
07:701:397,398. TROMBONE OR TUBA

Fourth Year

07:701:401. WOODWIND PEDAGOGY (1)
Open only to senior bachelor of music performance majors, except by special permission.
07:701:403. STRING PEDAGOGY (1)
Open only to senior bachelor of music performance majors, except by special permission.
07:701:405. BRASS PEDAGOGY (1)
Open only to senior bachelor of music performance majors, except by special permission.

07:701:409,410. SAXOPHONE

07:701:413. PERCUSSION PEDAGOGY (1)
Open only to senior bachelor of music performance majors, except by special permission.

07:701:415-416. VOICE PEDAGOGY (1,1)
Open only to senior bachelor of music performance majors, except by special permission.

07:701:417,418. JAZZ DRUMS

07:701:441,442. GUITAR

07:701:459-460. KEYBOARD PEDAGOGY (1,1)
Open only to senior bachelor of music performance majors, except by special permission.

07:701:461,462. PIANO

07:701:467,468. HARPSICHORD

07:701:469,470. VOICE

07:701:471,472. PERCUSSION

07:701:473,474. VIOLIN

07:701:477,478. VIOLA

07:701:481,482. VIOLONCELLO

07:701:483,484. DOUBLE BASS

07:701:485,486. FLUTE

07:701:487,488. OBOE

07:701:489,490. CLARINET

07:701:491,492. BASSOON

07:701:493,494. FRENCH HORN

07:701:495,496. TRUMPET

07:701:497,498. TROMBONE OR TUBA

07:701:499. INDIVIDUAL STUDY

THEATER ARTS 965

The following 965 courses are open to B.F.A. students. See Theater Arts in the Programs of Study for Liberal Arts Students section for prerequisites and course descriptions.

07:965:212. THEATER AND CONTEMPORARY ISSUES (3)

07:965:213. INTRODUCTION TO THEATER ARTS (3)

07:965:218. PLAYWRITING (3)

07:965:219. PLAYWRITING PROJECTS (BA)

07:965:271-272. BASIC ACTING (3,3)

07:965:311-312. THEATER HISTORY (3,3)

07:965:325-326. INTERMEDIATE ACTING: SCENE STUDY (3,3)

07:965:343. AMERICAN THEATER AND DRAMA (3)

07:965:384. SHOESTRING PERFORMANCE AND PRODUCTION (BA)

07:965:396. INTERNSHIP/THEATER (BA)

07:965:398. BASIC THEATER TEXTS (3)

07:965:400. THEATER THEORY (3)

07:965:401. THEATER CRITICISM (3)

07:965:421. DIRECTING (3)

07:965:422. ADVANCED DIRECTING PROJECT (3)

07:965:471-472. CREATIVE DRAMATICS FOR CHILDREN (3,3)

07:965:493. HONORS SEMINAR IN THEATER ARTS (3)

07:965:494. HONORS PROJECT IN THEATER ARTS (3)

07:965:495-496. SEMINAR: TOPICS IN THEATER (BA,BA)

07:965:497-498. WORKSHOP ASSIGNMENTS (BA,BA)

THEATER ARTS 966

07:966:105. DRAWING PRACTICE: THEATER DESIGN (0.5 EACH TERM FOR EIGHT TERMS)
Open only to B.F.A. design majors or by permission of instructor.
Daily drawing practice.
Class fee up to $20 per term for models.

07:966:123. THEATER PRACTICE (1)
Crew assignments each term in set, prop, and costume construction or running crew in sets / props, sound, lights, costumes, and costume maintenance. A minimum of 90 crew hours is required to pass the course, but some production running assignments may require up to 150 hours. Course is repeated.

07:966:215-216. SCENIC ART (3,3)
Corequisite: 07:966:123.
Theory and technique of scenic production. First term: instruction in stagecraft and the elements of design and stage management. Second term: lighting, sound, preparation of technical drawings, and other graphic techniques.

07:966:227-228. VOICE I,II (2,2)
Open only to B.F.A. acting students.
The practice of developing the vocal mechanism for stage speech.

07:966:230. MOVEMENT I (2)
Open only to B.F.A. acting students.
Basic development of the body for the stage.

07:966:243-244. ELEMENTS OF DESIGN (2,2)
Prerequisites: 07:966:215-216. Open only to B.F.A. design majors or by permission of instructor.
Basic techniques for script analysis and presentation of design ideas in two- and three-dimensional forms.

07:966:245-246. HISTORY OF ARCHITECTURE AND DECORATIVE ARTS (2,2)
Prerequisites: 07:966:215-216. Open only to B.F.A. design majors or by permission of instructor.
Biweekly lectures and field trips to the Cloisters, Metropolitan Museum of Art, Brooklyn Museum, Pierpont Morgan Library, Frick Collection, Japan Society, Asia House, New York Historical Society, and other museums, where students do sketch assignments covering appropriate historical periods.
Transportation expenses: up to $90 per year. Entrance fees additional.

07:966:247-248. COSTUME HISTORY AND RENDERING (2,2)
Prerequisite: 07:966:300. Open only to B.F.A. design and production majors or by permission of instructor.
The history of costume from 3100 B.C. to A.D. 1930 taught through a series of slides and lectures. Students render costumes worn by live models.
Class fee for models up to $20 per term.

07:966:251-252. FUNDAMENTALS OF DRAFTING (2,2)
Prerequisites: 07:966:215-216. Open only to B.F.A. design and production majors or by permission of instructor.
Fundamental skills in technical drawing and stagecraft techniques.

07:966:271-272. BASIC ACTING (3,3)
Open only to B.F.A. acting students.
Theory and practice in the art of acting.

07:966:273. THEATRICAL MAKEUP (1)
For theater arts majors or by permission of instructor.
Basic techniques in makeup for the stage. Makeup kit and textbook required.

07:966:300-301. INTRODUCTION TO DESIGN FOR THE THEATER (3,3)
Open only to B.F.A. design and production majors or by permission of instructor.
An introduction to color, line, and texture theory as applied to design for the theater.

07:966:305. INTRODUCTION TO STAGE LIGHTING (2)
Prerequisites: 07:966:215-216. Open only to B.F.A. design and production majors or by permission of instructor.
Technical and mechanical aspects of stage lighting including electrical theory, practical wiring, equipment maintenance, and safety practice. Applications to stage, TV, film, and touring situations.

07:966:307. PRODUCTION PROPERTIES (2)
Open only to B.F.A. design and production majors or by permission of instructor.
A course detailing the research, drawing, and construction of stage properties from library to performance.

07:966:309-310. DRAWING AND DESIGNERS (2,2)
Open only to B.F.A. design majors or by permission of instructor.
A course in drawing including figure, perspective, fabric, etc., that focuses on the illustration needs of scenic and costume designers.

07:966:313-314. SET DESIGN I (3,3)
Prerequisites: 07:966:243-244. Open only to B.F.A. design majors or by permission of instructor.
Advanced work in scene design with an emphasis on individual style development.

07:966:316. SCENE PAINTING (2)
Prerequisites: 07:966:215-216. Open only to B.F.A. design majors or by permission of instructor.
Fundamental training in painting for the stage.

07:966:323. THEATER PRACTICE (BA)
Not open to first-year students.
Crew or stage management assignments. Experience in set building, lighting, costume crews, and stage management and may advance to head crews with continued experience. Course may be repeated.

07:966:325-326. ACTING TECHNIQUE (3,3)
Open only to B.F.A. acting majors in the sophomore year.
Scene study and the basis of characterization.

07:966:327-328. VOICE II (2,2)
Open only to B.F.A. acting majors in the sophomore year.
Use of the voice in acting.

07:966:333-334. MOVEMENT (2,2)
Open only to B.F.A. acting majors in the sophomore year.
Emphasis on stage problems such as period movement, use of objects, awareness of space, energy, and time. Use of the body to develop characterization.

07:966:335-336. COSTUME DESIGN I (3,3)
Prerequisites: 07:966:247-248. Open only to B.F.A. design majors or by permission of instructor.
Advanced costume design course in which experienced students undertake a series of design projects to be presented for critique.

07:966:339. STAGECRAFT (2)
Prerequisites: 07:966:215-216 or permission of instructor.
Post-nineteenth-century technology or "beyond flats"—advanced woodworking, metal, plastics, engineering, moving scenery, and the art of problem solving.

07:966:340. STAGECRAFT PRACTICUM (BA)
Prerequisites: 07:966:339 and permission of instructor.
Stagecraft projects on production scenery under the direction of the technical director.

07:966:343-344. FUNDAMENTALS OF LIGHTING DESIGN (2,2)
Prerequisite: 07:966:305. Open only to B.F.A. design and production majors or by permission of instructor.
Basic theory and practice of lighting design including script analysis, physics of light and color, and light plots.

07:966:345-346. THEATRICAL RENDERING TECHNIQUES (2,2)
Development of traditional rendering techniques for scenery and costumes, focusing on, but not limited to, watercolors.
Fee for photocopying: $5.

07:966:359-360. DIRECTED STUDY (BA,BA)
Open only to B.F.A. majors with permission of instructor and student's theater arts adviser.
Special advanced projects undertaken with a faculty member who agrees to supervise the student's work.

07:966:361. SOUND TECHNOLOGY IN THE THEATER (2)
Prerequisites: 07:966:215-216 or permission of instructor.
Basic theory and practice for use of sound in the theater.
Fees: Cost of tapes.

07:966:362. SOUND TECHNOLOGY PRACTICUM (BA)
Prerequisites: 07:966:361 and permission of instructor.
Sound technology and sound design projects on departmental productions under the direction of the sound supervisor.

07:966:364. THEATER MANAGEMENT (3)
Exploration of management areas of regional, community, and commercial theater, including organization, administration, audience development, and fund raising.

07:966:365. THEATER MANAGEMENT PRACTICUM (3)
Prerequisite: 07:966:364.
Practicum in which students carry out a management project under supervision within the university or at an area theater.

07:966:389-390. COSTUME CONSTRUCTION TECHNIQUES (1,1)
Prerequisites: 07:966:247-248. Open only to B.F.A. design majors or by permission of instructor.
Flat-pattern drafting and draping techniques. Study of period patterns and construction of a period costume for inclusion in the student's portfolio.

07:966:401. ANALYSIS OF CLASSICAL TEXT (1)
Open only to B.F.A. acting majors.
Advanced work in the speaking of Elizabethan, Jacobean, and Restoration text.

07:966:403. VOICE III (2)
Open only to B.F.A. acting students in the junior year.
Voice and speech for the actor.

07:966:405. ACTING: INTERPRETATION AND CHARACTERIZATION (3)
Open only to B.F.A. acting students in the junior year.
Scene study for the actor.

07:966:407. SCENE PAINTING II (1)
Prerequisite: 07:966:316.
Advanced techniques in scene painting.

07:966:411. PRODUCTION TECHNIQUES (1)
Prerequisite: Two years of Theater Practice. Open only to junior and senior design and production majors.
Required production practice on season productions.
Course repeated.

07:966:419-420. ACTOR/DIRECTOR WORKSHOP (3,3)
Hart. Open only to B.F.A. acting students in the junior year.
Practice focused on the rehearsal process and actor / director collaboration.

07:966:422. PRODUCTION AND DESIGN PROJECTS (BA)
Open only to B.F.A. design majors.
Realizing production design in the areas of costumes, sets, and lights, as assigned by the faculty.

07:966:423. STAGE MANAGEMENT (3)
Prerequisites: 07:966:215-216.
Study of stage management practice.

07:966:424. STAGE MANAGEMENT SEMINAR (3)
Prerequisite: 07:966:423.
Practicum in which students perform stage management duties under supervision while attending advanced stage management seminar.

07:966:447-448. DRAPING (3,3)
Prerequisites: 07:966:389-390 or permission of instructor.
Development of skills needed to evolve patterns from designers' sketches and use of those patterns to produce finished garments.

07:966:451. TAILORING (3)
Prerequisites: 07:966:389-390 or permission of instructor.
Construction techniques for tailored garments with particular reference to men's wear.

07:966:455-456. SEMINAR IN COSTUME HISTORY (3,3)
Prerequisites: 07:966:247-248.
In-depth study of period clothing with emphasis on primary research sources. Activity fees.

07:966:460. SET DESIGN II (3)
Prerequisites: 07:966:313-314. Open only to B.F.A. design majors.
Advanced stage design.

07:966:462. COSTUME DESIGN II (3)
Prerequisites: 07:966:335-336. Open only to B.F.A. design majors.
Advanced costume design.

07:966:464-465. LIGHTING DESIGN I (3,3)
Prerequisites: 07:966:343-344. Open only to B.F.A. design majors.
Students undertake lighting design projects and prepare instrumentation and light plots for critique.

07:966:468. COMPUTER DRAFTING (BA)
Prerequisites: 07:966:251-252 and permission of instructor.
Introduction to basic computer drafting as practiced in the design profession, including familiarity with standard programs for theatrical drafting, perspective, and lighting applications.

07:966:473-474. PRODUCTION PRACTICUM (BA,BA)
Open only to B.F.A. production students.
Senior project or internship arranged with specialty adviser and production student adviser.

07:966:480. AUDITIONING (1)
Open only to B.F.A. acting students.
Preparation for graduating actors in cold reading and monologue.

07:966:490. ACTING IN LONDON (12)
Open only to B.F.A. acting students or by audition if room is available.
Classical acting and voice training, British culture, and literature in a thirteen-week residency at the Rutgers' London Academy.

Note: Graduate courses are open to juniors and seniors in good standing with permission of the graduate director and the instructor. (Graduate offerings are published in the graduate Schedule of Classes.)

Administration and Faculty

ADMINISTRATION

George B. Stauffer, Dean
Dennis Benson, Associate Dean
Scott A. Cagenello, Dean of Students
Diane Nixa, Director of Development

FACULTY

Department of Dance

Chairperson: Patricia Mayer

Associate Professors:

Robert Benford, B.M., M.M., Illinois
Patricia Mayer, B.F.A., Utah; M.A., California (Los Angeles)
Paulette Sears, B.A., Vassar College; M.A., Mills College

Assistant Professors:

John Evans, B.A., Western Washington; M.A., Ohio State
Randy James
Julia Ritter, B.F.A., Rutgers; M.F.A., Temple

Lecturers:

Deanna Tomasso Addeo, B.F.A., Rutgers; C.M.A., Laban/Bartenieff
Sherry Alban, B.A., Rutgers
Nancy Bannon
Kimani Fowlin
Debra Keller, B.F.A., Rutgers; C.M.A., Laban/Bartenieff
Stuart Loungeway
Raegon Wood Sanders

Department of Music

The Department of Music is a member of the National Association of Schools of Music.

Chairperson: William Berz

Assistant Chairperson: Richard A. Chrisman

Director of M.M., D.M.A., and A.D. Programs: Judith Nicosia Civitano

Director of M.A., and Ph.D. Programs: Floyd Grave

Director of Undergraduate Studies: Douglas Johnson

Department Coordinator: Anneliese Graseman

Professors:

William Berz, B.M., M.M., Ph.D., Michigan State
Gerald C. Chenoweth, B.M., M.M., Massachusetts; M.F.A., Ph.D., Iowa
Stanley Cowell, B.M., Oberlin College; M.M., Michigan
Paul Hoffmann, B.M., M.M., Eastman School of Music
Douglas Johnson, B.A., Hamilton College; M.A., Ph.D., California (Berkeley)
George M. Jones, B.M., M.M., Eastman School of Music; Ph.D., New York
Wanda Maximilien, B.M., M.S., Juilliard School of Music
Zara Nelsova, Fellow, Royal Academy of Music (London)
Susan Starr, Diploma, Curtis Institute of Music
Arnold Steinhardt, Diploma, Curtis Institute of Music
Floyd Sumner, B.M.Ed., M.A., Louisville; Ph.D., Rutgers
Frederick Urrey, B.M., M.M., Louisiana State; D.M.A., The Peabody Institute of Johns Hopkins
Scott Whitener, Diploma, Juilliard School of Music; M.M., Michigan; Ed.D., Rutgers
Charles Wuorinen, B.A., M.A., Columbia

Associate Professors:

Richard A. Chrisman, B.A., California (Riverside); Ph.D., Yale
Nancy Cooper, B.M.E., M.M.E., Colorado; D.M.E., Indiana
William B. Fielder, B.A., M.A., American Conservatory of Music
Patrick Gardner, B.A., California State (Hayward); M.M., D.M.A., Texas
Floyd Grave, B.M., Eastman School of Music; M.A., Ph.D., New York
Judith Nicosia, B.M., Ithaca College; M.M., Indiana

Assistant Professors:

Cecil L. Adderly III, B.S., Western Carolina; M.M., North Carolina (Greensboro); Ph.D., South Carolina
Antonius Bittmann, B.M., M.M., Staatliche Hochschule für Musik, Freiburg; M.A., M.M., D.M.A., Eastman School of Music
Ralph Bowen, B.M., M.M., Rutgers
Angelin Chang, B.A., Ball State; M.M., Indiana; D.M.A., The Peabody Institute of Johns Hopkins
Richard Auldon Clark, B.M., M.M., Manhattan School of Music
Nanette DeJong, B.M., Minnesota; M.M., DePaul; Ph.D., Michigan
Barbara González-Palmer, B.M., Oberlin Conservatory of Music; M.M., Juilliard School of Music
Mary Kennedy, B.M., M.Ed., Victoria
Brian Kershner, B.S., Duquesne; M.M., New England Conservatory of Music; D.M.A., Florida State
Andrew Kirkman, B.A., Durham; M.M., Ph.D., King's College (London)
Douglas Lundeen, B.S., Plymouth State College; M.M., South Florida; D.M.A., Cincinnati Conservatory
Brian McIntosh, B.M., Western Ontario
Nancy Rao, B.A., National Taiwan Normal; M.M., Ph.D., Michigan
David Reeves, B.A., Pennsylvania; M.A., Ph.D., New York
Scott Whitfield, B.M., Florida State; M.M., North Texas State

Assistant Instructor:

Charles Menoche, B.S., Tennessee Technological; M.M., D.M.A., Texas (Austin)

Adjunct Faculty:

Christopher Arneson, B.A., M.M., SUNY (Binghamton)
Peter Bond, B.A., Western Illinois; M.M., Georgia State
Paul Cohen, B.M., Baldwin-Wallace; M.M., D.M.A., Manhattan School of Music
Dennis DeLucia, B.A., Upsala College
Faith Esham, B.A., Columbia Union College; B.M., M.M., Juilliard School of Music
Bart Feller, B.M., Juilliard School of Music
Paul Harris, Cleveland Institute of Music
Vic Juris
Taina Kataja-Urrey, Diploma, Sibelius Academy (Helsinki); Diploma, Hochschule für Musik und darstellende Kunst (Vienna)
William Kellerman, B.S., Indiana (Pennsylvania); M.M., Michigan
Paul Neubauer, B.M., M.M., Juilliard School of Music
Anthony Pasquale, B.M., Eastman School of Music; M.M., Nebraska
Ralph Peterson, B.A., Rutgers
Michael Powell, B.M., Wichita State
Gretchen Pusch, B.M., Boston
Matthew Reichert, B.M., Juilliard School of Music; M.A., Brooklyn College– Conservatory
Michael Richmond, B.S., Temple
John Rojak, B.M., Juilliard School of Music
Nicholas Santoro, B.A., Rutgers; M.M.E., Trenton State College
Timothy Smith, B.M., Rutgers
Matthew Sullivan, B.A., Miami
Charles Sundquist, B.M., Minnesota; M.M., Eastman School of Music
Gordon Tedeschi, B.M., Northern Illinois
Michael Whitcombe, B.M., M.M., Michigan
Hsin-Yi Wu, B.M., M.M., North Texas

Department of Theater Arts

Chairperson: William Esper

Undergraduate B.F.A. Director: Vickie Esposito

Undergraduate B.A. Director: Joseph Hart

Professors:

Eileen Blumenthal, B.A., M.A., Brown; Ph.D., Yale
William Esper, B.A., Case Western Reserve; Neighborhood Playhouse School of the Theater; teaching training with Sanford Meisner
Joseph Hart, B.A., Fordham; M.A., New York
John Jensen (Emeritus), B.S., Oregon; Pratt Institute and Lester Polakof School of Stage Design
Eric Krebs, B.A., M.A., Rutgers
Gerald Rabkin (Emeritus), B.A., Brooklyn College; M.A., Ph.D., Ohio State
Harold Scott, B.A., Harvard; theater training with Elia Kazan, Harold Clurman, and José Quintero

Associate Professors:

F. Mitchell Dana, B.F.A., Utah State; M.F.A., Yale School of Drama
Vickie Esposito, B.A., Rutgers; M.F.A., Minnesota
Joseph Miklojcik, B.S., Northwestern; M.A., Connecticut
R. Michael Miller, B.F.A., M.F.A., Washington
Loyd Williamson, B.A., Georgia Southern College; M.F.A., Georgia

Assistant Professor:

Barbara Marchant, B.A., Fort Wright College; teacher training with William Esper

Instructors:

Deborah Hedwall, B.A., Washington; Neighborhood Playhouse School of Theater with Sanford Meisner and William Esper
Virginia Johnson, B.S., Moorhead State

Lecturers:

Patricia Fletcher, B.S., Springfield College; designated lickletter voice teacher
Richard Gang, B.S., New York; M.S., Emerson; M.F.A., Rutgers
Maureen Gibson
Don Jensen, B.F.A., Kansas
Leah Kreutzer, B.F.A., Emerson College; Joffrey Ballet School
Kevin Kittle, B.A., Hampshire College
Paul Lazar
Alba Leto, B.A., Chicago; M.F.A., New York Academy of Art; also Institute of Dchicao, Eduardo Lopez-Lemus and Pennsylvania Academy of the Fine Arts
Joseph Mancuso, B.A., M.A., Rutgers
Nancy Mayans, B.A., Stanford; M.F.A., Yale
Ted Morin, B.Ed., Alberta
David Murin, B.F.A., New York
Patricia Norcia-Edwards, B.A., Hofstra; M.F.A., Yale
Lenard Petit
Tim Pickens, B.A., Denison; M.F.A., Temple
Michael Warren Powell, Art Institute of Chicago
Sari Ruskin, B.A., M.A., CCNY; Ph.D., Long Island
Amy Saltz, B.A., Wisconsin
Carol Thompson, B.A., Montclair State College; M.F.A., Rutgers
Jake Turner, B.F.A., Carnegie Mellon
C. Rudy Veltre
Beth Wicke, B.A., American

Department of Visual Arts

Chairperson: Gary Kuehn

Professors:

Emma Amos, B.A., Antioch College; Diploma, London Central School of Art; M.A., New York
Melvin Edwards, B.F.A., Southern California
Lauren Ewing, B.A., Skidmore College; M.A., Indiana State; M.F.A., California (Santa Barbara)
Geoffrey Hendricks, B.A., Amherst College; M.A., Columbia
Gary Kuehn, B.A., Drew; M.F.A., Rutgers
Rafael Montanez Ortiz, B.S., M.F.A., Pratt Institute; Ed.M., Ph.D., Columbia
Martha Rosler, B.A., Brooklyn College; M.F.A., California (San Diego)

Associate Professors:

Lynne Allen, B.S., Kutztown; M.A., Washington (Seattle); M.F.A., New Mexico; Master Printer Certification, Tamarind Institute
Paul Bruner, B.S., Indiana; M.F.A., Pratt Institute
Robert T. Cooke, B.A., Newark State College; M.F.A., Cranbrook Academy of Art
Ardele Lister, B.A., M.A.A.B.D., British Columbia (Vancouver)
Toby MacLennan, B.A., Michigan; B.F.A., Wayne State; M.F.A., School of the Art Institute (Chicago)
Lloyd McNeill, B.A., Morehouse College; M.F.A., Howard
Diane Neumaier, B.A., Iowa; M.F.A., Washington
Thoma Nozkowski, B.F.A., Cooper Union
Philip Orenstein, B.A., M.F.A., Rutgers

Assistant Professors:

Gerry Beegan, M.A., Middlesex (London)
Heather Coffey, B.F.A., M.F.A., Arizona
Jason Francisco, B.A., Columbia; M.A., Wisoncin (Madison); M.F.A., Stanford
Liss Platt, B.F.A., Connecticut; M.F.A., California (San Diego)
Hanneline Rogeberg, B.F.A., San Francisco Art Institute; M.F.A., Yale

COLLEGE OF PHARMACY

Information on the following subjects may be found in the General Information section at the back of this catalog: Student Life and Services, Admission, Tuition and Fees, Financial Aid, and University Policies and Procedures.

Web Site: http://pharmacy.rutgers.edu/

General Information

HISTORY AND AIMS OF THE COLLEGE

The College of Pharmacy was founded in 1892 as the New Jersey College of Pharmacy by a group of citizens dedicated to the interest of pharmacy. It was incorporated into the university in 1927. The college was housed at various locations in downtown Newark and after 1925 in its own building in north Newark. During these years, most students lived at home and commuted to classes. In 1971 the college was relocated to the Busch campus in Piscataway, adjacent to the University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School, and also near the Library of Science and Medicine and other buildings related to the basic sciences at Rutgers University. The college now accommodates both resident students (housed at one of the residential colleges in the New Brunswick area) and commuters. Under either arrangement, pharmacy students have access to all cultural and other extracurricular activities within the university.

The six-year, professional degree curriculum for the Doctor of Pharmacy (Pharm.D.) is structured to educate and prepare men and women for practicing the profession of pharmacy in the community, medical institutions, organized health-care facilities, or the pharmaceutical industry by developing high levels of theoretical comprehension and professional skill required for competence in each of these areas. In addition, the Pharm.D. program is designed to create independent thinkers and problem solvers who know how to communicate and counsel health-care professionals and patients, and who are knowledgeable in all aspects of drug therapy.

The curriculum offers a combination of courses in the physical and social sciences and the humanities, and an expansive variety of new clinical field experiences, which are the hallmark of the program. Finally, because the pharmacist functions in the context of contemporary society, the curriculum is shaped to develop in the student a sensitivity to the socioeconomic, ethical, and legal aspects of professional life, and an appreciation of the artistic and cultural currents of modern civilization.

These objectives are realized through a balanced program of study in chemical biology, clinical pharmacy, pharmacy practice and administration, pharmaceutical chemistry, pharmaceutics, pharmacology, the natural and social sciences and the humanities, and a structured clinical experience program.

Web Site: http://pharmacy.rutgers.edu/

THE PHARMACY PROFESSION

Pharmacy is a health-care profession concerned with assuming responsibility for the management of drug therapy in patients, the compounding and dispensing of medications, and the generation and transmission of knowledge about the proper selection and use of drugs and their effects on humans and animals.

Pharmacists in their role as managers of drug therapy work with physicians, patients, and health-care providers to ensure effective treatments, particularly for such chronic diseases as asthma and diabetes, by collaborating on medication choices, educating and assisting patients with drug usage, tracking patient progress, and monitoring drug-therapy outcomes.

While everyone is familiar with the community pharmacist, the general public is less aware that career openings also exist in industrial and hospital pharmacies, government agencies, and education, as well as in nursing home, health maintenance organization, clinic, home health care, and nuclear pharmacies.

The community pharmacist serves patients directly as a vital part of total health care. Patients may obtain prescription service, medicines, surgical supplies, sickroom needs, and information and advice in pharmacies located in almost every town and city.

The modern hospital employs pharmacists who are responsible for establishing an efficient system for managing and providing drug therapy to patients throughout the institution. Hospital pharmacists are increasingly involved in the role of clinical consultation, providing drug information to physicians and nurses, designing and preparing special dosage regimens for patients, and counseling patients directly about the proper utilization of their medication.

Large numbers of pharmacists are employed by the pharmaceutical industry, serving as scientists and supervisors in research, manufacturing, quality control, sales, marketing, and drug information. Others teach and conduct research in colleges of pharmacy, and increasing numbers work for state and federal law enforcement agencies, the military, the U.S. Public Health Service, and the Veterans Administration.

ADVANTAGES AT RUTGERS

For students who wish to prepare for one of the many exciting pharmaceutical careers, Rutgers offers an excellent choice. The College of Pharmacy is located on a modern, attractive suburban campus, surrounded by the university's golf course, the University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School, and the university's major science departments. Student housing, a campus student center, and the Library of Science and Medicine are within walking distance of the college. While the campus is a traditional college campus and away from the hustle and bustle of any downtown business district, the nearby central New Jersey metropolitan region offers a wide array of practice-oriented educational opportunities in retail pharmacies, hospitals, and the pharmaceutical industry. The college's professional experiential programs take full advantage of these opportunities, including industrial pharmacy sites that provide a unique experience in the research laboratories of the nation's leading drug manufacturers.

All activities, both academic and extracurricular, of the larger university are available to pharmacy students, including extensive academic offerings in the basic sciences, humanities, and social sciences. While at the College of Pharmacy, students affiliate with a residential college in the New Brunswick area (Douglass, Livingston, or Rutgers) for housing and other student services.

As a state university, Rutgers offers tuition rates that are particularly affordable to New Jersey residents, while maintaining reasonable tuition rates for out-of-state students. Scholarships and other forms of financial aid also are available. For further information, see the Tuition and Fees and Financial Aid sections.

The pharmacy faculty also offers graduate programs for students wishing to earn a Master of Science or Doctor of Philosophy degree in chemical biology, pharmaceutical and medicinal chemistry, pharmaceutics and industrial pharmacy, pharmacology, or toxicology. These programs are described in the catalog of the Graduate School–New Brunswick.

The two-year post-B.S., advanced professional Pharm.D. also is offered to students holding a B.S. degree in pharmacy who are interested in advanced study. The Pharm.D. degree is growing in importance as the pharmacy degree of choice for a number of practice settings.

FACILITIES

William Levine Hall

The principal pharmacy building, William Levine Hall, provides more than 110,000 square feet of space on six different levels for undergraduate instruction and graduate study and research. Undergraduate laboratories and classrooms are provided for instruction in chemical biology, pharmaceutical chemistry, pharmacy practice and administration, pharmaceutics, and pharmacology. Specialized facilities accommodate work in animal experimentation, radioisotopes, electronic instrumentation, and pharmaceutical manufacturing. Computers and modern analytical instrumentation are available for instruction. College of Pharmacy faculty are located in this building as well as in several other buildings throughout the campus.

Libraries

Pharmacy students make use of an extensive pharmacy, science, and health-related collection in the Library of Science and Medicine adjacent to the college. Other sources are available in the Alexander Library on the College Avenue campus and the other libraries, general and specialized, of the university library system. All university library materials are accessible to pharmacy students directly or through intralibrary loan and telephone reference service.

NEW JERSEY LEGAL REQUIREMENTS FOR THE PHARMACY PROFESSION

The requirements for licensure as a registered pharmacist in the state of New Jersey are set by the state Board of Pharmacy. Since the specific requirements change from time to time, it is advisable to contact the state board for the most current information when specific questions about the requirements for licensure arise. Correspondence to the board may be addressed to the Executive Director, Board of Pharmacy, 124 Halsey Street, P.O. Box 45013, Newark, NJ 07101; 973/504-6450.

To qualify for licensure in the state of New Jersey, the applicant must be a graduate of an accredited college of pharmacy, must have completed a sufficient amount of time in an approved experience program, and must have passed both the state Board of Pharmacy Licensure Examination and the Multistate Jurisprudence Pharmacy Examination. The experience program may consist of internship, externship, or a combination of both. Externship refers to a college-credited and supervised experience program that has been approved by the Board of Pharmacy as meeting the experience requirement. Internship refers to postgraduate experience in an approved pharmacy with a board-approved preceptor. A total of 1,000 hours of internship/externship is necessary for a candidate to qualify to take the licensure examination. The examination itself is a comprehensive computer-adaptive examination that integrates the pharmaceutical sciences with pharmacy practice.

The curriculum at the College of Pharmacy currently provides an externship and related experience components that meet the experience requirements for licensure in New Jersey. Students contemplating registration as a pharmacist in states other than New Jersey should become familiar with the licensure and reciprocation requirements in those states. Information about registration in other states may be obtained from the appropriate state board of pharmacy or through the National Association of Boards of Pharmacy, 700 Busse Highway, Park Ridge, IL 60068; 847/698-6227, or http://www.nabp.org.

OFFICE OF CONTINUOUS EDUCATION

The mission of the Office of Continuous Education, under the guidance of the dean's office, is to serve the educational needs of practitioners through the provision of educational programs. These programs are designed to let the participant achieve, retain, and strengthen professional knowledge and competencies. The web site is http://pharmacy.rutgers.edu/ce/index.html.

ACCREDITATION

American Council on Pharmaceutical Education

The Pharm.D. degree program of the College of Pharmacy is accredited by the American Council on Pharmaceutical Education, 311 West Superior Street, Suite 512, Chicago, IL 60610, 312/664-3575, 800/533-3606; FAX: 312/664-4652. The B.S. degree program at the College of Pharmacy is accredited through 2003 by the same organization. The B.S. degree will not be awarded after 2003. The American Council on Pharmaceutical Education is made up of ten members representing the American Association of Colleges of Pharmacy, the American Pharmaceutical Association, the National Association of Boards of Pharmacy, and the American Council on Education. It is recognized as the national accrediting agency for colleges of pharmacy in this country. The council also accredits the College of Pharmacy as an approved continuing education provider.

American Association of Colleges of Pharmacy

Rutgers' College of Pharmacy is a member of the American Association of Colleges of Pharmacy, which was organized in 1899 for the promotion of the interests of pharmaceutical education. Since its founding, the association has steadily increased in size and enlarged its services. Today, it is recognized as a vital factor in the welfare of the profession of pharmacy. It has set and maintained high standards of pharmaceutical education. Members of the faculty participate in its activities, and the college maintains its prescribed standards.

Academic Policies and Procedures

Note: See also the University Policies and Procedures section for regulations that pertain to all the undergraduate colleges at Rutgers–New Brunswick.

STUDENT RESPONSIBILITY TO KEEP INFORMED

In addition to the material in this catalog, important information about the College of Pharmacy is printed in the College of Pharmacy Student Handbook, the Undergraduate Schedule of Classes, and the Official Notices appearing every Tuesday in the Daily Targum. Pharmacy students are responsible for keeping themselves informed of all policies and procedures announced in these publications, in official notices posted on bulletin boards, and in notices distributed to students through the campus mail system and posted electronically to student email addresses.

ACADEMIC CREDIT

Advanced Placement

Candidates for admission who have completed advanced-standing courses in secondary school are urged to take the College Board Advanced Placement Examinations. Credit is not given for grades of 1 or 2. The Educational Testing Service, which gives the examinations, should be asked to forward test papers with grades of 3 to the director of undergraduate admissions for individual consideration. These are reviewed by the departments concerned. College of Pharmacy students are offered advanced placement and course and degree credit in those subjects in which they receive a grade of 4 or 5.

Proficiency Examinations

With the approval of the academic adviser, the dean of the College of Pharmacy, and the department concerned, a student may, upon payment of a fee, take a proficiency examination in courses offered at the university. Degree credit is given for a grade of B or better, as determined by the department concerned. The grades for courses passed by this means are not computed in the cumulative grade-point average. Proficiency examinations ordinarily are not allowed in the following cases:

1. after the student has failed the course
2. for courses in which the principal content is laboratory or creative work, since the course's primary value is in the student's continuing and supervised participation
3. when a student's fourth or fifth year program is limited as to overload
4. for military education courses
5. for minicourses

Transfer Credit from Institutions Other Than Rutgers

A student who has transferred from another institution may receive degree credit only for those courses that are equivalent in content and credit to courses in the Rutgers curriculum and passed with the equivalent of a Rutgers grade of C or better. Courses at New Jersey community colleges that are equivalent to Rutgers University courses can be found at http://artsys.rutgers.edu.

Transfer credit from other institutions is never included in the student's cumulative grade-point average at Rutgers. This regulation applies both to transfer credit granted at the time of admission to the College of Pharmacy and to any summer or special work taken at other institutions while the student is a candidate for a Rutgers degree. Transfer credit is never given for correspondence courses of any kind. Whether or not transfer credit is requested, the college requires an official transcript of all work done by a student at any other institution of higher learning.

REGISTRATION AND COURSE INFORMATION

Academic Advising

Students are urged to seek help and advice on their academic programs and progress by conferring with their assigned adviser and the counseling staff of the Office of Student Development and of the Office of Academic Services and Student Records. The associate deans and the chairperson of the Scholastic Standing Committee also may be consulted for advice on academic matters and course selection.

However, students must assume full responsibility for conforming to the academic regulations of the college, for meeting prerequisite and graduation requirements, and for taking the specific courses as required in the appropriate term of the curriculum. Students may consult with the chairperson of the Scholastic Standing Committee or the Coordinator of Academic Services to determine their class standing, grade-point averages, current academic status, and progress toward meeting academic requirements for graduation.

Registration

Registration for matriculated students begins in October for the following spring term and in March for the following fall term. Matriculated students register through the Rutgers Touchtone Telephone Registration System (RTTRS) and online. Registration is completed upon full payment of tuition and fees by the announced deadline prior to start of the term. The university reserves the right to restrict registration in all courses offered and, when necessary, to cancel courses previously announced. See the Tuition and Fees section for further information about registration.

Change of Courses. See the University Policies and Procedures section for drop/add procedures.

Prerequisites. Students must be careful to ascertain that they have the proper prerequisites for any course for which they register, whether it be a pharmacy course or a course offered by another division of the university.

Course Load

The curriculum of the College of Pharmacy is designed so that a student can meet the appropriate professional degree requirements for the Pharm.D. degree in six years by completing the program, as outlined under the Programs of Study below.

With the written approval of the academic dean, a student may elect to take as few as 12 credits in any given term. Courses may be dropped to effect such reduction to 12 credits within the first eight weeks of the term. In contemplating such a reduction, however, the student should bear in mind which courses are prerequisite for other courses to be taken subsequently, as well as potential scheduling conflicts. The student also should give serious consideration to the financial implications of any additional years of education and its impact on other personal circumstances.

Students may not carry more than 20 credits in one term. The Committee on Scholastic Standing does not recognize, for graduation purposes, courses taken in excess of the maximum load determined by faculty rule, unless permission was granted previously by the committee.

The College of Pharmacy does not have any provision for part-time students, except in those cases where the Committee on Scholastic Standing or academic dean specifies a partial course load for not more than one or two terms.

Withdrawal and Readmission

Withdrawal. A student desiring to withdraw from the college with grades of W must arrange an interview with the academic dean's office. He or she then submits to the Office of the Registrar the Notification of Withdrawal form on which the reasons for the withdrawal are given. Withdrawal by mail is possible only when illness precludes the possibility of interviews. Students who leave college without officially withdrawing receive a grade of F in each incomplete course. Except in the case of documented extraordinary circumstances, a student may not arrange to withdraw officially with grades of W after the twelfth week of the term.

Readmission. Students who interrupt their registration at the College of Pharmacy and wish to return must apply for readmission to the director of the Scholastic Standing Committee. Those who leave in good academic standing and who do not have outstanding financial obligations to the university ordinarily are readmitted if they apply by November 15 for January entrance or by April 15 for September entrance. Later applications are given special attention if space is available, as are those applicants who have been away for more than one year.

For the college's policy on readmission after dismissal for academic reasons, see Scholastic Standing later in this chapter.

All requests for readmission must be made in writing to: Assistant Dean for Academic Services, Rutgers, The State University of New Jersey, College of Pharmacy, 160 Frelinghuysen Road, Piscataway, NJ 08854-8020.

Course Information

Courses Offered by Other Rutgers Faculties. Students are encouraged to take advantage of the wide range of courses offered by other faculties and schools at Rutgers in New Brunswick. However, students must be careful to maintain

the proper sequence of courses in the pharmacy curriculum. Any deviations require the advice and written permission of the academic dean's office.

Regardless of where students take courses, they are governed by the academic rules of the College of Pharmacy, and the registration must be processed through that college.

Auditing Courses. With the permission of the instructor and subject to the availability of space, full-time students of the college may audit courses without registration. No record is kept of courses audited and no academic credit is earned.

Summer Courses. Students must receive academic advising and permission in writing from the dean's office of the college before enrolling in course(s) during summer sessions at colleges outside of the university. Summer Session Course Request forms are available from the Office of Academic Services, Room 107B. Enrolling for more than 3 credits per summer session or more than 9 credits during one summer is considered an overload and requires special permission from the dean's office of the College of Pharmacy.

Professional courses may be taken at other colleges of pharmacy during summer sessions only after having failed the same course at Rutgers' College of Pharmacy and having been granted permission in writing to repeat the course by the instructor of the failed course (or departmental chairperson) and the director of scholastic standing.

For more information about Summer Session courses, contact the Office of Academic Services, Room 107B.

No degree credit is granted for any Summer Session course work that has not been authorized by the dean's office of the College of Pharmacy. It is the responsibility of the student to supply the Office of Academic Services with an official transcript from the college outside the university showing the grades received. Credit will be granted only for courses in which grades of C or better have been attained. No student will be permitted to progress with the prescribed program of study until the transcript is received. Only courses taken at Rutgers during Summer Session will have the grade applied to the student's cumulative grade-point average.

Students who are matriculating in the College of Pharmacy or seek admission or readmission to the college may not withdraw from the Summer Session during the last seven calendar days of a course without incurring a grade of F unless excused by the academic dean's office of the College of Pharmacy.

Attendance. Students are expected to attend all scheduled course meetings. When a student is frequently absent from class exercises, quizzes, or examinations, it becomes difficult or impossible for the instructor to evaluate that student's performance. The instructor therefore may require that the student obtain authentication of the circumstances that led to such absences. The grade for work missed is counted, discounted, or made up at the discretion of the instructor, except in the case of final examinations, where the academic dean must rule whether or not the student may take a makeup final examination.

Every student must notify the academic dean or a designee of any anticipated absence from class for a week or more. In the case of illness, the student must obtain a written statement on his or her physician's official stationery or a prescription form indicating diagnosis, dates of illness, and treatments. Such a statement must be submitted to the academic dean or a designee within three school days after the absence.

Examinations. Final examinations are held at the end of each term. All students enrolled for credit in a course in which a final examination is given must take the examination. During the term, announced and unannounced tests may be held at the discretion of the instructor.

SCHOLASTIC STANDING

Cumulative Grade-Point Average and Professional Grade-Point Average

The student's scholastic standing is determined by his or her cumulative grade-point average and professional grade-point average. These averages may be calculated as an overall average or a term average. See the University Policies and Procedures section for information on the computation of the cumulative grade-point average and other grading regulations.

The cumulative grade-point average includes all courses completed at Rutgers used to satisfy the degree requirements in the pharmacy program. The professional grade-point average includes all courses completed at Rutgers with the subject codes 158, and 715 through 725.

Effective with the inception of the entry-level Pharm.D. curriculum, when students earn a grade of D or F in a course, the course, with permission, may be repeated; however, both grades will be included in the student's averages and both remain on the student's transcript. Grades received at another institution are not included in either the cumulative or the professional grade-point averages. If a student is authorized to repeat a course at another institution, the grade and credits originally earned in the course at Rutgers remain part of the student's transcript.

Class Standing

A student's class standing is determined by the dean. It is based on the earliest possible date of graduation, assuming that the student completes a normal course load each term and follows the required sequence of courses. Summer school work may be required in order to graduate at the earliest possible date.

Dean's List

At the end of each term, the dean of the college compiles an honors list of students whose work during the term was outstanding, including those students whose cumulative and professional grade-point averages for the term were 3.2 or better. Only students taking 12 or more credits for letter grades are eligible for the Dean's List. Course credit and grades earned in repeated courses are not counted.

Academic Progression Requirements

Academic Review. Student academic performance is reviewed by the Scholastic Standing Committee, which is composed of appointed faculty of the college. The faculty must ratify any recommendations made by the committee before a student's academic status is changed.

Standards. Failure to maintain the college's academic progression standards is grounds for dismissal or placement on academic probationary status. A dismissal recommendation also may be based upon poor academic performance during any single term, regardless of any prior scholastic status, or after a student has spent two prior terms on probation.

Satisfactory academic progression is defined as:

1. achieving a minimum 2.3 cumulative grade-point average at the end of each academic term for the first two years of the preprofessional program
2. achieving a 2.3 cumulative grade-point average at the end of the second term of the second year
3. maintaining a minimum 2.0 cumulative and professional grade-point average thereafter

Entry into the third year of the program requires a minimum cumulative grade-point average of 2.3 and completion of all course work from the preprofessional portion of the curriculum.

Students who earn a grade of D or F in a course may be required, at the discretion of the Committee on Scholastic Standing, to repeat the course; however, both grades are included in the student's averages. Students are expected to meet the above academic progression standards at the end of each academic term and by the end of the academic year. The above standards are applied to students based on courses completed and the sequence of courses outlined in the Doctor of Pharmacy curriculum. Students may be allowed to complete course work in the following Summer Session in order to meet the above academic progression standards if equivalent summer courses are available at Rutgers. Students must have prior approval from the director of scholastic standing before initiating summer course work related to curricular deficiency (see the section on Academic Progress). Students pursuing course work during the summer are expected to meet the above academic progression standards.

All preprofessional curricular requirements of the program of study, including humanities, social sciences, core mathematics, science, and English courses, must be completed in good academic standing before a student is permitted to enter the professional years of the program.

All professional curricular requirements of the program of study, including professional electives, must be completed in good academic standing before a student is permitted to begin rotational experiences in the sixth year.

Academic Progress. Students are expected to follow the sequence of courses specified in the Doctor of Pharmacy curriculum approved by the faculty. Students enrolled prior to the fall of 1998 are expected to follow the sequence of courses specified in the Bachelor of Science curriculum. Failure to follow the approved curriculum will result in a dismissal or placement on academic probationary status. Students may be allowed to depart from the curriculum based on placement exams, scholastic standing committee actions, disciplinary actions, technical errors, and/or extenuating circumstances. Students must receive prior approval from the academic dean before deviating from the curriculum.

Probation. Being on probation means that the student is scholastically deficient and is continuing his or her education with the understanding that he or she must improve the level of work and meet the conditions of probation set by the Scholastic Standing Committee and approved by the faculty of the College of Pharmacy.

Students on probation must meet any conditions set by the Scholastic Standing Committee and approved by the college faculty, such as:

1. maintaining a specific average for one or more terms
2. repeating certain courses
3. carrying a reduced load for one or more terms
4. curtailing certain extracurricular activities

In addition, students on probation must attend all scheduled classes and laboratory sessions (unauthorized absence may lead to immediate dismissal) and carry no more than the normal class and curriculum course load. Students are removed from probation after they have achieved a satisfactory scholastic record.

Students placed on probationary status may appeal to the director of scholastic standing. Grounds for appeal include technical error and/or changes in temporary grades. Letters of appeal must state the reasons for appeal and must be written by the student, although advice from others may be sought in formulating the appeal.

Dismissal. Students are informed in writing of academic dismissal if they fail to meet the conditions of probation or if they have an exceedingly poor term record even though they may not have been previously on probation. Students who are dismissed are dropped from the college, and academic credit is not given for any college courses taken during a period of one term following dismissal, not including a summer. The minimum time before readmission to the college after dismissal is one full term, not including the summer.

Appeal. Students dismissed from the College of Pharmacy by the faculty may appeal by letter only to the director of scholastic standing within two weeks of the date of the dismissal letter. Grounds for appeal include technical error, extenuating circumstances, and/or additional information not previously available to the committee. Letters of appeal must state the reasons for appeal and must be written by the student, although advice from others may be sought in formulating the appeal. Recommendations to reinstate students require the approval of the faculty of the College of Pharmacy. Students are notified of the faculty's decision.

Readmission. Students who have been dismissed for academic reasons may not be considered for readmission until at least one term, but not more than three terms, not including Summer Session, has elapsed. The faculty of the College of Pharmacy may stipulate one or more of the following for readmission consideration:

1. a specific number of college courses and credits to be completed successfully elsewhere
2. a readmission interview with the director of scholastic standing
3. evidence (such as a medical report) or requirement that might be deemed appropriate to a particular student

Students are not readmitted after a second dismissal action.

Academic Suspension. A student may be suspended for one or two terms based upon academic reasons. This action may be used when a term's academic performance requires that work be repeated before progressing in the program. Remaining out of college for the intervening period may be required either due to the availability of professional courses or simply because it is in the best interest of the student. Through the readmission procedure, this student may return at the end of the designated period of suspension earlier described.

DISCIPLINARY HEARING PROCEDURES

The Board of Governors of Rutgers, The State University of New Jersey, has established a list of offenses that may result in separation from the university. These offenses are handled through the University Code of Student Conduct. (See the University Policies and Procedures section.) In addition, each college has a hearing procedure for use in instances where charges against a student are not of sufficient gravity to lead to separation from the university. Lists of the separation and nonseparation offenses and copies of both the College of Pharmacy and the university hearing procedures are available in the Office of the Dean.

Degree Requirements

REQUIREMENTS

The degree of Doctor of Pharmacy is awarded to a pharmacy student by the university upon the recommendation of the faculty of the College of Pharmacy. Recommendation is contingent upon the student's fulfillment of the following requirements:

1. completion of the six-year curriculum for the doctoral degree
2. cumulative grade-point average must be greater than 2.0, and the cumulative professional grade-point average must be greater than 2.0
3. professional grade-point average in the terminal year must be greater than 2.0
4. completion of four years of full-time study for the doctoral degree at an accredited college of pharmacy, the last year of which must have been spent at Rutgers' College of Pharmacy
5. candidate must be adjudged by the faculty to be of good character and properly equipped for the profession of pharmacy

Proficiency in English

Students are expected to demonstrate the ability to speak and write effectively in the English language. Those failing to write literate English on any written assignment may warrant a failing grade for that reason alone. Instructors report to the English department any failure to meet this standard. Students who continue to write unsatisfactorily even though they have passed 01:355:101 Expository Writing I may be required to repeat the course in addition to their regular program.

GRADUATION

Degrees are conferred by the university at the recommendation of the college faculty only at the annual commencement at the end of the spring term. Students completing degree requirements in October or February may make a written request to the Office of the Registrar for a certificate attesting to their completion of degree requirements after October 1 or February 15, provided they have filed a Diploma Information Card.

Graduation with Honors

Students whose cumulative and professional course grade-point averages are between 3.16 and 3.35 graduate with "Honors." Those whose averages are between 3.36 and 3.65 graduate with "High Honors." Students whose averages are between 3.66 and 4.00 graduate with "Highest Honors." These designations are inscribed on the diplomas. Only courses completed at Rutgers are counted in these averages.

Programs of Study

SIX-YEAR PHARMACY CURRICULUM

First Preprofessional Year

First Term

01:119:101 General Biology I (4)
01:160:161 General Chemistry I (4)
01:160:171 Introduction to Experimentation (1)
01:355:101 Expository Writing I (3)
01:640:135 or 136 Calculus I or II (4) *
30:725:104 Pharmacy Convocations (1) †

Second Term

01:119:102 General Biology II (4)
01:160:162 General Chemistry II (4)
01:355:201 Research in the Disciplines (3) ‡
humanities / social sciences electives (6)

Second Preprofessional Year

First Term

01:160:307 Organic Chemistry I (4)
01:220:102 Introduction to Microeconomics (3)
01:750:161 Elements of Physics (4) **
humanities / social sciences / psychology electives (6)

Second Term

01:146:356 Systems Physiology (3)
01:160:308 Organic Chemistry II (4)
01:160:311 Organic Chemistry Laboratory (2)
01:960:401 Basic Statistics for Research (3)
humanities / social sciences electives (6)

First Professional Year

First Term

01:694:301 Introduction to Biochemistry and Molecular Biology (3)
30:718:320 Introduction to Pharmacology (2)
30:721:301 Introduction to Pharmaceutics (3)
30:725:308 Pharmacy Practice Management (3)
30:725:320 Introduction to Pharmaceutical Care (4)
30:725:330 Introductory Practice Experience I (1)
30:___:___ Professional elective I (2)

Second Term

30:158:315 Molecular Biology and Pharmaceutical Biotechnology (3)
30:715:306 Pharmaceutical Chemistry (3)
30:718:304 Pathophysiology (3)
30:721:320 Drug Delivery I and Laboratory (3)
30:725:331 Introductory Practice Experience II (1)
30:725:340 Principles of Pharmaceutical Economics (3)
30:___:___ Professional elective II (2)

Second Professional Year

First Term

30:158:420 Pharmaceutical Microbiology (3)
30:715:409 Medicinal Chemistry I (3)
30:718:405 Pharmacology I (3)
30:721:420 Drug Delivery II and Laboratory (3)
30:725:460 Cardiopulmonary Therapeutics (3)
30:725:470 Essentials of Drug Information (3)

Second Term

30:715:410 Medicinal Chemistry II (3)
30:718:406 Pharmacology II (2)
30:721:430 Introduction to Biopharmaceutics and Pharmacokinetics (3)
30:725:415 Poison Management and Drug Abuse (3)
30:725:475 Infectious Disease Therapeutics (3)
30:725:480 Intermediate Practice Experience (Ambulatory) (1)
3_:___:___ Professional elective III (2)

Third Professional Year

First Term

31:725:555 Clinical Pharmacokinetics (4)
31:725:560 Clinical Immunology, Hematology, and Oncology Therapeutics (3)
31:725:565 Renal, Gastrointestinal, and Nutrition Therapy (3)
31:725:570 Physical Assessment (2)
31:725:580 Intermediate Practice Experience (Acute) (1)
31:725:585 Patient Communication / Monitoring / Counseling (2)
3_:___:___ Professional elective IV (2)

Second Term

31:725:545 Pharmacy Law and Bioethics (4)
31:725:550 Self-Care and Home Care (4)
31:725:587 Patient Communication / Monitoring / Counseling (2)
31:725:590 Endocrine Therapy and Special Patient Problems (3)
31:725:595 Neuropsychiatric Therapeutics (3)
3_:___:___ Professional elective V (2)

Summer Session

31:725:___ Advanced Practice Experience I (5)
31:725:___ Advanced Practice Experience II (5)

Note: All curriculum requirements of the first five years must be successfully completed before students may register for any sixth-year rotations.

* Every student must take calculus. If Calculus I was taken in high school, the student must take Calculus II.

† 30:725:104 is required of first-year students only. Transfer students do not take this course.

‡ Please note that students may take one of the following courses in lieu of Research in the Disciplines: 04:192:201 Interpersonal Communication Process (3), 04:192:220 Fundamentals of Speaking and Listening (3). Students who have placed into 01:355:103 Exposition and Argument may consider taking that course in the fall term and one of the two communications courses listed above to satisfy the English requirement at the college. Enrollment for both courses will be on a space-available basis.

** A new physics course has been added expressly for pharmacy students. This is a 4-credit course.

Fourth Professional Year

First Term
31:725:___ Advanced Practice Experience III (5)
31:725:___ Advanced Practice Experience IV (5)
31:725:___ Advanced Practice Experience V (5)
31:725:600 Clinical Seminar (2)

Second Term
31:725:600 Clinical Seminar (2)
31:725:___ Advanced Practice Experience VI (5)
31:725:___ Advanced Practice Experience VII (5)

TWO-YEAR PREPHARMACY CURRICULUM

This program outlines the courses required by students who currently are not enrolled at the College of Pharmacy but who are interested in the profession of pharmacy and wish to apply to the college as transfer students. Upon satisfactory completion of one or both years of the program, students are eligible to apply for transfer to the College of Pharmacy. All requirements of the preprofessional program must be completed prior to starting the first professional year.

First Year

First Term
General Biology I (4)
General Chemistry I with laboratory (4,1)
English Composition I (3)
Calculus I (4)

Second Term
General Biology II (4)
General Chemistry II (4)
English Composition II (3)
humanities/social sciences electives (6)

Second Year

First Term
Human Anatomy and Physiology I (3)
Organic Chemistry I with laboratory (4,1)
Microeconomics (3)
Physics I (3)
humanities/social sciences electives (6)

Second Term
Human Anatomy and Physiology II (3)
Organic Chemistry II with laboratory (4,1)
Physics II (3)
Basic Statistics for Research (3)
humanities/social sciences electives (6)

HONORS AND AWARDS

Honors Program

A program is available for qualified pharmacy students that offers them the opportunity to explore one of the areas of pharmacy to a greater depth than is possible in the regular program. The program does not excuse students from any of the normal course requirements but permits them to do independent reading and research in an area of their own choosing under the supervision of a faculty member selected by the student.

Students who have a cumulative grade-point average of 3.5 or better after their first year may be invited to participate in this program. Upon satisfactory completion of the program, the student is awarded an honors program certificate and a suitable notation is made on his or her university record.

Rho Chi Society

Students in the College of Pharmacy are eligible for election to Rho Chi Honor Society, the national honor society. After completion of no less than one-half of the required professional didactic course work, students ranked in the top twentieth percentile of their class and who have attained a minimum professional grade-point average of 3.0 on a 4.0 scale are eligible for election. Election is based on high standards of scholarship with the view that scholarly attainment indicates the capacity of the individual for outstanding achievement in pharmacy.

Sigma Xi

Students who have shown excellence in scholarship and promise of engaging in scientific research at a recognized institution during the ensuing year are eligible for election as associate members of Sigma Xi, the national scientific honor society. The web site is http://www.sigmaxi.org.

Other Honors and Awards

Students in the College of Pharmacy may compete for departmental, fraternal, industrial, or association monetary awards. Election to Phi Lambda Sigma, the national pharmacy leadership society, is a much-coveted honor for pharmacy students active in student life.

PHARMACY EDUCATION PROGRAM

The Pharmacy Education Program (PEP) was developed to introduce pharmacy as a career option to specific groups (i.e., Black, Hispanic, American Indian) that historically have been underrepresented in the areas of math and science. The goal of the program is to increase the enrollment of these ethnic communities through active recruitment, networking, and participation in a precollege summer enrichment program.

The summer enrichment program simulates a college environment with specialized course instruction, tutorial assistance, and workshops that provide information on career decision making, financial aid, and the college application process. To be eligible for the program, students

must have completed their junior year of high school or recently graduated from high school and been admitted to the College of Pharmacy.

Enrolled students who meet the criteria for the program will be provided with an academic adviser, tutoring, and other activities that will aid in the transition from high school to college.

For more information about this program, please contact the College of Pharmacy, Office for Student Development, at 732 / 445-2675, ext. 622.

EDUCATIONAL OPPORTUNITY FUND

Students eligible for an Educational Opportunity Fund (EOF) grant not only receive financial support, but also are assigned an adviser who will help with any problems that may arise as well as provide assistance in organizing their academic programs. In addition to advising, EOF offers tutorial assistance for basic to more advanced academic courses. The EOF program also offers a wide range of workshops to help students sharpen their skills and progress successfully through the curriculum.

Each year, EOF offers a precollege program to help the student make a smooth transition from high school to college through a summer-on-campus program.

For more information about EOF, please contact the College of Pharmacy, Office for Student Development, at 732 / 445-2675, ext. 622.

Course Listing

Explanation of Three-Part Course Numbers

The number preceding each course title is divided into three parts. The first two digits are the administrative code (standing for a faculty or a school), the next three digits are the subject code, and the final three digits are the course code.

Administrative Codes

The College of Pharmacy administrative code is 30 through the first four years of the Pharm.D. program. A code of 31 is used in the last two years of the doctoral program. For a complete list of administrative codes used in this catalog, see the beginning of the Programs of Study for Liberal Arts Students section.

Subject Codes

A subject code comprises the third through fifth digits in all course numbers and indicates the subject matter of the course. Courses with the following subject codes are listed in this chapter. (This list does not constitute a list of majors.)

158 Chemical Biology
715 Pharmaceutical Chemistry
718 Pharmacology and Toxicology
720 Pharmacy
721 Pharmaceutics
725 Pharmacy Practice and Administration

Course Codes

The course code comprises the sixth, seventh, and eighth digits in all course numbers. Course codes from 100 to 299 indicate introductory and intermediate undergraduate courses. Codes from 300 to 499 indicate advanced undergraduate courses. Courses coded from 500 to 899 are graduate courses and are described in the catalog of the Graduate School–New Brunswick and under the College of Pharmacy section of this catalog.

Two course codes separated by a comma indicate that each term may be taken independently of the other (example: 30:720:391,392). Two course codes separated by a hyphen indicate that satisfactory completion of the first term is a prerequisite to the second term (example: 30:725:202-203); the first term may be taken for credit without taking the second, except where a statement is added to indicate that both term courses must be completed in order to receive credit.

Credits awarded for the successful completion of each course are indicated in parentheses following the course title. The notation BA indicates that the number of credits is determined by arrangement with the department offering the course.

Unless otherwise indicated, a course normally meets for a number of lecture hours equal to the number of credits to be earned. Special hours or modes of class, other than lecture, are usually indicated in italics below the course title.

CHEMICAL BIOLOGY 158

30:158:315. MOLECULAR BIOLOGY AND PHARMACEUTICAL BIOTECHNOLOGY (3)
Chen. Lec. 3 hrs. Prerequisites: 01:119:101,102; 01:160:307,308; 01:694:301.
Basic principles of molecular biotechnology, recombinant DNA products, gene therapy, and pharmaceutical applications.

30:158:402. DIET, NUTRITION, AND DISEASE PREVENTION (2)
Yang. Lec. 2 hrs.
Selected topics on diet and nutrition as they relate to health and disease using biochemical mechanisms. Students encouraged to make class presentations or write term papers.

30:158:420. PHARMACEUTICAL MICROBIOLOGY (3)
Thomas. Prerequisites: 01:119:101,102; 01:160:307,308; 01:694:301.
Study of the basic principles of microbiology as applied to bacteria, fungi, viruses, immunology, protozoa, and helminth parasites. Major emphasis on the epidemiology, pathogenesis, and chemotherapy of infectious diseases in man.

30:158:495,496,497,498. RESEARCH IN CHEMICAL BIOLOGY (BA)
Prerequisite: Permission of instructor. No more than two terms of Problems courses may be used to satisfy degree requirements.
Undergraduate research in chemical biology.

PHARMACEUTICAL CHEMISTRY 715

30:715:306. PHARMACEUTICAL CHEMISTRY (3)
Kerrigan. Lec. 3 hrs. Prerequisites: 01:160:311; 01:640:135; 01:750:161; 01:960:401.
Principles of organic and inorganic pharmaceutical analysis.

30:715:360. PHARMACEUTICAL BIOCHEMISTRY (2)
LaVoie, Weyand. Prerequisite: 01:115:301.
Introduction to drug interaction in basic biochemical processes. Includes enzyme inhibitors, antimetabolites, and detoxification enzymes.

30:715:409-410. MEDICINAL CHEMISTRY I,II (3,3)
LaVoie, Rice, Weyand. Prerequisite: 01:694:301 or 30:718:320.
Study of organic medicinal and pharmaceutical compounds, with special emphasis on the correlation of structural and physicochemical properties with biological activity.

30:715:412. RADIOPHARMACEUTICALS (2)
Kerrigan. Prerequisite: Fourth year standing.
Overview of the field of nuclear pharmacy and how it is utilized in disease diagnosis and therapy. Expands on prior background in pharmacology, pathophysiology, and pharmaceutics by providing additional examples to illustrate the concepts of drug distribution and metabolism as related to radiopharmaceuticals. Special attention given to the topics of designing radiopharmaceuticals and the regulations and methods for handling and administration. Safety consideration and nuclear chemistry covered in depth.

30:715:495,496,497,498. PROBLEMS IN PHARMACEUTICAL CHEMISTRY (BA)
Prerequisite: Permission of instructor. No more than two terms of Problems courses may be used to satisfy degree requirements.
Undergraduate research in pharmaceutical chemistry.

PHARMACOLOGY AND TOXICOLOGY 718

30:718:304. PATHOPHYSIOLOGY (3)
Reuhl and staff. Lec. 3 hrs. Practicum provided as needed. Prerequisites: 01:119:102, 250; 01:694:301.
General principles of disease and their application to the study of clinical disorders that affect the body as a whole, its specific systems, and individual organs.

30:718:320. INTRODUCTION TO PHARMACOLOGY (2)
Iba, LaVoie, Rice, Snyder, Weyand. Prerequisites: 30:158:304, 01:694:301.
Chemical structure, physiochemical properties, drug absorption, and metabolism of medicinal agents.

30:718:401. THEORETICAL ASPECTS OF PHARMACOLOGY (2)
Ji. Prerequisite: First professional year or higher.
Introduction to some of the emerging theoretical concepts and principles in the areas of biochemistry, molecular biology, cell biology, physiology, and human genomics. Theoretical concepts and principles surveyed applied to pharmacologically relevant topics, such as receptor-ligand interactions, signal transduction, genotype-phenotype coupling, and others.

30:718:405-406. PHARMACOLOGY I,II (3,2)
Prerequisite: 30:718:304.
Effects of drugs on living systems, the mechanism of their effects, and their application to the therapy of disease.

30:718:409. PHARMACOGENETICS (2)
Iba. Prerequisites: One year of pharmacology or graduate standing and consent of instructor.
Survey of the polymorphisms (population and individual differences) in the pharmacokinetics and pharmacodynamics of therapeutic drugs. Genetics and molecular basis of these polymorphisms and examples of associated abnormal responses to therapeutic agents and sensitivity to environmental toxicants.

30:718:495,496,497,498. PROBLEMS IN PHARMACOLOGY (BA)
Prerequisite: Permission of instructor. No more than two terms of Problems courses may be used to satisfy degree requirements.
Undergraduate research in pharmacology.

PHARMACY 720

30:720:292. HONORS SEMINAR/TUTORIAL (1)
Kauffman. Sem. 1 hr. monthly. By invitation only.
Current topics with special interest to outstanding second-year pharmacy students presented in seminar form.

30:720:391,392. HONORS INDEPENDENT RESEARCH (3,3)
Kauffman and staff. By invitation only.
Individual work for third-year honors students under the guidance of selected professor-mentor, including problem identification, library research, preparation of a written research proposal, and initiation of research.

30:720:491,492. HONORS INDEPENDENT RESEARCH (3,3)
Kauffman and staff. Prerequisites: 30:720:391,392. By invitation only.
Independent research for fourth-year honors students, under the guidance of a professor-mentor. Continuation of research begun in prerequisite courses.

30:720:493. HONORS THESIS PREPARATION (0)
Kauffman and staff. Prerequisites: 30:720:491 or 492. By invitation only.
Preparation of a written thesis by fifth-year honors students with guidance of a professor-mentor, based upon information and data collected in Honors Independent Research courses.

30:720:494. HONORS THESIS PRESENTATION (0)
Kauffman and staff. Prerequisite: 30:720:493. By invitation only.
Baccalaureate thesis defended before faculty and presentation to Honors Program students.

PHARMACEUTICS 721

30:721:301. INTRODUCTION TO PHARMACEUTICS (3)
Cook. Prerequisites: 01:160:308, 01:640:135, 01:750:161.
Selected topics dealing with the physicochemical properties of drugs and pharmaceuticals (physical pharmacy); study of the fundamental principles and processes of pharmacy, metrology, and calculations.

30:721:320. DRUG DELIVERY I AND LABORATORY (3)
Knipp. Prerequisite: 30:721:301.
Pharmaceutical product design and drug delivery. Theory of dosage form formulation, manufacturing, testing, stability, bioavailability, and controlled release.

30:721:420. DRUG DELIVERY II AND LABORATORY (3)
Prerequisite: 30:721:320.
Pharmaceutical product design and drug delivery. Theory of dosage form formulation, manufacturing, testing, stability, bioavailability, and controlled release.

30:721:430. INTRODUCTION TO BIOPHARMACEUTICS AND PHARMACOKINETICS (3)
Sinko, Sturgill, Woodward. Prerequisite: 30:721:301.
Rate processes, time-course extent of absorption, distribution and elimination of drugs in humans, involving models, bioavailability calculations, and dosage regimen design.

30:721:495,496,497,498. PROBLEMS IN PHARMACEUTICS (BA)
Cook, Knipp, Minko, Sinko. Prerequisite: Permission of instructor. No more than two terms of Problems courses may be used to satisfy degree requirements.
Undergraduate research in the pharmaceutical sciences.

PHARMACY PRACTICE AND ADMINISTRATION 725

30:725:104. PHARMACY CONVOCATIONS (1)
Colaizzi and lecturers. Required for all first-year students.
Introduces basic concepts of the place of pharmacy as a profession in the health-care system. Discusses the role of pharmacists and the goals and trends of pharmaceutical education.

30:725.308. PHARMACY PRACTICE MANAGEMENT (3)
Pharmacy practice faculty
Relates principles of management to pharmacy practice environments (such as community and home health-care pharmacies, chain pharmacies, managed-care pharmacies, and hospitals and other institutional pharmacies).

30:725:320. INTRODUCTION TO PHARMACEUTICAL CARE (4)
Colaizzi and pharmacy practice faculty. Prerequisite: Transfer students and others who have not taken 30:725:104 are required to complete a tutorial covering basic information introduced in 30:725:104. For third-year pharmacy students or students in their first professional year in the College of Pharmacy.
Provides fundamental understanding of functions, responsibilities, and outcomes of pharmacy practice in modern health and disease and a systematic inquiry into the role and nature of pharmacy practice in the health-care system. Concept of pharmaceutical care emphasized as the underlying basis of pharmacy practice. Essential skills and pharmaceutical calculation acquired through self-study tutorials.

30:725:330-331. INTRODUCTORY PRACTICE EXPERIENCE I,II (1,1)
Pharmacy practice faculty. Prerequisite: 30:725:320.
Provides students with their first structured exposure to professional practice and the provision of pharmaceutical care in representative ambulatory and acute-care settings. Students participate in pharmacy-based teaching sessions and college-based seminars.

30:725:340. PRINCIPLES OF PHARMACEUTICAL ECONOMICS (3)
Suh and faculty. Prerequisites: Introductory economics and pharmacy management courses.
Provides an understanding of the economic aspects of pharmacy practice and the pharmaceutical industry within the context of the health-care system. Explores the principles and applications of pharmacoeconomics and pharmacy practice and provides the techniques to measure outcomes and disease-state management.

30:725:415. POISON MANAGEMENT AND DRUG ABUSE (3)
Pharmacy practice faculty. Prerequisite: Completion of all earlier course work.
Provides understanding of the effects in clinical management in drug overdose, toxic exposure, and substance abuse. Didactic lectures and student-based case discussions.

30:725:420. REGULATORY AFFAIRS (2)
Petruscke. Prerequisite: Second professional year or higher.
Drug application process and the role of a regulatory officer in the corporate environment, including an introduction to the FDA and the primary activities of a regulatory officer, such as filings and daily activities.

30:725:421. CURRENT ISSUES IN PHARMACY PRACTICE (2)
Lec. 2 hrs. Prerequisite: Permission of instructor.
Presentation and discussion of current issues facing pharmacy practitioners. Varying methods of study used.

30:725:422. GERONTOLOGICAL PHARMACY PRACTICE (2)
Wagner. Prerequisite: Permission of instructor.
Topics concerning pharmacy practice and the elderly, including the psychosocial aspects of aging, legal issues and regulations, communication skills, common medical problems of the elderly, altered pharmacokinetics, OTC medications, and nutritional concerns.

30:725:423. MEDICAL WRITING (2)
Hermes-DeSantis. Prerequisite: Third professional year or higher.
Practical applications of technical writing required of pharmacists in the health-care system; tools needed to meet demands and improve written communication skills.

30:725:424. HISTORY OF PHARMACY (2)
Colaizzi
Historical development, trends, and impact of pharmacy as a health-care profession and a biomedical science from ancient to modern times.

30:725:425. SELF-CARE PHARMACY PRACTICE (2)
Prerequisite: Permission of instructor.
Introduction to the major aspects of self-care pharmacy practice, including products used and the implications of self-medication. Covers pharmacist's responsibilities in patient counseling and monitoring, proper medication utilization, and community health education.

30:725:427. COMMUNITY PRACTICE MANAGEMENT (2)
Kreitman and pharmacy practice faculty. Lec. 2 hrs. Prerequisite: First professional year standing.
Overview of opportunities and involvement in community pharmacy practice.

30:725:428. HOSPITAL PRACTICE MANAGEMENT (2)
Pharmacy practice faculty. Lec. 2 hrs. Prerequisite: First professional year standing.
Introduction to hospital pharmacy practice; presentation and discussion of services, functions, personnel, administration, and relation to other hospital departments. Field trips and projects.

30:725:429. INDUSTRIAL PRACTICE MANAGEMENT (2)
Lec. 2 hrs. Prerequisite: First professional year standing.
Steps and factors involved in discovery and development of new pharmaceuticals. Emphasis on organizational functions and interfaces.

30:725:460. CARDIOPULMONARY THERAPEUTICS (3)
Pharmacy practice faculty. Prerequisite: 30:725:320. Corequisite: 30:718:405. For fourth-year pharmacy students or students in their second professional year in the College of Pharmacy.
Overview of the pathophysiology in pharmacotherapeutics of common disorders of the cardiovascular and pulmonary systems. Emphasis on application of pharmaceutical-care principles to cardiopulmonary disorders through a combination of didactic lectures, case study presentations, and assigned patient case write-ups.

30:725:470. ESSENTIALS OF DRUG INFORMATION (3)
Pharmacy practice faculty. Prerequisite: Statistics. For fourth-year College of Pharmacy students.
Provides fundamental background for answering drug information requests and critically evaluating primary literature.

30:725:475. INFECTIOUS DISEASE THERAPEUTICS (3)
Pharmacy practice faculty. Prerequisite: Completion of pretherapeutics courses. For fourth-year College of Pharmacy students.
Introduces antibiotic, antifungal, and antiviral therapy. Case discussions incorporated for various disease states, with emphasis on drug interactions, adverse reactions, dosing, monitoring, and patient counseling.

30:725:480. INTERMEDIATE PRACTICE EXPERIENCE (AMBULATORY) (1)
Pharmacy practice faculty. Prerequisite: Introductory professional experience in pharmacy management.
Provides intermediate-level structured experience in pharmacy practice settings in which pharmaceutical care is provided to patients in various types of community pharmacies and other community-based care settings such as HMOs, clinic pharmacies, home-health-care pharmacies, and other specialty practice sites.

31:725:481. PEDIATRIC PHARMACY PRACTICE (2)
Anley. Prerequisite: Third year students or higher.
Introduction to the concepts of pharmacy practice as it relates to the expanding segment of pediatrics.

30:725:482. POLICY ISSUES IN PHARMACY AND THE PHARMACEUTICAL INDUSTRY (2)
Pharmacy practice faculty
Policy issues that have structured and continue to restructure the profession of pharmacy; development of pharmacy policy, the players in the game, the process, how it impacts the average pharmacists, and how pharmacy students and pharmacists can get involved.

30:725:483. ADVENTURES IN PHARMACY PRACTICE (2)
Pharmacy practice faculty. Prerequisite: First professional year or higher.
Complement to the required Pharmacy Practice Management. Topics include contemporary subjects that have a direct impact on pharmacy practice. Subjects include automation, politics, ethics, customer satisfaction, "pharmacy practice in the news," and the future of pharmacy practice.

30:725:495,496,497,498. PROBLEMS IN PHARMACY PRACTICE AND ADMINISTRATION (BA)
Prerequisite: Permission of instructor. No more than two terms of Problems courses may be used to satisfy degree requirements.
Undergraduate research in pharmacy practice and /oradministration.

31:725:500. COMMUNITY AND INSTITUTIONAL PRACTICE (3)
Kreitman
Overview of the pharmacist's responsibilities and role in patient care; includes drug product selection and distribution, therapeutic monitoring, public health education, patient counseling, and proper medication utilization.

31:725:540. PHARMACOECONOMICS (3)
Suh
Principles and methods of pharmacoeconomics, measuring costs, identifying and valuing health outcomes, clinical decision analysis, incorporating health-related quality of life, time preference and sensitivity analysis, clinical trials, evaluation studies, applications and current issues, and critique of methods.

31:725:545. PHARMACY LAW AND BIOETHICS (4)
Pharmacy practice faculty. Prerequisites: 30:725:308 and 320.
Provides understanding of the theoretical and applied aspects of pharmaceutical jurisprudence and ethics, as required for professional practice and licensure as a pharmacist.

31:725:550. SELF-CARE AND HOME CARE (4)
Pharmacy practice faculty. Prerequisites: 31:725:570 and 585.
Provides opportunity to learn the concepts and acquire knowledge required for the pharmacist's involvement in self-care and home care.

31:725:555. CLINICAL PHARMACOKINETICS (4)
Pharmacy practice faculty. Prerequisite: Completion of all earlier course work. For fifth-year students in the Doctor of Pharmacy program.
Introduction to advanced concepts in clinical pharmacokinetics, with emphasis on special patient populations and specific drugs.

31:725:560. CLINICAL IMMUNOLOGY, HEMATOLOGY, AND ONCOLOGY THERAPEUTICS (3)
Pharmacy practice faculty. Prerequisite: Completion of all earlier required pretherapeutics courses.
Provides understanding of the basic principles of immunology, hematology, and oncology and their application to clinical situations.

31:725:565. RENAL, GASTROINTESTINAL, AND NUTRITION THERAPEUTICS (3)
Pharmacy practice faculty. Prerequisites: Completion of all earlier required course work. For fifth-year students in the Doctor of Pharmacy program.
Introduces pharmacotherapeutic concepts in renal, gastrointestinal, and nutrition patients. Case discussions.

31:725:570. PHYSICAL ASSESSMENT (2)
Pharmacy practice faculty. Prerequisite: Satisfactory completion of all professional course work in the first four years of the curriculum.
Introduces various aspects of the physical examination to assist in monitoring response to pharmacotherapy and disease progression.

31:725:580. INTERMEDIATE PRACTICE EXPERIENCE (ACUTE) (1)
Pharmacy practice faculty
Intermediate-level structured experience in settings in which pharmaceutical care is provided to patients in various types of institutional settings, such as hospitals and long-term-care facilities.

31:725:585. PATIENT COMMUNICATION/MONITORING/ COUNSELING I (2)
Pharmacy practice faculty. Prerequisite: 30:725:480 or 31:725:580.
Overview of the communication, patient monitoring, and patient counseling skills required to deliver pharmaceutical care in pharmacy practice settings.

31:725:587. PATIENT COMMUNICATION/MONITORING/ COUNSELING II (2)
Pharmacy practice faculty. Prerequisite: 31:725:585.

Continues to develop and refine interpersonal and interprofessional communicative and collaborative skills necessary to render pharmaceutical care.

31:725:590. ENDOCRINE THERAPY AND SPECIAL PATIENT POPULATIONS (3)
Pharmacy practice faculty. Prerequisite: Completion of all required pretherapeutics courses.
Provides fundamental understanding of the diagnosis and therapeutic management of disease states and / or conditions unique to endocrine, pediatric, and geriatric population groups.

31:725:595. NEUROPSYCHIATRIC THERAPEUTICS (3)
Pharmacy practice faculty. Prerequisite: All course work preceding therapeutics modules.
Provides fundamental understanding of the pathophysiology and therapeutic treatment of selected neurologic and psychiatric disorders. Didactic lectures and small-group discussions.

31:725:600. CLINICAL SEMINAR (1)
Pharmacy practice faculty. Prerequisite: Successful completion of all prior didactic course work.
Provides instruction and experience, with seminar preparation and presentation.

31:725:700 THROUGH 782. ADVANCED PRACTICE EXPERIENCE ROTATIONS (5)
Pharmacy practice faculty. Prerequisite: Successful completion of didactic course work and permission of instructor.
Pharmaceutical-care experience rotations conducted in the final professional year of the program. Sequence consists of seven, five-week rotations to include community-based pharmaceutical care experience, hospital-based pharmaceutical care experience, general medicine practice experience (either acute care or ambulatory care), three specialty practice experiences to be selected from available sites and preceptors, and one elective practice experience to be selected from available sites and preceptors.

Administration and Faculty

ADMINISTRATION

John Louis Colaizzi, Dean
Donald K. Woodward, Associate Dean
Marc C. Kollar, Assistant Dean for Academic and Computer Services
Nancy Cintron-Budet, Assistant Dean for Student Development

FACULTY

Department of Chemical Biology

Chairperson: Allan H. Conney

Professors:

Allan H. Conney, B.S., M.S., Ph.D., Wisconsin
Paul E. Thomas, B.S., Otterbein; Ph.D., Ohio State
Chung S. Yang, B.S., National Taiwan; M.S., Ph.D., Cornell

Associate Professors:

Suzie Chen, B.S., Trinity College; M.S., Ph.D., Albert Einstein College of Medicine
Renping Zhou, B.S., Nanjing Teacher's College (China); Ph.D., California (Berkeley)

Assistant Professors:

Fang Liu, B.S., Beijing (China); Ph.D., Harvard
Kevin Sweder, B.A., Colorado; Ph.D., California Institute of Technology

Assistant Research Professors:

Shu-jing Caroline Wei, B.S., National Taiwan; M.S., Ph.D., Johns Hopkins
Guang-Yu Yang, M.D., M.S., Ph.D., China Medical

Director, Biochemical Pharmacology Research Laboratory:

Richard Chang, B.S., National Taiwan; M.S., Utah State

Director, Biochemistry Research Laboratory:

Mou-Tuan Huang, B.S., National Taiwan; Ph.D., North Carolina

Visiting Professors:

Attallah Kappas, M.D., Chicago Medical School
Anthony Y. Lu, Ph.D., North Carolina
George H. Miller, Ph.D., Medical College of Virginia
Harold L. Newmark, M.S., Polytechnic Institute of New York; Ph.D. (Honorary), Rutgers
Cecil B. Pickett, Ph.D., California (Los Angeles)
Ronald White, Ph.D., Wisconsin

Department of Pharmaceutical Chemistry

Chairperson: Edmond J. LaVoie

Professor:

Edmond J. LaVoie, B.S., Fordham; Ph.D., SUNY (Buffalo)

Associate Professors:

Joseph E. Rice, B.S., M.S., Ph.D., Polytechnic Institute of New York
Eric H. Weyand, B.S., Concord; M.S., SUNY (Buffalo); Ph.D., Virginia Polytechnic Institute and State University

Assistant Professors:

Longqin Hu, B.S., M.S., Second Military Medical (China); Ph.D., Kansas
John E. Kerrigan, B.A., Rutgers; Ph.D., Georgia Institute of Technology

Visiting Professors:

Hamed M. Abdou, B.S., M.S., Cairo; Ph.D., Rutgers
Christopher Cimarusti, B.S., Providence College; Ph.D., Purdue
Gary L. Olson, A.B., Columbia College; Ph.D., Stanford

Visiting Associate Professors:

James B. Johnson, B.S., Seton Hall; M.S., Ph.D., Rutgers
S. David Kimball, B.A., Ph.D., SUNY (Stony Brook)

Visiting Assistant Professor:

Timothy A Roy, B.A., M.S., SUNY; Ph.D., Florida

Department of Pharmacology/Toxicology

Chairperson: Robert Snyder

Professors:

Frederick C. Kauffman, B.A., Knox College; Ph.D., Illinois
Debra Laskin, B.A., New York; M.A., CUNY (Hunter College); Ph.D., Medical College of Virginia
Herbert Edward Lowndes, B.A., M.Sc., Saskatchewan; Ph.D., Cornell Medical College
Kenneth Reuhl, B.A., Ph.D., Wisconsin
Robert Snyder, B.S., CUNY (Queens College); Ph.D., SUNY Upstate Medical Center (Syracuse)

Associate Professors:

Michael M. Iba, B.S., Wisconsin; Ph.D., Illinois College of Medicine
Sungchul Ji, B.A., Minnesota; Ph.D., SUNY (Albany)

Associate Research Professor:

Carol R. Gardner, B.A., SUNY (Potsdam); M.S., Southern Illinois; Ph.D., Texas Woman's

Assistant Professor:

Donald R. Gerecke, B.S., M.S., Rutgers; Ph.D., Harvard

Assistant Research Professors:

Marion K. Gordon, B.A., Rutgers; Ph.D., UMDNJ/Rutgers
Diane Heck, B.A., Douglass; Ph.D., UMDNJ/Rutgers

Visiting Distinguished Professor:

Herbert Remmer, Dr. Med., Berlin

Visiting Professors:

Michael A. Gallo, Ph.D., Albany Medical College
Bernard D. Goldstein, M.D., New York University of Medicine
Carl R. Mackerer, Ph.D., Nebraska
Emil A. Pfitzer, D.Sc., Pittsburgh
Robert A. Scala, Ph.D., Rochester

Visiting Associate Professors:

Richard S. Waritz, Ph.D., Stanford
Myron S. Weinberg, Ph.D., Maryland

Visiting Assistant Professor:

Eileen Hayes, Sc.D., Harvard School of Public Health

Department of Pharmaceutics

Chairperson: Patrick J. Sinko

Professor:

Patrick J. Sinko, B.S., Rutgers; Ph.D., Michigan

Assistant Professors:

Thomas J. Cook, B.S., Northeastern; M.S., Ph.D., Michigan
Gregory Thomas Knipp, B.S., Rutgers; M.S., Ph.D., Kansas
Tamara Minko, M.S., Mordovsky State (Russia); Ph.D., Institute of Physiology/ Ukrainian Academy of Sciences (Ukraine)

Department of Pharmacy Practice and Administration

Chairperson: Joseph A. Barone

Vice Chair: Lois M. Jessen

Professors:

John Louis Colaizzi, B.S., Pittsburgh; M.S., Ph.D., Purdue
David L. Cowen (Emeritus), B.S., M.S., Rutgers

Associate Professors:

Joseph A. Barone, B.S., Pharm.D., St. John's (New York)
Saira A. Jan, B.S., Karachi (Pakistan); M.S., St. John's; Pharm.D., Rutgers
Lois M. Jessen, B.S., M.S., St. John's (New York); Pharm.D., Utah
Julie A. Saleh, B.S., Pharm.D., Minnesota
Marc G. Sturgill, B.S., Pharm.D., Kentucky
Mary L. Wagner, M.S., Minnesota; Pharm.D., California (San Francisco)

Assistant Professors:

Peter Anley, B.S., Pharm.D., Philadelphia College of Pharmacy
Matthew J. Cimino, Pharm.D., Iowa
Michelle D'Aprile, B.S., Northeastern; Pharm.D., St. John's (New York)
Jacqueline Fein, B.S., M.S., Pharm.D., Rutgers
Susan Goodin, B.S., Pharm.D., Kentucky
Evelyn Hermes-Desantis, B.S., Pharm.D., Rutgers
Linda Houle, B.S., Connecticut; Pharm.D., Oklahoma
Jeffrey Kreitman, Pharm.D., Rutgers
Jeffrey J. Kuper, B.S., South Dakota State; Pharm.D., Ohio State
Mini Kurian, B.S., Pharm.D., Rutgers
Scott Mathis, Pharm.D., Philadelphia College of Pharmacy and Science
Enid Morales, B.S., Puerto Rico; Pharm.D., Maryland
Mona Hanna Nashed, B.S., Pharm.D., Rutgers
Constance Pfeiffer, B.S., Pharm.D., Rutgers
Kevin O. Rynn, B.S., Rutgers; Pharm.D., Duquesne
Dong Churl Suh, B.S., M.S., Chung-Ang (South Korea); M.B.A., Yonsei (South Korea); M.B.A., SUNY (Buffalo); Ph.D., Minnesota
Michael Wynd, B.S., Temple; Pharm.D., Rutgers

Lecturer:

Angelo Cifaldi, B.S., Rutgers; J.D., Seton Hall

Part-Time Lecturer:

Bruce E. Ruck, Pharm.D., St. John's (New York)

Adjunct Professors:

William N. Hait, M.D., Ph.D., Medical College of Pennsylvania
Basil S. Kasimis, M.D., Athens (Greece)

Adjunct Associate Professors:

Lawrence I. Golbe, M.D., New York
Clifton R. Lacy, M.D., UMDNJ-RWJMS
Salvatore Liguori, Ph.D., Purdue
Francis A. Siro, Ph.D., Sussex College (England)
Melvin P. Weinstein, M.D., George Washington
Donald K. Woodward, B.S., Pharm.D., Kentucky

Adjunct Assistant Professors:

Pamela Allen, B.S., Ohio; M.B.A., Rutgers
Walter Bender, B.S., Purdue
Catherine Celestin, Pharm.D., Florida
Louis E. D'Amelio, Ph.D., Thomas Jefferson
Robert Fakelman, B.S., M.B.A., Rutgers
Alvin V. Geser, J.D., Maryland
Julie L. Greenly, Pharm.D., Creighton
Catherine Hansen, B.S., M.S., Duquesne
Bruce J. Kimelblatt, Pharm.D., SUNY (Buffalo)
James L. Perhach, Ph.D., Dayton
John J. Raia, Pharm.D., St. John's (New York)
Fred J. Salter, Pharm.D., Michigan
Michael R. Scheffler, Ph.D., Purdue
Francis A. Siro, Ph.D., Sussex College (England)
Bradley Stolshek, Pharm.D., California
Lawrence Sylvan, M.S., Long Island
J. Russell Teagarden, B.S., Illinois; M.A., Loyola (Chicago)
Michael Toscani, Pharm.D., St. John's (New York)
Robert M. Voytovich, Pharm.D., Philadelphia College of Pharmacy and Science
David J. Wagner, Pharm.D., Texas (Austin)

Adjunct Lecturer:

Louis W. Coluni, M.S., St. John's (New York)

Adjunct Instructor:

Timothy Dunlap, B.S., Rutgers (Camden)

SCHOOL OF BUSINESS~ New Brunswick

Information on the following subjects may be found in the General Information section at the back of this catalog: Student Life and Services, Admission, Tuition and Fees, Financial Aid, and University Policies and Procedures.

General Information

HISTORY AND AIMS OF THE SCHOOL

The School of Business–New Brunswick offers major programs that lead to the bachelor of science degree in accounting, finance, management, management science and information systems, and marketing. Undergraduate degrees in the broad functional areas of business have been offered on the New Brunswick campus since 1934. In 1981, these departments were reorganized into the School of Administrative Sciences under the Faculty of Professional Studies.

In June 1984, the university's Board of Governors approved a reorganization of the School of Administrative Sciences into the School of Business. The new School of Business received final approval from the New Jersey Department of Higher Education in February 1986, and began operation as a distinct unit on September 1, 1986. In April 1991, the School of Business–New Brunswick received its accreditation from the American Assembly of Collegiate Schools of Business in both business administration and accounting.

The School of Business–New Brunswick has the following missions: to provide a high-quality, upper-division program of study for students wishing to pursue professional careers in industry and public accounting firms, to expand the university's research efforts in the areas of business and managerial issues, to encourage faculty in business studies to serve the business and government communities, and to participate in professional associations.

THE PROGRAM

The undergraduate majors offered by the School of Business–New Brunswick presently include accounting, finance, management, management science and information systems, and marketing.

Each major leads to the degree of Bachelor of Science. The degree is granted jointly by the School of Business–New Brunswick and the student's liberal arts college. All business students must satisfy the requirements of the School of Business–New Brunswick as well as the academic requirements of one of the following undergraduate liberal arts colleges at New Brunswick: Douglass College, Livingston College, Rutgers College, or University College–New Brunswick. School of Business–New Brunswick students retain their affiliation with their undergraduate liberal arts colleges while enrolled in the School of Business–New Brunswick.

Each of the business majors has been coordinated with the curricula of the four colleges to combine a liberal arts foundation in mathematics, the natural sciences, the social and behavioral sciences, and the humanities, with an upper-division professional specialization in one of the broad functional areas of business. The School of Business–New Brunswick's curriculum is an upper-division course of study and is taken during the student's junior and senior years.

The purpose of the curriculum is to provide for a broad education that prepares the student for imaginative and responsible citizenship and leadership roles in business and society. The curriculum is responsive to social, economic, and technological developments and reflects the application of evolving knowledge in economics and the behavioral and quantitative sciences. All School of Business–New Brunswick programs of study include emphases on written and oral expression.

Through course work at the School of Business–New Brunswick, every student is exposed to the international dimensions of business, to the economic and legal environments as they pertain to profit and nonprofit organizations, and to the effects of ethical considerations and social and political influence on such organizations. In studies outside the School of Business–New Brunswick, each student gains an understanding of the political and legal environments of business and society through course work in areas such as political science, public administration, and ethics.

ADMISSION

The academic departments of the School of Business–New Brunswick share a common, yearly admissions procedure. Students must apply for admission to the business majors in the School of Business–New Brunswick through an admissions procedure separate from the one through which they enter the university. Students already enrolled at one of the liberal arts colleges should apply for admission to the School of Business–New Brunswick from the beginning of November to mid-December of their sophomore year for entrance in the following fall term (junior year). Incoming transfer students should obtain information about the separate admissions procedure from the Office of the Dean, School of Business–New Brunswick. The selective admissions policy based on educational criteria is designed to deal with the size limitation of the school and growing student demand in an equitable manner.

The faculty of the school seeks to attract a highly motivated and diverse student body in accordance with the policies and procedures established by the Faculty Advisory Committee on Admissions to the School of Business–New Brunswick and by university regulations.

Eligibility Requirements

To be admitted to the school, students must satisfy a set of eligibility requirements that consists of three parts: courses, credits, and cumulative grade-point average. Fulfillment of these minimum requirements, however, does not ensure admission to the school.

Course Requirements. Applicants must complete the following six eligibility courses with grades of C or better before they can begin study in the School of Business–New Brunswick:

33:010:272 Introduction to Financial Accounting (3) *
01:198:170 Computer Applications to Business (3) †
01:220:102 Introduction to Microeconomics (3)
01:220:103 Introduction to Macroeconomics (3)
01:640:135 Calculus I (4) †
01:960:285 Introductory Statistics for Business (3) †

Students completing any of the six eligibility courses at schools other than those at Rutgers–New Brunswick should determine the transferability of the course before enrolling in the course. If the course does not transfer as an equivalent to the Rutgers–New Brunswick course, the course will not satisfy the eligibility requirement for School of Business–New Brunswick admission.

Applicants to the School of Business–New Brunswick must have made substantial progress toward completion of the six eligibility courses by the time they submit an application to the School of Business–New Brunswick and must be in the process of completing the remaining courses. Normally, students complete the following four courses prior to submitting the application:

01:198:170 Computer Applications to Business (3) †
01:220:102 Introduction to Microeconomics (3)
01:220:103 Introduction to Macroeconomics (3)
01:640:135 Calculus I (4) †

Students usually register for the remaining courses while the application is being evaluated:

33:010:272 Introduction to Financial Accounting (3) *
01:960:285 Introductory Statistics for Business (3) †

Admission is contingent upon the successful completion of all of the eligibility courses with grades of C or better. If the course requirements are not satisfied prior to the start of the fall term immediately following the student's acceptance, the offer of admission is withdrawn.

Credit Requirement. Students should apply for admission only if they anticipate completing 54 or more degree credits before beginning their business programs. If at least 54 credits are not achieved by the beginning of the fall term into which the student was admitted to the school, the offer of admission is withdrawn and the student is not permitted to enroll in School of Business–New Brunswick courses.

Cumulative Grade-Point Requirement. Because admission to the School of Business–New Brunswick is highly competitive and the number of applications and spaces available in the school may vary from one application cycle to the next, the cumulative grade-point average needed for admission also may vary from one application cycle to the next. The Advisory Committee on Admissions for the School of Business–New Brunswick determines the cumulative grade-point average needed for admission each application cycle. Students who receive an offer of admission into the School of Business–New Brunswick must maintain the grade-point average set by the Advisory Committee on Admissions until study in the School of Business–New Brunswick begins. Students whose cumulative grade-point average falls below the stated level are not permitted to enter the School of Business–New Brunswick. The School of Business–New Brunswick calculates the cumulative grade-point average in a uniform manner regardless of the student's undergraduate college.

Transfer students who are admitted into the School of Business–New Brunswick are admitted based on the cumulative grade-point average from the college that they most recently attended where they have completed 12 or more credits. In addition, transfer students who have been admitted simultaneously into the School of Business–New Brunswick and one of the liberal arts colleges at Rutgers–New Brunswick must maintain the cumulative grade-point average stated in their letter of admission through their first term at Rutgers–New Brunswick.

Normally, students who plan to apply to the School of Business–New Brunswick should satisfy their college's area distribution requirements as well as the School of Business–New Brunswick's eligibility requirements during their first 60 credits. Students already enrolled at one of the liberal arts colleges should, during their first year, declare a prebusiness curriculum (006). To make this declaration, students should consult with the Office of the Dean for Academic Services / Student Services at their liberal arts college.

* Applicants desiring a major in accounting must earn a grade of at least B in this course.
† Applicants desiring a major in management science and information systems must earn a grade of B or better in this course.

Academic Policies and Procedures

Note: See also the University Policies and Procedures section for regulations that pertain to all the undergraduate colleges at Rutgers–New Brunswick. In addition, business students are subject to the academic policies and procedures of both the School of Business–New Brunswick and the liberal arts college in which they are enrolled.

STUDENT RESPONSIBILITY TO KEEP INFORMED

In addition to the material in this catalog, important information about the School of Business is printed in the Undergraduate Schedule of Classes and the Official Notices that appear every Tuesday in the Daily Targum. School of Business–New Brunswick students are responsible for keeping themselves informed of all policies and procedures announced in these publications and in official notices posted on bulletin boards in the departments, the Office of the Dean, and the lobby of the Janice H. Levin Building, as well as in notices distributed to students through the campus mail system.

ACADEMIC CREDIT FOR TRANSFER COURSES

The School of Business–New Brunswick follows the guidelines on transfer credit established by the American Assembly of Collegiate Schools of Business (AACSB). If the school offers a course at the upper-division level (300 level or higher) that the student has taken at the lower division (100–200 level) at another institution, AACSB regulations require validation of the transfer course. In the School of Business–New Brunswick, the validation procedure is either a written examination or successful completion of advanced courses in the subject field for which the transfer course is a foundation. In general, the school considers only the following courses for transfer credit. The validation procedure also is described for each course.

01:198:170 Computer Applications to Business: Students who have completed with a grade of C or better a course comparable to the general introductory computer course 01:198:110 Introduction to Computers and Their Application, prior to their admission into Rutgers, must pass 33:623:370 Management Information Systems or 33:010:458 Accounting Information Systems with a grade of C or better during their first term in the School of Business–New Brunswick. If the student does not earn a grade of C or better in 33:623:370 or 33:010:458, the course 01:198:170 must be taken and passed with a grade of C or better before the student may continue his or her studies in the School of Business–New Brunswick.

01:960:285 Introductory Statistics for Business: Students who have completed with a grade of C or better a comparable statistics course prior to their admission into Rutgers must pass 33:623:385 Statistical Methods in Business with a grade of C or better during their first term in the School of Business–New Brunswick. If the student does not earn a grade of C or better in 33:623:385, the course 01:960:285 must be taken and passed with a grade of C or better before the student may continue his or her studies in the School of Business–New Brunswick.

33:010:272 Introduction to Financial Accounting: The transfer course will be accepted as meeting eligibility requirements if approved by the Department of Accounting.

33:010:325 Intermediate Accounting I: The student must pass a validation examination in 33:010:325.

33:140:320 Business Law I: The student must pass a validation examination in 33:140:320.

33:620:300 Principles of Management: To receive transfer credit for 33:620:300, the student must pass a validation examination.

33:630:301 Principles of Marketing: To receive transfer credit for 33:630:301, the student must pass a validation examination.

Upper-level School of Business–New Brunswick courses taken as upper-level courses at another institution are considered for transfer only if the credit-granting school is accredited by the American Assembly of Collegiate Schools of Business (AACSB).

Students who are interested in transferring academic credit should consult with the appropriate academic department concerning additional details about courses that are eligible for transfer and about the validation procedure.

In order to receive a degree from the School of Business–New Brunswick, the student must take at least 30 of his or her last 36 business credits in the School of Business–New Brunswick.

ACADEMIC ADVISING

Students should consult an academic adviser when they plan their academic program. The Office of the Dean can provide general advising on the school's admission policy. The department chairpersons and any other member of the school's faculty can provide specific advising concerning the development of an academic program. The student must assume full responsibility for satisfying the academic requirements of the school.

GRADES

Students may not enroll in courses offered by the School of Business–New Brunswick on a Pass/No Credit (P/NC) or Satisfactory/Unsatisfactory basis.

SCHOLASTIC STANDING

Students accepted into the School of Business–New Brunswick remain enrolled at their liberal arts college throughout the four-year undergraduate program, and are expected to complete the academic requirements of the major and the liberal arts college.

For the School of Business–New Brunswick, an Academic Standards Committee, which consists of the department chairpersons and the associate dean of instruction, reviews all student academic problems.

While academic standards involve many issues beyond academic performance, including adherence to university procedures regarding academic dishonesty and illegal and/or unauthorized actions in the academic setting, students should be aware of the school's specific policy on grades for required, business-related courses. The policy has three parts:

1. Students must retake any required course in which they earn a grade of D (1.0) or F/NC (0.0) and improve the grade to a C (2.0) or better. If students receive a grade of D or F/NC in a course that is a prerequisite to another course, they must repeat the course in which they received the D or F/NC and receive a grade of C or better before they may take the next course.
2. Failure to receive a grade of C or better on a student's second attempt in a given required course will result in dismissal from the School of Business–New Brunswick.
3. Students must not earn a grade of D or F/NC in more than two required courses. Three grades of D and/or F/NC will result in dismissal from the School of Business–New Brunswick.

Since students in the School of Business–New Brunswick retain their affiliation with their liberal arts colleges, dismissal from the School of Business–New Brunswick is independent of academic action by the liberal arts college. Dismissal from the School of Business–New Brunswick means the student may not pursue a School of Business–New Brunswick major. It may be possible for the student to pursue another major through his or her liberal arts college.

Students dismissed from the School of Business–New Brunswick may petition the School of Business–New Brunswick Academic Standards Committee for reconsideration. This must be done in writing by the date indicated in their letter of dismissal.

These guidelines complement current college/university regulations on student academic performance.

Major Requirements

The course requirements for School of Business–New Brunswick programs of study can be divided into three parts: eligibility courses that students must complete for admission to the business majors in the School of Business–New Brunswick, core course requirements that all students must complete regardless of their choice of major program (accounting, finance, management, management science and information systems, or marketing), and a combination of required and elective courses that students take according to their choice of major. Students must complete the requirements of the major that are in effect at the time of their admission into the major. It should be noted that students majoring in any program offered by the School of Business–New Brunswick are limited to earning a maximum of 60 credits toward a degree in School of Business–New Brunswick courses. All core courses and required courses specific to the major must be completed with a grade of C or better.

Eligibility Courses

33:010:272 Introduction to Financial Accounting (3)
01:198:170 Computer Applications to Business (3)
01:220:102 Introduction to Microeconomics (3)
01:220:103 Introduction to Macroeconomics (3)
01:640:135 Calculus I (4)
01:960:285 Introductory Statistics for Business (3)

Core Courses (31 credits)

33:010:272 Introduction to Financial Accounting (3)
33:010:275 Introduction to Managerial Accounting (3)
33:011:300 Business Forum (1)
33:140:320 Business Law I (3)
33:390:300 Introduction to Financial Management (3)
33:620:300 Principles of Management (3)
33:620:492 Business Policy and Strategy (3)
33:623:370 Management Information Systems (3)*
33:623:385 Statistical Methods in Business (3)
33:623:386 Operations Management (3)
33:630:301 Principles of Marketing (3)

Required and Elective Courses Specific to the Major

Accounting :
33:010:325 Intermediate Accounting I (3)
33:010:326 Intermediate Accounting II (3)
33:010:401 Advanced Accounting (3)
33:010:415 Concepts of Auditing (3)
33:010:421 Income Tax Accounting (3)
33:010:451 Cost Accounting (3)
33:010:458 Accounting Information Systems (3)
One 3-credit business elective (accounting elective is suggested)

* Not required for accounting majors.

Finance:
Required courses:
33:390:380 Investment Analysis (3)
33:390:400 Corporate Finance (3)
Finance electives (12)

Choose one course from among the following:
33:390:410 Asset Pricing and Portfolio Analysis (3)
33:390:420 Futures and Options (3)

Management:
33:620:365 Management of Human Resources (3)
33:620:490 Organizational Behavior (3)
Management electives (12)

Management Science and Information Systems:
33:623:400 Advanced Operations Management (3)
33:623:470 Advanced Management Information Systems (3)
33:623:490 Case Studies in Management Science and Information Systems (3)
33:623:___ Management science and information systems electives (15)

Marketing:
33:630:374 Consumer Behavior (3)
33:630:385 Marketing Research (3)
33:630:452 Marketing Strategy and Decision Making (3)
Any other marketing electives (12 credits)

Scheduling the Program

The business studies program is only part of the student's academic program. As noted earlier, a maximum of 60 credits may be earned toward the degree in courses taught at the School of Business–New Brunswick. Students should complement their professional education with course work in the humanities, mathematics, natural sciences, and social and behavioral sciences that satisfy the arts and sciences electives and the area distribution requirements of their liberal arts college. In order to design an integrated academic program, full-time students should plan their program over four years. During the first two years, the potential business student should formulate a schedule that comprises liberal arts and science classes designed to meet their college's area distribution requirements, liberal arts and science electives, and the eligibility courses for entrance into the School of Business–New Brunswick. During the remaining two years, the schedule focuses on completing the 49 to 55 credits required of the business major. Business majors should consult with an academic adviser in their department when they are planning their academic program. An academic program might follow the general guidelines suggested below.

Note: Students who select an accounting, finance, or marketing major enroll in 52 credits of School of Business–New Brunswick courses and 68 credits of electives and area distribution requirements (ADRs) for a total of 120 credits. For management majors, the comparable numbers are 49 and 71 credits, and for management science and information systems majors the numbers are 55 and 65 credits. Each of the undergraduate liberal arts colleges has its own ADRs; students should consult with their college academic adviser for details.

	School of Business–New Brunswick	Electives and ADRs
First Year		
Eligibility courses:		
01:198:170		3
01:220:102		3
01:220:103		3
01:640:135		4
Electives and ADRs		20
Sophomore Year		
Business core curriculum:		
33:010:272	3	
Electives and ADRs		18
01:960:285		3
Junior and Senior Years		
Business core curriculum:		
33:010:275	3	
33:011:300	1	
33:140:320	3	
33:390:300	3	
33:620:300	3	
33:620:492	3	
33:623:370	3	
33:623:385	3	
33:623:386	3	
33:630:301	3	
Business electives	18–24	
Electives and ADRs		11–17
Total (120 credits)	49–55	65–71

Course Listing

Explanation of Three-Part Course Numbers

The number preceding each course title is divided into three parts. The first two digits are the administrative code (standing for a faculty or a school), the next three digits are the subject code, and the final three digits are the course code.

Administrative Codes

The code for the School of Business is 33. For a complete list of administrative codes used in this catalog, see the beginning of the Programs of Study for Liberal Arts Students section.

Subject Codes

A subject code comprises the third through fifth digits in all course numbers and indicates the subject matter of the course. Courses with the following subject codes are listed in this chapter. (This does not constitute a list of majors.)

010 Accounting
011 Administrative Studies
140 Business Law
390 Finance
620 Management
623 Management Science and Information Systems
630 Marketing

Course Codes

The course code comprises the sixth, seventh, and eighth digits in all course numbers. Course codes from 100 to 299 indicate introductory and intermediate undergraduate courses. Codes from 300 to 499 indicate advanced undergraduate courses. (Courses coded from 500 to 799 are graduate courses.)

Two course codes separated by a comma indicate that each term may be taken independently of the other (example: 33:620:495,496). Two course codes separated by a hyphen indicate that satisfactory completion of the first term is a prerequisite to the second term (example: 33:010:325-326); the first term may be taken for credit without taking the second, except where a statement is added to indicate that both term courses must be completed in order to receive credit.

Credits awarded for the successful completion of each course are indicated in parentheses following the course title. The notation BA indicates that the number of credits is determined by arrangement with the department offering the course.

ACCOUNTING 010

The accounting major consists of the business core curriculum (31 credits) and accounting courses (21 credits). For required courses, see the Major Requirements chapter.

33:010:272. INTRODUCTION TO FINANCIAL ACCOUNTING (3)
Not open to first-year students.
Introduction to basic accounting concepts, business and reporting, and accounting; emphasis on measuring and recording transactions and interpreting financial statements.

33:010:275. INTRODUCTION TO MANAGERIAL ACCOUNTING (3)
Prerequisite: 33:010:272. Admission to School of Business.
Introduction to basic concepts of management accounting with emphasis on decision making and controlling operations through the use of budgets and forecasting models, cost and activity analysis, and various financial and nonfinancial performance measures.

33:010:310. ACCOUNTING FOR ENGINEERS (3)
Open only to juniors majoring in industrial engineering.
Introduction to financial accounting and significant cost accounting concepts.

33:010:325. INTERMEDIATE ACCOUNTING I (3)
Prerequisite: 33:010:272. Open only to accounting majors.
Development of accounting principles under the corporate form of business organization. Topics include basic financial statements, cash and receivables, inventories, property, plant, equipment, and intangible assets.

33:010:326. INTERMEDIATE ACCOUNTING II (3)
Prerequisite: 33:010:325. Open only to accounting majors.
Continuation of 33:010:325 with topical coverage of long-term liabilities, stockholders' equity, investments, revenue recognition, accounting for income taxes, pensions, leases, accounting changes, and statement of changes in financial position.

33:010:401. ADVANCED ACCOUNTING (3)
Prerequisite: 33:010:326 or permission of the department. Open only to accounting majors.
Consolidated financial statements, partnerships, consignments. Introduction to fund accounting for governmental and nonprofit activities; financial reporting by multinational companies.

33:010:415. CONCEPTS OF AUDITING (3)
Prerequisite: 33:010:325. Open only to accounting majors.
Objectives and concepts of auditing; legal and ethical environments for auditing; audit evidence and verification; basic analytical approach to auditing; methodology needed to perform an audit and an auditor's report on the information system. Introduction to operational audits of corporations.

33:010:421. INCOME TAX ACCOUNTING (3)
Prerequisite: 33:010:325. Open only to accounting majors.
Analysis of the income tax laws as they apply to the income of individuals with emphasis on problems arising from these laws.

33:010:422. TOPICS IN INCOME TAXATION (3)
Prerequisites: 33:010:326 and 421. Open only to accounting majors.
Designed for those who will specialize in taxation. Examination of taxation problems of corporations and partnerships, corporate distributions, liquidations, reorganizations, and other corporate tax matters.

33:010:425. PRINCIPLES OF BUSINESS TAXATION (3)
Prerequisites: 33:010:326 and 421. Open only to accounting majors.
General principles in business taxation with emphasis on corporate taxation, taxation of capital gains, compensation, and corporate reorganizations.

33:010:433. FUND ACCOUNTING (3)
Prerequisite: 33:010:326. Open only to accounting majors.
Government and nonprofit accounting as it relates to governments, colleges, and universities, as well as voluntary health and welfare programs.

33:010:435. INTERNAL AND OPERATIONAL AUDITING (3)
Prerequisite: 33:010:415. Open only to accounting majors.
Different phases of internal auditing, control for quality of accounting information, and observance of laws for disclosure of information.

33:010:441. ADVANCED ACCOUNTING THEORY (3)
Prerequisite: 33:010:326. Open only to accounting majors.
Study of the current status of generally accepted accounting principles, including the historical and conceptual dimensions; analyses of the APB Opinions and the FASB Statements; current theoretical controversies such as leases, pension costs, income definitions, inflation, and materiality.

33:010:451. COST ACCOUNTING (3)
Prerequisites: 33:010:275 and 325. Open only to accounting majors.
Basic cost concepts and the operation of the two basic cost systems (job order and process cost), including problems involving multiple product costing and standard cost with emphasis on variance analysis.

33:010:452. COST ACCOUNTING FOR ECONOMISTS (3)
Prerequisite: 33:010:272. Open only to economics majors with an accounting option. Credit not given for both this course and 33:010:451.
Basic cost concepts and the operation of the two basic cost systems (job order and process cost), including problems involving multiple product costing and standard cost, with emphasis on variance analysis.

33:010:457. BUDGETARY CONTROL AND ADVANCED MANAGEMENT ACCOUNTING (3)
Prerequisites: 33:010:451; 33:623:385 and 386. Open only to accounting majors.
Continuing development of principles of cost accounting and budgets; cost-volume-profit analysis, budgeting, responsibility accounting, evaluating profit performances, distribution cost analysis, decision-making costs, and capital budgeting.

33:010:458. ACCOUNTING INFORMATION SYSTEMS (3)
Prerequisite: 01:198:170. Open only to accounting majors.
Management information systems concepts used to develop an accounting information system for corporations, with emphasis on general concepts, management of accounting data flow, and software controls.

33:010:472. ANALYSIS OF FINANCIAL STATEMENTS (3)
Prerequisite: 33:010:326. Open only to accounting majors.
Factors that affect the critical examination and interpretation of financial statements from the viewpoint of groups using such data with emphasis on accounting problems, analytical methods, and item content of formal statements.

33:010:490. INDEPENDENT PROJECT IN ACCOUNTING (3)
Prerequisite: Permission of department. Open only to accounting majors.
Individual research and / or reading program under guidance of member of the department.

33:010:495. HONORS PROJECT (3)
Prerequisite: Permission of department. Open only to accounting honors students.
Individual research and reading project.

ADMINISTRATIVE STUDIES 011

33:011:201. INTRODUCTION TO MANAGEMENT FOR NONBUSINESS MAJORS (3)
For nonbusiness majors only. Course offered only during Summer Session. No credit for business majors. Credit not given for both this course and 33:620:300.
Introduction to the concepts that provide a basis for understanding human behavior in organizations. Theories of leadership, motivation, group dynamics, and employee morale introduced. Examination of managerial functions in organizations.

33:011:202. INTRODUCTION TO MARKETING FOR NONBUSINESS MAJORS (3)
For nonbusiness majors only. No credit for business majors. Course offered only during Summer Session. Credit not given for both this course and 33:630:301.
Introduction to the marketing function in business: the process of creating goods and services in response to consumer wants and needs.

33:011:203. INTRODUCTION TO FINANCE FOR NONBUSINESS MAJORS (3)
For nonbusiness majors only. No credit for business majors. Course offered only during Summer Session. Credit not given for both this course and 33:390:300.
Introduction to concepts of value, valuation of financial instruments, capital budgeting, risk and return, and security analysis.

33:011:204. PRINCIPLES OF BUSINESS LAW FOR NONBUSINESS MAJORS (3)
For nonbusiness majors only. No credit for business majors. Course offered only during Summer Session. Credit not given for both this course and 33:140:320.
Introduction to contracts and their formation, operation, and discharge. Sales and property contracts discussed. Cases encompassing basic principles of contracts examined.

33:011:220. INTERNATIONAL ASPECTS OF BUSINESS (3)
May not be used to satisfy School of Business–New Brunswick major requirements. Course offered only during Summer Session.
Introduction to international dimensions of business; multinational corporate management and marketing strategies; special problems of international marketing and management; the impact of globalization on U.S. business.

33:011:221. SMALL BUSINESS DEVELOPMENT AND OPERATIONS (3)
May not be used to satisfy School of Business–New Brunswick major requirements. Course offered only during Summer Session. Credit not given for this course and 33:620:302.
Methods and procedures used in selecting, planning, financing, organizing, and operating a small business.

33:011:230. THE NATURE OF LEADERSHIP (3)
May not be used to satisfy School of Business–New Brunswick major requirements. Course offered only during Summer Session. School of Business–New Brunswick majors may not receive credit for this course and 33:620:410.
Nature and function of leadership, primarily within an organizational context. Distinctions between management and leadership; leadership in an organizational group setting; impact of organizational culture on leadership.

33:011:240. CAREER DEVELOPMENT (3)
May not be used to satisfy School of Business–New Brunswick major requirements. Course offered only during Summer Session.
Theories of personal and organizational career development; techniques of self-evaluation, job assessment, career needs, career planning included.

33:011:300. BUSINESS FORUM (1)
Prerequisite: Admission to School of Business–New Brunswick.
Brief overview of business disciplines; composed of a series of lectures on current issues and their impact on business operations.

33:011:480. SPECIAL TOPICS IN BUSINESS (BA)
Prerequisite: Senior status or by permission of instructor. School of Business majors only.
Consideration of interdisciplinary topics of contemporary importance in business.

BUSINESS LAW 140

33:140:320. BUSINESS LAW I (3)
Discussion of the legal environments of business; contracts—their formation, operation, and discharge; sales—property, both real and personal.

33:140:321. BUSINESS LAW II (3)
Prerequisite: 33:140:320.
Negotiable instruments, agency, partnerships, corporations, secured transactions, and bankruptcy.

FINANCE 390

33:390:300. INTRODUCTION TO FINANCIAL MANAGEMENT (3)
Prerequisites: 33:010:272; 01:198:170; 01:220:102, 103; 01:640:135; 01:960:285. Admission to School of Business.
Introduction to value, valuation of financial instruments, capital budgeting, risk and return, and capital structures.

33:390:320. FINANCIAL MARKETS AND INSTRUMENTS (3)
Prerequisite: 33:390:300.
U.S. financial system, corporate flow of funds, financial intermediation, commercial and central banking, monetary theory, financial factors and economic activity, theory of level and structure of interest rates.

33:390:370. INTERNATIONAL CAPITAL MARKETS (3)
Prerequisite: 33:390:300.
Introduction to basics of international capital markets, including international diversification; exchange-rate determination;international equity and bond markets; and introduction to hedging, speculation, and arbitrage through foreign currency forwards, futures, options, and swaps.

33:390:380. INVESTMENT ANALYSIS (3)
Prerequisite: 33:390:300.
Overview of security analysis and financial management. Theory of investment, nature of financial markets, valuation of fixed income securities, term and risk structure of interest rates, strategies of bond management, evaluation of common stock, and efficient market hypotheses. Written and oral presentations required.

33:390:400. CORPORATE FINANCE (3)
Prerequisite: 33:390:300.
Capital budgeting, capital structure, dividend policy, mergers and acquisitions, and some aspects of international finance.

33:390:410. ASSET PRICING AND PORTFOLIO ANALYSIS (3)
Prerequisite: 33:390:380.
Modern theories of portfolio choice, capital asset pricing, and portfolio management. Risk and return nature of securities and portfolios, mean variance portfolio selection, index and capital asset models, arbitrage pricing theory, and other topics.

33:390:420. FUTURES AND OPTIONS (3)
Prerequisite: 33:390:380.
Analysis of different kinds of futures and options. Use of commodity, interest rate stock index and currency futures for hedgers and speculators. Stock options, investment strategies, arbitrage restriction on value and evaluation models, and the use of options and futures contracts in portfolio management.

33:390:430. WORKING CAPITAL MANAGEMENT (3)
Prerequisite: 33:390:300.
Introduction to liquidity and cash management, including the examination of inventory, cash, accounts receivable, and other treasury-related, short-term, financial management issues.

33:390:435. REAL ESTATE FINANCE AND MORTGAGE-BACKED SECURITIES (3)
Prerequisite: 33:390:300.
Examination of primary markets, secondary markets, and derivative products. Topics include origination process, income-producing mortgage loans, agency purchases, security pricing, and securitization of single-family and commercial loans.

33:390:440. ADVANCED CORPORATE FINANCE (3)
Prerequisite: 33:390:400.
Complex corporate securities such as callable and convertible debt or adjustable rate preferred stock, option theory, corporate insurance, and hedging.

33:390:450. FINANCIAL ANALYSIS, PLANNING, AND FORECASTING (3)
Prerequisite: 33:390:300.
Overview of short-term and long-term financial analysis, planning, and forecasting; credit, cash, marketable securities, and inventory management. Applications of regression, linear programming, and computer techniques in alternative financial planning and forecasting analyses.

33:390:460. INSURANCE FINANCE AND CORPORATE RISK MANAGEMENT (3)
Prerequisite: 33:390:300.
Examination of issues related to insurance finance and corporate risk management; issues faced by the risk manager; applications of financial analysis methodology; estimation and mitigation of risk by insurance, hedging, and diversification.

33:390:465. PENSION FUND INVESTMENT AND MANAGEMENT (3)
Prerequisite: 33:390:300.
Application of financial theory and methods to pension fund investment and management.

33:390:470. INTERNATIONAL CORPORATE FINANCE (3)
Prerequisite: 33:390:400.
International considerations in corporate financial decision making. Theories of exchange rate forecasting, political risk, capital budgeting for foreign subsidiaries, international capital markets, working capital management.

33:390:480. RESEARCH IN FINANCE (BA)
Formerly Honors in Finance Research Methods. Prerequisite: Permission of department. Open only to finance majors.
Individual research and reading program under the guidance of a member of the department.

MANAGEMENT 620

The management major consists of the business core curriculum (31 credits) and six specialized management courses (18 credits). Two of the management courses are required—33:620:365 Management of Human Resources and 33:620:490 Organizational Behavior.

33:620:300. PRINCIPLES OF MANAGEMENT (3)
Prerequisites: 33:010:272; 01:198:170; 01:220:103; 01:640:135; 01:960:285. Admission to School of Business.
Surveys classical, behavioral, systems, and contingency approaches to management; provides bases for understanding the functions of management and human behavior in work organizations; explores influence of complex internal and external environments on management practice and theory.

33:620:302. ENTREPRENEURSHIP AND SMALL BUSINESS MANAGEMENT (3)
Prerequisite: 33:620:300.
Provides introduction to theory and practice of entrepreneurship and small business through the examination of the basic principles of starting and managing a small business; considers various paths to business ownership and special topics of interest to the study of entrepreneurship.

33:620:350. NEGOTIATIONS (3)
Prerequisite: 33:620.300.
Examines major concepts, theories, and processes of negotiation; analyzes the dynamics of interpersonal and intergroup conflict and its resolution in managerial settings; explores the structural (e.g., parities, position, interests) and process-oriented dynamics that occur during the negotiation process.

33:620:355. MANAGING TECHNOLOGY (3)
Prerequisite: 33:620:300.
Examines a range of problems in the management of technology, including stimulating creativity and innovation, translating creative ideas into innovative output by the organization, evaluating alternative projects, and developing strategies and structures that support organizational innovation.

33:620:360. NEW VENTURE DEVELOPMENT (3)
Prerequisites: 33:620:300 and 302.
In-depth study and application of the process of creating a new venture; emphasizes the integration of entrepreneurship knowledge and skills through the creation of a business plan for a new venture; examines venture idea development and analysis, evaluation of the management team, financing, legal structures, and sources of assistance.

33:620:365. MANAGEMENT OF HUMAN RESOURCES (3)
Prerequisite: 33:620:300.
Explores traditional issues (e.g., staffing, training, job evaluation, compensation, and benefits administration) and contemporary concerns (e.g., organizational change, employee ownership, cross-cultural and international considerations) related to the management of human resources; emphasizes government legislation affecting human resource functions and the linkage between human resource management and firm strategy.

33:620:367. UNION MANAGEMENT RELATIONS (3)
Prerequisite: 33:620:300.
Examines federal and state legislation regulating employers and unions; analyzes union organizing, collective bargaining, and joint union-management committees; examines administration of the labor agreement, including grievance handling and arbitration.

33:620:370. MANAGING DIVERSITY IN ORGANIZATIONS (3)
Prerequisite: 33:620:300.
Explores the demographic diversity of the United States labor force and the challenge it presents to organization managers; treats diversity from the perspective of cultures and subcultures.

33:620:375. ORGANIZATIONAL DESIGN AND CHANGE (3)
Prerequisite: 33:620:300.
Describes major perspectives on organizational structures, processes, and culture; examines models of organizational change; introduces methodologies that facilitate creativity and change at the individual, group, and organizational levels.

33:620:410. ORGANIZATIONAL LEADERSHIP (3)
Prerequisite: 33:620:300.
Analyzes leaders, the leadership role, and the leadership process in organizational settings; examines leadership activities and classical and contemporary theories; investigates interactions among leadership styles, employee predispositions, group makeup, and organizational culture.

33:620:480,481. ADVANCED TOPICS IN MANAGEMENT (3,3)
Prerequisites: 33:620:300 and senior status.
Considers topics of current relevance in management, including sales management, human resource information systems, research methods, social issues, business ethics, or careers in organizations.

33:620:490. ORGANIZATIONAL BEHAVIOR (3)
Prerequisite: 33:620:300.
Studies organization dynamics, motivation, organization socialization, interpersonal communication, and leadership.

33:620:492. BUSINESS POLICY AND STRATEGY (3)
Prerequisites: 33:390:300; 33:620:300; 33:630:301; senior status.
Explores strategic decision making at the business and corporate levels, which determines the competitive advantage of a firm and its short- and long-term performance. Topics include situation analysis, core competence, competitive strategy, mergers / acquisitions, strategic alliances, and corporate restructuring.

33:620:498,499. INDEPENDENT MANAGEMENT PROJECTS (3,3)
Prerequisites: Senior status, 12 credits in management, and permission of department.
Individual research and reading program under the guidance of a departmental faculty member.

MANAGEMENT SCIENCE AND INFORMATION SYSTEMS 623

33:623:370. MANAGEMENT INFORMATION SYSTEMS (3)
Prerequisite: Admission to School of Business.
Fundamentals of computer technology, including hardware, software, telecommunications, and basics of the Internet. The role of computer-based information and executive decision support systems in the modern firm. Design, normalization, creation, and querying of relational databases. Management of information and data. Elementary system development principles.

33:623:385. STATISTICAL METHODS IN BUSINESS (3)
Prerequisite: Admission to School of Business.
Review of principles of hypothesis testing, chi-square tests, one-way and two-way ANOVA, simple and multiple regression analysis, correlation analysis, nonparametric methods, indices, time series, forecasting, and applications to business.

33:623:386. OPERATIONS MANAGEMENT (3)
Prerequisite: Admission to School of Business.
Theory and applications of linear programming (the simplex method, sensitivity analysis, duality), transportation and network optimization problems, project management (critical path methods), inventory models, queuing models, and simulation.

33:623:388. BUSINESS APPLICATIONS OF STRUCTURED PROGRAMMING (3)
Prerequisite: Admission to School of Business. MSIS majors only.
Structured programming, systems development, and intermediate data structures using the C programming language. Object-oriented programming concepts and the C^{++} language. Emphasis on exercising these tools on business problem solving and business systems development.

33:623:400. ADVANCED OPERATIONS MANAGEMENT (3)
Prerequisite: 33:623:386. MSIS majors only.
Continuation of 33:623:386. Topics include process selection, demand forecasting, production planning, periodic-review / continuous-review inventory control systems, materials requirement planning, quality control, assembly line balancing, and Japanese manufacturing systems. Computer applications.

33:623:405. THE HUMAN FACTOR IN MSIS—BUSINESS REENGINEERING (3)
Prerequisites: 33:623:370, 385, 386. MSIS majors only.
Language and concepts necessary to understand information technology and human systems; impact of social and cultural dynamics on information technology and human networks; Joint Application Development (JAD), change management, prototyping and rapid application development, team processes, human networking, and reengineering. Readings and case studies.

33:623:410. TELECOMMUNICATIONS NETWORK SYSTEMS IN BUSINESS (3)
Prerequisite: 33:623:370. MSIS majors only.
Emerging telecommunications systems in a business context, with emphasis on the Internet and World Wide Web. Network structure, information browsing, and transfer of commercial information across networks; advertising, security / privacy, computer crime, and intellectual property.

33:623:445. SIMULATION (3)
Prerequisite: 33:623:385. MSIS majors only.
Use of pseudorandom number generation on a computer to design and implement Monte Carlo methods to study stochastic models. Model implementation in a high-level simulation language. Model validation and statistical analysis of computationalresults.

33:623:470. ADVANCED MANAGEMENT INFORMATION SYSTEMS (3)
Prerequisite: 33:623:370. MSIS majors only.
Systems analysis, design, and development for transactions, management, and decision support; structured programming and elementary data structures; query languages, relational and nonrelational database models; relational operators and calculus; data concurrence, integrity, and security issues.

33:623:471. INFORMATION SYSTEMS ANALYSIS (3)
Prerequisite: 33:623:370. MSIS majors only.
Analysis phase of information systems development, with an introduction to process models of the design phase. Development of data flow diagrams, entity-relationship diagrams, data repositories, and normalization principles.

33:623:472. INFORMATION SYSTEMS DESIGN (3)
Prerequisite: 33:623:471. MSIS majors only.
Design and implementation phases of information systems projects: principles of information systems design, effective project management, and characteristics of effective design teams; analysis of effective and ineffective systems projects.

33:623:490. CASE STUDIES IN MANAGEMENT SCIENCE AND INFORMATION SYSTEMS (3)
Prerequisites: 33:623:385, 400, and 470. MSIS majors only.
Use of analysis in the management of operations, logistics, choice, and evaluation of methods. Reading and discussion of written case studies, discussions with industry analysts, and class projects.

33:623:492. PROJECTS IN INFORMATION SYSTEMS (3)
Prerequisite: 33:623:410 or permission of department. MSIS majors only.
Advanced information systems projects in collaboration with industry. Special emphasis on databases, business telecommunications, the web, and electronic commerce. Communication skills developed via class presentations.

33:623:498,499. INDEPENDENT PROJECTS IN MANAGEMENT SCIENCE AND INFORMATION SYSTEMS (3,3)
Prerequisites: Completion of core curriculum; senior status; permission of department.
Individual research project under the guidance of a departmental faculty member.

MARKETING 630

The marketing major consists of the business core curriculum (31 credits) and electives (21 credits). Three of the courses are required—33:630:374 Consumer Behavior, 33:630:385 Marketing Research, and 33:630:452 Marketing Strategy and Decision Making. For other required courses, see the Major Requirements chapter.

33:630:301. PRINCIPLES OF MARKETING (3)
Prerequisites: 33:010:272; 01:198:170; 01:220:102, 103; 01:640:135; 01:960:285.
Extensive overview of marketing—the process of creating goods and services in response to consumer wants and needs. Study of the marketing function in business firms and nonprofit organizations. Consumer behavior, marketing research, industrial marketing, pricing, channels of distribution, and promotion.

33:630:351. SELLING AND SALES PROMOTION (3)
Prerequisite: 33:630:301.
Analysis of sales strategy and methods; development of the sales plan; coordination of personal selling and sales promotion.

33:630:363. INTRODUCTION TO ADVERTISING (3)
Prerequisite: 33:630:301.
Advertising viewed as a promotional function in the context of marketing objectives. The history and economic significance of advertising; its social importance and relation to business organization; study of advertising functions.

33:630:368. RETAIL MARKETING (3)
Prerequisite: 33:630:301.
Channels of distribution approach to the retailing function. The changing character of retail competition; relations between manufacturers and middlemen; procedures and problems of retail management. Emphasis on the smaller entrepreneur as well as the large retail organization. Case studies, field projects.

33:630:369. PRODUCT PLANNING AND STRATEGY (3)
Prerequisite: 33:630:301.
Study of the functions, concepts, and decisions required in the introduction, maintenance, and deletion of products. Special attention given to the areas of new-product need, new-product development, and product planning and strategy.

33:630:370. INDUSTRIAL MARKETING (3)
Prerequisite: 33:630:301.
Analysis of industrial marketing planning and activities; the management of distribution channels, costs, and policy development.

33:630:371. INTERNATIONAL MARKETING (3)
Prerequisite: 33:630:301.
Analysis of economic, social, and political environments influencing international markets; comparative studies of global buying behavior, international marketing strategy, and operations.

33:630:374. CONSUMER BEHAVIOR (3)
Prerequisite: 33:630:301.
Explores the roots of buyer behavior from a managerial perspective, drawing on the disciplines of psychology, sociology, and anthropology. Development of sound marketing strategy. Topics include perception, learning, communication, cognition, memory, motivation, and attitudes of consumers.

33:630:385. MARKETING RESEARCH (3)
Prerequisites: 33:623:385; 33:630:301.
Techniques of marketing research and the role of the marketing research department in a business structure. Emphasizes the use of analytical techniques in the design and conduct of marketing research. Problem formulation; collecting and organizing respondent data; evaluation and use of research findings.

33:630:401. SALES MANAGEMENT (3)
Prerequisites: 33:630:301 and 6 additional credits in marketing electives.
Problems, policies, and functions of sales management as the vital link between selling and marketing. Role of the sales manager in the development of a successful sales force. Topics includeterritory and market analysis, compensation, sales planning, and control.

33:630:428. MARKETING AND SOCIETY (3)
Prerequisites: 33:630:301 and 6 additional credits in marketing electives.
Social issues that influence marketing activities; social responsibilities of marketing management; consumerism; marketing and urban redevelopment; marketing ethics; political action and reaction; legal aspects of marketing; social gains and costs of marketing.

33:630:430. INTERPRETIVE CONSUMER RESEARCH (3)
Prerequisite: 33:630:374. Pre- or corequisite: 33:630:385.
Introduction to the philosophies, methods, and applications of interpretive consumer research and the practice of consumer and marketing research approaches in general.

33:630:452. MARKETING STRATEGY AND DECISION MAKING (3)
Pre- or corequisite: 33:630:385.
Integrating and applying marketing concepts to the actual problems of real business and nonbusiness organizations. Strong emphasis on the case method of study. Written and oral presentations required.

33:630:481. MARKETING PLANNING AND MANAGEMENT (3)
Prerequisites: 33:630:301 and 6 additional credits in marketing electives.
Presentation and analysis of actual case problems in marketing, with emphasis on planning, performance, and decision making.

33:630:482. ADVERTISING MANAGEMENT (3)
Prerequisites: 33:630:301, 363, and 6 additional credits in marketing electives.
Investigation and solution of actual advertising problems by management; examination of advertising as influenced by the marketing structure and environment.

33:630:499. SPECIAL TOPICS IN MARKETING (3)
Prerequisite: 3 credits in marketing electives.
Focus on a topic of contemporary relevance to marketing. Topics change each term. Topics include public relations, direct marketing, marketing of high technology, and merchandise management.

Administration and Faculty

ADMINISTRATION

Howard Tuckman, Dean
Paul Miranti, Associate Dean, Faculty and Research
Martin S. Markowitz, Associate Dean, Instruction
Nelson Figueras, Departmental Administrator
Patricia Caldwell, Coordinator, Student Services
Joseph Bassano, Systems Programmer

FACULTY

The Faculty of Management is organized into the following six departments:

Accounting and Information Systems
Finance and Economics
International Business and Business Environment
Management Science / Computer Information Systems
Marketing
Organizational Management

The first five of these departments offer the undergraduate major programs in accounting, finance, management, management science and information systems, and marketing, respectively. The Department of International Business and Business Environment does not offer an undergraduate major.

Department of Accounting and Information Systems

Chairperson: D. Palmon

Professors:

Leonard Goodman, B.S., CUNY (Brooklyn College); M.B.A., Ph.D., New York
T. Edward Hollander, B.S., M.B.A., New York; Ph.D., Pittsburgh
Bikki Jaggi, B.A., Punjab (India); Ph.D., Free University (West Berlin)
Yaw Mensah, B.S., University of Ghana; M.B.A., Ph.D., Columbia
Paul Miranti, B.A., M.A., Ph.D., Johns Hopkins; M.B.A., New York
Glenn Shafer, A.B., Ph.D., Princeton
Ephraim Sudit, B.A., Hebrew; M.B.A., Columbia; Ph.D., New York
Miklos Vasarhelyi, B.S., Guanabara; B.S., Rio De Janeiro; M.S., Massachusetts Institute of Technology; Ph.D., Southern California

Associate Professors:

Michael G. Alles, B.Econ., Australian National; Ph.D., Stanford
Kevin C.W. Chen, B.B.A., National Taiwan; M.A.S., Ph.D., Illinois (Champaign-Urbana)
Gail Farrelly, B.S., Mt. St. Vincent College; M.A., Fordham; M.B.A., Iona; D.B.A., George Washington
Peter Gillet, B.A., M.A., Oxford; Ph.D., Kansas
Suresh Govindaraj, B.Tech., Institute of Technology (B.H.U., India); M.B.A., Delhi (India); M.A., Pennsylvania; Ph.D., Columbia
Lynford Graham, A.B., Muhlenberg College; M.B.A., Pennsylvania (Wharton School); Ph.D., Pennsylvania
Alexander Kogan, M.S., Moscow; Ph.D., USSR Academy of Science
Murugappa Krishnan, B.Com., Madras (India); M.B.A., Indian Institute of Management; Ph.D., Pennsylvania
Dan Palmon, B.S., M.B.A., Hebrew; Ph.D., New York
Alexander J. Sannella, B.B.A., M.B.A., Iona; M.Phil., Ph.D., New York
Michael Schoderbek, B.B.A., Iowa; M.S., Pennsylvania State; Ph.D., Indiana
Bin Srinidhi, M.B.A., Indian Institute; M.Phil., Ph.D., Columbia

Robert Werner, B.S., Pennsylvania; M.P.A., Rutgers; M.B.A., Seton Hall; Ph.D., New York
David Zaumeyer, B.S., Fordham; M.B.A., New York; M.Phil., Ph.D., Columbia

Assistant Professors:

Sunita Ahlawat, B.Com., M.Com., Delhi (India); M.B.A., Massachusetts; Ph.D., Pennsylvania State
Nandini Chandar, M.B.A., Indian Institute of Management; Ph.D., Case Western Reserve
Elizabeth A. Gordon, B.S., Indiana; M.P.P.M., Yale; Ph.D., Columbia
David Mest, B.S.C., M.B.A., Rider; Ph.D., Tennessee
Jay Soled, B.A., Haverford College; J.D., Michigan; LL.M., New York
W. Raymond Williams, B.S., Winston-Salem; J.D., Rutgers; LL.M., Widener
Hannah Wong, M.B.A., SUNY (Buffalo); Ph.D., California (Los Angeles)

Department of Finance and Economics

Chairperson: I. Brick
Vice Chairperson: O. Palmon

Professors:

James L. Bicksler, Ph.D., New York
Ivan E. Brick, B.A., Yeshiva; Ph.D., Columbia
Michael A. Crew, B.Com., Birmingham; Ph.D., Bradford
Lawrence Fisher, B.A., Pomona College; Ph.D., Chicago
Ronald Harstad, B.A., Michigan; Ph.D., Pennsylvania
Mahmud Hassan, M.A., Boston; M.B.A., Indiana; Ph.D., Vanderbilt
Cheng-few Lee, B.A., M.A., National Taiwan; M.S., West Virginia; Ph.D., SUNY (Buffalo)
W. Giles Mellon, B.A., Virginia; Ph.D., Princeton
Paul Nadler, A.B., Brown; M.A., Wisconsin; Ph.D., New York
Eliezer Prisman, B.A., Hebrew ; M.S., Ph.D., Technion (Israel Institute of Technology)
Abraham Ravid, B.S., Tel Aviv; Ph.D., Cornell

Associate Professors:

Mark Castelino, B.S., Bombay; M.S., Pratt; Ph.D., CUNY (Baruch College)
Ren-Raw Chen, B.A., National Taiwan; M.S., Ph.D., Illinois (Champaign-Urbana)
Sharon Gifford, B.A., Florida; Ph.D., New York
Dongcheol Kim, B.I.E., Seoul National; M.S., Ph.D., Michigan
Farrokh Langdana, B.Tech., M.B.A., M.A., Kanpur; Ph.D., Virginia Polytechnic Institute
Michael Long, B.S., Western Michigan; M.P.A., Georgia; Ph.D., Purdue
Oded Palmon, B.S., Technion; M.A., Ph.D., Chicago
Robert Patrick, B.A., Blackburn College; Ph.D., New Mexico
Menahem Spiegel, B.A., Hebrew; M.A., Ph.D., Chicago
Emilio Venezian, B.Eng., McGill; M.S., Ph.D., California Institute of Technology
Yangru Wu, Ph.D., Ohio State

Assistant Professors:

Young-Hye Cho, B.A., M.A., Yonsei (Seoul); Ph.D., California (San Diego)
Guo Ying Luo, B.S., EMG, Science and Technology (Beijing); Ph.D., McMaster
Dilip Patro, B.Tech., Indian Institute of Technology; M.S., Ph.D., Maryland (College Park)
Tavy Ronen, B.A., Wesleyan; M.Phil., New York; Ph.D., New York (Stern School of Business)
Ben Sopranzetti, B.S.E.E., Rutgers; M.S.E., Drexel; Ph.D., Illinois (Champaign-Urbana)
John Wald, B.A., Yale; Ph.D., California (Berkeley)

Department of International Business and Business Environment

Chairperson: E. Hartman

Professors:

Farok Contractor, B.S.E., Bombay; M.S., Michigan; M.B.A., Ph.D., Pennsylvania
John H. Dunning (Emeritus), B.S., London; Ph.D., Uppsala; Ph.D., Autonomous Madrid; Ph.D., Southampton
Edwin Hartman, B.A., Haverford College; B.A., M.A., Oxford; M.B.A., Pennsylvania; Ph.D., Princeton
Jerry Rosenberg, B.S., CUNY; M.A., Ohio; Ph.D., New York
Allan Roth, A.B., Rutgers; LL.B., Harvard

Associate Professor:

Wayne Eastman, A.B., J.D., Harvard

Assistant Professors:

Sam Beldona, B.S., M.B.A., Karnatak; M.S., Ph.D., Temple
James Gathii, LL.B., Nairobi; LL.M., Harvard; S.J.D., Harvard
S.P. Raghunathan, M.B.A., Xavier Labor Research Institute; Ph.D., Temple
Michael A. Santoro, B.A., Oberlin; J.D., New York; Ph.D., Harvard

Department of Management Science and Computer Information Systems

Chairperson: R. Armstrong
Vice Chairperson: B. Melamed

Professors:

Nabil R. Adam, M.S., Cairo; M.S., M.Phil., Ph.D., Columbia
Ronald Armstrong, B.S., Acadia; M.A., Dalhousie; Ph.D., Massachusetts
Benjamin Avi-Itzhak, B.S., M.S., D.Sc., Technion (Israel Institute of Technology)
Adi Ben-Israel, B.S., M.S., Technion (Israel Institute of Technology); Ph.D., Northwestern
Michael Katehakis, B.A., Athens; M.A., South Florida; M.S., Ph.D., Columbia
Benjamin Melamed, B.S., Tel Aviv; M.S., Ph.D., Michigan
Rosa Oppenheim, B.S., M.S., M.A., Ph.D., Brooklyn Polytechnic Institute
Michael Rothkopf, A.B., Pomona College; M.S., Ph.D., Massachusetts Institute of Technology
Andrzej Ruszczynski, M.Sc., Ph.D., Warsaw University of Technology
David Shanno, B.A., Yale; M.S., Ph.D., Carnegie Mellon
Ted Szatrowski, B.A., Oberlin College; M.S., Ph.D., Stanford

Associate Professors:

Farid Alizadeh, B.S., Wisconsin (Madison); M.S., Nebraska (Lincoln); Ph.D., Minnesota
Jonathan Eckstein, A.B., Harvard; S.M., Ph.D., Massachusetts Institute of Technology
Douglas Jones, B.S., Florida A&T; M.S., Ph.D., Florida State
Lei Lei, B.A., Northeastern; M.S., Dalran; Ph.D., Wisconsin
Lee Papayanopoulos, B.A., Cornell; M.S., New York; Ph.D., Columbia

Assistant Professors:

Vijay Atluri, B.Tech., Jawaharlal Nehru Technical; M.Tech., Indian Institute of Technology; Ph.D., George Mason
Avigdor Gal, B.Sc., D.Sc., Technion (Israel Institute of Technology)
Stephen Herschkorn, B.A., Wesleyan; M.S., Massachusetts Institute of Technology; Ph.D., California (Berkeley)
Sun Park, B.S., M.S., Korea; Ph.D., Michigan
Zachary Stoumbos, B.S., North Carolina; M.S., Ph.D., Virginia Polytechnic Institute and State University
Victoria Ungureanu, B.S., Romania; M.S., Ph.D., Rutgers

Department of Marketing

Chairperson: B. Stern
Vice Chairperson: L.J. Shrum

Professors:

Phipps Arabie, A.B., Harvard; Ph.D., Stanford
J. Douglass Carroll, B.S., Florida; M.A., Ph.D., Princeton
Elizabeth Hirschman, B.A., M.B.A., Ph.D., Georgia State
Harsharanjeet Jagpal, Ph.D., Columbia
Barbara Stern, B.A., Cornell; M.B.A., Fordham; M.A., Ph.D., CUNY

Associate Professors:

S. Chan Choi, B.B.A., B.S., Seoul; M.B.A., Michigan; Ph.D., Pennsylvania
Robert Rothberg, M.B.A., Ph.D., Pennsylvania
L.J. Shrum, B.B.A., Houston; M.S., Ph.D., Illinois (Champaign-Urbana)

Assistant Professors:

Patrali Chatterjee, B.Sc., M.A., M.Sc., Bombay; Ph.D., Vanderbilt
Michael Mulvey, B.Com., Ottawa; M.S., Clarkson; Ph.D., Pennsylvania State
Amitabh Mungale, Ph.D., Florida
Hao Zhao, M.Sc., Toronto; M.S., Ph.D., Rochester

Department of Organizational Management

Chairperson: F. Damanpour
Vice Chairperson: S. Park

Professors:

Fariborz Damanpour, B.S., Pahlavi; M.S., Houston; Ph.D., Pennsylvania
Nancy DiTomaso, B.A., Ohio State; M.S., Ph.D., Wisconsin
George Farris, B.S., Yale; M.S., Ph.D., Michigan
Michael E. Gordon, B.A., Lehigh; M.S., Syracuse; Ph.D., California (Berkeley)
Barbara Kovach, B.A., M.A., Stanford; Ph.D., Maryland
Donald McCabe, A.B., Princeton; M.B.A., Seton Hall; Ph.D., New York

Associate Professors:

Chao C. Chen, M.A., Ph.D., SUNY (Buffalo)
Deborah Dougherty, B.A., College of William and Mary; M.A., Wright State; Ph.D., Massachusetts Institute of Technology
Robert Hooijberg, B.A., M.A., Nijmegen; Ph.D., Michigan
dt ogilvie, B.A., Oberlin College; M.B.A., Southern Methodist; Ph.D., Texas
Seung Ho Park, B.A., Han Yang; Ph.D., Oregon

Assistant Professors:

Grant R. Ackerman, B.A., Pennsylvania State; J.D., Pittsburgh; M.B.A., Ph.D., Columbia
Theresa Cho, A.B., Harvard; Ph.D., Columbia
Varghese George, B.Sc., Kerak; Ph.D., Massachusetts Institute of Technology (Sloan School of Management)
Daniel Z. Levin, B.A., Pennsylvania; M.S., Ph.D., Northwestern
Ayesha Malhotra, B.A., George Washington; M.C.P., Massachusetts Institute of Technology; Ph.D., Maryland
Asha Rao, B.A., M.A., Bangalore (India); Ph.D., Temple
Wei Shen, B.S., Beijing; Ph.D., Texas A&M
Phyllis A. Siegel, B.S., Pennsylvania; Ph.D., Columbia

SCHOOL OF COMMUNICATION, INFORMATION AND LIBRARY STUDIES (SCILS)

Information on the following subjects may be found in the General Information section at the back of this catalog: Student Life and Services, Admission, Tuition and Fees, Financial Aid, and University Policies and Procedures.

General Information

HISTORY AND AIMS OF THE SCHOOL

The School of Communication, Information and Library Studies (SCILS) was created in 1982 with the merger of the Graduate School of Library and Information Science and the School of Communication Studies. The school offers three major programs: one in communication, one in journalism and media studies, and one in information technology and informatics.* The focus of the three programs is on the nature and function of communication and information processes; the institutions and technologies central to the creation, dissemination, storage, and retrieval of information; and the impact of information, media, and communication on individual, social, organizational, national, and international contexts.

SCILS has the following missions: to provide a high-quality, upper-division program of study for students wishing to pursue careers in communication, journalism and media studies, or the information professions; to provide leadership in theory and research in information systems, communication processes, media studies, information policy and management, and library studies; and to encourage partnerships with information professionals, industry, and community groups to facilitate the communication and effective use of information.

THE PROGRAM

The two majors currently offered by SCILS are communication and journalism and media studies. A third major, information technology and informatics, will become available in September 2001. Each major leads to the degree of Bachelor of Arts. The programs offered by SCILS comprise upper-division courses of study to be taken during a student's junior and senior years, following completion of SCILS core requirements. All students must satisfy the requirements of SCILS as well as the academic requirements of one of the following undergraduate liberal arts colleges at New Brunswick: Cook College, Douglass College, Livingston College, Rutgers College, or University College. Students maintain their affiliation with their undergraduate college while enrolled at SCILS.

Students are urged to check the SCILS web site (http://www.scils.rutgers.edu) for the latest requirements and course offerings. The school reserves the right, for any reason, to change or modify any course or program listed.

ADMISSION

The departments of communication and journalism and media studies maintain admission procedures separate from the one through which students apply to the university. Students already enrolled at one of the liberal arts colleges and new transfer students may obtain information about SCILS admission procedures from the dean's office of SCILS, or from the SCILS web site (http://www.scils.rutgers.edu).

There is no minimum grade-point average for admission to SCILS; however, students' applications, transcripts, and written statements are reviewed by department admissions committees to determine suitability for admission. The faculty of the school is committed to admitting a highly motivated and diverse student body to the undergraduate programs.

Eligibility Requirements

To be admitted to the school, students must satisfy a set of eligibility requirements that consists of SCILS core courses, recommended courses, a credit requirement, and a writing requirement.

Required SCILS Core Courses

Prior to admission to the school, applicants to the major in communication or journalism and media studies must complete the following SCILS courses with a C^+ average in the two courses, and a minimum grade of C in each course.

04:189:101	Introduction to Communication and Information Systems and Processes (3)
04:189:102	Introduction to Media Systems and Processes (3)

Applicants to the major in information technology and informatics also must complete 04:189:103 Information, the Internet, and the World of Knowledge.

Application Process

Students applying for spring-term admission must submit applications by October 1 of the pervious term. Students applying for fall-term admission must submit applications by February 15 of the previous term. These deadlines allow applications to be processed and admission decisions made in time for students to preregister for the following term. All applications submitted after the deadlines will be held until the following term.

Applicants must have completed 04:189:101 and 102 and have grades available for review by the admissions committees before applying.

In addition to 04:189:101 and 102, students planning to major in communication may take 04:192:200 and 201 before being admitted to the major. Students planning to major in journalism and media studies may take 04:567:324, 334, 335, 350, and 379 before being admitted to the major. Completion of any of these courses does not guarantee admission to either major.

Students applying to the major in journalism and media studies only, and completing their SCILS courses in the spring term, may submit their applications upon receipt of spring-term grades for an early admissions decision.

Students may apply to only one major in SCILS. Students who wish to change to another major in SCILS after being admitted must reapply for the new major.

Writing Requirement

Prior to applying to SCILS, students must complete successfully 01:355:101 Expository Writing I or 01:355:201 Research in the Disciplines or place at a higher level on the English placement exam. All applicants must submit a personal statement.

* Beginning in September 2001.

HONORS PROGRAM

The communication department offers an individualized honors program that students plan with the help of a faculty adviser. The honors program in communication requires the writing of a thesis under the direction of a faculty adviser and committee. Interested students are urged to consult the department handbook or SCILS web site for more information.

The journalism and media studies department offers an honors track to students entering SCILS with a cumulative GPA of 3.5 or better. Students ordinarily apply during the term in which they have been admitted, but must do so no later than the second term of their junior year. The honors program includes one seminar in the junior year and one in the senior year.

Academic Policies and Procedures

Note: See also the University Policies and Procedures section for regulations that pertain to all the undergraduate colleges at Rutgers–New Brunswick. In addition, SCILS students are subject to the academic policies and procedures of both the School of Communication, Information and Library Studies and the liberal arts college in which they are enrolled.

STUDENT RESPONSIBILITY TO KEEP INFORMED

In addition to the material in this catalog, important information about SCILS is printed in the Undergraduate Schedule of Classes and the Official Notices appearing every Tuesday in the Daily Targum. SCILS students are responsible for keeping themselves informed of all policies and procedures announced in these publications, in handbooks distributed by the departments or dean's office, in official notices posted on bulletin boards in the departments, and in notices distributed to students through the campus mail system. Students also are urged to check the SCILS web site, http://www.scils.rutgers.edu, for updated information.

ACADEMIC CREDIT FOR TRANSFER COURSES

A student who transfers from another institution may receive degree credit toward SCILS majors only for those courses that are equivalent in content and credit to courses in the Rutgers curriculum. Courses must be passed with a grade of B or better in order to transfer credit.

Transfer credit from another institution is not included in the student's cumulative grade-point average at Rutgers. Transfer credit is not given for correspondence courses. Students are urged to contact their department to have specific courses evaluated for credit toward the major.

ACADEMIC ADVISING

Students are urged to consult an academic adviser when they plan their academic program. The SCILS dean's office can provide general advising on the school's admission policy. The department chairpersons and any other member of the school's faculty can provide specific advising concerning the planning and development of a student's academic program. The student must assume full responsibility for satisfying the academic requirements of SCILS.

UNDERGRADUATE CREDIT FOR GRADUATE COURSES

Students in any SCILS undergraduate program may take courses in SCILS graduate programs with permission of the faculty teaching the course, and in keeping with the requirements of the students' undergraduate liberal arts colleges. Although approved graduate courses count toward credits for graduation, they may not count toward fulfilling major requirements. Students should check with the Department of Communication or the Department of Journalism and Media Studies to determine which courses satisfy major requirements.

SCHOLASTIC STANDING

Students accepted into SCILS remain enrolled at their undergraduate liberal arts colleges throughout the four-year undergraduate program. Students are expected to complete the academic requirements of their major and their college, and remain in good academic standing in accordance with the standards set by their colleges.

Programs of Study

COMMUNICATION

The Department of Communication offers a major in communication that examines the communication process, emphasizing its role in human affairs in three core areas: social interaction, organizational communication, and mediated communication. Health communication is an additional focus that cuts across all three areas. Courses in communication cover both ideas and applications in preparation for communication careers in business, education, or government, or for the pursuit of graduate degrees in communication and other social science fields. Communication majors learn to read and think critically, and to reason, write, speak, and listen analytically.

Admission to the Major

In addition to the two required SCILS core courses, preference for admission is given to students who have taken courses leading to a broad understanding of (1) the development of institutions found in society, including economic, cultural, political, and business institutions; (2) basic human behavior, both as an individual and as a member of social groupings; and (3) the role and function of culture in human life.

Courses that contribute to the first category include, but are not limited to, foundation courses in American studies, ethnic studies, economics, geography, history, labor studies, political science, religion, urban studies, and women's studies. Courses that contribute to the second category include, but are not limited to, foundation courses in anthropology, philosophy, psychology, and sociology. Courses that contribute to the third category include, but are not limited to, foundation courses in art history, humanities, comparative literature, music, and cinema studies.

The Department of Communication seeks a highly motivated and diverse student body. Admission to the communication major is competitive; meeting the minimum requirements does not guarantee acceptance. Minimum requirements include a grade-point average of 2.0 or better; a combined average of C+ in 04:189:101 and 102, with a minimum grade of C in each course; a grade of B or higher in expository writing; and a well-written personal statement. The admissions committee, comprised of faculty from within the department, seeks the following when reviewing student essays: (1) a persuasive statement of purpose, (2) an understanding of issues in communication, (3) strong written communication skills, including correct grammar and spelling, and (4) evidence that the student will contribute to the community of learners in the Department of Communication as reflected in, but not limited to, such things as extracurricular activities, community involvement, leadership skills, and work experience. Applications are available on the school's web site (http://www.scils.rutgers.edu) and are due by the close of business on October 1 for spring-term admission, or February 15 for fall-term admission. Students are encouraged

strongly to consult the department handbook and the school's web site for up-to-date information regarding admission procedures.

Major Requirements

Students majoring in communication are required to earn 33 credits in the department. This includes the 6 core credits required for admission to the major (04:189:101,102). Students majoring in communication are required to complete 27 credits of course work within the department, as follows:

1. Foundation courses (9 credits)
   04:192:200 Communication Theory (3)
   04:192:201 Interpersonal Communication Processes (3)
   04:192:300 Communication Research (3)
2. Intermediate-level courses (3 credits)
   Students must complete at least one of the following intermediate-level courses and are strongly encouraged to take additional intermediate-level courses as electives.
   04:192:354 Mediated Communication Theory (3)
   04:192:355 Interpersonal Communication Theory (3)
   04:192:357 Organizational Communication Theory (3)
3. Upper-level courses (6 credits)
   At least two 400-level courses are required of all majors. Courses 04:192:491,492 Independent Study in Communication and 04:192:495 Applied Study in Communication may not be used to fulfill this or the total credit requirement in the major.
4. Elective courses (9 credits)
   Student electives may include all 300- and 400-level courses, with the exception of 04:192:491,492 Independent Study in Communication and 04:192:495 Applied Study in Communication.

Advising and Plan of Study

The Department of Communication offers a variety of advising options for its students. An undergraduate handbook is updated each term and is available in the department's office. Additionally, the department regularly updates its portion of the SCILS web site. Students are urged to consult the handbook or the web site for information regarding admission procedures, program requirements, and course offerings and prerequisites. Additionally, the department offers a peer advising program and employs faculty and staff advisers who are available by appointment. To address more complex questions, students are encouraged to schedule appointments with the departmental adviser(s).

Students are encouraged strongly to formulate a plan of study in consultation with a departmental adviser. This study plan guides each student in choosing electives and aims to develop a coherent area of concentration within the major. Established areas of concentration include social interaction (and interpersonal communication), organizational communication (and public relations), and mediated communication (and telecommunication processes and policy). Students may tailor their plan of study to focus on specific contexts or issues, such as conflict resolution, everyday conversation, family, gender, health, impact of technology, and learning and facilitation. Students further may use their study plan to guide their selection of elective course work outside of SCILS. Students should seek advising through their liberal arts college regarding appropriate minors, double majors, and college requirements in concert with the communication major.

Internship

The department encourages students to pursue internship experiences that complement their studies and potential career choices. Students must be accepted into the communication major in order to enroll in the internship. Students may apply up to three internship course credits toward their upper-division course electives in the major. Additional internship credits may be earned, but do not apply to the communication major. Each college in the university sets its own limits regarding the number of experiential credits a student may apply toward graduation. Further information about the internship is available at the SCILS web site, http://www.scils.rutgers.edu.

Minor Requirements

To earn a minor, students must complete 18 credits (6 courses) including 04:189:101 and 102; 04:192:200 and 201; and two additional courses at the 300 level or above. Most students in the communication minor complete 04:192:300 Communication Research and 04:192:380 Public Speaking as their additional 300-level courses. These are the courses most frequently available to students completing the minor. Minors must complete all prerequisites. Students wishing to minor in communication must declare the minor through the academic dean's offices at their undergraduate colleges. Students who have not followed the required procedure for declaring the minor will not be allowed to complete the minor.

JOURNALISM AND MEDIA STUDIES

The journalism and media studies major provides an opportunity to study print and electronic journalism, including law and ethics as well as media theory, with an emphasis on how the media affects individuals, social groups, and political processes. Journalism and media studies students are encouraged to take electives outside of SCILS to complement both their studies in the major and their career interests. Students are encouraged to pursue a second major outside of SCILS.

Admission to the Major

The Department of Journalism and Media Studies seeks a highly motivated and diverse student body. Admission is not guaranteed. The review committee requires evidence of interest in journalism and media studies, including extracurricular involvement and commitment to study in the major. General writing ability and communication skills, as evidenced in both the personal essay and success in relevant courses, are required. Applicants must have completed successfully 01:355:101 Expository Writing I or 01:355:201 Research in the Disciplines or the English placement exam. The committee also will consider the grades in the two SCILS prerequisite courses and overall grade-point average at the time of admission. Grades in other journalism and media studies courses will get particular attention, but applicants are not required to have taken such courses before applying. Admission to the major in journalism and media studies is coordinated by the dean's office at SCILS and is decided by the department. Students are urged to consult the department staff and the SCILS web site for detailed and up-to-date information about application procedures, program requirements, course offerings, and special programs.

Prerequisite Courses

Before being considered for admission, students must complete the following two SCILS courses:

04:189:101 Introduction to Communication and Information Systems and Processes (3)
04:189:102 Introduction to Media Systems and Processes (3)

Major Requirements

The major requires 30 credit hours beyond 04:189:101 and 102. All majors must complete the following two courses:

04:567:324 News Reporting and Writing (3)
04:567:480 Media Law and Responsibility (3)

All students must take at least one of the following two courses:

04:567:310 Broadcast Newswriting (3) or
04:567:325 Writing and Editing for Print Media (3)

Students also must take at least two conceptual courses in journalism and media studies, of which at least one must be at the 300 or 400 level. The remainder of the 30 credits (students may not take more than 30 hours in the major) may be in additional professional and conceptual courses; up to 9 hours may be taken in a combination of internship and independent study. Students must earn a grade of C or better in all courses taken for major credit.

The Department of Journalism and Media Studies does not offer a minor.

Internship/Independent Study

A professional internship is recommended strongly. The internship and independent study options are limited to journalism and media studies majors who have been accepted to SCILS and who have completed at least 75 overall credits, including five journalism and media studies courses, of which at least three must be skills-oriented courses (such as in reporting, editing, web page design, photojournalism). Students must have a minimum cumulative GPA of 2.5 and a GPA of 2.75 in the major in order to enroll in the internship or independent study. For more information about these options, students are urged to contact the department. Students must check with their undergraduate college to determine how many independent study and/or internship credits their college will accept. Students also may do internships on a noncredit basis and are encouraged to work for campus media or off-campus media organizations and to participate in campus media activities, including the student chapter of the Society for Professional Journalists (SPJ).

INFORMATION TECHNOLOGY AND INFORMATICS (ITI)

The information technology and informatics major is designed to meet the needs of students who wish to combine information and technology skills with a liberal education in the arts, humanities, or social sciences. It uses a multidisciplinary approach to prepare students with the kinds of technological, interpersonal, and information competencies required for diverse professions in our technologically saturated society. The ITI major requires 39 credits, including two prerequisite courses (04:189:101 and 103) for admission, three required courses, and an additional 24 credits in the ITI program or in approved electives from other units.

The ITI program will be available to students in the Class of 2002 and beyond; applicants will be accepted beginning in fall 2001.

Students are urged to visit the SCILS web site for the most current information about ITI program requirements and admission procedures.

Course Listing

Explanation of Three-Part Course Numbers

The number preceding each course title is divided into three parts. The first two digits are the administrative code (standing for a faculty or a school), the next three digits are the subject code, and the final three digits are the course code.

Administrative Codes

The code for SCILS is 04. For a complete list of administrative codes used in this catalog, see the beginning of the Programs of Study for Liberal Arts Students section.

Subject Codes

A subject code comprises the third through fifth digits in all course numbers and indicates the subject matter of the course. Courses with the following subject codes are listed in this chapter (this does not constitute a list of majors).

189 Communication and Media Studies
192 Communication
567 Journalism and Media Studies

Course Codes

The course code comprises the sixth, seventh, and eighth digits in all course numbers. Course codes from 100 to 299 indicate introductory and intermediate undergraduate courses. Codes from 300 to 499 indicate advanced undergraduate courses. (Courses coded from 500 to 799 are graduate courses.)

Two course codes separated by a comma indicate that each term may be taken independently of the other (example: 04:189:493,494). Two course codes separated by a hyphen indicate that satisfactory completion of the first term is a prerequisite to the second term; the first term may be taken for credit without taking the second, except where a statement is added to indicate that both term courses must be completed in order to receive credit.

Credits awarded for the successful completion of each course are indicated in parentheses following the course title. The notation BA indicates that the number of credits is determined by arrangement with the department offering the course.

COMMUNICATION AND MEDIA STUDIES 189

04:189:101. INTRODUCTION TO COMMUNICATION AND INFORMATION SYSTEMS AND PROCESSES (3)
Theory and practice in communication studies with emphasis on receiving, processing, and transmitting information. Particular attention to interpersonal, organizational, and intercultural contexts.

04:189:102. INTRODUCTION TO MEDIA SYSTEMS AND PROCESSES (3)
Historical development of mass media institutions and the role of media in society. Particular attention to news, government regulation, effects, economics, emerging technologies, and audience dynamics.

04:189:103. INFORMATION, THE INTERNET, AND THE WORLD OF KNOWLEDGE (3)
Pre- or corequisites: 01:189:101, 102. ITI majors only.
The nature of the Internet, its fundamental structural components and the methodologies necessary for its critical manipulation in order to find reliable information for personal, academic, and career-oriented results. Emphasis on the appropriate use of web browsers, general and compound search engines, as well as Internet resource guides.

04:189:441. COMMUNICATION AND HUMAN VALUES (3)
Prerequisite: Permission of instructor. Open only to seniors and graduate students.
Seminar on communication and human values in a democratic society. Emphasis on the concept of cultural democracy in the formulation of public policy; historical evaluation of the philosophical problems related to matters of private taste versus public good.

COMMUNICATION 192

04:192:120. AMERICAN SIGN LANGUAGE I (3)
Prerequisite: Permission of instructor.
Beginning skills in American Sign Language (ASL) and skills needed in communication with deaf persons.

04:192:121. AMERICAN SIGN LANGUAGE II (3)
Prerequisite: 04:192:120 or permission of instructor.
Beginning skills in American Sign Language (ASL) and skills needed in communication with deaf persons.

04:192:200. COMMUNICATION THEORY (3)
Prerequisite: 04:189:101.
Basic concepts, models, and theories examining the role of communication in human behavior.

04:192:201. INTERPERSONAL COMMUNICATION PROCESSES (3)
Prerequisite: 04:189:101.
Patterns of human interaction, types and stages of relationships, verbal and nonverbal exchanges, strategies and tactics.

04:192:210. FUNDAMENTALS OF DISPUTE MEDIATION (3)
Enrollment limited to first- and second-year students.
Introduction to the theory and process of mediation as an approach to resolving disputes and conflict.

04:192:220. FUNDAMENTALS OF SPEAKING AND LISTENING (3)
Development of effective oral presentation and participation skills in interpersonal, small group, and public settings.

04:192:300. COMMUNICATION RESEARCH (3)
Prerequisites: 04:189:101, 102; 04:192:200. Open only to communication majors accepted to SCILS.
Exploration of the uses of experimental, descriptive, historical-critical, and field research approaches to the study of communication.

04:192:310. COMMUNICATION AND POPULAR CULTURE (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201. Open only to communication majors accepted to SCILS.
Mass media and their role in creating and reflecting social and cultural trends in society.

04:192:313. MESSAGE DESIGN FOR PUBLIC RELATIONS AND ORGANIZATIONAL COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201. Open only to communication majors accepted to SCILS.
Theories and techniques for collecting, selecting, packaging, and disseminating information within organizations and between organizations and their constituencies.

04:192:344. LANGUAGE AND COMMUNICATION (3)
Prerequisites: 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
Sociolinguistics, psycholinguistics, language acquisition and development, phonetics, and issues of bilingualism.

04:192:345. INTERNATIONAL COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
World communication systems: policies, methods, prospects, and controversies concerning the international flow of information.

04:192:346. INTERCULTURAL COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
Process of communication among individuals from different cultures or subcultures; influence of value orientations, concepts of time, thought patterns, and nonverbal styles.

04:192:347. INFORMATION SYSTEMS AND COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
Generation, classification, storage, retrieval, and use of information in human communication systems.

04:192:350. VISUAL COMMUNICATION THEORY (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
Critical evaluation of the aesthetic and social impact of visual communication.

04:192:354. MEDIATED COMMUNICATION THEORY (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
Critical examination of the literature and research on the nature and effects of mediated communication processes, and the social, cultural, and economic impact of communication technology.

04:192:355. INTERPERSONAL COMMUNICATION THEORY (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
Critical examination of the theory and research concerning the dimensions, dynamics, and functions of interpersonal interaction.

04:192:356. GROUP COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
Principles of group communication, types of groups, group structure, leadership, and membership roles; techniques for working with groups.

04:192:357. ORGANIZATIONAL COMMUNICATION THEORY (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
Communication in organizations, communication networks, management and communication, decision making, goal setting, and process consultation in varying organizational settings.

04:192:359. PERSUASIVE COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
Principles and techniques in persuasive communication: credibility, audience analysis, assessment of effects, media selection, resistance to persuasion, and attitude change.

04:192:360. PRINCIPLES OF INTERVIEWING (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
Introduction to various types of interviewing and other forms of focused conversation. Particular emphasis on analyzing and participating in goal-oriented conversation.

04:192:365. PRINCIPLES OF PUBLIC RELATIONS (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
Basic principles and policies of public relations and advertising; includes history, development, ethics, roles, functions, media selection methods, and message strategies of public relations.

04:192:369. INTERNSHIP IN COMMUNICATION I (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300, and permission of instructor. Open only to communication majors accepted to SCILS.
Practical field experience in intercultural, international, interpersonal, group, organizational, or mass communication; or public relations and advertising.

04:192:370. INTERNSHIP IN COMMUNICATION II (1)
Prerequisites: 04:192:369 and permission of instructor. Open only to communication majors accepted to SCILS.
Continued practical field experience.

04:192:380. PUBLIC SPEAKING (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS and communication minors with special permission.
Principles of public speaking; practice in composition, delivery, and criticism of informative and persuasive speeches.

04:192:381. ARGUMENTATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to communication majors accepted to SCILS.
Principles and techniques of persuasion through argument, evidence, and logical inference.

04:192:390. APPROACHES TO LEADERSHIP (3)
Prerequisite: Permission of instructor.
Interdisciplinary approach to leadership theory and practice; utilizes lecture, discussion, case study, and experience-based instructional methods.

04:192:405. COMMUNICATION AND GENDER (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Effects of gender roles in various communication contexts; examination of literature and research on differences between male and female patterns of interaction.

04:192:407. HEALTH COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Exploration of communication demands of health care and the development of effective communication strategies and skills for use in health-care practice.

04:192:409. PUBLIC RELATIONS MANAGEMENT (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300, 365. Open only to senior communication majors.
Analysis and preparation of case studies in industry, labor, education, government, and trade organizations, and the application of public relations techniques.

04:192:422. COMMUNICATION AND FACILITATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Theory and pragmatics of intrapersonal, interpersonal, and small-group process analysis, intervention, and facilitation.

04:192:425. COMMUNICATION AND LEARNING (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Instructional communication theory, research, and techniques. Recommended for persons seeking careers in education, public relations, management, and other fields requiring the development and evaluation of training and instructional programs.

04:192:432. MEDIATED COMMUNICATION IN SOCIETY (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Analysis of proliferating mediated communication technologies, their societal and interpersonal consequences, as well as the social forces that affect their form and function. Attention also given to national and industrial policy issues related to mediated communication processes.

04:192:434. INTERCULTURAL COMMUNICATION WORKSHOP (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Workshop experience designed to help participants understand the impact of culture on their communication behavior and to improve skills in interacting with people from different cultures and subcultures.

04:192:443. NONVERBAL COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Nonverbal aspects of human communication, including proxemics, kinesics, vocalics, eye behavior, human artifacts, and environments; the functions served by nonverbal behavior in interaction.

04:192:444. LANGUAGE, BEHAVIOR, AND COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Sociolinguistic, psycholinguistic, and general semantic analysis of language as a component of human communication systems.

04:192:445. COMMUNICATION DISORDERS (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Speech, language, and hearing-disabled children and adults. Special emphasis on the role of those who are not speech professionals but who work with the communication handicapped.

04:192:446. COMMUNICATION AND SOCIAL CHANGE (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Role of communication in social change, diffusion of innovations, and national development.

04:192:449. TELECOMMUNICATION PROCESSES AND POLICY (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Applications and policy implications of innovative communication and information-processing technology in business, government, and education; emphasis on political, economic, and legal aspects.

04:192:457. ADMINISTRATIVE COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300, 357. Open only to senior communication majors.
Application of principles and theories of organizational communication in a simulated organization.

04:192:461. ADVANCED INTERPERSONAL AND SMALL-GROUP COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300, 355, 356. Open only to senior communication majors.
In-depth study of interpersonal and group dynamics with emphasis on group leadership, listening, process observation, and intervention.

04:192:466. AUDIENCE AND MARKET ANALYSIS (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Principles and methods of identifying, categorizing, and segmenting mass audiences.

04:192:470. RESEARCH IN COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300; faculty sponsor; and approval of chairperson. Open only to senior communication majors.
Individual student involvement in actual communication research.

04:192:471. CONTENT ANALYSIS (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Development of research techniques for the systematic analysis of the content of written and oral messages; methods of sampling, development of content categories, reliability assessment, and presentation of findings.

04:192:472. TOPICS IN COMMUNICATION I (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300; or permission of instructor. Open only to senior communication majors.
Advanced topical seminar dealing with issues of concern to contemporary communication studies.

04:192:473. TOPICS IN COMMUNICATION II (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors.
Advanced topical seminar dealing with issues of concern to contemporary communication studies.

04:192:476. ADVANCED COMMUNICATION THEORY (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300; or permission of instructor.
Issues in theory building in the field of communication.

04:192:478. FAMILY COMMUNICATION (3)
Prerequisites: 04:189:101,102; 04:192:200, 201, 300. Open only to senior communication majors.
Family communication theory, research, and practice. Includes assessment and measurement of interaction patterns, pathologies, and intervention strategies.

04:192:481. ADVANCED SEMINAR IN COMMUNICATION THEORY AND RESEARCH (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300; or permission of instructor. Open only to senior communication majors.
Research trends in current literature in interpersonal, group, organizational, mass, and intercultural communication, and in public relations and advertising.

04:192:491,492. INDEPENDENT STUDY IN COMMUNICATION (1-3,1-3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Faculty sponsor and approval of chairperson. Open only to senior communication majors.
Independent study projects in communication.

04:192:493,494. HONORS THESIS INDEPENDENT PROJECT (1-3,1-3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors. Faculty sponsor and approval of chairperson.

04:192:495. APPLIED STUDY IN COMMUNICATION (3)
Prerequisites: 04:189:101, 102; 04:192:200, 201, 300. Open only to senior communication majors. Faculty sponsor and approval of chairperson.
Supervised study in communication pedagogy and /or applied research.

JOURNALISM AND MEDIA STUDIES 567

In some laboratory courses, fees may be required to defray equipment costs. Students should contact the departmental office concerning these fees.

04:567:278. NEWS MEDIA AND GOVERNMENT IN AMERICA (3)
Examines the relationship between media and institutions and the processes through which people and societies make political choices.

04:567:310. BROADCAST NEWSWRITING (3)
Prerequisite: 04:567:324. Open only to journalism and media studies majors accepted to SCILS.
Newswriting for radio, with review of television newswriting approaches for comparison.

04:567:314. PHOTOJOURNALISM (3)
Open only to journalism and media studies majors accepted to SCILS.
Fundamentals of still photography in print and audiovisual mass media; focus on print journalism.

04:567:320. COPY EDITING AND LAYOUT (3)
Prerequisite: 04:567:325 or permission of instructor. Open only to journalism and media studies majors accepted to SCILS.
Fundamentals of copy editing and layout.

04:567:324. NEWS REPORTING AND WRITING (3)
Prerequisites: 04:189:101, 102.
Fundamentals of gathering information and journalistic writing.

04:567:325. WRITING AND EDITING FOR PRINT MEDIA (3)
Prerequisite: 04:567:324.
Intermediate-level writing, reporting, and editing skills.

04:567:326. ADVANCED REPORTING (3)
Prerequisite: 04:567:325 or permission of instructor.
Advanced reporting and research skills including computer-assisted reporting.

04:567:327. PUBLIC INFORMATION AND PUBLIC AFFAIRS (3)
Prerequisite: 04:567:310 or 325 or permission of instructor.
Techniques of public information with focus on government, public affairs, and public interest issues.

04:567:334. WOMEN, MINORITIES, AND THE MASS MEDIA (3)
Content, treatment, and effects of women and minority-group coverage in television, newspapers, magazines, popular music, and film.

04:567:335. MASS COMMUNICATION AND THE AMERICAN IMAGE (3)
Open only to juniors and seniors.
Mass communications and America's traditional self-imagery. Critical analysis of how the American experience is and has been interpreted by mass media; the relationship of myth to reality.

04:567:340. SCIENCE AND HEALTH JOURNALISM (3)
Prerequisite: 04:567:325.
Reporting and writing about medicine, health, science, and technology.

04:567:345. MEDIA PUBLISHING AND DESIGN (3)
Prerequisite: 04:567:310 or 325 or permission of instructor.
Computer-based writing, designing, and paginating newsletters, magazines, web sites, and newspapers.

04:567:347. INFORMATION DESIGN FOR WEB JOURNALISTS (3)
Prerequisite: 04:567:310 or 325.
Web pages as primary sites for distributing news content and supplementing other technologies for news transmission.

04:567:350. DEVELOPMENT OF MASS MEDIA (3)
Prerequisites: 04:189:101, 102.
History of mass media in the United States.

04:567:375. TELEVISION REPORTING (3)
Prerequisite: 04:567:310.
Fundamentals of television reporting and electronic newsgathering.

04:567:376. ADVANCED TELEVISION REPORTING (3)
Prerequisite: 04:567:375.
Advanced television reporting and electronic newsgathering, with students assigned to various projects.

04:567:379. MEDIA AND POLITICS (3)
Prerequisites: 04:189:101, 102; or permission of instructor.
Examines who controls the media and how the media differentially serve the public and power holders. Attention to both news and entertainment media.

04:567:388,389. INDEPENDENT STUDY IN JOURNALISM AND MEDIA STUDIES (BA,BA)
Prerequisite: Permission of instructor. Open only to junior and senior journalism and media studies majors.
Independent study in journalism and mass media topics under faculty supervision.

04:567:394. INTERNSHIP IN JOURNALISM AND MEDIA STUDIES (BA)
Fieldwork and research. Prerequisite: Permission of instructor. Open only to journalism and media studies majors in the junior or senior year.
Supervised field experience at professional media outlets.

04:567:410. MAGAZINE WRITING (3)
Prerequisite: 04:567:310 or 325 or permission of instructor.
Magazine writing for publication, including consumer, trade, and business magazines.

04:567:411. MEDIA CRITICISM (3)
Prerequisite: 04:567:310 or 325 or permission of instructor.
Survey of critical approaches to the analysis of media and popular cultural texts.

04:567:420. GLOBAL NEWS (3)
Prerequisite: 04:567:310 or 325. Open only to juniors and seniors.
Analyzes global production, distribution, and consumption of news. Issues include global news flows, journalistic cultures and practices, and international news coverage.

04:567:423. COMMUNICATION LAW (3)
Prerequisites: 04:189:101, 102. Open only to juniors or seniors.
Examines laws and regulations governing U.S. mass media.

04:567:458. MEDIA, GOVERNMENT, AND POLITICS (3)
Prerequisites: 04:189:101, 102; or permission of instructor. Open only to juniors and seniors.
Interactions between media and political institutions, actors and processes, in light of theories of journalism, communication, and political practice.

04:567:464. MASS MEDIA MANAGEMENT (3)
Prerequisite: 04:567:310 or 325.
Management strategies in mass media.

04:567:465. TELEVISION PROGRAMMING STRATEGIES (3)
Open only to junior or senior journalism and media studies majors.
Theories and methods used by television programmers; students produce programs for Rutgers' television.

04:567:470. CRITICAL ANALYSES OF NEWS (3)
Prerequisite: 04:567:310 or 325 or permission of instructor.
Surveys and critiques of social science research on news, journalists, and news media.

04:567:473. SEMINAR IN JOURNALISM AND MEDIA STUDIES (3)
Prerequisite: 04:567:310 or 325 or permission of instructor.
Advanced seminar on special topics relating to journalism and media studies. Examples of recent topics: Covering the World, Design for the World Wide Web, History of Sports Journalism.

04:567:475. INTERNATIONAL MEDIA (3)
Prerequisites: 04:189:101,102. Open only to junior and senior journalism and media studies majors.
Analyzes debates about media and cultural globalization and theories about international media.

04:567:480. MEDIA LAW AND RESPONSIBILITY (3)
Prerequisite: 04:567:310 or 325. Juniors and seniors only.
Legal issues and ethical problems confronting journalists.

04:567:489. HONORS SEMINAR IN JOURNALISM AND MEDIA STUDIES (BA)
Prerequisite: Permission of instructor. Open only to majors in the junior or senior year.
Independent study in journalism and mass media topics under faculty supervision.

04:567:490. HONORS THESIS/PROJECT (3)
Open only to journalism and media studies majors.
Honors thesis or project under faculty supervision.

04:567:495. INVESTIGATIVE AND IN-DEPTH REPORTING (3)
Prerequisite: 04:567:326 or permission of instructor.
In-depth reporting using public records and other journalism investigative techniques.

Administration and Faculty

ADMINISTRATION

Gustav W. Friedrich, Dean
Kay Vandergrift, Associate Dean of Instruction
Jon Oliver, Assistant Dean for Network and Information Technology
Sydell Spinner, Associate Dean for Administration and Student Services
Alex Daley, Coordinator of Multimedia Services
Terri Davis, Coordinator of Career Services
Steven Miller, Manager of Media Services
Karen Novick, Director of Professional Development Studies

FACULTY

Department of Communication

Chairperson: Ronald E. Rice

Professors:

Gustav W. Friedrich, B.A., Minnesota; M.A., Ph.D., Kansas
James E. Katz, B.A., M.A., Northern Illinois; Ph.D., Rutgers
Linda C. Lederman, A.B., Brown; M.A., Columbia; Ph.D., Rutgers
Ronald E. Rice, B.A., Columbia; M.A., Ph.D., Stanford
Brent D. Ruben, B.A., M.A., Ph.D., Iowa
Lea P. Stewart, B.A., Allegheny College; M.A., Ph.D., Purdue

Associate Professors:

Kathryn Greene, B.A., M.A., Ph.D., Georgia
Jennifer S. Mandelbaum, B.A., Oxford (England); M.A., Ph.D., Texas (Austin)
Hartmut Mokros, B.A., M.A., Minnesota; Ph.D., Chicago

Assistant Professors:

Mark A. Aakhus, B.A., North Dakota; M.A., Washington State; Ph.D., Arizona
Lynn Cockett, B.A., Mesiah; M.L.S., Ph.D., Rutgers
Marya Doerfel, B.A., M.A., Ph.D., SUNY (Buffalo)
Mark G. Frank, B.A., SUNY (Buffalo); Ph.D., Cornell
Stephen M. Haas, B.A., M.A., Cincinnati; Ph.D., Ohio State
Radha S. Hegde, B.A., Madras (India); M.A., Ph.D., Ohio State
Maureen Taylor B.A., Westfield State; M.A, Ph.D., Purdue

Department of Journalism and Mass Media

Chairperson: Linda Steiner

Associate Professors:

Roger Cohen, B.A., Rutgers; M.S., Syracuse
Montague Kern, A.B., Bryn Mawr College; M.A., American; Ph.D., Johns Hopkins
Robert Kubey, B.A., California (Santa Cruz); M.A., Ph.D., Chicago
Shannon Martin, B.A., M.A., Indiana; Ph.D., North Carolina (Chapel Hill)
Barbara S. Reed, B.A., Miami (Ohio); M.A., Minnesota; Ph.D., Ohio
William Solomon, B.A., Rhode Island; M.A., Northern Illinois; Ph.D., California (Berkeley)
Linda C. Steiner, B.A., Pennsylvania; Ph.D., Illinois

Assistant Professors:

Laurie J. Ouellette, B.A., Minnesota; M.A., New School; Ph.D., Massachusetts (Amherst)
Christopher Vaughan, A.B., Brown; M.A., Ph.D., California (Berkeley)
Silvio Waisbord, B.A., Buenos Aires (Argentina); M.A., Ph.D., California (San Diego)

Department of Library and Information Science

Acting Chairperson: Carol Kuhlthau

Professors:

James D. Anderson, B.A., Harvard; M.S.L.S., D.L.S., Columbia
Nicholas I. Belkin, B.A., M.Lib., Washington; Ph.D., London
Paul Kantor, A.B., Columbia; Ph.D., Princeton
Carol Kuhlthau, B.S., Kean; M.L.S., Ed.D., Rutgers
Tefko Saracevic, Undergraduate Studies, Zagreb; M.S.L.S., Ph.D., Case Western Reserve
Betty Turock, B.A., Syracuse; M.L.S., Ph.D., Rutgers
Kay Vandergrift, B.S., Millersville State; M.A., Ed.D., Columbia

Associate Professors:

Daniel O. O'Connor, B.A., Niagara; M.S.L.S., Ph.D., Syracuse
Patricia Reeling, B.A., Edgecliff; M.A., Indiana; D.L.S., Columbia
Jana Varlejs, A.B., Bryn Mawr College; M.L.S., Rutgers; Ph.D., Wisconsin (Madison)

Assistant Professors:

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SCHOOL OF ENGINEERING

Information about the following subjects may be found in the General Information section at the back of this catalog: Student Life and Services, Admission, Tuition and Fees, Financial Aid, and University Policies and Procedures.

General Information

HISTORY AND AIMS OF THE SCHOOL

Instruction in engineering began at Rutgers in 1864, when the state of New Jersey designated the Rutgers Scientific School as the State College for the Benefit of Agriculture and Mechanic Arts. The present School of Engineering became a separate entity in 1914 and continues to maintain two principal objectives: the sound technical and cultural education of the student and the advancement of knowledge through research.

The School of Engineering has designed each of its engineering curricula to contain three types of courses: (1) courses covering the basic scientific principles essential to advanced study in any field of science or engineering; (2) nontechnical courses that, with the basic sciences, are a part of the common heritage of educated persons; and (3) technical courses in which the basic scientific principles are applied to problems in a particular engineering field. Throughout all courses, the emphasis is on a thorough understanding of fundamental principles and engineering methods of analysis and reasoning. All curricula are sufficiently comprehensive to form a foundation for a satisfying career as a practicing engineer; for advanced scientific and technical study and research; and for advanced study and careers in business, law, and medicine.

TEACHING GOALS OF THE SCHOOL

Each curriculum within the School of Engineering is designed to ensure that its graduates have achieved: (1) an ability to apply knowledge of mathematics, science, and engineering; (2) an ability to design and conduct experiments, as well as to analyze and interpret data; (3) an ability to design a system, component, or process to meet desired needs; (4) an ability to function on multidisciplinary teams; (5) an ability to identify, formulate, and solve engineering problems; (6) an understanding of professional and ethical responsibility; (7) an ability to communicate effectively; (8) the broad education necessary to understand the impact of engineering solutions in a global and societal context; (9) a recognition of the need for an ability to engage in lifelong learning; (10) a knowledge of contemporary issues; and (11) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

THE ENGINEERING PROFESSION

Engineering is a profession in which a knowledge of the mathematical and natural sciences, gained by study, experience, and practice, is applied to develop ways to use the materials and forces of nature economically for the benefit of humanity.

Engineering touches every phase of modern life. It extends human physical power through machines. It extends human reasoning power through computers. It extends human powers of observation through instruments enabling people to explore the tiniest microscopic structure or the far reaches of the universe. It creates vehicles to move people rapidly and safely to all parts of the earth and into the space surrounding it. It makes possible complex production and distribution systems for providing ample food to urban populations. It permits rapid communication of information among people throughout the world. It has given people great power to control their environment and, with this power, the responsibility to control it wisely. It has provided people with the most sophisticated art form, the art of engineering design.

THE UNIVERSITY ENVIRONMENT

As students at one of the colleges of Rutgers, The State University of New Jersey, engineering students share a rich campus life with students in many other disciplines. Intellectual stimulation abounds in a wide variety of interdisciplinary lectures and seminars, and extracurricular activities include an equally wide range of concerts and athletic and social events. Every student has access to distinguished professors in many fields. In addition, the undergraduate engineering student studies in an atmosphere of scholarly activity enriched by the closely related programs of graduate instruction and research.

Instruction in engineering is centered in Piscataway (adjacent to New Brunswick) on the Busch campus. Housing and all other student services are provided to each engineering student through one of the four residential colleges in the New Brunswick area (Douglass, Livingston, Rutgers, or Cook) with which that student affiliates. See the Student Life and Services section for more information on affiliation.

ACADEMIC PROGRAMS

Undergraduate Curricula and Accreditation

Four-year undergraduate curricula leading to the degree of Bachelor of Science are offered in the fields of biomedical engineering, bioresource engineering, ceramic engineering, chemical engineering, civil engineering, electrical and computer engineering, industrial engineering, and mechanical engineering. In addition, a flexible four-year curriculum in applied sciences in engineering is administered by an interdepartmental committee. Numerous areas of concentration are available within these disciplines, such as aerospace engineering, biochemical engineering, computer engineering, engineering physics, environmental engineering, materials engineering, packaging engineering, and solid-state electronics. The engineering curricula (with the exception of biomedical engineering) are accredited by the Accreditation Board for Engineering and Technology (ABET). The field of applied sciences in engineering is not a professional engineering curriculum and is not subject to ABET accreditation. The biomedical engineering curriculum was instituted in fall 1999, and it is anticipated that it will be evaluated for ABET accreditation within the next two years.

A five-year, dual-degree program is offered by the School of Engineering in cooperation with three liberal arts colleges in New Brunswick: Douglass College, Livingston College,

and Rutgers College. This program leads to a Bachelor of Science degree in any of the engineering fields listed above, and a Bachelor of Arts or Bachelor of Science degree from the cooperating liberal arts college in any major in which that college confers the B.A. or B.S. degree. A five-year, dual-degree program in bioresource engineering also is available in cooperation with Cook College, a professional school that specializes in agricultural and environmental studies. This program leads to B.S. degrees from the School of Engineering and Cook College.

Finally, it is possible for students to take the first two years of either a four-year B.S. program or a five-year B.A./B.S. program at the Camden College of Arts and Sciences or the Newark College of Arts and Sciences. At the end of the second year, students transfer to the School of Engineering in New Brunswick.

Five-Year B.S./M.B.A. Program

A special joint program offered by the School of Engineering and the Graduate School of Management is available for qualified engineering students. This program offers the opportunity to obtain the Master of Business Administration degree within one calendar year of completing the baccalaureate degree requirements.

Graduate Programs

Extensive engineering programs at the graduate level also are available. The degrees of Master of Science, Master of Philosophy, and Doctor of Philosophy are given in a wide range of fields. The graduate programs are described in the catalog of the Graduate School–New Brunswick.

Study Abroad

A junior-year abroad program at the City University of London is available to qualified students majoring in civil, electrical and computer, and mechanical engineering. Students in all engineering majors also may arrange individualized programs through the Rutgers Study Abroad Office, which coordinates extensive programs in several countries.

ORGANIZATION OF THE SCHOOL

The school is organized in seven academic departments: Department of Biomedical Engineering, Department of Ceramic and Materials Engineering, Department of Chemical and Biochemical Engineering, Department of Civil and Environmental Engineering, Department of Electrical and Computer Engineering, Department of Industrial Engineering, and Department of Mechanical and Aerospace Engineering. Courses in bioresource engineering are taught by the faculty of the Department of Bioresource Engineering, which is part of Cook College.

To fulfill its obligation to extend the boundaries of knowledge, the school operates the Office of Graduate Education and Research. Through this organization, members of the faculty and students engage in research that may be supported by the university, by industry, or by state or federal government agencies. Since research is an integral part of the educational function of the school, the research laboratories are intermingled with those used for instruction. The result is an academic environment that excites the curiosity of students and stimulates their interest in exploring the frontiers of knowledge.

To support the programs of instruction and research, the school established Engineering Computing Services (ECS). Sophisticated modern computing systems are available through the engineering computer laboratories supported by ECS and through facilities provided by Rutgers University Computing Services (RUCS).

Education in engineering, like that in any other profession, is a lifelong process. Practicing engineers can keep abreast of the latest developments in their field through the Program for Continuing Engineering Studies operated by the school. The school offers short courses and conferences in a wide range of subjects to meet the changing needs of the profession.

Description of Fields of Study

The School of Engineering offers academic programs leading to the degree of Bachelor of Science in applied sciences in engineering, biomedical engineering, bioresource engineering, ceramic engineering, chemical engineering, civil engineering, electrical and computer engineering, industrial engineering, and mechanical engineering. The detailed requirements for each program can be found in the Programs of Study chapter. General descriptions of the undergraduate fields of study and various areas of specialization are given in this chapter.

Applied Sciences in Engineering

The curriculum in applied sciences in engineering is intended to meet the needs of students whose goals might not be served by the professional engineering programs. The curriculum permits the development of a wide range of interdisciplinary programs individually tailored to the needs of the student outside the accredited or professional engineering fields. A faculty committee advises each student in the preparation of a sound educational program from courses available in the regular engineering programs. The applied sciences in engineering curriculum is not accredited as a professional engineering program.

Courses are not offered specifically for this curriculum, but must be chosen from among those scheduled by the professional engineering programs. Several areas of specialization currently are available, such as packaging engineering, engineering physics, and preparatory programs for law school or medical school.

Biomedical Engineering

This program offers two curriculum options: molecular, cell, and biomaterials engineering and physiological systems engineering. In the molecular, cell, and biomaterials option, students apply principles of physics, chemistry, biology, mathematics, and computer science to the analysis, development, and design of new therapies, diagnostics, and molecular machines. The physiological systems engineering option focuses on organ and systems processes that require the integration of physiology with other basic sciences. Special programs are available for those who wish to pursue biomedical engineering as a precursor to medical school. Training opportunities in genomics and bioinformatics, tissue engineering, and medical imaging also are available within the department.

The achievements of biomedical engineering constantly touch our daily lives. Past and current breakthroughs that were pioneered at Rutgers include: techniques for online analysis and operating room lesioning of brain tissue for Parkinson's disease; an artificial hand with finger dexterity; the use of virtual reality in the rehabilitation of limbs; revolutionary techniques for making large numbers of new biopolymers for implants; and rapid NMR analysis of protein structure, balloon catheters, and pacemakers.

The broad education provided by these options and special programs allows students to choose from a wide variety of careers. Many graduates work in large corporations and smaller companies as practicing biomedical engineers. Increasing numbers of graduates are finding rewarding jobs in state and federal institutions, including the Patent and Trademark Office and many of the national labs. The degree program also prepares qualified students for graduate study leading to the M.S. or Ph.D. degrees in biomedical engineering. In addition, students are prepared to meet the graduate entrance requirements for medical and law schools, business administration, and other professional disciplines.

The department participates in the School of Engineering's James J. Slade Scholars Program, which attracts qualified students from either option (see the Programs of Study chapter for further information). Highly qualified students also may elect to commence work toward the M.S. or Ph.D. degree in the senior year of the undergraduate curriculum.

Bioresource Engineering

Bioresource engineering applies the physical and biological sciences in solving problems related to plants, animals, food, wastes, and our natural environment. Graduates of this program receive a unique engineering education, enabling them to apply the rapid advances being made in the biological and environmental sciences for the benefit of humanity. This program prepares students for immediate employment as practicing engineers with industrial companies, government agencies, and private consulting firms, or for additional study at the graduate level. The curriculum includes the following three options:

Bioenvironmental Engineering Option. This option is concerned with maintaining the quality of our natural environment. It involves the application of physical, biological, and environmental sciences to land use and waste management problems, air and water pollution, and the conservation of our natural resources. The goal of this option is to gain an understanding of the requirements and tolerances of natural, living ecosystems and the engineering expertise needed to solve serious environmental problems facing our society.

Food Engineering Option. This option involves the application of engineering principles to the processing, packaging, storage, and distribution of food products. A knowledge of chemical, microbiological, and biophysical characteristics of foods is combined with engineering and computer technologies to develop systems that produce quality food products for human consumption.

Horticultural Engineering Option. This option is for students interested in the engineering design and systems analysis of controlled environment plant production (CEPPS) within phytomation systems. It provides a strong scientific understanding of the biological, environmental, and automation aspects of plant growth and production. Students are instructed in engineering systems design and challenged with design problems such as large-scale greenhouses, growth chambers, micropropagation, and automatic control systems. Employment opportunities are numerous and varied, ranging from commercial greenhouse plant production to NASA (food production in space), and from biotechnology laboratories (tissue culture propagation) to robotics for transplant automation.

Both four- and five-year curricula are offered. These programs are administered jointly by the School of Engineering and Cook College.

Ceramic and Materials Engineering

The curriculum in ceramic and materials engineering prepares graduates for a variety of career options, including manufacturing of ceramic products, research and development of new ceramic materials, production of optical fibers, and employment in the diverse group of industries that utilize ceramic materials. The curriculum stresses engineering fundamentals, but also provides the flexibility to allow students to concentrate on a specific field within ceramic engineering. Suggested areas of concentration in the Department of Ceramic and Materials Engineering are glass and optical materials, ceramic processing, and ceramic science and materials engineering, although the choice of electives need not be restricted to those that apply to these three concentrations. Some students' career interests may be better served by choosing a wide range of electives to create a unique program of study; these students are encouraged to discuss this option with their faculty advisers.

Ceramic Processing. This concentration prepares students for careers in industry and provides a suitable background for graduate study. The emphasis is on ceramic processing, manufacturing, and properties. The particular emphasis on these three respective areas is determined by the electives that the student selects. Recommended courses are refractories, microscopy, engineering economics, and quality control. All students in this concentration must take 14:150:411, 412 Ceramic Engineering Design in their senior year.

Ceramic Science. This concentration in the physics and chemistry of ceramic materials introduces students to original, independent research through 14:150:401,402 Senior Ceramic Laboratory I,II, which prepares the student for both research and development careers and graduate school. Other courses recommended as electives include such subjects as behavior of electrons in solids, semiconductors and superconductors, theory of glass structure, and optical properties.

Glass and Optical Materials. This concentration prepares students for graduate work and for careers in basic and applied research, processing, and manufacturing in the fiber optics, glass, and optical materials field. The emphasis of the concentration is on optical materials, including glass, fiber optics, and lasers. All students in this concentration should take recommended courses on glass, fiber optics, optical properties of materials, and independent study on glass research or glass design.

Materials Engineering. This concentration prepares students for careers in manufacturing and research related to metals, polymers, composites, nanomaterials, and biomaterials. Students must consult their faculty advisers regarding the status and course requirements of this option.

Student Education and Financial Aid

More than fifteen undergraduate scholarships are available to students, based on either financial need or academic excellence, and the department offers part-time employment to ten students to assist faculty with their research. In addition, a co-op program places selected seniors in industry for one term; many other students take advantage of shorter summer internships. The department uses its extensive industrial contacts with leading ceramics, glass, and materials companies to arrange career placement interview sessions.

Program Goals

In addition to the objectives and teaching goals of the School of Engineering described at the beginning of this section, the ceramic and materials engineering program has the following goals:

1. To increase by 10 percent per year the number of incoming sophomores entering the program whose GPA exceeds 2.5.
2. To provide graduates with a ceramic engineering education relevant to current science and engineering.
3. To provide graduates with the education needed to enter ceramic engineering or disciplines utilizing ceramic science and engineering.
4. To provide graduates with the education needed to lead a productive and rewarding career.
5. To prepare graduates to enter graduate school.

Chemical and Biochemical Engineering

This program offers two curriculum options: chemical engineering and biochemical engineering. In the chemical engineering option, students apply principles of physics, chemistry, mathematics, computer science, environmental engineering, and health and safety sciences to the analysis, development, design, and automatic control of processes in which matter is physically or chemically transformed, separated, and/or transported. The biochemical engineering option is similar to the chemical engineering option, but focuses on biochemical and biological processes that require the integration of biochemistry and microbiology with other basic sciences. Special programs are available for those who wish to pursue careers as chemical engineers in medicine or biomedical engineering, polymer process engineering and science, environmental engineering, pharmaceutical engineering, and food engineering.

The achievements of chemical and biochemical engineering constantly touch our daily lives. Past and current breakthroughs include large-scale production of antibiotics; plastics, synthetic rubber, and polymeric fabrics; gasoline and aviation fuel; hydrocarbon-based chemicals from oil, coal, and renewable resources; water and air purification systems; management of hazardous wastes; fertilizers, nutritional synthetic foods, and dietary supplements; dyes, paints, and solvents; kidney dialysis machines and artificial skin; biological production of alcohol or methane gas from controlled microbial digestion of natural and industrial waste materials; and development of bioreactors using enzymes and cells to enhance production of foods and specialty chemicals.

The broad education provided by these options and special programs allows students to choose from a wide variety of careers. Many graduates work in large corporations and smaller companies as practicing chemical or biochemical engineers. Increasing numbers of graduates are finding rewarding jobs in state and federal institutions, including the Department of Environmental Protection, the Department of Energy, and the United States Environmental Protection Agency. The degree program also prepares qualified students for graduate study leading to the M.S.

or Ph.D. degrees in chemical or biochemical engineering, including specialties in biomedical, environmental, polymer, food, and pharmaceutical engineering. In addition, students are prepared to meet the graduate entrance requirements for medical and law schools, business administration, and other professional disciplines.

The department participates in the School of Engineering's James J. Slade Scholars Program, which attracts qualified students from either option. (See the Programs of Study chapter for further information.) Highly qualified students also may elect to commence work toward the M.S. or Ph.D. degree in the senior year of the undergraduate curriculum. During this year, the student begins a research project and may enroll in a graduate-level course, provided his or her schedule allows it. The B.S. degree is granted upon completion of all undergraduate requirements, normally at the end of the fourth year, and the student devotes the following summer and the fifth academic year to the completion of course and research requirements for the M.S. degree or first year of the Ph.D. program.

Civil and Environmental Engineering

Civil engineering is one of the broadest of the engineering disciplines, extending across many technical specialities. Civil engineers plan, design, and supervise the construction of facilities essential to modern life. These facilities vary widely in nature, size, and scope and include space satellites and launching facilities, offshore structures, bridges, buildings, tunnels, highways, transit systems, dams, airports, harbors, water supply and wastewater treatment plants, and other facilities for mitigating environmental problems. All of the forces of nature, static and dynamic, are included in this field of inquiry, as are the properties of materials, including the soil and rock mantle of the earth. In addition, civil engineering is concerned with the interlocking influences of structures, systems, forces, and materials on one another and on society. Civil engineers work in many diversified areas, such as structural engineering, geotechnical engineering, water resources and environmental engineering, transportation engineering, ocean and coastal engineering, and construction engineering.

Civil engineering activities are intimately involved with the activities of many other professions, such as planning, finance, architecture, and health; with agencies of local, state, and federal governments; and with the business community in general.

The undergraduate program in civil and environmental engineering provides a broad and thorough education to students in civil engineering fundamentals, applications, and design in order to prepare graduates for the practice of professional engineering. To enable graduates to meet challenges posed by an ever-changing society and advancing technology, the program provides a broad background in many of the different areas of civil engineering, and sound exposure to engineering sciences, humanities, and social sciences. The undergraduate curriculum permits students to have an area of concentration in structures, geotechnical engineering, construction engineering, or water resources / environmental engineering. Students have considerable freedom to select a variety of departmental electives, technical electives, and, in the senior year, capstone design courses to form a concentrated area of study.

Water Resources and Environmental Engineering Option. New in fall 2001, a water resources and environmental engineering option within the civil engineering curriculum is available. The first two years of the curriculum are identical for all students; course changes take place in the junior and senior years. The requirements for this option are listed in the civil engineering curriculum section. Interested students are encouraged to contact the civil and environmental engineering undergraduate director for more information.

Electrical and Computer Engineering

Electrical and computer engineering is a rapidly developing and diverse field ranging from integrated circuits and submicron devices to powerful computational systems and massive communication networks, such as those used in the information superhighway. Over the past two decades, increasing numbers of electrical and computer engineering graduates have been engaged in the development and application of solid-state electronic devices, electronic computers and data processing systems, and automatic control systems of increasing sophistication. In turn, these developments have led to further development of the more traditional technologies, such as energy conversion and transmission; electrical circuit synthesis; and particularly to an unprecedented growth of electronic data processing, communication, control, and computer systems.

To prepare its graduates to compete in a fast-changing technical environment, the department depends upon a curriculum with a strong core of required courses in mathematics, physical sciences, and engineering science. In addition, students have considerable freedom to choose electives in these and other areas of study. As a result, electrical and computer engineering undergraduates may structure their programs to accommodate the changes of the electrical and electronic industry and to prepare for graduate study in such diverse areas as control and power systems, communication systems, digital signal processing, computer engineering, solid-state electronics, wireless information networks, and others. The wide range of subject matter enhances the student's opportunity for challenging employment and graduate study.

The department offers two curriculum options for undergraduate students: electrical engineering and computer engineering. The electrical engineering option follows a traditional set of required courses with equal emphasis on all main areas of electrical engineering, yet allows a student to favor one area over another by appropriate selection of elective courses. The computer engineering option, while giving a broad background in electrical engineering, prepares students for careers in the area of computer hardware and software engineering.

Industrial Engineering

In today's complex and competitive world, industrial engineers are in ever greater demand to design, improve, and operate integrated systems of people, materials, equipment, and energy. The industrial engineering discipline applies fundamentals from the mathematical, physical, and engineering sciences to design and analyze efficiently large systems that serve industry and government both in manufacturing and service sectors.

To allow students to understand the impact of engineering solutions in a global/societal context, the undergraduate industrial engineering program provides a broad engineering education along with specialization in the industrial engineering and manufacturing fields. Academic strength in mathematics, physics, and basic engineering science is required. Specializations are offered in mathematical modeling, quality engineering techniques, computer-aided design (CAD), computer-aided manufacturing (CAM), simulation, manufacturing processes, engineering economics, production planning and control, and information technology. Students have access to state-of-the-art laboratory facilities where hands-on instruction is emphasized in CAD/CAM, robotics, machine vision, automated material handling, quality engineering, and computer integration of databases and information systems.

The undergraduate pedagogy focuses on classroom instruction fostered by learning in multidisciplinary project teams. These teams frequently formulate and find engineering solutions to real-world industry problems. The ability to communicate effectively is emphasized by having students provide both oral and written reports.

Our graduates contribute to a wide range of endeavors, including electronic, pharmaceutical, and other manufacturing; health services, transportation, distribution, and communication; and computers, finance, marketing, and management. Students pursue graduate studies in engineering and in management at leading institutions.

The faculty is dedicated to excellence in teaching, research, and professional service. It brings experience, real-life industrial problems, and enthusiasm to the classroom, setting a standard for students to follow in their professional careers.

Mechanical and Aerospace Engineering

The evolution of our technology into the computer age has reinforced the importance of the broad technical and professional training of both the mechanical and the aerospace engineer. Each may make his or her professional contribution in many diverse industries, ranging from the automobile and aerospace industries to the manufacture of computers and the automation and control of systems.

Regardless of the particular product involved, mechanical and aerospace engineers rely upon knowledge of matter and energy conversions, motions, and forces obtained from computer simulations and experimental investigations of processes and systems. Each type of engineer is able to design mechanisms, machines, and structures to serve a specific purpose, such as the manufacture of high-tech materials, including ceramics and composites, and high-tech equipment, such as advanced automation and control systems. They also are trained to determine, both experimentally and theoretically, the heat and energy transfer rates that occur within engineering devices, such as internal combustion engines, electronic equipment, robots, solar energy systems, rocket engines, steam and gas turbines, and nuclear reactors. The curriculum in mechanical and aerospace engineering provides these skills and prepares students for graduate study and research.

The undergraduate program in mechanical and aerospace engineering trains students in a technically sound, challenging, and professional manner, laying the foundation for a productive career and enabling graduates to make positive contributions to their profession and society. This is achieved with a thorough preparation in the humanities, mathematics, and basic sciences, as well as up-to-date mechanical and aerospace engineering fundamentals and applications using the most advanced tools and methods available.

In the senior year, the capstone design and manufacturing course allows students to solve open-ended, multicriteria engineering problems. Emphasis is placed on teamwork, project management, conceptualization, detailed design, analysis, and manufacturing. At the end of the yearlong course, students will have experienced a full product development cycle from concept to construction and testing.

Facilities

The facilities of the School of Engineering for laboratory instruction and other services are housed in buildings on the Busch campus, except for the laboratories of the Department of Bioresource Engineering, which are located on the Cook College campus. The Engineering Center on Busch campus contains spacious quarters for instruction and research in the fields of biomedical, ceramics and materials, chemical and biochemical, civil and environmental, electrical and computer, industrial, and mechanical and aerospace engineering. The following summary of laboratories and equipment is organized by department.

Biomedical Engineering

The biomedical engineering laboratories contain the specialized equipment and other facilities needed for research and education in a number of areas in this field, including the development of medical instruments and devices. Extensive computer facilities are available for special and general-purpose applications in biomedicine and related fields.

The extensive laboratories of other departments within the university and of the University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School also are available for special studies and research.

Bioresource Engineering

Bioenvironmental Engineering Laboratory. The laboratory is well equipped for the analysis of both liquid and solid waste materials and the study of various physicochemical and biological treatment processes. Equipment available includes a gas chromatograph, spectrophotometers, centrifuges, analytical balances, microscopes, an incubator, a bomb calorimeter, an autoclave, a Kjeldahl apparatus, constant temperature baths, ovens and furnaces, turbidmeters, dissolved oxygen, and conductivity and pH meters, together with a full range of ancillary materials and chemicals for chemical and biological testing. Apparatus is available for studying granular media filtration, heat transfer in completely mixed reactors, biodegradability of organic pollutants, activated sludge treatment, and aerobic and anaerobic digestion. Experiments in open-channel flow can be performed with a tilting hydraulic flume. Other equipment includes a pressure membrane apparatus for determining moisture-tension relationships in soil, digital soil-moisture testers, and Campbell Microloggers using gypsum-block sensors. Also available are hydrometers, tensiometers, infiltrometers, tipping-bucket rain gauges, and continuous digital rainfall-recording equipment. Apparatus for determining soil texture, suspended sediment, and pollutant concentrations are available, as well as workstations for signal conditioning and data acquisition and processing. Surveying equipment for instructional use includes levels, transits, plane tables, planimeters, and electronic distance measuring (EDM) instruments.

Computer Laboratory. The computer laboratory is equipped with Pentium-type PC workstations linked to a central server that has 8,000 Mb of storage for programs and large working data files. Various printers, plotters, and other peripherals are on the network, which can be utilized from any workstation. This laboratory is linked via fiber optic communications to other departmental laboratories, faculty offices, and the Rutgers network. All of the workstations have high-speed access to the Internet. Numerous software packages are available for instructional purposes.

Energy Conversions Laboratory. Several internal combustion engines are available for experimentation, including single and multicylinder engines. Fuels used are propane, methane, gasoline, alcohol, and diesel. A 100-horsepower dynamometer, Tektronix engine analyzer system, and other instrumentation enable students to investigate power generation and efficiency using the various fuels. A flat-plate, low-temperature water, solar collector, and photovoltaic flatplate solar cogenerator are available for investigating various aspects of solar energy collection.

Flexible Automation Laboratories. Laboratories are available for studies in the areas of robotics, machine vision, decision support, and robotic workcell. The robotics facilities house a teaching robot (SIR–1) and an integrated, 4-axis, SCARA-type, industrial robot (AdeptOne). Two feed conveyors and an x–y table accompany the robots to simulate workcell activities. The machine vision systems include a high-speed computer, a dedicated image processor, a variable scan camera, an electronic shutter area camera, and optics for real-time, 3-D, stereoscopic vision tasks. A spectral analysis system also is available for measuring the spectral properties of biological materials over a wide range of sample sizes, from microscopic to telescopic levels. Software for expert system development is readily accessible to students.

Horticultural Engineering Laboratories. Numerous digital data acquisition and control systems, both microcomputer-integrated and stand-alone, along with a multitude of temperature, humidity, radiation, conductivity, pH, carbon dioxide, air and water flow, and event sensors are available. Radiation sensors include pyrometers, quantum flux, and spectroradiometers. A computer-controlled environmental chamber provides testing and analysis of climate control strategies on full-scale greenhouse, low tunnel, and other controlled-environment horticultural structures. Hydroponic, deep-water culture, and drip-irrigation demonstration units are available for laboratory exercises. Modern automated greenhouse space includes two 180 square-meter structures for heating, ventilation, and cooling-system demonstrations. Also available for instructional purposes are a walk-in microclimate control chamber, a robotic manipulator, a computer-vision demonstration facility, hot air / water solar photovoltaic collectors, and access to nearly 2,000 square meters of state-of-the-art commercial horticultural facilities.

Measurements, Instrumentation, and Control Laboratory. The instrumentation laboratory has several workstations with a full range of equipment for electrical measurements and the study of analog and digital electronics and microprocessors. There are breadboards and components for the design and testing of digital logic circuits and operational amplifier applications. A second area has PC-based systems for studying digital data acquisition, analysis, and digital feedback control. A variety of special sensors, actuators, and two-image processing workstations is available.

Unit Operations and Measurements Laboratory. Equipment available for the measurement and evaluation of physical properties of biological materials includes a universal testing machine, impact test equipment, viscometers, spectrophotometers, facilities for investigating drag properties of particulate solid materials, several electronic moisture meters, vacuum ovens, analytical balances, ultrasonic testing instrumentation, microscopes, electrical conductivity meters, and a refractometer. Equipment for investigating several different fluid flow measurement techniques also is available. For the study of unit operations, the laboratory has a particulate solids separator, attrition and hammer mills, sieve analysis equipment, and a laboratory dehydration unit. Several computers and plotters are available for digital data acquisition and analysis. An associated optoelectronics laboratory contains digital image-processing facilities, along with various sensors and general electronic test instrumentation used for studies involving computerized nondestructive testing and process control.

Other Facilities. Solar-heated greenhouses and a solid-waste composting facility are available. In addition, a combined photovoltaic solar / air heating collector that is incorporated into a crop drying and conditioning system is available. These and many other facilities and equipment are used for instruction in engineering applications to biological systems.

Ceramic and Materials Engineering

The Department of Ceramic and Materials Engineering contains extensive instructional and research facilities pertaining to production, quality control, property analysis, and characterization of the wide variety of conventional and advanced ceramics, glasses, and composite materials required by modern technology. Equipment is housed in an instructional facility and several advanced technology centers, including the Center for Ceramic Research and the Fiber Optic Materials Research Center. Major grants from industry and the New Jersey Commission for Science and Technology have provided these instructional and research facilities.

Laboratory facilities and equipment are available for the processing, forming, firing, and testing of normal types of ceramics. Also available is special equipment necessary for the preparation and evaluation of the newer types of ceramics and composites required in space, advanced engine, fiber optic, and electronic applications.

Evaluation and Measurement. Microscopy equipment includes petrographic and metallographic microscopes, an electron microscope, and scanning electron microscopes. Several X-ray diffraction units provide the capability of identifying phases, with computer-automated, high-resolution systems available for advanced study of particle size, strains, and quantitative phase analysis. Chemistry can be evaluated with techniques such as energy dispersive spectroscopy, atomic absorption, inductively coupled plasma, Fourier transform IR, and laser Raman. Energy dispersive X-ray analysis systems used with the scanning electron microscopes permit microchemical analysis. Virtually all types of particle-size analysis are represented. A surface analysis system provides scanning Auger microscopy coupled with secondary ion mass, X-ray photoelectron, and ion scattering spectroscopies.

Thermal analysis equipment includes simultaneous differential thermal analysis, thermogravimetric analysis, differential scanning calorimetry, thermomechanical analysis, and high-temperature X-ray diffraction.

Dielectric properties of ceramic materials can be measured over a frequency range from 0.01 hertz to 10^{10} hertz. There is equipment for measuring heat capacity, thermal expansion, thermal conductivity, and thermal diffusivity over a wide temperature range. Mechanical properties that may be measured and that are currently being studied include elasticity, viscosity, and plasticity.

Mechanical testing instrumentation includes microhardness, toughness, and modulus- and strength-testing equipment, including advanced computer-controlled servo-hydraulic, electromechanical, and high-temperature creep systems. Various room- and elevated-temperature viscometers permit rheology to be determined. An advanced torque rheometer permits optimization of such industrial processes as mixing, extrusion, and injection molding. Tribology is studied with a specially designed, automated machine that measures friction and wear.

Packaging. Equipment is available to determine tensile, compression, tear, rub, and puncture properties of paper, plastic, metal, wood, glass, and composite material. Water vapor, oxygen, and carbon dioxide permeation of polymer materials is measured with the latest MOCON equipment. Materials and packaged product interaction is measured by gas chromatography. A gel permeation chromatograph is available to measure molecular weight distributions of polymers. Melt index of polymers can be determined. Thermal analysis equipment applicable to transition, degradation, and melting temperatures of polymeric packaging materials is available for both instructional and research use.

Design and testing equipment is available to determine fragility of packaged objects by subjecting them to mechanical shock and sine wave and random vibration. Cushioning for packages can be designed and testing done to evaluate protection offered using the Damage Boundary Curve. An ISTA-certified test laboratory is used by students to evaluate packages they design, with results reported internationally. A professional, corrugated box sample maker is available.

A laboratory packaging line consisting of equipment for weighing, proportioning, or counting of products; handling, filling, and closing of packages; and code dating and checkweighing enables students to run actual line trials and obtain performance data, such as production, weight accuracy, and closure integrity.

Preparation and Forming. Common and special-purpose types of pulverizers, mixers, blungers, extruders, presses, and furnaces are available for pilot-plant production of whitewares, refractories, dielectrics, glass, and other types of ceramics. Microprocessor- and computer-controlled kilns with carefully controlled atmospheres and closely regulated temperatures are especially suitable for sintering studies.

Hot pressing and hot extrusion of special ceramics may be done in a wide range of presses and furnaces, including both cold and hot isostatic presses, atmosphere-controlled hot presses, nitriding furnaces, and injection molders. A wide variety of conventional and novel gas-fired, electric, and radio-frequency furnaces is available.

Advanced ceramic production technologies include special equipment for composites; laser synthesis of ultrafine, perfect powders; R.F./D.C. film sputtering; chemical vapor deposition; and evaporation-deposition. The properties of electronic substrates, packages, and magnetic and superconducting ceramics and devices can be studied in the Howatt Laboratory for Electronic Ceramics. A complete fiber optics laboratory includes an internal chemical vapor deposition lathe, a preform preparation clean room, and two instrumented fiber drawing towers. Extensive online and offline quality control and testing equipment for optical fiber also is available.

Laboratories

Computer Laboratory. This laboratory is equipped with fifteen Silicon Graphics workstations with links to the Rutgers computer center for massively parallel computing and to supercomputers at the national level. Computations are performed in CAD/CAM related to design, manufacture, and properties of materials; in molecular dynamic simulations of materials; and in theory of materials.

Electron Microscopy Laboratory. This laboratory is equipped with a field emission scanning electron microscope (FESEM) and a transmission electron microscope, JOEL 100 CX, and various specimen-preparation facilities. The transmission-electron microscope operates at up to 125 KV and is capable of **6**30° tilting with a top entry specimen holder stage. Materials research by conventional electron microscopy techniques is carried out routinely with the use of this electron microscope. The supporting equipment includes an evaporator, chemical and electropolishing units for thin foils, and darkroom facilities.

Materials Research Laboratory. This laboratory provides the necessary equipment and facilities for the study of structure and structural defects in metals, alloys, and other materials and for the study of techniques, such as the controlled use of precipitate particles or rearrangement of the existing dislocation structures to improve the engineering properties of materials. Among the various facilities of this laboratory are electron microscopes, X-ray facilities, equipment for the preparation and examination of opaque and transparent specimens, electrolytic polishing equipment, Servomet erosion spark cutters for sectioning and planing, various optical microscopes, various induction furnaces and zone-refining equipment for the growth of crystals, and a stress-corrosion test apparatus.

Mechanics and Materials Laboratory. The facilities of this laboratory are used for instruction in determining the mechanical and physical properties of various materials. The available facilities include a hydraulically controlled Instron testing machine with a high- and low-temperature environmental chamber, an Instron universal testing machine, a torsional pendulum apparatus, a sonic modulus tester, a differential scanning calorimeter, an infrared apparatus, a density gradient column, and an apparatus for the study of surface friction.

X-Ray Laboratory. This laboratory provides a variety of X-ray equipment used to determine crystal structure, characterize the defect structure of both metallic and polymeric materials, identify unknown materials, carry out accurate measurements of lattice parameters, and conduct phase identification. The facilities include two Rigaku-Denki rotating anode X-ray generators, Tennelec position-sensitive detectors with Tracor Northern pulse height analysis system, nine X-ray diffraction units, including two microfocusing units and two X-ray units with divergent-beam source, four X-ray double-crystal diffractometers that were specially developed at the materials research laboratory for the study of lattice defects in single crystals as well as in polycrystalline specimens, one Lang X-ray microcamera for the study of dislocation structure in crystals, a special X-ray small-angle scattering apparatus connected to a microfocusing X-ray tube, and one proportional counter plus circuits and automatic microdensitometer for X-ray intensity studies.

Chemical and Biochemical Engineering

The department's instructional laboratories for chemical engineering majors contain numerous modern analytical instruments and process engineering apparatus. Most equipment, such as the computer-coupled, closed-loop, continuous-flow distillation unit, features advanced microprocessor design, representing the state-of-the-art in automation. The department also maintains its own personal computer laboratory. This facility, which is conveniently located within the department's laboratory complex, contains seventeen IBM Pentium computers and one Macintosh computer. The PC-laboratory also has a Hewlett-Packard laserjet printer and plotter, a local area network, and extensive software for problem solving. The facility also provides ready access to the Rutgers network and a variety of supercomputers.

As a special feature, the department's research equipment is available for students in the James J. Slade Scholars Program. The impetus for this unique offering stems from the department's strong commitment to graduate research and its active involvement with sponsored research projects at the university and state high-tech centers. Research is in such areas as biotechnology, computers for industrial productivity, fiber optics, advanced food technology, and management of hazardous wastes.

The department's major instructional laboratories include a chemical-process engineering laboratory, a biochemical engineering laboratory, and laboratories for the study of polymer processes and materials. The chemical-process engineering laboratory is devoted to the study of chemical reactions and physical phase separations for multicomponent systems. Typical apparatus include distillation, gas absorption, liquid extraction, wiped-film evaporation, falling-film evaporation, and computer-coupled process control units. Special devices are used for the study of fluid flow in pipe systems and heat transfer in heat exchangers. Analyses of changes in chemical compositions are aided by gas chromatographs, UV and IR spectrophotometers, refractometers, and many other modern analytical instruments.

The department's biochemical engineering laboratory is devoted to the study of biochemical engineering processes and the detection and separation of biospecies resulting from these bioprocesses. Specific experiments in enzyme and fermentation kinetics, for batch and continuous systems, are provided. This fully equipped biolaboratory contains a wide range of analytical instruments and specialized devices, including a Pharmacia Fine-Chemicals microprocessor-controlled and automated liquid chromatograph analyzer, and a computer-coupled BIOFLOW III fermentor system. A modern pilot-scale fermentation facility,

located at the Waksman Institute of Microbiology, is used in conjunction with department facilities to provide excellent practical experience for students in the biochemical option. A computer-coupled food extruder is available for studying biochemical reactions in a non-Newtonian fluid environment. Also, a fully equipped immunotechnology laboratory for specialized experiments concerned with monoclonal antibody production, identification, and purification is open for use by select groups of students in the James J. Slade Honors Program.

The polymer electroprocessing laboratory is a unique facility directed toward the study of structure / electroprocessing / properties. It contains a wide array of equipment used to provide diverse thermal, mechanical, and electric field histories. These include hydraulic presses and film drawing devices, computer-controlled current density compared with electric field measurement systems for the study of ferroelectric polymers, a Rheolograph Solid (Toyo Seiki), a computer-controlled state-of-the-art apparatus for measuring the piezoelectric, dielectric, and dynamic mechanical response of polymers as functions of temperature and frequency, a DSC and FTIR, and a wide array of X-ray diffraction equipment. The ion-containing polymer characterization laboratory contains various equipment, especially for light scattering and mechanical testing. Light scattering instruments include low-angle light scattering, wide-angle and dynamic light scattering, and a differential refractometer. Mechanical testing instruments include a Minimart Tester and a dynamic mechanical thermal analyzer (polymer laboratory). There also is a facility for the investigation of theoretical properties of polymers by thermodynamics and statistical mechanics and other methods, and for computer modeling of their behavior.

Civil and Environmental Engineering

The curriculum requires that all students obtain firsthand experience in the use of a wide range of modern experimental equipment. The purpose of the laboratory instruction is to complement the theoretical and analytical course work and to verify the fundamentals learned in the courses. The department's laboratory facilities are located in the Civil Engineering Laboratory Building and the Civil Engineering Building, which are equipped to carry out a broad spectrum of sophisticated research and instruction in virtually all aspects of civil engineering.

Concrete Structures and Materials Laboratory. This laboratory has facilities for instrumentation and testing for failure of reinforced and prestressed large-span beams, columns, connections, and large-panel slabs. The equipment includes a 1,000,000 lb. capacity compression tester; a 650,000 lb. capacity girder and frame tester for testing simple and continuous girders; a 350,000 lb. capacity slab, pipe, and frame tester; two Hewlett-ßPackard 100-channel data acquisition and processing systems; a 20 x 25 ft. temperature- and humidity-controlled environmental chamber; and facilities for rapid freezing and thawing tests.

Environmental Engineering Laboratory. This laboratory is equipped for performing basic and analytical work for the analysis of water and wastes and the unit processes associated with treatment.

The equipment includes a gas chromatograph, total organic carbon analyzer, atomic absorption analyzer, pH meters, centrifuges, constant-temperature water baths, ovens, an exhaust hood, various mixing devices, and pumps. It also includes equipment for assessment of the effect of hazardous liquids on the geohydrologic properties of soils, such as flexible type permeameters.

Fluid Mechanics and Hydraulics Laboratory. Several apparatus are available for basic student instruction. Three multipurpose hydraulic benches are equipped with attachments designed to demonstrate the basic principles of mass, momentum, and energy conservation and transfer. A tilting flume is available for similar experiments and demonstrations. The laboratory is equipped with a set of hot film anemometers for turbulent flow measurements of velocity fluctuations and their correlations. Apparatus to study sediment transport and water quality also are available.

Large-Scale Structures Laboratory. This laboratory features a 25 x 50 ft. reaction floor having tie-down points designed to resist uplift forces of thirty kips each. A five-ton bridge crane spans the floor. "Erector set" type fixtures are utilized to provide maximum flexibility for testing a variety of full-scale structural components. Hydraulic jacks with capacities of up to 100 tons are available for application of structural loads. An MTS Closed Loop Electrohydraulic Test System capable of more than 125,000 lb. of force and velocities of up to 350 in. per minute is available for the application of dynamic and repeated loads.

Microcomputer Laboratory. Undergraduates use this facility extensively for course and laboratory work and computer graphics. The laboratory is equipped with the latest personal computers. There is an ample number of printers and plotters. More than forty software packages are available for computer-aided design, construction engineering, geotechnical engineering, structural engineering, and water resources. The laboratory is updated continually as computer technology advances.

Soil Dynamics Laboratory. This laboratory is equipped to study wave propagation characteristics through soil and rock, the basic dynamic properties of particulate materials, and the interaction between foundation structures and underlying soils. The equipment consists of a resonant column device, a high-strain amplitude torsional shear test apparatus, a cyclic triaxial shear system, and a miniature electrodynamic exciter used for studying the response of dynamically loaded model footings. A cross-hole apparatus and a wave analyzer are available for subsurface investigation.

Solid Mechanics Laboratory. This laboratory is equipped to determine the strength and physical properties of engineering materials. There are universal testing machines, with a maximum capacity of 60,000 lb. for tension and compression tests; a torsion machine; Brinell and Rockwell hardness testers; an impact machine; beam-testing rigs; and strut buckling apparatus.

Soil Mechanics and Foundation Engineering Laboratory. This laboratory contains up-to-date equipment for the performance of soil identification and classification tests and for the determination of physical, hydraulic, and mechanical properties. The equipment includes standard as well as back-pressured consolidometers; direct, triaxial, and laboratory vane shear strength devices; and various permeameters. An automatic triaxial testing system also is available. A large-capacity environmental chamber is available for temperature and humidity control testing.

Electrical and Computer Engineering

Departmental Computer Facilities. The department has a network of UNIX workstations and x-terminals available in the undergraduate instruction laboratories. Most of the workstations and servers are Sun Solaris based with additional access to Silicon Graphics and Hewlett-Packard workstations. More specialized undergraduate instructional laboratories associated with the courses in digital signal processing, electromagnetic fields and radiation, microwaves, and microelectronics are provided with a large number of PC-Pentium computers and laser printers. The department has high-speed networking capability. In addition, terminals provide access to the School of Engineering Sun Ultra 10 computer systems hosting state-of-the-art CAD/CAM software packages. Sophisticated engineering packages are available, such as Mentor Graphics, Cadence, EESOF, SPICE, Matlab, Maple V, SPW, and a variety of graphics packages.

Communication Systems Laboratory. This laboratory contains equipment for the study of analog, pulse, and digital modulation methods. Facilities include multimeters, wideband signal generators, oscilloscopes, and spectrum analyzers. Experiments involve a range of topics requiring communication circuit and system design, using breadboarded components through the sophisticated subsystem module interconnection. In addition, computer simulation methods are used to verify system performance. A graphics-based communication systems simulator software package is available.

System performance is investigated for amplitude, phase, and frequency modulation techniques, including pulse position, width, and amplitude data transmission schemes, binary and M-ary digital modulation and receiver structures, and spectral occupancy versus power constraints.

Computer Architecture Laboratory. This laboratory consists of experimental stations that provide students with opportunities to gain experience with the internal workings of a microcomputer, learn assembly programming for a standard commercial microprocessor, and learn how to interface input/output memory, serial I/O, and parallel I/O chips to a standard microprocessor.

Digital Logic Design Laboratory. This laboratory provides practical experience with the design and hardware implementation of digital circuits for sophomore students. The laboratory is based on a CAD tool from Viewlogic to simulate and debug a circuit that is then implemented in hardware using SSI and MSI ICs. The experiments cover all the relevant topics about combinational and sequential logic with circuits of increasing complexity.

Digital Signal Processing Laboratory. This laboratory is available for undergraduate instruction and special projects. Microprocessor-based workstations provide flexibility in the design and analysis of various real-time digital filtering operations. Experiments in speech and audio signal processing demonstrate digital methods used in processing analog signals. Other facilities include a digital image-processing laboratory and a variety of special-purpose signal processors.

Electronics Laboratory. This laboratory contains equipment for the study of solid-state devices and circuits. Experiments involve studies of biasing and low-frequency operations of discrete solid-state devices, frequency response, and the effect of feedback on single- and multistage BJT and MOSFET amplifiers. Further studies include OP-AMP parameters, frequency response, and OP-AMP linear and nonlinear circuits and systems. The laboratory is well-equipped for a range of student projects in electronic circuit designs.

Microelectronics Research Laboratory (MERL). MERL provides students an opportunity to familiarize themselves with the integrated circuit fabrication and semiconductor device processing techniques in a modern, clean-room environment. Students become familiar with the photolithography, oxidation and diffusion processes, ion implantation, metallization, plasma etching, silicon micromachining, interconnects, and fabrication of different devices. In addition, a well-equipped simulation laboratory is used for the modeling of circuits, devices, and processes related to the experimental and theoretical aspects of semiconductor technology.

Solid-State Electronics Laboratory. In addition to the facilities provided by the microelectronics research laboratory (MERL), facilities exist for the study of microwave devices, high-current switching devices, electro-optical modulation, heterojunction lasers, and electrical characterization of materials, as well as their use in communications, different solar cells, and related devices.

Telecommunication Networks Laboratory. This laboratory consists of multimedia workstations, a protocol analyzer, optical networking instrumentation, and high capacity switches. The hardware and software facilitate experimental instruction on network design and management, network programming, and performance/analysis. The laboratory offers experimental instruction for multipurpose communication networks.

VLSI Design Laboratory. This laboratory consists of Sun and HP engineering workstations, a color plotter, automatic test equipment for VLSI chip testing, and a laser printer. Students are able to design integrated circuits and in some cases may be able to have them fabricated and tested. The laboratory has the Generator Development Tool industrial chip design software that supports silicon compilation mixed-level circuit simulation (including SPICE), automatic chip layout generation from circuit schematics, and the VHDL hardware description language.

In addition to the above-mentioned laboratories, students interested in special projects in computer engineering may take advantage of the many well-equipped faculty-supervised research laboratories, available in such specialties as robotics, computer graphics, computer database design, speech processing, image processing, machine vision, and software engineering.

Wireless Information Networks Laboratory (WINLAB). WINLAB provides facilities for students to study and research the rapidly evolving area of wireless networking and speech technology. Equipment includes a fully operational cellular base station and peripheral equipment, a system of fully networked Sun computers, a hardware fabrication lab, and a unique wireless environmental simulator.

Industrial Engineering

Facilities Design and Productivity Laboratory. The laboratory is used for instruction in the areas of plant and facilities layout and design, as well as in the area of materials handling and control. The laboratory is equipped with belt conveyors, plant layout prototypes, and two- and three-dimensional capabilities for facilities design. CAD stations for designing complex facilities also are available.

Manufacturing Automation Laboratory. The laboratory is equipped with state-of-the-art equipment in CAD/CAM (computer-aided design and computer-aided manufacturing) and manufacturing automation equipment. It includes full-scale CNC milling machines, a CNC lathe, Puma, Mitsubishi, and Seiko robots, an automated storage and retrieval system, a material handling carousel, and a wide arrangement of CAD software, including IDEAS and MASTERCAM. CAD stations and graphics terminals also are available.

Manufacturing Information Systems Laboratory. This laboratory is equipped with state-of-the-art programmable logic controllers and microcontrollers for controlling manufacturing processes, as well as binary and analog sensors for monitoring manufacturing processes, and bar code equipment and other automatic data acquisition devices used in manufacturing plants. State-of-the-art microcomputers with database management tools and data acquisition software are networked with programmable controllers to emulate supervisory control and data acquisitions systems in a factory environment.

Manufacturing Processing Laboratory. Basic machine tools such as turning, milling, drilling, grinding, and measuring machines are available to help the student to become familiar with metal-processing operations. The equipment also is used to perform laboratory experiments in heat treatment, chip formation, tool life, cutting forces, temperature, chip metallurgy, and power consumption.

Microcomputer Laboratory. This laboratory is equipped with state-of-the-art microcomputers, printers, and visual aids. The lab has a very large number of simulation software, such as Siman, XCELL, GPSS, Promodel, and optimization software Lindo, and Gino. It has software for quality control, plant layout, production control, statistical analysis, and text processing. The equipment is connected to a university-wide network.

Quality and Reliability Engineering Laboratory. This laboratory allows students to have hands-on experience in actual methods of quality control and reliability engineering. A variety of software for control charts, sampling plans, and design of experiments is available. The laboratory has a wide array of materials testing equipment, roundness measurement equipment, temperature chambers, vibration tests, and voltage stressing equipment. Labview and Statgraphics software is available for students' use.

Mechanical and Aerospace Engineering

The laboratory curriculum in mechanical and aerospace engineering has been structured to help students integrate physical understanding with theoretical knowledge, and to familiarize them with advanced engineering systems and instrumentation for multidisciplinary problem solving in the twenty-first century. Laboratory exercises begin with introductions to basic measurement concepts and culminate in the exploration of complex, open-ended engineering problems. Facilities are continuously upgraded to provide an effective learning environment. State-of-the-art facilities, which are integral parts of the undergraduate laboratory experience, include a stereolithography rapid prototyping machine, a Mach 4 supersonic wind tunnel, and a pair of industrial-quality robotic arms. The undergraduate and research laboratory space is integrated physically to provide personal, often informal, contact and communication among undergraduate students, graduate students, and faculty. Undergraduate participation in research is widespread and strongly encouraged. A summary listing of facilities comprising the undergraduate laboratories follows.

Design and Manufacturing. Mechanical and aerospace engineering analysis, design, and synthesis problems are investigated in the Computer-Aided Design (CAD) laboratory. Students gain hands-on experience on CAD workstations through exercises in automated drafting, simulation of kinematic and dynamic problems, and stress analysis using finite element methods. Extensive software is available, including CAE, Ideas, Ansys, Simulink, Matlab, Maple, Mips assembly language, and programming in C and Fortran.

Exposure to advanced manufacturing techniques is provided through machine-shop training as well as use of a 3-D Systems SLA-190 stereolithography machine. This state-of-the-art rapid prototyping facility operates through the use of a UV laser to trace out layers of a finished CAD drawing in a bath of liquid polymer resin. The resin cures wherever the laser makes contact, making it possible to rapidly create a plastic model of a design in only a few hours.

Dynamics and Vibrations. Prediction and control of the response of structures subject to dynamic loadings are a central component of mechanical and aerospace engineering design and analysis. Experiments have been designed to illustrate dynamic response of single- and multiple-degree of freedom systems, as well as to carefully examine frequency and amplitude response of structural components. Diagnostics are conducted using advanced laboratory computers and digital spectrum analyzers, in addition to conventional strain gages and impact hammers.

Fluid Dynamics. Fundamental principles and advanced systems involving fluid flows, ranging from demonstrating Bernoulli's principle to assessing the lift and drag characteristics of airfoil designs, are examined in the undergraduate curriculum. Facilities include four low-speed wind tunnels and a Mach 4 supersonic wind tunnel; a large free surface water tunnel also is used for undergraduate participation in independent or sponsored research. Advanced instrumentation includes hot-film anemometry with computerized data acquisition, and optical diagnostics techniques.

Robotics and Mechatronics. Critical concepts in system control as well as advanced theories of robotics and mechatronics are investigated using two five-axis Mitsubishi RV-M2 robots, each with a reach of 450 mm. Automated assembly operations, trajectory planning, force control, and object manipulation are topics that can be addressed in the laboratory exercises. This dual-purpose educational/research laboratory enjoys a particularly high degree of undergraduate student participation in the research component.

Solid Mechanics. Mechanical properties of materials are examined in the newly completed solid mechanics laboratory. Facilities include three Instron tensile testing machines with digital data acquisition and control, and three hardness testing machines. Laboratory exercises have been structured to highlight phenomena associated with deformation and failure of engineering materials. Additional research-quality facilities available to undergraduates include larger MTS and Instron testing machines. These instruments are used in research on biomechanical systems and composite materials, respectively. Undergraduate research also may be conducted in a high pressure, ~100,000 psi, materials testing / processing laboratory.

Thermal Sciences. A variety of energy-related experiments is offered in the undergraduate curriculum from basic sciences of thermodynamics and heat transfer, to assessing the performance and environmental impact of a steam turbine power generating system. Specific experiments include convection and radiation heat transfer exercises, and experiments carried out in an internal combustion engines laboratory and the steam power generator facility. A partnership with local industry to design the applied engineering laboratories has provided students with realistic simulations of actual engineering problems and scenarios.

Computers

Computer facilities are available at the university, college, and departmental levels, and via several supercomputers, at remote sites through the School of Engineering Supercomputer Remote Access Center (SRAC). Rutgers University Computing Services (RUCS) manages general-purpose facilities that may be used for both instruction and research. These facilities include the ICI and RCI projects.

The School of Engineering makes use of a variety of facilities to provide computing support to its members. The Engineering Computing Services (ECS) group provides faculty and students with advice and assistance in choosing which facilities will best match their requirements. The facilities available include those offered through the Instructional Computing Initiative, the Research Computing Initiative, the High Performance Computing Project, and a variety of college and departmental laboratories.

The Rutgers University Instructional Computing Initiative (ICI) is a project to provide contemporary computing capability and Internet access to all registered students at Rutgers. The ICI system provides access to instructional software and access to on-campus computing facilities. The back-end machines are provided by Sun Microsystems, and the laboratories are composed of Macintosh, Windows, and UNIX-based machines, as well as printers for instructional purposes. There are facilities available on each of the New Brunswick campuses. All of the laboratories are connected to RUNet, which gives all users access to the Internet.

The Rutgers University Research Computing Initiative (RCI) is a project to provide a world-class research computing facility to all faculty and staff at Rutgers. The back-end machines are Sun Microsystems servers; these servers also provide interactive use. In addition to regular disk storage facilities, RCI also has optical jukebox technology that allows for hierarchical storage and archival capabilities for users with large data sets. The RCI systems are connected to the large storage array via a high-speed network exclusive to its own machines. In addition, they are capable of connecting to the Internet via RUNet.

The High Performance Computing Project (HPCP) provides local development and analysis capabilities for large computing projects that utilize the National Science Foundation Supercomputer Centers, as well as a variety of other supercomputer centers internationally. The HPCP provides local Supercomputer Remote Access Center (SRAC) laboratories in many departments at the university, including the School of Engineering. The SRAC in the college is maintained by ECS. It consists of a Sun Microsystems server and a laboratory of UNIX workstations. A variety of development software, as well as presentation and graphics software, is available. The laboratory is connected to RUNet via a high-speed School of Engineering backbone.

Engineering Computing Services also maintains a state-of-the-art instructional laboratory for engineering-specific course work called the Design, Simulation, and Visualization (DSV) lab. This facility consists of sixty Sun Ultra 10 workstations and a SmartBoard projection screen with color projector. Each workstation consists of a 360 MHz UltraSparcIIi processor, a 256 Mbyte RAM, 21-inch color monitor, Elite #D m3 graphics, and a PC coprocessor card. The workstations operate under UNIX, and the coprocessor under Windows. The DSV lab offers a variety of software to support instruction in engineering courses, including MATLAB and a Computer-Aided Design system.

All School of Engineering departments have their own microcomputer laboratories that provide software for the special use of their faculty and students. All of the facilities are connected to RUNet via the high-speed engineering backbone.

Libraries

The Rutgers University Libraries rank among the nation's top research libraries. More than three million volumes are contained in twenty-five libraries, reading rooms, and collections on the university's three campuses. Engineering students have access to extensive science and engineering collections in the Library of Science and Medicine, the mathematics, physics, and chemistry branch libraries located on Busch campus, and the Chang Science Library on Cook campus. In addition, the Archibald S. Alexander Library houses a large research collection in the humanities and social sciences. There also are many general and specialized collections in libraries located in Newark, Camden, and New Brunswick / Piscataway.

The Libraries provide numerous electronic resources to the Rutgers community. Library users can search IRIS, the online catalog, through the Libraries' web site at http://www.libraries.rutgers.edu/. From this address, students, faculty, and staff also may access a variety of electronic indexes and abstracts, full-text electronic journals, subject web guides, and library services. In addition to the online resources, the Libraries provide hundreds of CD-ROM titles.

At the Library of Science and Medicine, professional librarians assist students and faculty with engineering resources. The Rutgers Request Service and Interlibrary Loan Service allow students to place requests for books and journal articles located in a library on another campus or outside the university. Library instruction classes also are available to improve students' information-seeking skills for lifelong learning.

Academic Policies and Procedures

Note: See also the University Policies and Procedures section for regulations that pertain to all the undergraduate colleges at Rutgers–New Brunswick.

STUDENT RESPONSIBILITY TO KEEP INFORMED

The academic policies and procedures in this chapter apply to all students enrolled at the School of Engineering. Students in one of the five-year, dual-degree programs also should consult the section in this catalog that deals with the college from which they will earn their second degree. Similarly, students in the first two years of the four- or five-year program at the Camden College of Arts and Sciences or the Newark College of Arts and Sciences are responsible for the information in the catalog of one of those colleges. In addition to the material in this catalog, engineering students are responsible for information appearing in the Undergraduate Schedule of Classes and the Official Notices printed every Tuesday in the Daily Targum and sent via campus mail or electronic mail. All students are responsible for maintaining an active campus post office box and a university email account.

ACADEMIC CREDIT

Advanced Placement

Degree credit and placement are granted for grades of 4 and 5 in the College Board Advanced Placement Examinations, provided the subject matter is equivalent to those courses satisfying the engineering curriculum requirements. Each student has the option of presenting advanced placement results for degree credit or of taking the equivalent course at Rutgers for degree credit and a grade. Students may not receive credit for both advanced placement and the equivalent Rutgers course.

Proficiency Examinations

With the approval of the associate dean for academic affairs and the department that offers the course, students may pay a fee and take a proficiency examination in order to fulfill a prerequisite or satisfy a course requirement. Satisfying a course requirement by this means alone does not entitle the student to degree credit unless specific approval is obtained from the associate dean for academic affairs prior to taking the examination. Proficiency examinations may not be used to obtain credit for a course that a student has failed. A grade of B or better on the proficiency examination is required for degree credit. Grades on such examinations are not included in the cumulative grade-point average.

Transfer Credit from Institutions Other Than Rutgers

Engineering students who have transferred to Rutgers from another institution may receive degree credit only for those courses that are equivalent in content and credits to courses required in their curriculum and passed with a grade of C or better. Transfer credit for required engineering courses of the junior and senior years is granted only for courses taken in curricula accredited by the Accreditation Board for Engineering and Technology. Credit is granted at the time of entrance to the college for new transfer students. Students enrolled at the School of Engineering who wish to receive credit from another institution must receive prior approval from the associate dean. Transfer credits and grades from institutions other than Rutgers are not included in the student's cumulative grade-point average. This policy applies both to transfer credits granted at the time of admission and to any summer or special work taken at other institutions while the student is a candidate for a bachelor's degree at Rutgers. An official transcript of all work at other institutions of higher learning is required whether or not transfer credit is claimed.

Transfer Credit from Other Programs at Rutgers

A student who has transferred to the School of Engineering from a nonengineering program at Rutgers may receive credit toward the Bachelor of Science degree for those courses that satisfy the engineering curriculum requirements. The student's cumulative grade-point average is based on grades earned in all courses taken at Rutgers prior to transfer and all subsequent courses taken for credit after entry into the engineering program.

REGISTRATION AND COURSE INFORMATION

Academic Advising

First-year engineering students are advised by the assistant dean for first-year students. After selecting a major, students are assigned to and advised by a faculty member in their major curriculum. In the first two years of a five-year, dual-degree program, students are assigned to advisers through the office of the dean of the college that has academic jurisdiction.

Students are required to consult their advisers at least once each term prior to registering for the next term. Students must assume full responsibility for conforming to the academic regulations of the college and for taking specific courses required in the appropriate term for the chosen curriculum. Students also must be careful to ascertain that they have the proper prerequisites for any course for which they register. Students are encouraged to consult the associate dean for academic affairs, the assistant dean for first-year students, the assistant dean for special programs, and any other member of the engineering faculty for advice regarding their educational or professional development.

Registration

Registration for matriculated students begins in October for the following spring term and in March for the following fall term. Matriculated students register through the Rutgers Touchtone Telephone Registration System (RTTRS) or online web registration system. Registration is completed upon full payment of tuition and fees by the announced deadline prior to the start of the term. The university reserves the right to restrict registration in all courses offered and, when necessary, to cancel courses previously announced. See the Tuition and Fees section for further information on registration.

Change of Courses. See the University Policies and Procedures section for drop/add procedures.

Course Load

All engineering curricula contain carefully integrated sequences of courses that must be taken in the proper order. It is generally advisable for the student to follow the program as shown in the Programs of Study chapter later in this section. When necessary, a student may modify his or her program to take from 12 to 21 credits in any term. No modification beyond these limits may be made without the approval of the associate dean for academic affairs. Before making any changes, the student should look ahead and assess the possible effects on future scheduling of courses.

Withdrawal and Readmission

Withdrawal. A student who wishes to withdraw from the university with grades of W must consult the associate dean for academic affairs and fill out a withdrawal form. Students who leave the college without officially withdrawing receive a grade of F in each incomplete course. Unless excused because of reasons beyond their control, students who withdraw after the twelfth week of the term receive a grade of F in all courses. The refund of tuition is calculated from the effective date as indicated by the dean on the withdrawal form submitted to the registrar.

Readmission. Students who interrupt their registration in the School of Engineering and wish to return must apply for readmission to the associate dean for academic affairs.

Those who leave in good academic standing and who do not have outstanding financial obligations to the university ordinarily will be readmitted if they apply by December 1 for January entrance or August 1 for September entrance. Later applications receive special attention if space is available.

For the college's policy on readmission after dismissal for academic reasons, see the Scholastic Standing section later in this chapter.

Course Information

Graduate Courses. An undergraduate student may enroll for a graduate-level course with the approval of the course instructor or the graduate director and the administrator of the graduate school offering the course. The student must submit an application form to the graduate school. In general, approval is given only to seniors who have cumulative grade-point averages of 3.0 or better.

Pass/No Credit Courses. An engineering student may take one elective course (not exceeding 4 credits) on a Pass/No Credit basis in any two terms of the curriculum. An application to enroll in a course for Pass/No Credit must be filled out by the student and presented to the office of the associate dean within four weeks of the start of the term. For courses taken during Summer Session, the application must be submitted by the end of the first week of classes. Students taking a course for Pass/No Credit must take all quizzes and examinations and are subject to attendance requirements. Grades of A, B, and C correspond to Pass, and D and F correspond to No Credit.

Auditing Courses. Upon obtaining the permission of the instructor of the course and subject to the availability of space, full-time matriculated students may audit courses without registration. No academic credit is earned in this manner and no notation is made on the student's academic transcript.

Summer Courses. For courses taken at institutions other than Rutgers, the prior approval of the associate dean for academic affairs of the School of Engineering is required in order to receive degree credit. Students in the first two years of a five-year program must obtain approval from the office of the dean of the college that has academic jurisdiction during that time period.

Only courses taken at divisions of Rutgers are included in the cumulative grade-point average. For courses taken elsewhere, it is the student's responsibility to have an official transcript mailed directly to the office of the associate dean. Degree credit is granted only for those courses that are equivalent in content and credits to courses required in the student's curriculum and passed with a grade of C or better.

Attendance. Students are expected to attend all scheduled course meetings. No special provisions are made for reporting occasional absences from class. However, when absences are so excessive as to impair the student's academic achievement in any course, a report is sent by the instructor to the associate dean of the School of Engineering. Reasons for the absences are then investigated and a report is sent to the instructor. Students are expected to notify the associate dean if they find that they will be absent from class for one week or more.

The makeup of work missed due to class absences is the responsibility of the student. The extent to which such work is counted toward the student's grade is left to the discretion of the instructor. A student absent from class because of required religious observance is excused without penalty.

Examinations. Final examinations are held at the end of each term. All students enrolled in a course in which a final examination is given must take the examination. During the term, unannounced and announced tests may be held at the discretion of each instructor. Common hour examinations in multisection courses may be scheduled during the evening hours on Monday through Thursday. They are not scheduled on Saturdays, except in those courses that regularly meet on Saturdays.

Declaration and Change of Curriculum

Choice of Curriculum. Students in the four-year program choose the curriculum in which they will major at the end of the first year. Students in the five-year B.A./B.S. program choose an engineering curriculum at the end of the second year.

Change of Curriculum. Students wishing to change their curriculum must fill out an application form that may be obtained from the office of the associate dean for academic affairs. The change is not effected until approved by the old and new departments and until the completed form is filed with the registrar and appropriate deans.

SCHOLASTIC STANDING

Cumulative Grade-Point Average

The student's cumulative grade-point average is based on all grades in courses completed at Rutgers and accepted for credit by the faculty of the School of Engineering, including courses failed and repeated. The university cumulative grade-point average includes all courses taken in the university. The grade-point average within the major includes specific courses identified by each department as comprising the grade-point average for the major. Generally, this includes all courses required of the major except the common core courses required of all majors in engineering and the humanities / social science and general electives. See the University Policies and Procedures section for information on the computation of the grade-point average and other grading regulations.

Repeated Courses

When failed courses are repeated, both the F and the new grade are included in the cumulative grade-point average. Courses in which a grade of D is earned may also be repeated, but only once, with both the original and new grades included in the cumulative grade-point average. A withdrawal with a W grade is not counted as a repeat. Courses in which a grade of C or higher is earned may not be repeated for inclusion in the cumulative grade-point average. If such courses are repeated, the second grade will not be included in the cumulative grade-point average.

Grade Replacement

When courses are repeated, the original grade of F or D normally is not removed from the cumulative grade-point average. In the event of significant extenuating circumstances, replacement of the original F or D grade in the cumulative grade-point average may be approved by the associate dean for academic affairs upon review of the documentation of such circumstances and successful completion of the repeated course.

Class Designation

A student's class designation is determined by the predicted year of graduation. This designation depends not only on the number of earned degree credits, but also on the completion of key prerequisite courses in the curriculum.

Dean's List

At the end of each term, the Dean's List is published, recognizing those students who have obtained the following term averages with no grades of F while enrolled in a minimum of 12 credits of engineering or engineering-related courses: seniors, 3.5 or better; juniors, 3.4 or better; sophomores, 3.3 or better; and first-year students, 3.2 or better. All courses for which a student is enrolled must be completed and grades must be recorded at the time the Dean's List is prepared. Students on the Dean's List receive a letter from the dean and a special designation on their university transcript.

Poor Academic Performance

Academic Review. At the end of each term, the Committee on Scholastic Standing, composed of elected faculty and representatives of the dean of the college, reviews and may take action on the record of every student whose university term or cumulative grade-point average is 1.8 or less or whose cumulative grade-point average within the major is 2.0 or less. Students who were placed on probation at the end of the previous term also are reviewed. These students may be given a warning, placed on probation, or dismissed from the School of Engineering.

Probation. Students are placed on probation when the academic record and / or circumstances indicate that the student is in danger of being dismissed unless substantial improvement is shown. Students are notified in writing of probationary status and the conditions of probation before the start of the next term. While on academic probation, students must consult with faculty advisers regularly, curtail extracurricular activities, including employment, and attend class regularly. Removal from probation depends on academic performance, including grades and progress in the major, in the following term.

Students placed on probationary status may appeal in writing to the associate dean. Grounds for appeal include technical error and / or changes in temporary grades. Letters of appeal must state the reasons for appeal and must be written by the student, although advice from others may be sought in formulating the appeal.

Dismissal. Except for students in their first term, students may be dismissed if (1) the university cumulative grade-point average is 1.8 or less, or (2) the cumulative grade-point average in the major is 2.0 or less, or (3) the term grade-point average is 1.4 or less, or (4) there have been two prior terms in which the student was placed on probation. Students in their first term may be dismissed if their grade-point average for the term is less than 1.0. Students are notified in writing of academic dismissal.

Students dismissed from the college by action of the Committee on Scholastic Standing may appeal their dismissal in writing to the committee chairperson. Grounds for appeal include technical error, changes in temporary grades, extenuating circumstances, and / or additional information not previously available to the committee. The letter of appeal must state the reasons for appeal and, when possible, should be accompanied by appropriate documentation. Letters of appeal must be written by the student, although advice from others may be sought in formulating the appeal. The appeal must be received by the committee within one week after the date of the dismissal letter. Action by the committee is final.

Readmission. Students who have been dismissed from the college because of poor academic performance may not apply for readmission until they can produce evidence to indicate that the causes of failure have been overcome. Normally, this evidence consists of the satisfactory completion of one year of work at another accredited college in a program of study approved in advance by the associate dean for academic affairs. The program of study should include at least 24 credits of engineering or engineering-related courses. Students are usually not considered for readmission after a second dismissal action. Juniors and seniors are considered for readmission only in special cases with the approval and advice of the associate dean for academic affairs.

Each application for readmission is considered on its own merits. In no case may it be assumed that satisfactory grades at another institution will lead automatically to readmission.

DISCIPLINARY PROCEDURES

The Board of Governors of Rutgers, The State University of New Jersey, has established a list of offenses that may result in separation from the university. These offenses are handled through the University Code of Student Conduct. (See the University Policies and Procedures section.) In addition, each college has a hearing procedure for use in instances where charges against a student are not of sufficient gravity to lead to separation from the university. For School of Engineering students, hearings in academic dishonesty cases are conducted by the assistant dean for special programs. For nonacademic offenses, hearings are conducted by the dean of students of the student's affiliated college. The hearing procedures are available in the Office of the Dean.

Degree Requirements

REQUIREMENTS

Credits and Residency

Students must complete a prescribed program of study in their declared major, outlined in the Programs of Study chapter, including the distribution requirements for departmental, technical, general, and humanities / social sciences electives. The total number of credits required for graduation varies from 128 to 139 credits in the four-year program, depending on the student's major.

Students in the five-year, dual-degree (B.S. / B.A. or B.S. / B.S.) program must complete an additional 30 credits of electives acceptable toward the second degree and must plan a total program that satisfies all the degree requirements of both the School of Engineering and the college offering the second degree. See the Programs of Study chapter for further information.

No degree is awarded to any student who has earned fewer than 30 credits at Rutgers. Not more than 12 of the last 42 credits for the degree may be taken outside Rutgers.

Minimum Scholastic Requirements

The degree of Bachelor of Science from the School of Engineering is not awarded to any candidate whose university cumulative grade-point average is less than 1.800 or whose cumulative grade-point average in the major is less than 2.000.

GRADUATION

Degrees are conferred by the university upon recommendation of the faculty only at annual commencement at the end of the spring term. Students completing degree requirements in October or January may ask the registrar for a certificate attesting to their completion of degree requirements after October 1 or after February 15. All students are required to file a diploma information card with the registrar, normally at the beginning of the senior year.

Degrees are conferred *in absentia* when the candidate has advised the registrar in advance of inability to attend commencement. Diplomas are withheld from all students whose financial or library accounts are not cleared.

Graduation with Honors

General honors are noted on the student's diploma and in the list of degrees and honors conferred.

Students whose cumulative grade-point averages at the end of the senior year are at least 3.200, 3.400, or 3.650 may be graduated with "Honors," "High Honors,'' or "Highest Honors," respectively.

Programs of Study

The following curricula are offered by the School of Engineering. The numbers indicate the curriculum code for each major program.

4-Year	Curriculum	5-Year
073	Applied Sciences in Engineering	072
125	Biomedical Engineering	123
127	Bioresource Engineering	128, 129
150	Ceramic Engineering	151
155	Chemical Engineering	156
180	Civil Engineering	181
332	Electrical and Computer Engineering	333
540	Industrial Engineering	541
650	Mechanical Engineering	651

Students in the first year of a four-year curriculum are assigned curriculum code 004. Students in the first two years of a five-year B.A./B.S. program are assigned curriculum code 005.

SUMMARY OF ACADEMIC PROGRAMS

Four-Year Undergraduate Programs

Students who wish to pursue four-year engineering curricula normally take the entire program in the School of Engineering at New Brunswick. In the four-year programs, the first year is common to all curricula. At the end of the first year, the student selects a curriculum in which to specialize. Guidance in selecting a curriculum is provided principally through the introductory engineering course. Departmental advisers also are available. For program details, see Four-Year Engineering Curricula in this chapter.

It is possible for a student to complete the first two years of a four-year program at the Camden College of Arts and Sciences (CCAS) or the Newark College of Arts and Sciences (NCAS). Some curricula may require attendance at Summer Session or an extra year of study in New Brunswick in order to complete degree requirements. For program details, see Transfer Programs with Newark and Camden in this chapter.

Five-Year, Dual-Degree Undergraduate Programs

The five-year programs offer dual degrees in conjunction with various other undergraduate colleges at Rutgers. A B.A./B.S. program is offered in cooperation with three liberal arts colleges in New Brunswick: Douglass College, Livingston College, and Rutgers College. Students normally enroll at one of the liberal arts colleges initially and then select a particular engineering curriculum at the end of the second year when they transfer to the School of Engineering. Alternatively, students enrolled in the four-year program at the School of Engineering may apply at any time prior to their final year to one of the liberal arts colleges for admission to the B.A./B.S. program. A B.S./B.S. program (in bioresource engineering only) is offered in cooperation with Cook College. For program details, see Five-Year Engineering Curricula in this chapter.

It also is possible for a student to complete the first two years of a five-year B.A./B.S. program at CCAS or NCAS. For program details, see Transfer Programs with Newark and Camden in this chapter.

Precurriculum Preparation

Some students may choose or be required to take designated courses in order to prepare adequately for success in the required curricula outlined below. These courses may include, but are not limited to, the subject areas of mathematics, physics, chemistry, biology, and English. Selection of these courses is on the basis of placement tests administered upon admission to the School of Engineering. They are viewed as necessary additions to the required curriculum, and do not replace any of the designated curriculum courses.

Other Academic Programs

For further information about the following programs, see the appropriate heading later in this chapter.

Five-Year B.S./M.B.A. Program. This special joint program between the School of Engineering and the Graduate School of Management enables qualified students to earn the Master of Business Administration degree within one calendar year of completing the baccalaureate degree requirements.

Honors Program. The School of Engineering offers an honors program for outstanding students. Information concerning the honors program is located at the end of this chapter.

Study Abroad

An exchange program between the School of Engineering and City University in London, England, is available to qualified students. Engineering students also may enroll in programs coordinated by the Rutgers Study Abroad Office. The associate dean for academic affairs should be contacted for detailed information.

Declaration of Major

Students in the four-year B.S. program declare the engineering major after the first year. Five-year B.A./B.S. students who enroll at a liberal arts college initially declare the engineering major at the end of their second year. Currently, all students in the School of Engineering are admitted to the major of their choice. The School of Engineering faculty reserves the right, however, to restrict enrollments in certain majors if the need arises.

Minors and Second Majors

Students enrolled at the School of Engineering are eligible to earn minors and/or second majors offered by any program at the Faculty of Arts and Sciences (FAS). Students declare the minor or second major at the Office of Academic Affairs, Room B100, in the Engineering Building, and are responsible for meeting the requirements set by FAS departments as outlined in this catalog. Completion of the minor or second major is certified by the appropriate FAS department in the last term prior to graduation, and is recognized by a notation on the student's academic transcript.

Students who wish to have the second major associated with a second degree must apply and be accepted by Douglass, Livingston, or Rutgers College for enrollment in the five-year, dual-degree program. (See the Douglass, Livingston, or Rutgers College sections of this catalog.)

Electives

All engineering curricula provide an opportunity for students to select from a wide range of elective courses to meet their individual needs. The following types of electives are used in the programs outlined in this chapter.

Departmental Electives. Departmental electives must be selected from among the course offerings of the department whose subject code is indicated. For example, "14:332:___ departmental elective" indicates a course offered by the Department of Electrical and Computer Engineering.

Electives (for Five-Year B.A./B.S. Program). Each five-year engineering curriculum leading to the B.A. and B.S. degrees must contain a minimum of 48 credits of electives that satisfy the major requirements and any other degree requirements of the liberal arts college offering the B.A. degree. Eighteen of these 48 credits also must satisfy the humanities/social sciences elective requirement of the School of Engineering as described above. The total number of credits required for the dual-degree program must be at least 30 credits more than is required for the B.S. degree alone. See Five-Year Engineering Curricula in this chapter for further information.

Engineering Electives. An engineering elective refers to courses offered by the School of Engineering. (This elective occurs only in the applied sciences in engineering curriculum.)

General Electives. The general electives shown in all engineering curricula may be chosen from any subject area other than individual and team activities in exercise science (377). A student who wishes to carry more credits of general electives than are shown may add these credits to the normal curriculum. All credits taken in excess of degree requirements will be counted in the university cumulative grade-point average. Normally, general electives may be scheduled at any time as long as the load for any given term does not exceed 21 credits. General elective credit is not allowed for remedial courses such as precalculus and other courses offered at a level below that of required courses.

Humanities/Social Sciences Electives. Each four-year curriculum must contain a minimum of 18 credits (or equivalent) of humanities/social sciences electives, which are chosen with the advice and approval of the appropriate faculty adviser. These electives must include an expository writing course, such as 01:355:101 or its equivalent, 01:220:200 Economic Principles and Problems, and a minimum of 6 credits of upper-level courses. Upper-level refers to courses with numbers in the 300s or 400s. At least 3 credits of upper-level course work must be taken in a subject in which the student has had a prior course.

The humanities/social sciences electives must meet generally accepted definitions. Humanities are the branches of knowledge concerned with people and their cultures, while social sciences study individual relationships in and to society. Subjects such as accounting, industrial management, finance, personnel administration, introductory modern language courses, and ROTC studies normally do not fulfill the objectives of this elective. Skills courses are acceptable only if a substantial amount of material relating to cultural values is involved, as opposed to routine exercises that enhance the student's performance. An extensive listing of acceptable courses offered by the various units of Rutgers is available from the Office of Academic Affairs. Normally, these electives may be scheduled at any time as long as the load for any given term does not exceed 21 credits. The faculty of the School of Engineering views this requirement as an important and integral part of the overall curriculum.

Technical Electives. Technical electives are courses in engineering or related areas as determined by the department, and are chosen with the approval of the appropriate faculty adviser.

Four-Year Engineering Curricula

FIRST-YEAR PROGRAM

Curriculum Code 004
(common to all four-year curricula)

First Term		
01:160:159	General Chemistry for Engineers	3
01:160:171	Introduction to Experimentation *	1
01:355:101	Expository Writing I or 14:440:127 Introduction to Computers for Engineers	3
14:440:100	Engineering Orientation Lectures	1
01:640:151	Calculus for Mathematical and Physical Sciences	4
01:750:123	Analytical Physics I	2
humanities/social sciences elective		3
Second Term		
01:160:160	General Chemistry for Engineers	3
14:440:127	Introduction to Computers for Engineers or 01:350:101 Expository Writing I	3
14:440:221	Engineering Mechanics: Statics	3
01:640:152	Calculus for Mathematical and Physical Sciences	4
01:750:124	Analytical Physics I	2
humanities/social sciences elective		3
	Total Credits	35

APPLIED SCIENCES IN ENGINEERING

Four-Year Curriculum Code 073

First Year

See First-Year Program	35

* May be taken in the second term.

Sophomore Year

First Term

14:440:222	Engineering Mechanics: Dynamics	3
01:640:251	Multivariable Calculus	4
01:750:227	Analytical Physics IIA	3
01:750:229	Analytical Physics II Laboratory	1
engineering or technical elective		3
humanities / social sciences elective		3

Second Term

01:220:200	Economic Principles and Problems	3
01:640:244	Differential Equations for Engineering and Physics	4
01:750:228	Analytical Physics IIB	3
01:750:230	Analytical Physics II Laboratory	1
engineering or technical elective		3
engineering or technical elective		3

The last two years of the program must be developed with the assistance of the designated faculty adviser. The overall program must meet the student's career objectives and must be sufficiently different from the accredited engineering programs so as not to permit incorporation into an existing program. Applied sciences in engineering is not accredited as a professional engineering program; it is an individualized interdisciplinary program that is not subject to professional accreditation.

The minimum degree requirement is 135 credits. In addition to other specific requirements, the following distribution of courses must be completed:

Humanities / social sciences electives: 12 credits
Engineering electives: ten courses of 3 credits or more
General electives: 9 credits
Technical electives: 33 credits

Some examples of possible concentrations in applied sciences in engineering are listed below. Other fields may be covered to meet the special interests of engineering students. Courses are not offered specifically for this curriculum. Appropriate courses are to be selected from those offered by the departments (see course descriptions at the end of this chapter). Since departmental course offerings may change from year to year, availability of a particular course cannot be guaranteed.

Biomedical Science and Engineering (Premed). This specialty is intended primarily for those students who plan to go on to medical school or graduate study in biomedical engineering and who wish to take advantage of the flexibility in curriculum planning that the applied sciences program offers. Engineering electives may be chosen from any engineering discipline, including undergraduate courses offered by the Department of Biomedical Engineering.

Engineering Physics. This concentration allows students to combine a background in the basic engineering subjects with the courses of a physics curriculum. It provides preparation for work in a physics research laboratory, for further study in engineering, or for graduate study in physics. The first two years are the same as those in any of the regular engineering curricula, although some substitutions are suggested. The last two years include courses in modern physics, electricity and magnetism, thermal physics, solid-state physics, and partial differential equations. Coupled with these are laboratory courses and other courses in engineering, physics, computer science, mathematics, or other sciences, to be chosen in consultation with an adviser in the Department of Physics. Students in this option generally would simultaneously complete a second major in physics.

Packaging Engineering. The packaging engineering concentration is designed to prepare engineers and scientists for a major role in the field of packaging. The program is structured to meet the technical requirements for the development and growth of total packaging systems. (See course descriptions under Ceramic Engineering and contact the Center for Packaging Science and Engineering at 732 / 445-3224 for information.)

BIOMEDICAL ENGINEERING

Four-Year Curriculum Code 125

First Year

See First-Year Program 35

Sophomore Year

First Term

01:119:101	General Biology	4
14:125:209	Biomedical Systems Theory I	3
01:220:200	Economic Principles and Problems	3
01:640:251	Multivariable Calculus	4
01:750:227	Analytical Physics IIA	3
01:750:229	Analytical Physics II Laboratory	1

Second Term

01:119:102	General Biology	4
14:125:210	Biomedical Systems Theory II	3
14:125:211	Biomedical Systems Laboratory	1
01:640:244	Differential Equations for Engineering and Physics	4
01:750:228	Analytical Physics IIB	3
01:750:230	Analytical Physics II Laboratory	1
humanities / social sciences elective		3

Junior Year

First Term

01:146:356	Systems Physiology	3
01:146:357	Systems Physiology Laboratory	1
14:125:301	Introduction to Biomechanics	3
14:125:313	Introduction to Biomedical Engineering I	3
01:160:307	Organic Chemistry* (or technical elective)	4 (3)
technical elective		3

Second Term

14:125:302	Introduction to Biomaterials	3
14:125:314	Introduction to Biomedical Engineering II	3
14:125:315	Introduction to Biomedical Engineering Laboratory	1
01:160:308	Organic Chemistry* (or technical elective)	4 (3)
life sciences elective		3

* Students preparing for medical school must complete Organic Chemistry I and II and the laboratory. 01:160:311 Organic Chemistry Laboratory or equivalent will count as one technical elective.

Senior Year

First Term

14:125:401	Biomedical Engineering Senior Design I	3
14:125:___	departmental elective	3
14:125:___	departmental elective	3
technical elective		3
humanities / social sciences elective		3

Second Term

14:125:402	Biomedical Engineering Senior Design II	3
14:125:___	departmental elective	3
14:125:___	departmental elective	3
technical elective		3
general elective		3
	Total Credits	133 (131)

BIORESOURCE ENGINEERING

Four-Year Curriculum Code 127

First Year

See First-Year Program 35

Sophomore Year

First Term

01:119:101	General Biology or 01:119:103 Principles of Biology	4
14:180:215	Engineering Graphics	1
14:440:222	Engineering Mechanics: Dynamics	3
01:640:251	Multivariable Calculus	4
01:750:227	Analytical Physics IIA	3
01:750:229	Analytical Physics II Laboratory	1

Second Term

11:127:290	Biosystems Engineering Measurements	3
14:180:243	Mechanics of Solids	3
14:332:373	Elements of Electrical Engineering	3
01:640:244	Differential Equations for Engineering and Physics	4
option requirement		4

Junior Year

First Term

01:160:209	Elementary Organic Chemistry	3
01:160:211	Elementary Organic Chemistry Laboratory	1
14:180:387	Fluid Mechanics	3
14:180:389	Fluid Mechanics Laboratory	1
14:650:351	Thermodynamics	3
option requirement		3
option elective		3

Second Term

11:127:495	Environmental Systems Analysis for Engineers	3
option requirement		1
option requirement		3
option requirement		3
option requirement		3
option requirement or general elective		4

Senior Year

First Term

11:127:450	Applied Instrumentation Control	4
11:127:488	Bioresource Engineering Design I	2
option requirement		1
option requirement		3
option requirement		3
humanities / social sciences elective		3
general elective		3

Second Term

11:127:489	Bioresource Engineering Design II	2
01:220:200	Economic Principles and Problems	3
humanities / social sciences elective		3
option requirement		3 or 4
option requirement		3
option elective		3
	Total Credits	138–139

Options

Students select one of the following options in order to develop an area of specialization. The unspecified option credits are selected with the approval of a faculty adviser. See the five-year bioresource engineering curriculum (129) presented later in this chapter for a listing of appropriate courses.

Note: The "Food" and "Horticultural" options currently are suspended. Contact the chairperson of the bioresource engineering program for more information regarding plans for reinstatement.

Food Engineering Option

11:127:492	Energy Conversions for Biological Systems (3)
11:127:493	Unit Processes for Biological Materials (3)
14:155:202	Fundamentals of Reactive Transport Phenomena (3)
*14:155:303	Transport Phenomena in Chemical Engineering I (3)
14:155:304	Transport Phenomena in Chemical Engineering II (3)
*14:155:308	Chemical Engineering Thermodynamics (4)
14:180:345	Properties of Materials Laboratory (1)
11:400:201	Principles of Food Science (3)
11:400:202	Principles of Food Science Laboratory (1)
11:400:402	Introductory Food Engineering Processes (4)
11:400:411	Food Chemistry (3)
11:400:419	Food Physical Systems (3)
16:400:527	Food Process Design (4) or 14:540:482 Computer Control of Manufacturing Systems (3)
01:447:390	General Microbiology (4)
option elective (3)	
option elective (3)	

Bioenvironmental Engineering Option

11:127:413	Unit Processes in Bioenvironmental Engineering I (3)
11:127:414	Unit Processes in Bioenvironmental Engineering II (3)
11:127:423	Bioenvironmental Engineering Unit Processes Laboratory I (1)
11:127:424	Bioenvironmental Engineering Unit Processes Laboratory II (1)
11:127:462	Design of Solid Waste Treatment Systems (3)

* 14:155:303 and 308 may substitute for 14:180:387, 389 and 14:650:351.

11:127:468	Hazardous Waste Treatment Engineering (3)	
11:127:474	Air Pollution Engineering (3)	
11:127:494	Land and Water Resources Engineering (3)	
14:180:331	Elements of Environmental Engineering (3) or 14:180:382 Hydraulic and Environmental Engineering (3)	
14:180:431	Design of Environmental Engineering Facilities (4)	
01:447:390	General Microbiology (4)	
11:704:351	Principles of Applied Ecology (4)	
option elective (3)		
option elective (3)		

Horticultural Engineering Option

11:127:240	Elements of Horticultural Engineering (3)	
11:127:490	Functional Design of Agricultural Structures (3)	
11:127:491	Soil-Plant-Machine Systems (3)	
11:127:492	Energy Conversions for Biological Systems (3)	
11:127:493	Unit Processes for Biological Materials (3)	
11:127:494	Land and Water Resources Engineering (3)	
14:180:345	Properties of Materials Laboratory (1)	
11:375:266	Soils and Their Management (4)	
11:776:211	Introduction to Horticulture (3)	
11:776:321	Greenhouse Environment Control and Crop Production (3)	
option elective (3)		
option elective (3)		

CERAMIC ENGINEERING

Four-Year Curriculum Code 150

First Year

See First-Year Program		35

Sophomore Year

First Term

14:150:203	Introductory Ceramics	3
14:150:205	Crystal Chemistry for Ceramists	3
14:150:253	Laboratory I	2
01:640:251	Multivariable Calculus	4
01:750:227	Analytical Physics IIA	3
01:750:229	Analytical Physics II Laboratory	1

Second Term

14:150:204	Ceramic Processing I	3
14:150:206	Thermodynamics for Ceramics	3
14:150:254	Laboratory II	2
01:640:244	Differential Equations for Engineering and Physics	4
01:750:228	Analytical Physics IIB	3
01:750:230	Analytical Physics II Laboratory	1

Junior Year

First Term

14:150:303	Phase Diagrams for Ceramics	3
14:150:305	Ceramic Processing II	3
14:150:307	Physics of Ceramics I	3
14:150:309	Analytical Techniques for Ceramics	3
14:150:355	Laboratory III	2
01:960:401	Basic Statistics for Research	3

Second Term

14:150:304	Ceramic Compositions	4
14:150:306	Ceramic Processing III	3
14:150:308	Physics of Ceramics II	3
14:150:312	Glass Engineering	3
01:220:200	Economic Principles and Problems	3
technical elective		3

Senior Year

First Term

14:150:403	Senior Ceramics Seminar	1
14:150:411	Ceramic Engineering Design or	3
14:150:401	Senior Ceramic Laboratory I or	3
14:150:497	Co-op Internship	3
humanities / social sciences elective		3
technical elective		3
technical elective		3

Second Term

14:150:404	Senior Ceramics Seminar	1
14:150:405	Mechanical Properties of Ceramics	3
14:150:412	Ceramic Engineering Design or	3
14:150:402	Senior Ceramic Laboratory I or	3
14:250:496	Co-op Internship	3
14:150:414	Electronic Ceramics	3
humanities / social sciences elective		3
general elective		3
	Total Credits	132

Each year, the department offers a selection of technical electives that are recommended for specific areas of concentration within the major. These areas include, but are not limited to, glass and optical materials, ceramic processing, and ceramic science. Students should see their faculty adviser for details.

CHEMICAL ENGINEERING

Four-Year Curriculum Code 155

The chemical engineering curriculum includes two options: chemical and biochemical.

First Year

See First-Year Program		35

Sophomore Year

(common to both options)

First Term

14:155:201	Chemical Engineering Analysis I	3
01:160:307	Organic Chemistry	4
01:220:200	Economic Principles and Problems	3
01:640:251	Multivariable Calculus	4
01:750:227	Analytical Physics IIA	3
01:750:229	Analytical Physics II Laboratory	1

Second Term

14:155:202	Fundamentals of Reactive Transport Phenomena	3
01:160:308	Organic Chemistry	4
01:640:244	Differential Equations for Engineering and Physics	4
01:750:228	Analytical Physics IIB	3
01:750:230	Analytical Physics II Laboratory	1
humanities / social sciences elective		3

Chemical Option

Junior Year

First Term

14:155:303	Transport Phenomena in Chemical Engineering I	3
14:155:307	Chemical Engineering Analysis II	3
01:160:311	Organic Chemistry Laboratory	2
01:160:323	Physical Chemistry	3
humanities / social sciences elective		3
general elective		3

Second Term

14:155:304	Transport Phenomena in Chemical Engineering II	3
14:155:308	Chemical Engineering Thermodynamics	3
01:160:324	Physical Chemistry	3
01:160:325	Physical Chemistry Laboratory for Engineers	2.5
general elective		3

Senior Year

First Term

14:155:409	Chemical Systems Safety and Health Engineering Management	1.5
14:155:415	Process Engineering I	4
14:155:423	Design of Separation Processes	3
14:155:441	Chemical Engineering Kinetics	3
14:155:___	departmental elective	3
technical elective		3

Second Term

14:155:416	Process Engineering II	4
14:155:422	Process Simulation and Control	3
14:155:424	Chemical Engineering Design and Economics	4
technical electives		6
	Total Credits	137

Biochemical Option

Junior Year

First Term

14:155:303	Transport Phenomena in Chemical Engineering I	3
14:155:307	Chemical Engineering Analysis II	3
01:160:341	Physical Chemistry: Biochemical Systems	3
*01:447:390	General Microbiology	4
general elective		3

* The official prerequisite (01:119:101-102 General Biology) is waived if 01:160:307-308 Organic Chemistry has been completed. See associate dean for academic affairs for prerequisite override.

Second Term

14:155:304	Transport Phenomena in Chemical Engineering II	3
14:155:308	Chemical Engineering Thermodynamics	3
01:160:342	Physical Chemistry: Biochemical Systems	3
01:694:301	Introductory Biochemistry and Molecular Biology	3
01:694:313	Introductory Biochemistry Laboratory	1
humanities / social sciences elective		3

Senior Year

First Term

14:155:409	Chemical Systems Safety and Health Engineering Management	1.5
14:155:411	Introduction to Biochemical Engineering	3
14:155:415	Process Engineering I	4
14:155:423	Design of Separation Processes	3
14:155:441	Chemical Engineering Kinetics	3
technical elective		3

Second Term

14:155:416	Process Engineering II	4
14:155:422	Process Simulation and Control	3
14:155:426	Biochemical Engineering Design and Economics	4
technical electives		6
	Total Credits	137.5

Note for both options: (1) The technical elective is a junior- or senior-level mathematics, science, or engineering course selected with the approval of the student's adviser. (2) The departmental elective may be selected from the following: 14:155:411 Introduction to Biochemical Engineering; 15:155:491 / 492 Special Problems; 14:440:407 Mechanical Properties of Materials; or 16:155:551 Polymer Science and Engineering I, if qualified.

CIVIL ENGINEERING

Four-Year Curriculum Code 180

The civil engineering curriculum includes two options: civil, and water resources and environmental.

First Year

See First-Year Program		35

Sophomore Year

First Term

01:220:200	Economic Principles and Problems	3
14:440:222	Engineering Mechanics: Dynamics	3
01:640:251	Multivariable Calculus	4
01:750:227	Analytical Physics IIA	3
01:750:229	Analytical Physics II Laboratory	1
humanities / social sciences elective		3

Second Term

14:180:216	Introductory Computer-Aided Design and Drafting	3
14:180:243	Mechanics of Solids	3
01:355:302	Scientific and Technical Writing	3
01:640:244	Differential Equations for Engineering and Physics	4
humanities / social sciences elective		3

Civil Option

Junior Year

First Term

14:180:305	Construction Engineering	3
14:180:318	Elements of Structures	3
14:180:387	Fluid Mechanics	3
14:180:389	Fluid Mechanics Laboratory	1
14:440:407	Mechanical Properties of Materials	3
01:960:379	Basic Probability and Statistics	3

Second Term

14:180:320	Design of Steel Structures	3
14:180:345	Properties of Materials Laboratory	1
14:180:364	Transportation Engineering	3
14:180:372	Soil Mechanics	3
14:180:374	Soil Mechanics Laboratory	1
14:540:343	Engineering Economics	3

Senior Year

First Term

14:180:411	Reinforced Concrete	3
14:180:421	Reinforced Concrete Laboratory	1
14:180:430	Water and Wastewater Engineering	3
14:180:473	Foundation Engineering	3
14:180:___	departmental elective	3
technical elective		3

Second Term

14:180:482	Professional Issues in Civil Engineering	1
14:180:___	departmental elective (Capstone Design)	4
14:180:___	departmental elective	3
technical elective		3
general elective		3
	Total Credits	128

1. Departmental courses may be used for technical electives, but technical courses outside the department may not be used as departmental electives. The department publishes annually a list of acceptable technical electives. The following technical courses are strongly recommended:
   - 14:332:373 Elements of Electrical Engineering
   - 14:650:351 Thermodynamics
2. At least one of the following Capstone Design courses is required:
   - 14:180:407 Construction Projects
   - 14:180:426 Structural Design
   - 14:180:438 Transportation Engineering II
   - 14:180:474 Geotechnical Engineering Design
3. With a combination of the required and elective departmental courses and the available general and technical electives, a student may pursue a general program or a program having an area of concentration in structural engineering, geotechnical engineering, construction engineering, or transportation engineering.

Water Resources and Environmental Option

Junior Year

First Term

01:160:209	Elementary Organic Chemistry	3
01:160:211	Elementary Organic Chemistry Laboratory	1
14:180:305	Construction Engineering	3
14:180:318	Elements of Structures	3
14:180:387	Fluid Mechanics	1
14:180:389	Fluid Mechanics Laboratory	3
01:960:379	Basic Probability and Statistics	3

Second Term

14:180:345	Properties of Materials Laboratory	1
14:180:372	Soil Mechanics	3
14:180:374	Soil Mechanics Laboratory	1
14:180:382	Hydraulic and Environmental Engineering	3
01:447:390	General Microbiology	4
14:540:343	Engineering Economics	3

Senior Year

First Term

14:180:430	Water and Wastewater Engineering	3
14:180:471	Elements of Environmental Geotechnology	3
14:180:___	departmental elective*	3
environmental technical elective		3
environmental technical elective		3

Second Term

14:180:431	Design of Environmental Engineering Facilities	4
14:180:482	Professional Issues in Civil Engineering	1
14:180:___	departmental elective*	3
technical elective		3
general elective		3
	Total Credits	129

ELECTRICAL AND COMPUTER ENGINEERING

Four-Year Curriculum Code 332

The electrical and computer engineering curriculum includes two options: electrical engineering and computer engineering.

First Year

See First-Year Program 35

Sophomore Year

(common to both options)

First Term

14:332:221	Principles of Electrical Engineering I	3
14:332:223	Principles of Electrical Engineering I Laboratory	1
14:332:231	Digital Logic Design	3
14:332:233	Digital Logic Design Laboratory	1
01:640:251	Multivariable Calculus	4
01:750:227	Analytical Physics IIA	3
01:750:229	Analytical Physics II Laboratory	1

* A list of technical, environmental technical, and departmental electives is published by the department. These courses must be selected with the approval of the departmental adviser.

Second Term

01:220:200	Economic Principles and Problems	3
14:332:222	Principles of Electrical Engineering II	3
14:332:224	Principles of Electrical Engineering II Laboratory	1
14:332:252	Programming Methodology I	3
01:640:244	Differential Equations for Engineering and Physics	4
01:750:228	Analytical Physics IIB	3
01:750:230	Analytical Physics II Laboratory	1

Electrical Engineering Option

Junior Year

First Term

14:332:321	Probability and Random Processes	3
14:332:345	Linear Systems and Signals	3
14:332:347	Linear Systems and Signals Laboratory	1
14:332:361	Electronic Devices	3
14:332:363	Electronic Devices Laboratory	1
humanities / social sciences elective		3

Second Term

14:332:322	Principles of Communications Systems	3
14:332:346	Digital Signal Processing	3
14:332:348	Digital Signal Processing Laboratory	1
14:332:366	Digital Electronics	3
14:332:368	Digital Electronics Laboratory	1
14:332:___	restrictive elective	3
humanities / social sciences elective		3

Senior Year

First Term

14:332:362	Analog Electronics	3
14:332:364	Analog Electronics Laboratory	1
14:332:___	restrictive elective	3
14:332:___	restrictive elective	3
14:332:___	departmental elective	3
technical elective		3

Second Term

14:332:___	design elective	3
14:332:___	departmental electives	6
technical elective		3
general elective		3
	Total Credits	131

Computer Engineering Option

Junior Year

First Term

14:332:331	Computer Architecture and Assembly Language	3
14:332:333	Computer Architecture Laboratory	1
14:332:345	Linear Systems and Signals	3
14:332:347	Linear Systems and Signals Laboratory	1
14:332:351	Programming Methodology II	3
14:332:361	Electronic Devices	3
14:332:363	Electronic Devices Laboratory	1

Second Term

01:198:416	Operating Systems	4
14:332:346	Digital Signal Processing	3
14:332:348	Digital Signal Processing Laboratory	1
14:332:366	Digital Electronics	3
14:332:368	Digital Electronics Laboratory	1
computer elective		3
humanities / social sciences elective		3

Senior Year

First Term

14:332:321	Probability and Random Processes	3
14:332:431	Digital Systems Design	3
computer elective		3
technical elective		3
humanities / social sciences elective		3

Second Term

14:332:452	Introduction to Software Engineering	3
computer elective		3
technical electives		6
general elective		3
	Total Credits	132

Note: A list of each type of elective (computer, departmental, design, restrictive, technical) is published by the department. These courses must be selected from the appropriate lists.

INDUSTRIAL ENGINEERING

Four-Year Curriculum Code 540

First Year

See First-Year Program		35

Sophomore Year

First Term

01:220:200	Economic Principles and Problems	3
14:540:201	Work Design and Ergonomics	3
14:540:202	Work Design and Ergonomics Laboratory	1
14:540:213	Industrial Engineering Laboratory	1
01:640:251	Multivariable Calculus	4
01:750:227	Analytical Physics IIA	3
01:750:229	Analytical Physics II Laboratory	1

Second Term

14:180:243	Mechanics of Solids	3
14:440:222	Engineering Mechanics: Dynamics	3
14:540:210	Engineering Probability	3
01:640:244	Differential Equations for Engineering and Physics	4
01:750:228	Analytical Physics IIB	3
01:750:230	Analytical Physics II Laboratory	1

Junior Year

First Term

14:180:215	Engineering Graphics	1
14:332:373	Elements of Electrical Engineering	3
14:440:407	Mechanical Properties of Materials	3
14:540:338	Probability Models in Operations Research	3
14:540:343	Engineering Economics	3

14:540:382	Computer Control of Manufacturing Systems	3
14:540:383	Computer Control of Manufacturing Systems Laboratory	1

Second Term

01:355:302	Scientific and Technical Writing	3
14:540:303	Manufacturing Processes	3
14:540:304	Manufacturing Processes Laboratory	1
14:540:311	Deterministic Models in Operations Research	3
14:540:384	Simulation Models in Industrial Engineering	3
14:540:399	Design of Engineering Systems I	3

Senior Year

First Term

33:010:310	Accounting for Engineers	3
14:540:400	Design of Engineering Systems II	3
14:540:433	Quality Engineering and Statistics	3
14:540:434	Quality Engineering Laboratory	1
14:540:453	Production Planning and Control	3
humanities / social sciences elective		3

Second Term

14:540:462	Facilities Layout and Materials Handling	3
departmental or technical elective (List A) *		3
departmental or technical elective (List B) *		3
humanities / social sciences elective		3
general elective		3
	Total Credits	132

MECHANICAL ENGINEERING

Four-Year Curriculum Code 650

The mechanical engineering curriculum includes two options: mechanical engineering and aerospace engineering.†

First Year

See First-Year Program 35

Sophomore Year

(common to both options)

First Term

01:220:200	Economic Principles and Problems	3
14:440:222	Engineering Mechanics: Dynamics	3
01:640:251	Multivariable Calculus	4
14:650:231	Mechanical Engineering Computational Analysis and Design ‡	3
01:750:227	Analytical Physics IIA	3
01:750:229	Analytical Physics II Laboratory	1

Second Term

14:332:373	Elements of Electrical Engineering	3
14:332:375	Elements of Electrical Engineering Laboratory	1
01:640:244	Differential Equations for Engineering and Physics	4
14:650:215	Introduction to Computer-Aided Drafting and Machining ‡	1
14:650:291	Introduction to Mechanics of Materials ‡	3
01:750:228	Analytical Physics IIB	3
01:750:230	Analytical Physics II Laboratory	1

Mechanical Engineering Option

Junior Year

First Term

14:540:343	Engineering Economics ‡	3
01:640:421	Advanced Calculus for Engineering ‡	3
14:650:3__	Junior-year required course(s) in mechanical and aerospace engineering **	3–4
14:650:3__	Junior-year required course(s) in mechanical and aerospace engineering **	3
humanities / social sciences elective		3

Second Term

14:440:407	Mechanical Properties of Materials ‡	3
14:650:3__	Junior-year required course(s) in mechanical and aerospace engineering **	3–4
14:650:3__	Junior-year required course(s) in mechanical and aerospace engineering **	3
technical elective		3
humanities / social sciences elective		3

Senior Year

First Term

14:650:431	Mechanical Engineering Laboratory I	1
14:650:486	Design of Mechanical Systems I	3
14:650:4__	Senior-year required course in mechanical and aerospace engineering ††	3
14:650:4__	Senior-year required course in mechanical and aerospace engineering ††	3
14:650:4__	departmental elective	3
technical elective		3

Second Term

14:650:432	Mechanical Engineering Laboratory II	1
14:650:487	Design of Mechanical Systems II	3
14:650:4__	Senior-year required course in mechanical and aerospace engineering ††	3
14:650:4__	departmental electives	6
general elective		3
	Total Credits	130–132

Aerospace Engineering Option

Junior Year

First Term

14:540:343	Engineering Economics ‡	3
01:640:421	Advanced Calculus for Engineering ‡	3
14:650:3__	Junior-year required course(s) in mechanical and aerospace engineering **	3–4
14:650:3__	Junior-year required course(s) in mechanical and aerospace engineering **	3
humanities / social sciences elective		3

* Lists of electives (List A and List B) are published each year by the department.

† Aerospace option courses to be selected from 14:650:447, 458, 459, 460, 463, 465.

‡ May be taken during the first or second term, within the listed year.

** Junior-year required courses to be selected from 14:650:312, 342, 349 and 350, 351. (Note that 14:650:349 and 350 must be taken concurrently for 4 credits total.)

†† Senior-year required courses to be selected from 14:650:443, 481, 488.

Second Term

14:440:407	Mechanical Properties of Materials‡	3
14:650:3__	Junior-year required course(s) in mechanical and aerospace engineering **	3–4
14:650:3__	Junior-year required course(s) in mechanical and aerospace engineering **	3
technical elective		3
humanities / social sciences elective		3

Senior Year

First Term

14:650:431	Mechanical Engineering Laboratory I	1
14:650:486	Design of Mechanical Systems I	3
14:650:4__	Senior-year required course in mechanical and aerospace engineering ††	3
14:650:4__	Senior-year required course in mechanical and aerospace engineering ††	3
14:650:4__	Aerospace option †	3
technical elective		3

Second Term

14:650:433	Aerospace Engineering Laboratory	1
14:650:487	Design of Mechanical Systems II	3
14:650:4__	Senior-year required course in mechanical and aerospace engineering ††	3
14:650:4__	Aerospace option †	3
14:650:4__	Aerospace option †	3
technical elective		3
	Total Credits	130–132

Five-Year Engineering Curricula

FIVE-YEAR B.A./B.S. PROGRAM IN NEW BRUNSWICK

The five-year, dual-degree program in engineering and the liberal arts / sciences is offered by the School of Engineering in cooperation with the following liberal arts colleges: Douglass College, Livingston College, and Rutgers College. (Students also may begin the five-year program at the Camden College of Arts and Sciences or the Newark College of Arts and Sciences. See Transfer Programs with Camden and Newark later in this chapter.) The five-year program leads to a Bachelor of Science degree in any of the engineering curricula listed at the beginning of this chapter and a Bachelor of Arts or Bachelor of Science degree in any major offered by the cooperating liberal arts college.

Students interested in the five-year program may apply prior to their first year to one of the liberal arts colleges under whose jurisdiction they remain for the first two years. Transfer to the School of Engineering at the end of the second year is not automatic; students' records are reviewed at the end of the third term by the School of Engineering. After acceptance, students come under the academic jurisdiction of the School of Engineering for the remaining three years of the program. Alternatively, students in the four-year program may apply to a liberal arts college after their first year and prior to their final year for admission to the program.

In all five-year curricula, the engineering portion of the program for the first two years is common. Selection of a particular engineering field of study is made at the end of the second year. After transferring to the School of Engineering, students remain affiliated with their liberal arts college for student services and continue to be responsible for completion of that college's requirements for the B.A. (or B.S.) degree. Both degrees are conferred at the end of the fifth year.

Distribution of Electives for Five-Year Students

Engineering students pursuing the five-year B.A. / B.S. program jointly with Douglass, Livingston, or Rutgers College must complete a minimum of 48 credits of liberal arts course work, including 01:355:101 Expository Writing I, 01:220:200 Economic Principles and Problems, and courses designated as electives in the following curriculum outline. (In the fourth and fifth years, the humanities / social sciences electives should be used toward these 48 credits.) These courses must satisfy the requirements for a departmental major in a B.A. program as well as any other degree requirements of the student's liberal arts college. The student should consult the Degree Requirements chapter of the appropriate college for further information. In addition, 18 of these 48 credits must satisfy the humanities / social sciences electives requirement of the School of Engineering. These electives should be chosen with the advice and approval of the advisers for both the B.A. and B.S. programs. Students in the five-year program should consult with the designated five-year engineering adviser during each term of the first two years. The total number of credits required for the dual-degree program must be at least 30 credits more than is required for the B.S. program alone.

First Year

Curriculum Code 005
(common to all five-year curricula)

First Term

01:160:159	General Chemistry for Engineers	3
01:160:171	Introduction to Experimentation *	1
01:355:101	Expository Writing I	3
01:640:151	Calculus for Mathematical and Physical Sciences	4
01:750:123	Analytical Physics I	2
elective		3

Second Term

01:160:160	General Chemistry for Engineers	3
01:640:152	Calculus for Mathematical and Physical Sciences	4
01:750:124	Analytical Physics I	2
electives		6

* May be taken in the second term.
† Aerospace option courses to be selected from 14:650:447, 458, 459, 460, 463, 465.
‡ May be taken during the first or second term, within the listed year.
** Junior-year required courses to be selected from 14:650:312, 342, 349 and 350, 351. (Note that 14:650:349 and 350 must be taken concurrently for 4 credits total.)
†† Senior-year required courses to be selected from 14:650:443, 481, 488.

Second Year

Curriculum Code 005
(common to all five-year curricula)

First Term

14:440:100	Engineering Orientation Lectures	1
14:440:221	Engineering Mechanics: Statics	3
01:640:251	Multivariable Calculus	4
01:750:227	Analytical Physics IIA	3
01:750:229	Analytical Physics II Laboratory	1
electives		6

Second Term

14:440:127	Introduction to Computers for Engineers	3
01:640:244	Differential Equations for Engineering and Physics	4
01:750:228	Analytical Physics IIB	3
01:750:230	Analytical Physics II Laboratory	1
electives		6

Third Year

(common to all five-year curricula except as noted)

First Term

__:___:___	Engineering major †	3–8
01:220:200	Economic Principles and Problems *	3
14:440:222	Engineering Mechanics: Dynamics ‡	3
electives		6

Second Term

__:___:___	Engineering major †	3–8
electives		12

Fourth Year

See the junior year of the four-year program in the student's curriculum.

Fifth Year

See the senior year of the four-year program in the student's curriculum.

FIVE-YEAR B.S./B.S. PROGRAM WITH COOK COLLEGE

The five-year, dual-degree program in bioresource engineering is offered by the School of Engineering in cooperation with Cook College. The curriculum provides options in food engineering, bioenvironmental engineering, and horticultural engineering. This program allows a greater depth of specialization at the undergraduate level than can be achieved by completing the four-year program.

Students in the five-year program apply to Cook College, under whose jurisdiction they remain for the first two years. Assuming satisfactory progress, the students come under the academic jurisdiction of the School of Engineering for the remaining three years of the program. However, the students continue to affiliate with Cook College and must select humanities / social sciences electives to satisfy Cook College requirements. Four-year bioresource engineering majors may apply to Cook College for transfer to the dual-degree, five-year program at any time prior to their fourth year.

* May be taken in the second term.
† See the sophomore year of the four-year program in the student's curriculum.
‡ Not required for ceramic, chemical, or electrical and computer engineering.

First Year

Curriculum Code 129

First Term

01:119:101	General Biology or 01:119:103 Principles of Biology *	4
11:127:100	Introduction to Bioresource Engineering	1
01:355:101	Expository Writing I	3
01:640:151	Calculus for Mathematical and Physical Sciences	4
01:750:123	Analytical Physics I	2
Cook College elective		2

Second Term

14:440:127	Introduction to Computers for Engineers	3
14:440:221	Engineering Mechanics: Statics	3
01:640:152	Calculus for Mathematical and Physical Sciences	4
01:750:124	Analytical Physics I	2
humanities / social sciences elective		3

Second Year

First Term

01:160:159	General Chemistry for Engineers	3
01:160:171	Introduction to Experimentation	1
14:180:215	Engineering Graphics	1
14:440:222	Engineering Mechanics: Dynamics	3
01:640:251	Multivariable Calculus	4
01:750:227	Analytical Physics IIA	3
01:750:229	Analytical Physics II Laboratory	1

Second Term

11:127:290	Biosystems Engineering Measurements	3
01:160:160	General Chemistry for Engineers	3
14:332:373	Elements of Electrical Engineering	3
01:640:244	Differential Equations for Engineering and Physics	4
11:776:242	Plant Science or 11:704:351 Principles of Applied Ecology or general elective	3 or 4

Food Engineering Option

Third Year

First Term

14:155:201	Chemical Engineering Analysis I	3
01:160:209	Elementary Organic Chemistry	3
01:160:211	Elementary Organic Chemistry Laboratory	1
01:220:200	Economic Principles and Problems	3
11:400:201	Principles of Food Science	3
11:400:202	Principles of Food Science Laboratory	1
Cook College elective		3

Second Term

14:155:202	Fundamentals of Reactive Transport Phenomena	3
14:180:243	Mechanics of Solids	3
01:447:390	General Microbiology	4
humanities / social sciences elective		3
general elective		4

* In the Food and Horticultural Engineering options, if the student elects to take 01:119:101, then 01:119:102 must also be taken as a general elective.

Fourth Year

First Term

11:127:493	Unit Processes for Biological Materials	3
14:155:303	Transport Phenomena in Chemical Engineering I	3
11:400:411	Food Chemistry	3
11:400:419	Food Physical Systems	3
Cook College elective		3
humanities / social sciences elective		3

Second Term

11:127:495	Environmental Systems Analysis for Engineers	3
14:155:304	Transport Phenomena in Chemical Engineering II	3
14:155:308	Chemical Engineering Thermodynamics	4
14:180:345	Properties of Materials Laboratory	1
11:400:402	Introductory Food Engineering Processes	4

Fifth Year

First Term

11:127:450	Applied Instrumentation and Control	4
11:127:488	Bioresource Engineering Design I	2
14:155:411	Introduction to Biochemical Engineering	3
16:400:527	Food Process Design	4
option elective		3

Second Term

11:015:400	Junior / Senior Colloquium	3
11:127:489	Bioresource Engineering Design II	2
11:127:492	Energy Conversion for Biological Systems	3
option electives		6
humanities / social sciences elective		3
	Total Credits	163–164

Option electives are selected from the following: 11:115:301, 14:150:270, 14:155:422, 11:400:304, 16:400:510, 16:400:515, 16:400:516, 16:400:518, 14:540:343, 14:540:482, 14:540:483, 11:776:401, and 01:960:401.

Bioenvironmental Engineering Option

Third Year

First Term

01:160:209	Elementary Organic Chemistry	3
01:160:211	Elementary Organic Chemistry Laboratory	1
14:180:387	Fluid Mechanics	3
14:180:389	Fluid Mechanics Laboratory	1
01:220:200	Economic Principles and Problems	3
humanities / social sciences elective		3
general elective		4

Second Term

01:119:390	General Microbiology	4
14:180:243	Mechanics of Solids	3
14:180:332	Hydraulic and Environmental Engineering	3
14:650:351	Thermodynamics	3
Cook College elective		3

Fourth Year

First Term

11:127:450	Applied Instrumentation and Control	4
11:127:462	Design of Solid Waste Treatment Systems	3
01:460:101	Introductory Geology	3
Cook College elective		3
option elective		3

Second Term

11:127:413	Unit Processes in Bioenvironmental Engineering I	3
11:127:423	Bioenvironmental Engineering Unit Processes Laboratory I	1
11:127:494	Land and Water Resources Engineering	3
11:127:495	Environmental Systems Analysis for Engineers	3
11:127:496	Planning and Design of Land Treatment Systems	3
humanities / social sciences elective		3

Fifth Year

First Term

11:015:400	Junior / Senior Colloquium	3
11:127:414	Unit Processes in Bioenvironmental Engineering II	3
11:127:424	Bioenvironmental Engineering Unit Processes Laboratory II	1
11:127:474	Air Pollution Engineering	3
11:127:488	Bioresource Engineering Design I	2
option elective		3

Second Term

11:127:468	Hazardous Waste Treatment Engineering	3
11:127:489	Bioresource Engineering Design II	1
14:180:431	Design of Environmental Engineering Facilities	4
option electives		6
humanities / social sciences elective		3
	Total Credits	161–162

Option electives are selected from the following: 11:127:492, 14:180:372, 14:180:374, 14:180:443, 14:180:448, 11:375:303, 11:375:307, 11:375:345, 11:375:408, 11:375:409, 11:375:411, 11:375:413, 11:375:421, 11:375:422, 11:375:423, 11:375:430, 11:375:444, 11:375:451, 01:460:428, 14:540:343, 14:650:481, 14:670:323, and 01:960:401.

Horticultural Engineering Option

Third Year

First Term

11:127:240	Elements of Horticultural Engineering	3
01:160:209	Elementary Organic Chemistry	3
01:160:211	Elementary Organic Chemistry Laboratory	1
11:776:211	Introduction to Horticulture	3
humanities / social sciences elective		3
general elective		3

Second Term

14:180:243	Mechanics of Solids	3
11:375:266	Soils and Their Management	4
14:650:351	Thermodynamics	3
11:776:321	Greenhouse Environmental Control and Crop Production	3
humanities / social sciences elective		3

Fourth Year

First Term

11:015:400	Junior / Senior Colloquium	3
11:127:493	Unit Processes for Biological Materials	3
14:180:345	Properties of Materials Laboratory	1
14:180:387	Fluid Mechanics	3
14:180:389	Fluid Mechanics Laboratory	1
humanities / social sciences elective		3
Cook College elective		3

Second Term

11:127:491	Phytomation	3
11:127:495	Environmental Systems Analysis for Engineers	3
14:180:318	Elements of Structural Analysis	3
11:776:382	Plant Physiology	4
Cook College elective		3

Fifth Year

First Term

11:127:450	Applied Instrumentation and Control	4
11:127:488	Bioresource Engineering Design I	2
11:127:490	Structural Design and Environmental Control	3
01:220:200	Economic Principles and Problems	3
option electives		6

Second Term

11:127:489	Bioresource Engineering Design II	1
11:127:492	Energy Conversion for Biological Systems	3
11:127:494	Land and Water Resources Engineering	3
option electives		6
general elective		3
	Total Credits	162–163

Option electives are selected from the following: 01&11:115:301, 11:375:459, 11:370:350, 01:447:380, 01:460:101, 14:540:343, 11:776:305, 11:776:362, 11:776:401, 11:776:439, 11:776:450, 11:776:452, 14:650:481, 11:770:301, and 01:960:401.

Transfer Programs with Camden and Newark

Two transfer programs are available to students who initially attend either the Camden College of Arts and Sciences (CCAS) or the Newark College of Arts and Sciences (NCAS). The Two-Plus-Two Transfer Program is a four-year program leading to a Bachelor of Science degree in engineering. In addition, the Five-Year, Dual-Degree Program in Engineering and Liberal Arts / Sciences, which leads to both a Bachelor of Arts degree and a Bachelor of Science degree, may be started at either of these colleges. In both cases, transfer to the School of Engineering after two years is not automatic; students' records are reviewed at the end of the third term by the School of Engineering.

Two-Plus-Two Transfer Program

Students apply to either CCAS or NCAS and attend one of these colleges for the first two years of the program. After two years, students transfer to the School of Engineering in New Brunswick and come under the academic jurisdiction of that college for the remaining two years. At that time, the student also chooses a liberal arts college in New Brunswick (Douglass College, Livingston College, or Rutgers College) with which to affiliate for student services. The program leads to a B.S. degree in the selected engineering curriculum. Elective courses during the first two years must be selected with the aid and approval of the student's faculty adviser in Camden or Newark. Some curricula may require attendance at one or more summer sessions or an extra year of study in New Brunswick due to the lack of availability of second-year courses for some engineering majors at CCAS or NCAS.

Five-Year Transfer Program

Students apply to either CCAS or NCAS and attend one of these colleges for the first two years of the program. After two years, students transfer to the School of Engineering in New Brunswick and come under the academic jurisdiction of that college for the remaining three years. At that time, the student chooses a liberal arts college in New Brunswick (Douglass College, Livingston College, or Rutgers College) with which to affiliate for student services. During the first term of enrollment in New Brunswick, the student applies to one of the liberal arts colleges for admission for the second degree. If accepted, the student must satisfy that college's requirements for the B.A. degree. The B.A. degree in a liberal arts or science discipline and the B.S. degree in engineering are both conferred at the end of the fifth year.

Elective courses during the first two years must be selected with the aid and approval of the student's faculty adviser in Camden or Newark. See the respective catalogs for CCAS and NCAS for information on suitable electives for the first two years. Also see the paragraph on the distribution of electives under the five-year B.A. / B.S. program in New Brunswick earlier in this chapter.

CAMDEN COLLEGE OF ARTS AND SCIENCES

First Year

First Term

50:350:101	English Composition	3
50:640:121	Unified Calculus I	4
50:750:131	Elements of Physics I	3
50:750:133	Elements of Physics Laboratory I	1
elective *		3 or 4

Second Term

50:198:151	Introduction to Programming Methods	3
50:640:122	Unified Calculus II	4
50:750:132	Elements of Physics II	3
50:750:134	Elements of Physics Laboratory II	1
electives *		6 to 8

* See the description of elective requirements elsewhere in this chapter.

Second Year

First Term

50:160:115	Chemical Principles I	3
50:160:125	Chemical Principles Laboratory I	1
50:640:221	Unified Calculus III	4
50:750:233	Electric Circuits I	3
50:750:235	Electric Circuits Laboratory I	1
50:750:253	Mechanics I	3

Second Term

50:160:116	Chemical Principles II	3
50:160:126	Chemical Principles Laboratory II	1
50:640:314	Elementary Differential Equations	3
50:750:232	Elements of Modern Physics	3
50:750:254	Mechanics II †	3
elective *		3 or 4

Last Two or Three Years

Same as four-year or five-year programs starting in New Brunswick.

NEWARK COLLEGE OF ARTS AND SCIENCES

First Year

First Term

21:160:113	General Chemistry Laboratory	1
21:160:115	General Chemistry	3
21:350:101	English Composition	3
21:640:135	Calculus I	3
21:750:205	Introductory Physics Laboratory	1
21:750:213	Elements of Physics	3
CIS 101	Computer Programming (NJIT) ‡	2
	or	
21:198:101	Computers and Programming I	3

Second Term

21:160:114	General Chemistry Laboratory	1
21:160:116	General Chemistry	3
21:640:136	Calculus II	3
21:750:206	Introductory Physics Laboratory	1
21:750:214	Elements of Physics	3
SS 201	Economics (NJIT)	3
humanities / social sciences elective		3

Second Year

First Term

21:640:236	Calculus IV	3
21:750:316	Introduction to Modern Physics	3
21:750:407	Advanced Physics Laboratory I	1
Mech 235	Statics (NJIT) ‡	3
engineering major (NJIT) ‡		3–4
humanities / social sciences elective *		3

Second Term

21:640:235	Calculus III	3
21:640:314	Elementary Differential Equations	3
engineering major (NJIT) ‡		6–8
humanities / social sciences electives *		3

Last Two or Three Years

Same as four-year or five-year programs starting in New Brunswick.

Other Academic Programs

B.S./M.B.A. PROGRAM

Qualified candidates for the Bachelor of Science (B.S.) degree in the School of Engineering are offered the opportunity to obtain the Master of Business Administration (M.B.A.) degree from the Graduate School of Management in one calendar year of academic work following completion of requirements for the B.S. degree.

Ordinarily, candidates for the M.B.A. degree must complete 60 credits of academic work at the Graduate School of Management. However, with careful curriculum planning, candidates for the B.S. degree in engineering may reduce this requirement by at least 12 credits by completing courses required for the M.B.A. while enrolled in the School of Engineering.

Admission Requirements for Dual-Degree Program

Students interested in pursuing the dual-degree program must apply for admission to the Graduate School of Management during the spring term of their junior year. Students must take (usually in the fall term of their junior year) the Graduate Management Admissions Test (GMAT) that is administered by the Educational Testing Service and have the scores sent to the Graduate School of Management. Applicants also should submit a completed application form, official transcripts of all college and graduate level work, two letters of reference, a letter from the associate dean for academic affairs at the School of Engineering authorizing application, and the required nonrefundable application fee. The application and all supporting material must be received by the Graduate School of Management no later than June 1.

Applicants who place in the top quartile on the GMAT examination and who have earned a cumulative grade-point average of 3.0 or better through the first term of the junior year may be admitted conditionally to the M.B.A. program; the admission becomes official upon satisfactory completion in good standing of the B.S. degree requirements.

An Overview of the Dual-Degree Program

Candidates for the M.B.A. degree must complete the following M.B.A. core courses:

22:010:577	Accounting for Managers	3
22:223:581	Managerial Economic Analysis	3
22:223:591	Aggregate Economic Analysis	3
22:373:551	Business Communications	0
22:373:592	Legal Environment	2
22:373:593	International Business Environment	2
22:390:587	Financial Management	3
22:620:585	Organization Behavior	3

* See the description of elective requirements elsewhere in this chapter.

† Not required for ceramic, chemical, or electrical and computer engineering. Students planning to major in electrical engineering should take 50:750:234,236 in place of 50:750:254. Those planning to major in chemical engineering should take 50:160:115,116 in the first year and 50:160:335,336, Organic Chemistry, in the second year. Mechanical engineering or civil engineering majors should take 50:750:291 Mechanics of Materials.

‡ Courses may be taken at the New Jersey Institute of Technology or, during Summer Session, at the School of Engineering. See program requirements earlier in this chapter.

22:630:586	Marketing Management	3
22:711:574	Deterministic Optimization Models	3
22:711:578	Operations Management	3
22:960:576	Statistical Models	3
	Total Credits	31

After completing the core course, students must take a sequence of courses designed to integrate the material that they have learned. This requirement usually is met by taking:

22:620:595	Interfunctional Consulting Program I	3
22:620:596	Interfunctional Consulting Program II	2

In addition, candidates for the M.B.A. degree must complete 24 credits of elective courses drawn from the course offerings of the Graduate School of Management.

The B.S./M.B.A. dual-degree candidate may shorten substantially the M.B.A. requirements through careful planning of the undergraduate program at the School of Engineering. The following opportunities exist:

1. B.S./M.B.A. candidates who have completed successfully 01:640:151-152 Calculus for Mathematical and Physical Sciences with a grade of B or better are exempted from fulfilling math proficiency requirements.
2. The statistics proficiency requirement may be satisfied by completion of the following courses with a grade of B or better:
   01:960:379 or 384, or 401, or 14:180:301, or 14:332:321, or 14:540:210.
3. A GMAT scaled score of 32 or higher will exempt students from 22:373:551 Business Communications.
4. All interested students should plan to complete the following courses offered by the Graduate School of Management prior to the end of their senior year if they have been accepted to the dual-degree program:

22:010:577	Accounting for Managers	3
22:223:581	Managerial Economic Analysis	3
22:620:585	Organization Behavior	3
22:711:574	Deterministic Optimization Models	3

   Most students find that they may take the above listed courses for credit toward both the B.S. and M.B.A. degrees by counting them as general or technical electives in their field of concentration. Students should refer to the planning guides for each field of specialization to determine which of the courses should be taken as general or technical electives and when they should be taken.

Students who satisfy these requirements are able to complete the M.B.A. degree within one calendar year after completing their B.S. degree by enrolling at the Graduate School of Management for the summer, fall, and spring terms. For details, see the Graduate School of Management 2000–2001 Course Catalog Curriculum and Information Guide, available at Room 107 in the Janice H. Levin Building on the Livingston campus (732/445-4046). Applications also are available at that location.

HONORS PROGRAM

The School of Engineering offers an honors program for undergraduate engineering students who exhibit outstanding academic ability. Students who have a combined math-verbal SAT score of 1350 or better, including minimum scores of 700 in math and 600 in the verbal section, a high school rank in the top 10 percent of their graduating class, and math placement in Honors Calculus are eligible for consideration for admission to the program.

During the first year of the undergraduate program, students register for 01:640:191-192 Honors Calculus; 01:750:271-272 Honors Physics; 01:355:103 Honors Expository Writing; and 14:440:191 Honors Introduction to Engineering. During the second year, students take 01:640:291 Honors Calculus; 01:750:273 Honors Physics; and 14:440:291 Honors Engineering Mechanics: Statics. With special permission, they may register in a college honors seminar given by their college of affiliation. In the third year, students may be eligible to participate in the James J. Slade Scholars Program.

James J. Slade Scholars

In the third year, students who have maintained a 3.2 university cumulative grade-point average may apply to the chairperson of their major department to be admitted into the James J. Slade Scholars Program.

Upon admission to the program, each scholar prepares a plan of study under the guidance of a faculty committee and the Honors Committee of the School of Engineering. The chairperson of the student's committee acts as the thesis adviser and should be a member of the student's major department. Although great flexibility is permitted, each engineering program is planned to meet the definition of an engineering curriculum as stated by the Accreditation Board for Engineering and Technology. A Slade scholar's program requires independent research and a thesis that results in a total number of credits that is 6 credits beyond the minimum required for graduation. The thesis, describing the student's investigations, is presented at a public seminar of the college. With the approval of the student's committee, courses of equivalent stature may be substituted for any four of the required technical courses in the regular program. Any course that is below the student's current status in his or her major field is counted as an additional overload.

At the end of each term, the student's committee formally reports on the candidate's progress to the Honors Committee of the college. Continuance as a designated candidate depends upon continued satisfactory progress. Upon successful completion of the honors program and with the recommendation of the committee, department, and the Honors Committee, the student receives a special honors certificate. Successful completion of the honors program is also noted in the list of degrees and honors conferred in the commencement program.

Course Listing

Explanation of Three-Part Course Numbers

The number preceding each course title is divided into three parts. The first two digits are the administrative code (standing for a faculty or a school), the next three digits are the subject code, and the final three digits are the course code.

Administrative Codes

The School of Engineering administrative code is 14. For a complete list of administrative codes used in this catalog, see the beginning of the Programs of Study for Liberal Arts Students section.

Subject Codes

A subject code comprises the third through fifth digits in all course numbers and indicates the subject matter of the course. Courses with the following subject codes are listed in this chapter. (This list does not constitute a list of majors.)

125 Biomedical Engineering
127 Bioresource Engineering
150 Ceramic Engineering
155 Chemical and Biochemical Engineering
180 Civil and Environmental Engineering
332 Electrical and Computer Engineering
440 General Engineering
540 Industrial Engineering
650 Mechanical and Aerospace Engineering

Course Codes

The course code comprises the sixth, seventh, and eighth digits in all course numbers. Course codes from 100 to 299 are used for introductory and intermediate undergraduate courses usually offered in the first two years. Codes from 300 to 499 indicate advanced undergraduate courses normally taken in the junior and senior years. Courses coded from 500 to 799 are graduate courses and are described in the catalog of the Graduate School–New Brunswick.

Two course numbers separated by a comma indicate that each term may be taken independently of the other (example: 14:150:411,412). Two course numbers separated by a hyphen indicate that satisfactory completion of the first term is a prerequisite to the second term (example: 14:332:221-222); the first term may be taken for credit without taking the second, except where a statement is added to indicate that both term courses must be completed in order to receive credit.

Credits awarded for the successful completion of each course are indicated in parentheses following the course title. The notation BA indicates that the number of credits is determined by arrangement with the department offering the course.

Unless otherwise indicated, a course normally meets for a number of lecture hours equal to the number of credits to be earned. Special hours or modes of class, other than lecture, are usually indicated in italics below the course title.

Consult the Undergraduate Schedule of Classes for the name(s) of the faculty member(s) teaching each course.

BIOMEDICAL ENGINEERING 125

14:125:209-210. BIOMEDICAL SYSTEMS THEORY I,II (3,3)
Prerequisites: 01:640:152, 01:750:124. Corequisites: 01:640:251, 244 and 01:750:227-228.
Time and frequency domain analysis of electrical networks; hydrodynamic, mechanical, and thermal analogs; basic electronic circuits and energy conversion systems.

14:125:211. BIOMEDICAL SYSTEMS LABORATORY (1)
Corequisite: 14:125:210.
Experiments and demonstrations dealing with basic medical electronics and signal analysis.

14:125:301. INTRODUCTION TO BIOMECHANICS (3)
Prerequisites: 14:125:209-210 or by permission.
Integrating biomechanics and biomaterials to the mechanical design of the body, functional anatomy of the musculoskeletal system, and organizational structure of biological tissues. Biomechanical modeling of the musculoskeletal system and computer simulation for different tasks.

14:125:302. INTRODUCTION TO BIOMATERIALS (3)
Prerequisites: 14:125:209-210 or by permission.
Structure and properties of materials (including polymers, ceramics, and metals) used to replace soft and hard biological tissues. Emphasis on development of structure and property correlations. Properties include phase transitions and mechanical and hydrodynamic behavior. Processes used for forming biomaterials. Biocompatibility criteria for structural, cardiovascular, and other applications.

14:125:313. INTRODUCTION TO BIOMEDICAL ENGINEERING I (3)
Prerequisites: 14:125:209-210 or by permission.
Biological systems analysis, fluid flow, cardiovascular modeling, compartments, nervous system, endocrine systems, sensory mechanisms, and health-care delivery.

14:125:314. INTRODUCTION TO BIOMEDICAL ENGINEERING II (3)
Prerequisites: 14:125:209-210 or by permission.
Physiological measurements, bioelectric events, biotelemetry, transducers, electrodes, amplifiers, and instrument systems.

14:125:315. INTRODUCTION TO BIOMEDICAL ENGINEERING LABORATORY (1)
Prerequisites: 14:125:211, 213.
Experiments and demonstrations dealing with the measurement of various physiological quantities of the cardiovascular, respiratory, neural, and visual systems. Testing and use of biomedical sensors.

14:125:401,402. BIOMEDICAL ENGINEERING SENIOR DESIGN I,II (3,3)
Prerequisites: 14:125:313-314.
Student determines a suitable design project with faculty adviser. Project results in a preliminary instrument design, experimental study, or computer application related to biomedical engineering.

14:125:410. SENSORY PROCESSES, MECHANISMS, AND COMPUTATIONAL MODELS (3)
Prerequisites: 14:125:313-314.
General principles of information processing in the human sensory organs, neural mechanisms, and pathways to the cortex. Emphasis on pathways of vision and audition. Mechanisms covered from a neurophysiological, computational, and psychophysical point of view.

14:125:420. ELECTROMAGNETIC COMPATIBILITY OF MEDICAL DEVICES (3)
Prerequisites: 14:125:313-314.
Increasing use of high-frequency energy bands has an impact on both the design and regulation of medical devices. Medical applications of electromagnetics (EM), principles of reducing EM emission and noise, and test and measurements of EM fields for regulatory compliance explored.

14:125:430. CARDIOVASCULAR ENGINEERING (3)
Prerequisites: 14:125:313-314.
Introduction to measurements in the cardiovascular system, analysis of blood-flow dynamics, and function of the heart. Applications to cardiovascular instrumentation, assist devices, and disease processes.

14:125:440. INTRODUCTION TO NEURAL PROCESSES—BIOLOGICAL AND ARTIFICIAL (3)
Prerequisites: 14:125:313-314.
Introduction to the function of the nervous system and its building blocks, the neurons. Basic functional characteristics of neurons as individual elements and as parts of neuronal assemblies. Introduction of artificial and electronic equivalents of neurons or neural networks.

14:125:450. SCIENCE AND ENGINEERING IN MEDICINE (3)
Prerequisites: 14:125:313-314.
Explores the scientific principles on which a variety of medical instruments are based and the impact of these technologies on the practice of medicine. Technologies from pathology, neurosurgery, ophthalmology, radiology, cardiothoracic surgery, orthopedic surgery, and plastic surgery reviewed.

14:125:491,492. SPECIAL PROBLEMS IN BIOMEDICAL ENGINEERING (BA,BA)
Prerequisite: By permission.
Independent study under the guidance of a faculty member in special areas of interest in biomedical engineering.

BIORESOURCE ENGINEERING 127

Bioresource engineering courses with the administrative code 11 are taught by Cook College. The following 127 courses are relevant for the bioresource engineering student.

11:127:100. INTRODUCTION TO BIORESOURCE ENGINEERING (1)
Overview of specializations within bioresource engineering. Expanding role of biological and environmental sciences in engineering. Analysis of selected problems. Review of professional opportunities.

11:127:240. ELEMENTS OF HORTICULTURAL ENGINEERING (3)
Elements of controlled environment horticulture in crop production systems: greenhouse design, environmental control, intensive plant production methods, and postharvest handling and storage.

11:127:290. BIOSYSTEMS ENGINEERING MEASUREMENTS (3)
Prerequisite: 01:750:227 or equivalent. Pre- or corequisite: 14:332:373 or equivalent.
Measurement principles including error analysis and transducers. Statistical analysis of experimental data. Electrical measurements. AC and DC circuits. Frequency response and transient analysis. Measurement and interpretation of physical properties of biological materials.

11:127:413. UNIT PROCESSES IN BIOENVIRONMENTAL ENGINEERING I (3)
Prerequisites: 14:155:303 or 14:180:387 or 14:650:312.
Application of theoretical concepts from mass, momentum, heat transfer, and reaction kinetics to the design and analysis of unit processes in environmental engineering, with an emphasis on physicochemical operations.

11:127:414. UNIT PROCESSES IN BIOENVIRONMENTAL ENGINEERING II (3)
Prerequisites: 01:447:390, 11:127:413 or permission of instructor.
Biological principles and operations, including microbial ecology, stoichiometry and kinetics of organic contaminant degradation and biomass growth, modeling of ideal biochemical reactors, design criteria for several named biochemical operations used for wastewater treatment.

11:127:423. BIOENVIRONMENTAL ENGINEERING UNIT PROCESSES LABORATORY I (1)
Prerequisite: 01:160:171 or equivalent. Corequisite: 11:127:413.
Demonstration of physicochemical operations used in the treatment of municipal and industrial wastewater, including coagulation, flocculation, sedimentation, filtration, carbon adsorption, chemical oxidation, heat transfer, oxygen transfer, and residence time distribution.

11:127:424. BIOENVIRONMENTAL ENGINEERING UNIT PROCESSES LABORATORY II (1)
Prerequisite: 01:160:171 or equivalent. Corequisite: 11:127:414.
Demonstration of biochemical operations used in the treatment of municipal and industrial wastewater, including biodegradability and biodegradation kinetics, energy balance in a biological reactor, respirometry, activated sludge, anaerobic toxicity, and aerobic digestion.

11:127:450. APPLIED INSTRUMENTATION AND CONTROL (4)
Prerequisite: 11:127:290 or equivalent.
Digital electronics, advanced sensing techniques, signal conditioning. Computer-based data acquisition, analysis, and control applications.

11:127:462. DESIGN OF SOLID WASTE TREATMENT SYSTEMS (3)
Open only to junior and senior engineering students.
Design of integrated solid waste management systems, including waste minimization, collection, composting, materials recovery, recycling, incineration, and landfilling.

11:127:468. HAZARDOUS WASTE TREATMENT ENGINEERING (3)
Prerequisites: 11:127:413, 01:160:209, 14:180:382, 01:447:390, or permission of instructor.
Engineering and process design aspects of hazardous waste management. Waste reduction and recovery, waste treatment, and site remediation. Case studies. Engineering solutions to model hazardous waste problems.

11:127:474. AIR POLLUTION ENGINEERING (3)
Prerequisites: 14:155:303 or 14:180:387 or 14:650:312 or permission of instructor.
Engineering design techniques for air quality control. Control of particulate and gas emissions from stationary sources. Control of mobile source emissions. Design for indoor air quality and regional air quality control.

11:127:488. BIORESOURCE ENGINEERING DESIGN I (2)
Open only to seniors in bioresource engineering.
Design morphology. Case studies and special design problems. Solutions developed using creative design processes that include analysis, synthesis, and iterative decision making. Safety and professional ethics.

11:127:489. BIORESOURCE ENGINEERING DESIGN II (2)
Prerequisite: 11:127:488.
Completion of bioresource engineering senior design project. Evaluation. Presentation of final report.

11:127:490. STRUCTURAL DESIGN AND ENVIRONMENTAL CONTROL (3)
Prerequisites: 14:180:215, 243.
Functional requirements and design aspects for controlled environment plant production systems, including structures, energy flows and balances, and environmental control equipment.

11:127:491. PHYTOMATION (3)
Prerequisites: 14:440:221, 222.
Analysis and design of mechanization and automation for controlled environment plant production systems with special emphasis on flexible automation, machine vision, mechatronics, and knowledge-based systems.

11:127:492. ENERGY CONVERSION FOR BIOLOGICAL SYSTEMS (3)
Prerequisite: 14:650:351.
Principles of energy conversion techniques and their application to various biomechanical systems, including solar energy systems, compostation, methane and alcohol production, and the internal combustion engine.

11:127:493. UNIT PROCESSES FOR BIOLOGICAL MATERIALS (3)
Pre- or corequisite: 14:155:308 or 14:650:351.
Theory and design of unit operations for handling and processing of biological materials with emphasis on particulate solids separation, comminution, mixing, heat transfer, dehydration, and process control.

11:127:494. LAND AND WATER RESOURCES ENGINEERING (3)
Prerequisite: 14:180:387.
Engineering aspects of land and water conservation: basic hydrology, soil-water-plant relationships, erosion control, surface and subsurface drainage, flood control, irrigation, non-point source pollution.

11:127:495. ENVIRONMENTAL SYSTEMS ANALYSIS FOR ENGINEERS (3)
Prerequisite: Permission of instructor.
Principles of procedural and heuristic systems analysis. Overview of engineering economics. Techniques of simulation and optimization. Topics of applied intelligence. Solutions for bioresource engineering problems by systems analysis methods.

11:127:496. PLANNING AND DESIGN OF LAND TREATMENT SYSTEMS (3)
Prerequisite: 14:180:387.
Engineering design of land treatment systems for municipal and industrial wastewater, including spray irrigation, overland flow, infiltration / percolation, and subsurface soil absorption systems. Facilities planning.

11:127:497,498. SPECIAL PROBLEMS IN BIORESOURCE ENGINEERING (BA,BA)
Prerequisite: Permission of department.
Studies of special interest in some selected area of bioresource engineering.

CERAMIC ENGINEERING 150

JUNIOR INSPECTION TRIP (0)
A visit to various types of ceramic manufacturing plants. Written report required.

SENIOR INSPECTION TRIP (0)
A visit to various types of ceramic manufacturing plants. Written report required. Seniors are encouraged to attend the annual meeting of the American Ceramic Society.

14:150:201. GLASS IN THE MODERN WORLD (3)
No prerequisite. For students with little or no background in the physical sciences or engineering, especially liberal arts students seeking an elective. Not open to majors.
Role of glass in contemporary society.

14:150:202. CERAMICS IN THE MODERN WORLD (3)
For students with little background in mathematics or the physical sciences.
Introduction to the field of ceramics. Surveys the broad principles of ceramics and relates them to each principal area in the discipline.

14:150:203. INTRODUCTORY CERAMICS (3)
Prerequisite: 01:160:160 or 162.
General field of ceramics, including its development and present scope, the classification of the industry by major divisions, and discussion of the technology of these industries. The broad principles of ceramics based on an approach from crystal physics and unit processes.

14:150:204. CERAMIC PROCESSING I (3)
Overview of ceramic raw materials. Mining and production of ceramic raw materials with emphasis on liberation and separation and the engineering of materials for specific processes and applications.

14:150:205. CRYSTAL CHEMISTRY FOR CERAMISTS (3)
Prerequisite: 01:160:160 or 162.
Introduction of concepts of crystal chemistry applied to ceramics, oxides, and nonoxides. Theories of bonding, the unit cell, crystallography, and symmetry as a basis for structure-property relationships.

14:150:206. THERMODYNAMICS FOR CERAMICS (3)
Prerequisites: 01:160:160 or 162, 01:640:251.
The laws of thermodynamics, chemical potentials and activities, condensed phase equilibria, phase diagrams and microstructure, the reactions between solids and gases, gas-gas reactions.

14:150:253. LABORATORY I (2)
Lab. 3 hrs., lec. 55 min.
Develops skills for planning, execution, and reporting of formal experimental results relating to processing of ceramic materials. Fabrication methods, powder processing, porcelain enameling, and melt forming.

14:150:254. LABORATORY II (2)
Lab. 3 hrs., lec. 55 min. Prerequisite: 14:150:253.
Develops skills for planning, execution, and reporting of formal experimental results relating to the characterization of ceramic materials, particle size measurement, phase identification, and dilatometry.

14:150:270. INTRODUCTION TO PACKAGING ENGINEERING (3)
Overview of the various principles and practices involved in packaging science and packaging engineering. Topics such as packaging materials, properties and processing, package design and development, and packaging production lines and their components.

14:150:271. PACKAGING IN THE MODERN WORLD (3)
For students with little or no background in the physical sciences or engineering. Not open to engineering or science majors.
Introduction to the field of packaging covering the nature, design, use, and environmental impact of packages. Overview of the past, present, and future roles of packaging in our technological society.

14:150:301. MEASUREMENTS IN PHYSICAL CERAMICS (4)
Lec. 3 hrs., lab. 3 hrs.
Physical measurements and underlying principles. Their application to ceramics in determining mechanical, thermal, and electrical properties. Rheological measurements related to processing of ceramics. Temperature measurements related to firing.

14:150:303. PHASE DIAGRAMS FOR CERAMICS (3)
Prerequisite: 14:150:206.
Applications of phase rule to one-, two-, and three-component systems with special emphasis on silicates and other oxide systems of interest in ceramics.

14:150:304. CERAMIC COMPOSITIONS (4)
Lec. 3 hrs., lab. 3 hrs.
Classical triaxial bodies and glazes. Consideration of composition of many new ceramic bodies and coatings with respect to their chemical, physical, electrical, and nuclear properties.

14:150:305. CERAMIC PROCESSING II (3)
Prerequisite: 14:150:204.
Fundamentals of powder processing, organic chemistry, rheology, and colloid science, with examples in various ceramic casting technologies.

14:150:306. CERAMIC PROCESSING III (3)
Prerequisite: 14:150:305.
Engineering methods for forming ceramic products. Role of processing in determining microstructure and product quality is a major theme.

14:150:307. PHYSICS OF CERAMICS I (3)
Prerequisites: 14:150:205,206.
Phenomenological approach to the solid-state reactions involved in ceramic processing, including phase transformations, phase separation, mechanisms, and transport phenomena.

14:150:308. PHYSICS OF CERAMICS II (3)
Prerequisites: 14:150:307, 01:640:244.
Structure-property-processing relationships with emphasis on properties. Introduction to thermal processes, thermal properties, and optical properties.

14:150:309. ANALYTICAL TECHNIQUES FOR CERAMICS (3)
Prerequisite: 14:150:205.
Interactions of electromagnetic radiation, electrons, and ions with matter and their application in X-ray diffraction and X-ray, IR, UV, electron, and ion spectroscopies in the analysis of ceramic materials. Nonspectroscopic analytical techniques also are covered.

14:150:312. GLASS ENGINEERING (3)
Prerequisites: 14:150:204, 303.
Study basic physical and chemical properties, chemical durability, stress release, annealing and tempering, mechanical strength, raw materials and melting, and methods of manufacture. Design of composition for desired engineered properties.

14:150:355. LABORATORY III (2)
Lab. 3 hrs., lec. 55 min. Prerequisite: 14:150:254.
Measurement of the optical, mechanical, electrical, and magnetic properties of ceramic materials. Fiber optics, strength of materials, and piezoelectric ceramics included.

14:150:370. APPLICATION OF ENGINEERING PRINCIPLES TO PACKAGING (3)
Basic principles from various fields of engineering applied to specific problems in packaging engineering using a mathematical approach.

14:150:372. PACKAGING DESIGN AND DEVELOPMENT (3)
Relationship between packaging and the marketing of consumer goods. Scientific approach to the problems of packaging. Model management plan for the packaging function.

14:150:373. PACKAGING EVALUATION METHODS (3)
Methods for evaluating and characterizing packaging materials and manufactured packages discussed, with emphasis on package development and established test protocols.

14:150:374. PACKAGE DESIGN LABORATORY (1)
Lab. 3 hrs.
Application of principles learned in 14:150:372 to design a package. Concept search through prototype production and testing.

14:150:375. PACKAGING EVALUATION LABORATORY (1)
Lab. 3 hrs.
Experiments performed to evaluate the performance of manufactured packages and materials used for packaging. Mechanical and chemical properties of packaging materials determined.

14:150:376. PACKAGE MANUFACTURING PROCESSES (3)
Manufacturing methods for glass, metal, plastic, paper, and composite packages studied and observed on field trips.

14:150:377,378. PACKAGING MATERIALS AND MECHANICAL PROPERTIES I,II (3,3)
Chemistry, structure, and physical and mechanical properties of materials used in packaging studied along with the effect of manufacturing processes.

14:150:401-402. SENIOR CERAMICS LABORATORY I,II (3,3)
Conf. 1 hr., lab. 6 hrs. Prerequisites: 14:150:305, 306, 308, 309.
Training in methods of independent research. Students, after consultation, assigned a problem connected with some phase of ceramics or ceramic engineering in their elected field of specialization.

14:150:403,404. SENIOR CERAMICS SEMINAR (1,1)
Current trends and topics of special interest in ceramics discussed by faculty, students, and representatives from the ceramics industry.

14:150:405. MECHANICAL PROPERTIES OF CERAMICS (3)
Prerequisites: 01:640:244, 01:750:228.
Mechanical behavior of ceramics, including brittle behavior, basic deformation mechanisms, microstructural features, and implications for design.

14:150:406. REFRACTORIES (3)
Physical and chemical principles involved in the development, production, and use of refractories, including carbides, nitrides, oxides, and silicates. Emphasis on modern, high-temperature applications.

14:150:407. CERAMIC MICROSCOPY (3)
Indicatrix theory. Use of thin-section and polished-section techniques in optical microscopy, application of scanning electron microscopy with sections, fractures, and powders. Application to ceramic products and processes.

14:150:408. INSTRUMENTAL TECHNIQUES FOR CERAMIC RESEARCH (3)
Lec. 2 hrs., lab. 3 hrs.
Study of the instrumentation used in the analysis and evaluation of ceramic materials. Instruction on X ray, DTA / TGA, electron microscope, and electron microprobe.

14:150:409. PHYSICS OF CERAMIC COLORS (1.5)
Physical nature of color and coloring agents. Light sources, optical laws for transparent and opaque materials, additive and subtractive colors, the ICI system, and spectrophotometric measurements. Colorants for glasses, glazes, and other ceramic materials.

14:150:411,412. CERAMIC ENGINEERING DESIGN (3,3)
Prerequisites: 14:150:305-306.
Fundamentals of equipment and plant design, construction, installation, maintenance, and cost for manufacture of ceramic products. Assignment of a problem in elected field of specialization.

14:150:413. CERAMIC ENGINEERING VENTURE ANALYSIS (3)
Product innovation and development techniques for ceramic materials based on traditional venture-analysis techniques. Aspects of marketing, engineering design, framework structuring, and decision and risk analysis.

14:150:414. ELECTRONIC CERAMICS (3)
Theoretical and practical consideration of dielectric loss, ferroelectricity, ferromagnetism, and semiconductivity in ceramic systems (glass, crystal, glass-crystal composites). Variation of properties with composition, structure, temperature, and frequency.

14:150:416. PHYSICAL AND CHEMICAL PROPERTIES OF GLASS (3)
Two 80-minute lectures. Offered even years only. Prerequisites: 14:150:312, 01:750:227.
Provides an atomistic understanding of the role of composition on the structure and properties of glasses.

14:150:418. OPTICAL CRYSTALLOGRAPHY (3)
Lec. 2 hrs., lab. 3 hrs.
Theory of use of the petrographic microscope and laboratory practice in the identification of isometric, uniaxial, and biaxial crystals in powder form.

14:150:419. PACKAGING THERMODYNAMICS (3)
Introduction to the laws of thermodynamics, phase equilibria, equilibrium reaction effects, surface science, interfacial thermodynamics, bonding forces, and adhesion principles.

14:150:422. ABRASIVES (1.5)
Manufacture, development, and properties of abrasives.

14:150:423. STRUCTURAL CERAMICS (1.5)
Fundamental engineering aspects of structural ceramics.

14:150:424. HYDRAULIC SETTING MATERIALS (1.5)
Cements, limes, and plasters; their manufacture, properties, and uses.

14:150:426. CERAMIC-METAL SYSTEMS (3)
Vitreous enamels, refractory coatings, electronic components, composite systems, and cemented carbides from the standpoint of engineering production methods, physical properties, and fundamental principles.

14:150:431. FIBER OPTICS ENGINEERING (3)
Light propagation in transparent materials, waveguide materials and structures, fiber drawing and characterization, basic fiber measurement techniques, optical data links, advanced applications of optical fibers.

14:150:432. APPLICATIONS OF FIBER OPTICS (3)
Applications of fiber optics in sensors, medicine, and surgery. Unconventional fibers, such as infrared fiber optics, discussed.

14:150:433. OPTICAL MATERIALS (3)
Fundamentals of optical materials (crystals, glasses, polymers). Relation of structure with optical properties and applications. Spectral characteristics of thin materials.

14:150:435. GLASS PACKAGING ENGINEERING (3)
Open to ceramic majors by special permission only. Offered odd years only.
Nature of glass; history and economics of glass packaging; soda-lime and other glass families; batching, furnaces, and forming; color; decoration and enameling; container strength; glass recycling; pharmaceutical packaging.

14:150:451. FIBER OPTICS ENGINEERING LABORATORY (1)
Lab. 3 hrs.
Optical spectroscopy, cleaving and splicing, loss, numerical aperture, dispersion measurements, mechanical properties, environmental effects, source and detector evaluation, optical link measurements, fiber optic sensors.

14:150:457. CERAMIC MICROSCOPY LABORATORY (1)
Lab. 3 hrs.
Optical and scanning electron microscopes used for the examination of demonstration specimens. Preparation of polished and thin-section specimens; identification of phases present, quantitative amounts of each phase, grain size, and general microstructure.

14:150:460. SURFACE DECORATION OF PACKAGING (3)
Fundamentals of printing techniques used on glass, metal, plastic, paper, and composite packages with attention to relevant topics on physical chemistry of packaging material surfaces.

14:150:467. WHITEWARES (3)
Graduate students encouraged to participate.
Intended for students interested in expanding their knowledge of clay-based bodies and glazes: raw materials, body formulations, forming techniques, glaze compositions, glaze application technology, and firing technology. Students presented with a series of problems typical of those found in whitewares industries.

14:150:469. ELECTRONIC CERAMICS I LABORATORY (1)
Principles of control circuits for the operation of electric furnaces and motors. Single- and three-phase electricity and the advantages for power lines and induction motors. Theory of shaded pole and capacitor-starter single-phase motors. Feedback principles for temperature control. Experiments with silicon control rectifiers, triacs, FET buffers for thermocouples, proportional control of heaters, and damping of oscillations.

14:150:471. DISTRIBUTION PACKAGING (3)
Design, development, and evaluation of distribution packaging. Physical distribution management as a systems approach to the flow, storage, and control of the product. Equipment used in distribution packaging. Economics of package design.

14:150:472. MATERIALS ELECTRONIC PACKAGING (3)
Materials and processes for packaging with ceramics, polymers, and metals. Thermal, mechanical, and electrical properties of composite packaging structures. Printed circuits, ceramic substrates, thin and thick films, protective coatings. Multilayers, multichip configurations, and design trends.

14:150:473. DISTRIBUTION PACKAGING LABORATORY (1)
Lab. 3 hrs.
Experiments in design of distribution packages, cushioning of products, and testing in a simulated distribution environment. Builds on principles studied in 14:150:471.

14:150:475. PACKAGING REGULATORY ASPECTS (3)
Laws and regulations at the national, state, and local levels that govern package design, development, and distribution. Recycling and solid waste disposal stressed.

14:150:476. PACKAGING MACHINERY (3)
Study of packaging machinery with some review of materials and considerations of the interrelationship between machinery and materials. Analysis of the development of package production lines. Principles of machine design and selection emphasizing the synthesis of knowledge.

14:150:478. PACKAGING MACHINERY LABORATORY (1)
Lab. 3 hrs.
Laboratory experimentation to accompany 14:150:476. Designed to augment the principles and practices presented in the lectures. Complete packaging line used by students for experiments.

14:150:479,480. PACKAGING PRACTICE I,II (3,3)
Open only to seniors.
Internships with major corporations serving as paid packaging engineers. Term paper required.

14:150:481,482. SPECIAL PROBLEMS IN PACKAGING I,II (3,3)
Individual or group projects, under the guidance of a faculty member, on special areas of interest in packaging engineering.

14:150:483,484. SEMINAR IN PACKAGING I,II (1,2)
Current trends and topics of special interest in package engineering discussed by faculty, students, and representatives from the packaging industry.

14:150:491,492. SPECIAL PROBLEMS IN CERAMICS (BA,BA)
Individual or group study or study projects, under the guidance of a faculty member on special areas of interest in ceramic engineering.

14:150:496-497. CO-OP INTERNSHIP IN CERAMIC AND MATERIALS ENGINEERING (3,3)
Prerequisite: Permission of department. Graded Pass/No credit.
Provides the student with the opportunity to practice and apply knowledge and skills in various ceramic and materials engineering professional environments. Intended to provide a capstone experience to the student's undergraduate studies by integrating prior course work into a working engineering environment. Credits earned for the educational benefits of the experience and granted only for a continuous, six-month, full-time assignment.

CHEMICAL AND BIOCHEMICAL ENGINEERING 155

14:155:201. CHEMICAL ENGINEERING ANALYSIS I (3)
Prerequisites: 01:160:160, 171; 01:640:152.
Introductory course. Mass and energy balances, recycle and bypass calculations. First Law of Thermodynamics and application to closed and open systems. Formulation of simple chemical equilibria. Analysis and solution of mass and energy balance problems for complex processes.

14:155:202. FUNDAMENTALS OF REACTIVE TRANSPORT PHENOMENA (3)
Prerequisites: 14:155:201, 14:440:127, 01:640:251.
Introductory course. Molecular theory of viscosity, diffusivity, and thermal conductivity. Shell balances. Transport of momentum, energy, and mass in one-dimensional reactive problems. Introduction to differential balances and boundary conditions in transport processes.

14:155:303. TRANSPORT PHENOMENA IN CHEMICAL ENGINEERING I (3)
Prerequisites: 14:155:202, 01:640:244 or equivalent.
Introduction to fluid dynamics of chemical systems. Application of basic equations to steady-state and unsteady-state flow processes. Description of laminar and turbulent-flow regimes leading to the determination of velocity distributions and friction factors. Design equations for flowing fluids, with computer applications.

14:155:304. TRANSPORT PHENOMENA IN CHEMICAL ENGINEERING II (3)
Prerequisite: 14:155:303. Corequisite: 14:155:308.
Energy and mass transfer in chemical engineering processes, with computer applications. Steady-state and unsteady-state heat conduction and molecular diffusion. Energy and mass transfer in fluids undergoing flow, phase change, and / or chemical reaction. Radiant heat transfer. Heat exchangers and mass transfer equipment.

14:155:307. CHEMICAL ENGINEERING ANALYSIS II (3)
Prerequisites: 14:155:201, 14:440:127, 01:640:244 or equivalent.
Introduction to modeling and simulation techniques in the analysis of chemical and biochemical engineering systems. Application of numerical methods for the solution of complex chemical process problems. Development and use of PC-computer software for the analysis and solution of engineering problems.

14:155:308. CHEMICAL ENGINEERING THERMODYNAMICS (3)
Prerequisites: 14:155:201, 01:160:323.
Thermodynamics from a chemical engineering viewpoint. First Law as it applies to nonflow and steady-flow processes, pressure-volume-temperature behavior of fluids and heat effects, the Second Law and its applications, thermodynamic properties of pure fluids and fluid mixtures, phase equilibria and chemical reaction equilibria. Thermodynamics of polymers and biosystems.

14:155:409. CHEMICAL SYSTEMS SAFETY AND HEALTH ENGINEERING MANAGEMENT (1.5)
Open only to seniors in the department.
Modern principles and practices of chemical systems analyses of engineering safety and health problems in the industrial, government, and public sectors of society. Emphases on engineering management duties and responsibilities, particularly as related to codes and standards of OSHA, EPA, the Consumer Product Safety Commission, ANSI, ASTM, Underwriters' Laboratory, NFPA, the National Electric Code. Case studies of chemical safety and health mishaps, including legal and ethical aspects of engineering design negligence.

14:155:411. INTRODUCTION TO BIOCHEMICAL ENGINEERING (3)
Prerequisites: 14:155:304, 01:447:390, 01:694:30l.
Integration of the principles of chemical engineering, food science, biochemistry, cell and molecular biology, and microbiology with applications to the analysis, control, and development of industrial, biochemical, and biological processes. Quantitative, problem-solving methods emphasized.

14:155:415. PROCESS ENGINEERING I (4)
Lec. 1 hr., lab. 9 hrs. Prerequisite: 14:155:304.
Original experiments developed using existing pilot-scale or bench-scale equipment. Working independently under faculty supervision, students use modern instruments, operate equipment under various open- and closed-loop control conditions, perform experiments, take data and assay samples, and write reports of professional quality. OSHA-type laboratory safety and health practices taught and utilized.

14:155:416. PROCESS ENGINEERING II (4)
Lec. 1 hr., lab. 9 hrs. Prerequisite: 14:155:415.
Projects different in kind and scale from those of the first term. Emphasis on professional-quality data and individual contributions, particularly process evaluation, scale-up, and design criteria. Also, orientation on careers, job opportunities, professional societies, licensing, rights and responsibilities of licensed engineers, and safety-risk management.

14:155:422. PROCESS SIMULATION AND CONTROL (3)
Prerequisite: 14:155:304.
Modern simulation techniques and automatic control theory as applied to process dynamics of chemical and biochemical engineering systems. Use of analytical methods and computer software for solving complex problems. Structure and design of closed-loop, computer-controlled processes. Discussion of safety engineering in the final process of control design.

14:155:423. DESIGN OF SEPARATION PROCESSES (3)
Prerequisites: 14:155:304, 308.
Application of mass transfer theory to the design and analysis of chemical engineering separation processes. Distillation, liquid extraction, gas absorption, and other separation processes. Computer software for the design and analysis of various separation processes.

14:155:424. CHEMICAL ENGINEERING DESIGN AND ECONOMICS (4)
Prerequisites: 14:155:423, 441 or permission of instructor.
Design of large chemical plants. Economics involved in the design, construction, and operation of chemical plants using modern computer software packages. Plant safety practices and OSHA concerns. Design problems using basic engineering principles.

14:155:426. BIOCHEMICAL ENGINEERING DESIGN AND ECONOMICS (4)
Prerequisites: 14:155:423, 441 or permission of instructor.
Design of large biochemical plants. Economics involved in the design, construction, and operation of biochemical and biological plants using basic engineering principles and computer software packages. Safety and OSHA issues discussed.

14:155:441. CHEMICAL ENGINEERING KINETICS (3)
Prerequisites: 14:155:304, 01:160:324 or 342.
Fundamental theories of kinetics. Ideal reactor analysis; single reactions, parallel and series reactions. Consideration of real reactors. Principles of heterogeneous catalysis, combined mass transfer / kinetic phenomena, and approaches to catalytic reactor design using computer methods.

14:155:453. CHEMICAL ENVIRONMENTAL ENGINEERING (3)
Prerequisite: Permission of instructor required for nonmajors.
Distribution, transport pathway, fate, and effects of natural and synthetic chemicals in the environment. Relationships between waste minimization, unit processes employed in end-of-pipe treatment, and alternative materials, in terms of economics and regulatory controls. Site remediation. Hazardous and extremely hazardous substances.

14:155:491,492. SPECIAL PROBLEMS IN CHEMICAL AND BIOCHEMICAL ENGINEERING (BA,BA)
Individual work under the guidance of a faculty adviser on special problems in a specific area of chemical or biochemical engineering. Interdisciplinary cooperation encouraged where applicable. Projects may be one or two terms in length, although the latter is preferred. Normally, no more than 3 credits are awarded per term, except for students in the James J. Slade Scholars Program.

14:150:496-497. CO-OP INTERNSHIP IN CHEMICAL AND BIOCHEMICAL ENGINEERING (3,3)
Prerequisite: Permission of department. Graded Pass/No credit.
Intended to provide a capstone experience to the student's undergraduate studies by integrating prior course work into a working chemical and biochemical engineering professional environment. Credits earned for the educational benefits of the experience and granted only for a continuous, six-month, full-time assignment.

CIVIL AND ENVIRONMENTAL ENGINEERING 180

14:180:215. ENGINEERING GRAPHICS (1)
Lab. 3 hrs. Not for civil engineering majors.
Principles of computer-aided drafting and design (CADD): graphic entities, hatch patterns, layering, part file creation and information extraction. Two-dimensional drafting and pictorial drawings using a CADD system. Introduction to three-dimensional modeling and surface revolution.

14:180:216. INTRODUCTORY COMPUTER-AIDED DESIGN AND DRAFTING (3)
Lec. 1 hr., lab. 3 hrs., rec. 1 hr. Open to civil engineering majors only.
Principles of computer-aided drafting and design (CADD): graphic entities, hatch patterns, layering, part file creation, and information extraction. Two-dimensional drafting and pictorial drawings using a CADD system. Introduction to three-dimensional modeling and surface revolution. Descriptive geometry. CADD applications in civil engineering.

14:180:243. MECHANICS OF SOLIDS (3)
Prerequisites: 01:640:251, 14:440:221 or equivalent. Corequisite: 01:640:244.
Axial force, shear, moment, and torque in structural members; stress, strain, and stress-strain relations; principal stresses and strains; torsion of circular shafts; bending of singly symmetric beams; compound loading; buckling of columns; statically indeterminate systems.

14:180:305. CONSTRUCTION ENGINEERING (3)
Prerequisite: 14:180:243.
Construction planning and practices. Utilization of heavy construction equipment. Economic and operational considerations in selection of construction equipment. Use of computer spreadsheets for cost recording and economic decisions. Formwork design. Quality and productivity control.

14:180:318. ELEMENTS OF STRUCTURES (3)
Prerequisites: 14:180:243, 14:440:222.
Structural analysis of statically determinate trusses, frames, cables, and arches. Computation of deflections in trusses and plane frames. Influence lines for beams and trusses. Introduction to indeterminate structures.

14:180:320. DESIGN OF STEEL STRUCTURES (3)
Lec. 2 hrs., rec. 1 hr. Prerequisites: 14:180:243, 318; 14:440:222.
Design of bolted and welded connections; design of components of structural systems in tension, compression, bending, and combined axial and bending loads. Use of computers for design and detailing.

14:180:331. ELEMENTS OF ENVIRONMENTAL ENGINEERING (3)
Engineering management of the environment with particular emphasis on water and wastewater, air and noise pollution, and solid wastes. Hazardous substances and risk analysis.

14:180:345. PROPERTIES OF MATERIALS LABORATORY (1)
Prerequisite: 14:180:243.
Mechanical properties and behavior of structural elements under a variety of load conditions.

14:180:364. TRANSPORTATION ENGINEERING I (3)
Principles of transportation engineering with application to various modes; planning, selection, formulation, and administration of transportation systems. Economic, environmental, and political constraints; land-use studies; applications; term project to include proposal and analysis to meet a specific transportation requirement.

14:180:372. SOIL MECHANICS (3)
Prerequisites: 14:180:243, 387.
Elements of engineering geology; mechanical and hydraulic properties of soils; soil-water systems and fluid flow; stresses in soils; compressibility, consolidation, and settlement; shearing resistance; lateral earth-pressures; slope stability; bearing capacity; numerical methods and computer applications.

14:180:374. SOIL MECHANICS LABORATORY (1)
Lab. 3 hrs. Corequisite: 14:180:372.
Engineering classification of soils and rocks. Laboratory studies of physical properties and shear strength of soils such as Atterberg limits, compaction, permeability, unconfined compression, and direct shear tests.

14:180:382. HYDRAULIC AND ENVIRONMENTAL ENGINEERING (3)
Prerequisites: 14:180:387.
Basic concepts of viscous flows, conservation laws (mass, momentum, and energy), pipe flows and open-channel flows, water distribution systems, hydraulic modeling (stream and marine pollution), air, stream, and marine pollution problems. Computer applications.

14:180:387. FLUID MECHANICS (3)
Prerequisites: 14:440:222, 01:640:244.
Fluid properties, statics and kinematics; concepts of system and control volume; mass, momentum, and energy conservation principles; laminar and turbulent flows in conduits and channels; boundary layer theory; drag and lift; ideal fluid flow.

14:180:389. FLUID MECHANICS LABORATORY (1)
Corequisite: 14:180:387.
Experimental applications and demonstrations; measurement of fluid properties; applications of mass, energy, and momentum principles; energy losses; forces on immersed bodies; flow measurement devices.

14:180:402. FINITE ELEMENT METHODS IN CIVIL ENGINEERING (3)
Prerequisites: 14:180:243, 01:960:379 or equivalent.
Finite element method of analysis for problems in structures and solid, fluid, and soil mechanics. Fundamentals of the finite element method. Variational formulation of boundary value problems, Galerkin approximations, matrix equations, finite element interpolation, error estimates, computer program algorithms and codes.

14:180:406. CONSTRUCTION ENGINEERING MANAGEMENT (3)
Prerequisite: 14:180:305.
Construction planning, scheduling, and control. Use of computer based information systems for project management. Value engineering. Critical path method and PERT scheduling techniques. Computer drawn scheduling networks. Schedule compression. Resource allocation leveling and optimization. Project organization and financial control. Decision making.

14:180:407. CONSTRUCTION PROJECTS (4)
Prerequisites: 14:180:305, 406.
Application of skills and theories of construction engineering management to actual projects. Students assigned to a project and work with managers to budget, schedule, and control operations. Topics include project staffing, cost control and documentation, safety and health, and labor relations.

14:180:411. REINFORCED CONCRETE (3)
Prerequisites: 14:180:318, 320.
Strength theories for the analysis and design of beams, slabs, columns, and floor systems in flexure, diagonal tension, torsion, serviceability, and load factors, including computer applications.

14:180:412. BEHAVIOR OF CONCRETE MATERIALS AND SYSTEMS (3)
Prerequisites: 14:180:301, 411.
Material behavior under uniaxial, multiaxial, and time-dependent loading. Various methods of testing and computer aids for quality control. Analysis of structural members. Recent developments in cementitious composites.

14:180:413. THEORY OF INDETERMINATE STRUCTURES (3)
Prerequisite: 14:180:318.
Force method for solving simple indeterminate structures. Classical methods of slope-deflection and moment distribution. Formulation and algorithms for matrix method. Application of computers for analyzing indeterminate trusses and frames.

14:180:421. REINFORCED CONCRETE LABORATORY (1)
Lab. 3 hrs. Corequisite: 14:180:411.
Experimental stress analysis of concrete structures, including test to failure of beams, plates, and prestressed elements; control testing and design of concrete mixtures.

14:180:426. STRUCTURAL DESIGN (4)
Lec. 3 hrs., lab. 3 hrs. Prerequisites: 14:180:318, 320, 411, 421.
Design of steel or concrete structures; prestressed concrete design of beams and slabs. Design project with working drawings for a bridge or high-rise building. Economic and ethical considerations. Comprehensive report.

14:180:430. WATER AND WASTEWATER ENGINEERING (3)
Prerequisites: 14:180:387, 389.
Design principles for water and wastewater engineering systems, water supply and distribution, wastewater collection and disposal, water treatment, and wastewater treatment.

14:180:431. DESIGN OF ENVIRONMENTAL ENGINEERING FACILITIES (4)
Prerequisites: 14:180:387, 389.
Analysis and design considerations for environmental engineering facilities such as water supply and wastewater treatment plants; physical engineering management of solid and hazardous waste; resource recovery; economic and ethical considerations. Comprehensive report.

14:180:438. TRANSPORTATION ENGINEERING II (4)
Lec. 3 hrs., lab. 3 hrs. Prerequisite: 14:180:437.
Studies in the design of transportation facilities, with emphasis on streets, highways, and airports. Earthworks, construction, pavement, and roadway design based on economic, stability, and durability considerations, and interface with the environment.

14:180:443. ADVANCED HYDRAULICS (3)
Prerequisite: 14:180:387.
Hydraulic engineering fundamentals—boundary layer, surface roughness, resistance in viscous flows; design of erodible and nonerodible canals; gradually varied flow, backwater analysis in rivers, computational methods; hydraulic jump; hydraulic applications in channel transitions and controls; flow over spillways; pollution problems in rivers and streams.

14:180:448. ELEMENTS OF HYDROLOGY (3)
Prerequisite: 14:180:387.
Hydrologic cycle; weather and hydrology; precipitation; evaporation and transpiration; stream flow and subsurface hydrology; stream flow hydrographs, unit hydrograph theory; stream flow routing, computer simulation of hydrologic processes; probability concepts in hydrology, models for frequency distribution of floods, time series analysis.

14:180:471. ELEMENTS OF ENVIRONMENTAL GEOTECHNOLOGY (3)
Prerequisite: 14:180:372.
Geotechnical aspects of analysis design and construction of waste containment systems.

14:180:473. FOUNDATION ENGINEERING (3)
Lec. 2 hrs., rec. 1 hr. Prerequisites: 14:180:372, 374.
Subsurface exploration; bearing capacity, settlement, and design of shallow foundations; design of rigid and flexible retaining structures; bearing capacity, settlement, and design of deep foundations.

14:180:474. GEOTECHNICAL ENGINEERING DESIGN (4)
Prerequisites: 14:180:372, 374, 473.
Subsurface investigation; construction dewatering; design concepts and procedures for shallow and deep foundations; application of numerical methods; safety and economy. Comprehensive report.

14:180:482. PROFESSIONAL ISSUES IN CIVIL ENGINEERING (1)
Prerequisite: Completion of all required courses through fall term of senior year.
Principles of design of civil engineering projects from the viewpoint of the whole; interactions between individual parts (subsystems) and the effect of each on the overall system; overview of design process, quality of design, risk and liability, ethics, and economic considerations; report writing.

14:180:491,492. SPECIAL PROBLEMS IN CIVIL ENGINEERING (BA,BA)
Open only to seniors with departmental permission.
Individual investigation in a branch of civil engineering of particular interest to the student.

14:180:493,494. SPECIAL PROBLEMS IN ENVIRONMENTAL ENGINEERING (BA,BA)
Open only to seniors with departmental permission.
Individual investigation in a branch of environmental engineering of particular interest to the student.

14:180:496-497. CO-OP INTERNSHIP IN CIVIL AND ENVIRONMENTAL ENGINEERING (3,3)
Prerequisite: Permission of department. Graded Pass/No credit.
Intended to provide a capstone experience to the student's undergraduate studies by integrating prior course work into a working civil and environmental engineering professional environment. Credits earned for the educational benefits of the experience and granted only for a continuous, six-month, full-time assignment.

ELECTRICAL AND COMPUTER ENGINEERING 332

14:332:221-222. PRINCIPLES OF ELECTRICAL ENGINEERING I,II (3,3)
Prerequisite: 01:640:152. Corequisites: 01:640:244, 251; 14:332:223-224.
Circuit elements, independent sources, dependent sources, circuit analysis in the DC and AC steady state, network theorems, operational amplifiers, transient analysis, Laplace Transforms, step and impulse response, active and passive filter circuits, introduction to 3-φ circuits, transformers, and DC and AC machines.

14:332:223-224. PRINCIPLES OF ELECTRICAL ENGINEERING I,II LABORATORY (1,1)
Corequisites: 14:332:221-222.

14:332:231. DIGITAL LOGIC DESIGN (3)
Prerequisite: 01:440:127. Corequisite: 14:332:233.
Binary arithmetic, Boolean algebra, K-maps. Combinational circuit synthesis, combinational MSI circuits. Sequential logic. Synchronous state machine design. Sequential MSI circuits.

14:332:233. DIGITAL LOGIC DESIGN LABORATORY (1)
Corequisite: 14:332:231.

14:332:252. PROGRAMMING METHODOLOGY I (3)
Prerequisite: 14:332:231.
Principles of block structured languages and data systems. Syntax, semantics, and data types of C programming language. Structured programming. Arrays, structures, lists, queues, stacks, sets, and trees. Recursion and pointers. Searching, sorting, and hashing algorithms. Introduction to complexity analysis.

14:332:303-304. HONORS CANDIDACY PROBLEMS (0,0)
Prerequisite: Permission of department chairperson. Open to undergraduate students who wish to become James J. Slade Scholars.
Extensive reading and study in a particular problem area of electrical and computer engineering under the guidance of a faculty member in the Department of Electrical and Computer Engineering.

14:332:321. PROBABILITY AND RANDOM PROCESSES (3)
Prerequisite: 14:332:222 or 50:750:234.
Probability and its axioms, conditional probability, independence, counting, random variables and distributions, functions of random variables, expectations, order statistics, central limit theorem, confidence intervals, hypothesis testing, estimation of random variables. Random processes and their characterization, autocorrelation function.

14:332:322. PRINCIPLES OF COMMUNICATIONS SYSTEMS (3)
Prerequisites: 14:332:321, 345.
Amplitude modulation and demodulation, frequency modulation and demodulation, phase locked loops, stochastic processes, autocorrelation, power spectral density, noise analysis in analog systems, and digital communications.

14:332:331. COMPUTER ARCHITECTURE AND ASSEMBLY LANGUAGE (3)
Prerequisites: 14:332:231, 252. Corequisite: 14:332:333.
Principles of computer architecture. Principles of assembly language programming, data definitions, instruction sets, addressing modes, assembler directives, macros. Control structures, organization of microcontrol systems, microprogramming. Memory organization, physical and virtual memory, implementation of virtual and paging memory systems, DMA, caches. Bus organization, input / output handling, interfaces and asynchronous control.

14:332:333. COMPUTER ARCHITECTURE LABORATORY (1)
Prerequisites: 14:332:231, 252. Corequisite: 14:332:331.
Assembly language programming for one of the standard commercial RISC microprocessors. Design and implementation of a simple microprocessor-based single-user computer.

14:332:345. LINEAR SYSTEMS AND SIGNALS (3)
Prerequisites: 14:332:222, 01:640:244. Corequisite: 14:332:347.
Introduction to continuous- and discrete-time systems and signals, basis function representation of signals, convolution, Fourier Series, Fourier, Laplace, Z-transforms theory, and state space variable.

14:332:346. DIGITAL SIGNAL PROCESSING (3)
Prerequisites: 14:332:345, 01:640:244. Corequisite: 14:332:348.
Introduction to digital signal processing, sampling and quantization, A / D and D / A converters, review of discrete-time systems, convolution, Z-transforms, digital filter realizations, fast Fourier transforms, filter design, and digital audio applications.

14:332:347. LINEAR SYSTEMS AND SIGNALS LABORATORY (1)
Corequisite: 14:332:345.

14:332:348. DIGITAL SIGNAL PROCESSING LABORATORY (1)
Corequisite: 14:332:346.

14:332:351. PROGRAMMING METHODOLOGY II (3)
Prerequisite: 14:332:252.
In-depth analysis of algorithms using object oriented techniques. Comparative algorithm analysis, sorting, graphs, NP-completeness. Emphasis on programming and practical applications in electrical and computer engineering. Introduction to parallel programming. Programming project.

14:332:361. ELECTRONIC DEVICES (3)
Prerequisites: 14:332:221-222. Corequisite: 14:332:363.
Fundamentals of semiconductor devices and microelectronic circuits, characteristics of p-n, Zener and tunnel diodes, and analog diode circuits. Principles of JFET, MOSFET, and BJT operation, biasing and stabilization methods, and transistor analysis at low frequencies.

14:332:362. ANALOG ELECTRONICS (3)
Prerequisite: 14:332:361. Corequisite: 14:332:364.
Feedback amplifier analysis. Frequency response of BJT and FET amplifiers, frequency response with feedback stability, and power amplifiers.

14:332:363. ELECTRONIC DEVICES LABORATORY (1)
Corequisite: 14:332:361.

14:332:364. ANALOG ELECTRONICS LABORATORY (1)
Corequisite: 14:332:362.

14:332:366. DIGITAL ELECTRONICS (3)
Prerequisite: 14:332:361. Corequisite: 14:332:368.
Transistor level circuit design theory for the digital logic gate families of CMOS, BiCMOS, nMOS, TTL, and ECL. Circuit delay, power, and noise analysis.

14:332:368. DIGITAL ELECTRONICS LABORATORY (1)
Corequisite: 14:332:366.

14:332:373. ELEMENTS OF ELECTRICAL ENGINEERING (3)
Prerequisites: 01:640:244, 01:750:227. Not open to electrical engineering students.
Survey course in electrical equipment and circuit solving.

14:332:375. ELEMENTS OF ELECTRICAL ENGINEERING LABORATORY (1)
Corequisite: 14:332:373. Not open to electrical engineering students.

14:332:382. ELECTROMAGNETIC FIELDS (3)
Prerequisites: 01:640:252 or 244, 01:750:227, 14:332:222.
Field theory of static, stationary, and moving charges explored. Basic laws of Coulomb, Gauss, Faraday, and Ampere discussed in the context of engineering applications. Knowledge of vector analysis assumed.

14:332:411. ELECTRICAL ENERGY CONVERSION (3)
Prerequisites: 14:332:221-222.
Magnetic circuit concepts, transformers, rotating electromagnetic devices as generalized machines, DC machines, and polyphase AC machines.

14:332:415. INTRODUCTION TO AUTOMATIC CONTROL THEORY (3)
Prerequisite: 14:332:345.
Theory of automatically controlled systems and their dynamic behavior.

14:332:416. CONTROL SYSTEM DESIGN (3)
Prerequisite: 14:332:415 or 14:650:401.
Design of controllers for linear time-invariant systems using Bode diagrams, root locus, pole placement, and observer techniques. Linear-quadratic optimal controllers and Kalman filters. Design of controllers for nonlinear systems based on linearization, first and second method of Lyapunov, describing function method. Observers for nonlinear systems and extended Kalman filter.

14:332:421. COMMUNICATIONS ENGINEERING (3)
Prerequisite: 14:332:322.
Quantization, analog signal coding, intersymbol interference, equalization, signal space and digital modulation, information theory, and coding.

14:332:422. COMMUNICATION SYSTEMS DESIGN (3)
Prerequisite: 14:332:322.
Laboratory experiments dealing with analog and digital communications schemes. Experiments involve component-level circuit construction, modular connection of subsystems, and use of interactive graphics-based, system-simulation software packages.

14:332:423. TELECOMMUNICATION NETWORKS (3)
Prerequisite: 14:332:321.
Problems of network synthesis and analysis. Includes network architectures for telephony and data network, circuit and packet multiplexing / switching methods, network design / routing algorithms via elementary linear / dynamic programming, layered protocol architectures, protocol design and analysis methods, and performance analysis.

14:332:426. WIRELESS PERSONAL COMMUNICATION SYSTEMS (3)
Prerequisites: 14:332:322, 421, 423.
Comparison of wireless and conventional communications, interference limited communications, channel reuse, capacity, spectrum efficiency, physical channels, systems, code division cellular system, low-tier personal communications systems, wireless data systems.

14:332:431. DIGITAL SYSTEM DESIGN (3)
Prerequisites: 14:332:231, 252, 331.
Logic design of a small number of specific microcomputers. Characteristics of their microprocessors examined in detail. Analysisof associated software with emphasis on interface technology.

14:332:434. DESIGN AUTOMATION OF DIGITAL SYSTEMS (3)
Prerequisites: 14:332:231, 351.
Fundamental concepts and techniques for DA / CAD of digital systems, with emphasis on identification of design issues / problems and mathematical formulation of solutions. Topics include specification and modeling, synthesis, low-power design, design verification, behavioral optimizations, scheduling, binding / sharing, and testability.

14:332:445. MULTIMEDIA SIGNAL PROCESSING (3)
Prerequisites: 14:332:346, 348.
Speech and image processing, matrix formulation of algorithms and MATLAB implementation, C programming, and debugging of Texas Instruments signal processors. Laboratory experiment each week.

14:332:446. MULTIMEDIA SIGNAL PROCESSING DESIGN (3)
Prerequisite: 14:332:445.
Speech, audio, and video processing; matrix formulation of algorithms and MATLAB implementations; Internet videophones. Laboratory experiments and projects.

14:332:448. IMAGE PROCESSING (3)
Prerequisites: 14:332:321, 346.
Representation and manipulation of images in computers. Feature enhancement and extraction. Spatial and frequency domain approaches. Practical experience through MATLAB-based implementations.

14:332:452. INTRODUCTION TO SOFTWARE ENGINEERING (3)
Prerequisite: 14:332:252.
Introduction to the concepts of software engineering. System planning, software requirements analysis, formal specification, testing, reliability, software maintenance, software cycle analysis and documentation.

14:332:461. PULSE CIRCUITS (3)
Prerequisite: 14:332:362. Corequisite: 14:332:463.
RC timing circuits used in waveform generating and shaping circuits.

14:332:463. PULSE CIRCUITS LABORATORY (1)
Corequisite: 14:332:461.

14:332:465. PHYSICAL ELECTRONICS (3)
Prerequisite: 14:332:361.
Semiconductor fundamentals, p-n diodes, bipolar transistors, Schottky diodes, JFETs, MESFETs, and MOSFETs.

14:332:466. OPTO-ELECTRONIC DEVICES (3)
Prerequisites: 14:332:361, 382, 465.
Fiber optical waveguides, lasers, light-emitting diodes, photodetectors, modulators, and system application.

14:332:468. MICROELECTRONIC PROCESSING DESIGN (3)
Prerequisite: 14:332:465.
Overview of microelectronic processing technology, lithography, etching, oxidation, diffusion, implantation and annealing, film deposition, epitaxy growth, metallization, process integration, and simulation.

14:332:471. ROBOTICS AND COMPUTER VISION (3)
Prerequisites: 14:332:252, 345, 346.
Introduction to robotics. Robot arm kinematics and dynamics. Trajectories and control. Sensing and robot programming languages. Low-level vision, edge detection, and segmentation. Illumination strategies, 3-D.

14:332:473. INTRODUCTION TO VLSI DESIGN (4)
Prerequisites: 14:332:231, 331, 366.
Introductory digital VLSI chip design, CMOS technology, dynamic clocked logic, layout design rules, and analog MOSFET timing analysis.

14:332:474. INTRODUCTION TO COMPUTER GRAPHICS (3)
Prerequisites: 14:332:231, 252.
Computer display systems, algorithms, and languages for interactive graphics. Vector, curve, and surface generation algorithms. Hidden-line and surface algorithms.

14:332:476. VIRTUAL REALITY (3)
Prerequisite: 14:332:252.
Introduction to VR, input / output devices, haptic interfaces, dedicated hardware, world modeling, human factors in VR simulations, applications, the future of VR.

14:332:481. ELECTROMAGNETIC WAVES (3)
Prerequisite: 14:332:382.
Interaction of electromagnetic waves in various media presented, beginning with Maxwell's equations and the constitutive relations. Practical applications in optoelectronics, fiber optics, and communications presented throughout the course.

14:332:491,492. SPECIAL PROBLEMS (3,3)
Prerequisite: Permission of department.
Individual investigation in some branch of electrical and computer engineering of particular interest to the student. Topic selected for study must be approved and directed by a faculty member.

14:332:496-497. CO-OP INTERNSHIP IN ELECTRICAL AND COMPUTER ENGINEERING (3,3)
Prerequisite: Permission of department. Graded Pass/No credit.
Intended to provide a capstone experience to the student's undergraduate studies by integrating prior course work into a working electrical and computer engineering professional environment. Credits granted only for a continuous, six-month, full-time assignment.

GENERAL ENGINEERING 440

14:440:100. ENGINEERING ORIENTATION LECTURES (1)
Graded Pass/No Credit.
Brief overview of each of the specific fields of engineering offered as degree programs at the college. Describes the major fields of study, as well as the engineering profession in general.

14:440:107. METHODS OF INQUIRY FOR ENGINEERS (E3)
Study skills. A system of thinking strategies and critical and analytical thinking skills applicable across the engineering curriculum.

14:440:125. INTRODUCTION TO FORTRAN (3)
Prerequisite for 14:440:127 in absence of prior programming experience.
Introductory and advanced aspects in the FORTRAN 90 computer language. Program development and control related to engineering problem interpretation for computer applications. Debugging techniques.

14:440:127. INTRODUCTION TO COMPUTERS FOR ENGINEERS (3)
Prerequisite: One year of computer programming in high school or 14:440:125 or equivalent.
Use of higher-level language such as FORTRAN 90 to solve engineering-related problems. Emphasis on problem solving skills and mathematical tools of importance in engineering.

14:440:191. HONORS INTRODUCTION TO ENGINEERING (1)
Open only to honors program participants.
Covers the same material as 14:440:100, but in a more thorough and demanding fashion.

14:440:221. ENGINEERING MECHANICS: STATICS (3)
Prerequisites: 01:640:151, 01:750:123.
Classification of systems of forces and their resultants; geometrical and analytical conditions for the equilibrium of force systems; frames and trusses; friction; parabolic and catenary cables; centers of gravity.

14:440:222. ENGINEERING MECHANICS: DYNAMICS (3)
Prerequisites: 14:440:221, 01:640:152, 01:750:124. Corequisite: 01:640:251.
Kinematics of particles and rigid bodies; rectangular, path, and polar descriptions. Relative motion. Kinetics of particles, particle systems, and rigid bodies; equations of motion, principles of work and energy, linear and angular impulse and momentum. Impact.

14:440:291. HONORS ENGINEERING MECHANICS: STATICS (3)
Open only to honors program participants.
Covers the same material as 14:440:221, but in a more thorough and demanding fashion.

14:440:292. HONORS ENGINEERING MECHANICS: DYNAMICS (3)
Open only to honors program participants.
Covers the same material as 14:440:222 but in a more thorough and demanding fashion.

14:440:407. MECHANICAL PROPERTIES OF MATERIALS (3)
Prerequisites: 14:155:303, 14:180:243, 14:650:291; or equivalent.
Mechanical behavior of metals, ceramics, polymers, and composites. Elastic and plastic behavior. Theories of yielding, brittle fracture, time-dependent behavior, and fatigue. Relation of properties to structure.

INDUSTRIAL ENGINEERING 540

14:540:201. WORK DESIGN AND ERGONOMICS (3)
Corequisite: 14:540:202.
Man-machine analysis, motion economy, time study, predetermined time systems, work sampling; introduction to robotics, facilities layout, material handling; introduction to ergonomics and anthropometric, biomechanical, and human-machine interface models.

14:540:202. WORK DESIGN AND ERGONOMICS LABORATORY (1)
Corequisite: 14:540:201.
Experiments in robotics, time study, work measurement, workplace design and the human-machine interface, facilities layout.

14:540:210. ENGINEERING PROBABILITY (3)
Prerequisites: 01:640:152, 14:440:127.
Probability problems in engineering, conditional probability, discrete and continuous distributions, functions of random variables, interval estimates.

14:540:213. INDUSTRIAL ENGINEERING LABORATORY (1)
Introduction to C programming; fundamental data types, flow control, and functions; arrays, pointers, and strings; algorithms and flow charts; application of dynamic memory allocation in simulation of queuing systems.

14:540:242. METAL PROCESSING (4)
Lec. 3 hrs., lab. 3 hrs.
Properties of engineering materials, casting, forming, and machining; basic machine tools processes, laser machining, waterjet cutting, micromachining, and tolerancing. Experimental work, microscopic analyses of metals, chip formation, and tool life.

14:540:303. MANUFACTURING PROCESSES (3)
Prerequisites: 14:180:243, 14:440:407. Corequisite: 14:540:304.
Properties of materials, phase diagrams, metal forming and cutting. Basic and computerized machine tools. Process planning. Control charts.

14:540:304. MANUFACTURING PROCESSES LABORATORY (1)
Corequisite: 14:540:303.
Experiments on machine tools: lathes, drilling machines, milling machines, and CNC milling machines; robot workplace design and computer control of machine tools.

14:540:305-306. HONORS CANDIDACY PROBLEMS (0,0)
Prerequisite: Permission of departmental chairperson. Prerequisite for industrial engineering students who wish to be James J. Slade Scholars.
Extensive reading and study in a particular problem area of industrial engineering under the guidance of a faculty member.

14:540:311. DETERMINISTIC MODELS IN OPERATIONS RESEARCH (3)
Prerequisite: 01:640:244.
Elements of problem solving and algorithmic design. Use of numerical analysis and linear algebra to solve industrial engineering problems. Linear programming, optimization techniques.

14:540:338. PROBABILITY MODELS IN OPERATIONS RESEARCH (3)
Prerequisite: 14:540:210.
Decision making under uncertainty, Markov chains, inventory models, queuing systems.

14:540:343. ENGINEERING ECONOMICS (3)
Open only to junior and senior engineering students.
Economic decisions involving engineering alternatives; annual cost, present worth, rate of return, and benefit-to-cost; before and after tax replacement economy; organizational financing; break-even charts; unit and minimum-cost public sector studies.

14:540:382. COMPUTER CONTROL OF MANUFACTURING SYSTEMS (3)
Corequisite: 14:540:383.
Programmable automation applied to manufacturing. Computer architecture, sensors and automatic data acquisition, computer control of actuators, continuous and discrete control of processes, computer integration, and local areas networks.

14:540:383. COMPUTER CONTROL OF MANUFACTURING SYSTEMS LABORATORY (1)
Corequisite: 14:540:382.
Use of microcomputers and industrial controllers in controlling machines and processes. Assembly language programming, ladder logic programming, and interfacing controllers to sensors and actuators. Experiments in manufacturing applications.

14:540:384. SIMULATION MODELS IN INDUSTRIAL ENGINEERING (3)
Prerequisites: 14:540:210, 14:450:338.
Modeling and analysis of industrial and service systems, simulation modeling perspectives, discrete event and continuous simulation, simulation languages, statistical aspects of simulation.

14:540:390. MANUFACTURING PROCESSES AND MATERIALS FOR ENGINEERS (3)
Properties of engineering materials, heat treating, welding, casting, forming, machining, and basic machine tool processes; experimental work, microscopic analysis of metals, chip formation, and tool life.

14:540:399. DESIGN OF ENGINEERING SYSTEMS I (3)
Recommended pre- or corequisites: 14:540:303, 304.
Design principles, material selection, design for assembly, design for manufacturing, and effect of environmental issues on product design.

14:540:400. DESIGN OF ENGINEERING SYSTEMS II (3)
Prerequisites: 14:540:303, 304, 382, 384, 399.
Team approach to the redesign of a "real life" product. Alternative engineering plans for improved designs developed and implemented. Both written and oral reports.

14:540:410. LINEAR PROGRAMMING (3)
Prerequisite: 14:540:311. Open only to seniors and graduate students in engineering.
Methods and applications of linear programming, the Simplex method, the revised Simplex method, duality, transportation problems, postoptimality analysis, computer programs and solutions, decomposition and industrial application of linear programming.

14:540:421. INDUSTRIAL ORGANIZATION AND MANAGEMENT (3)
Nature and purpose of organizing, types of organizations, functions of management, human problems in industrial management. Organizational design, staffing, and human resource management.

14:540:433. QUALITY ENGINEERING AND STATISTICS (3)
Prerequisite: 14:540:210. Corequisite: 14:540:434.
Statistical methods for controlling and improving product quality. Control charts, acceptance sampling, on- and off-line process controls.

14:540:434. QUALITY ENGINEERING LABORATORY (1)
Corequisite: 14:540:433.
Practical application of quality engineering methodologies, including online process control, design of experiments to improve product design, industrial manufacturing processes, and system design. Use of statistical quality control software, data acquisition software, digital measurement instruments, and software and hardware interfaces.

14:540:453. PRODUCTION PLANNING AND CONTROL (3)
Prerequisites: 14:540:210, 311.
Coordination of activities of both manufacturing and service systems. Systems design; input and output; planning and scheduling. Decision-making problems employing mathematical techniques of linear programming. Sequencing jobs on machines and line balancing techniques.

14:540:461. ENGINEERING LAW (3)
Prerequisite: Permission of department. Open only to seniors and graduate students in engineering.
Legal and ethical aspects of engineering; bids, awards, and negotiated contracts. Liabilities to the public and to employees, contract labor law. Contracts, patents, copyrights, trademarks, and engineering specifications.

14:540:462. FACILITIES LAYOUT AND MATERIALS HANDLING (3)
Prerequisites: 14:540:201, 303.
Fundamentals of the design, layout, and location of industrial and nonmanufacturing facilities. Selection of machines and material handling equipment and their efficient arrangement. Emphasis on quantitative methods. Warehouse layout. Facility location theory.

14:540:470,471. INDUSTRIAL ENGINEERING SEMINAR (1,1)
Broad aspects of current engineering practices. Individual investigation and reports by students. Participation by representatives from industry.

14:540:475. INTRODUCTION TO PHARMACEUTICAL MANUFACTURING (3)
Generic issues in pharmaceutical drug development and manufacturing processes, such as regulatory issues including safety requirements (OSHA); the Good Manufacturing Practice (FDA); and others such as validation, quality control, and automation. Sterile and nonsterile manufacturing operations and packaging applications studied. Design and performance analysis of pharmaceutical production systems emphasized using analytical as well as simulation techniques. Case studies emphasized.

14:540:484. DESIGN OF A MANUFACTURING ENTERPRISE (3)
Open only to senior industrial engineering majors.
Senior-level capstone course. Students in small groups select product(s) to be manufactured, and design and justify the enterprise.

14:540:485. MANUFACTURING INFORMATION SYSTEMS (3)
Design of information systems for integrated manufacturing. Modeling, specification, and implementation of factory information systems. Relational database model and structured query language. Methods of automatic data acquisition and integration of factory floor information with factory host database for production planning and control.

14:540:486. AUTOMATED MANUFACTURING SYSTEMS (3)
Corequisite: 14:540:487.
Introduction to computer-aided design and computer-aided manufacturing (CAD / CAM), numerical control, hardware and programming, robotics hardware and programming, and machine vision with applications in manufacturing.

14:540:487. AUTOMATED MANUFACTURING SYSTEMS LABORATORY (1)
Corequisite: 14:540:486.
Use of CAD / CAM equipment to design and manufacture discrete parts. Experimentation with robotics with applications in manufacturing. Use of machine vision in manufacturing.

14:540:491,492. SPECIAL PROBLEMS (BA,BA)
Studies in phases of industrial engineering of special interest.

14:540:496-497. CO-OP INTERNSHIP IN INDUSTRIAL ENGINEERING (3,3)
Prerequisite: Permission of department. Graded Pass/No credit.
Intended to provide a capstone experience to the student's undergraduate studies by integrating prior course work into a working industrial engineering professional environment. Credits earned for the educational benefits of the experience and granted only for a continuous, six-month, full-time assignment.

MECHANICAL AND AEROSPACE ENGINEERING 650

14:650:215. INTRODUCTION TO COMPUTER-AIDED DRAFTING AND MACHINING (1)
Personal-computer-aided drafting, geometric construction techniques, orthographic projections, auxiliary views, sectional views, oblique and isometric views, library symbols, 3-D modeling and viewing.

14:650:231. MECHANICAL ENGINEERING COMPUTATIONAL ANALYSIS AND DESIGN (3)
Prerequisite: 14:440:127. Open only to mechanical engineering majors.
Computational methods used in modeling mechanical engineering systems. Design project using the computer to judge engineering alternatives.

14:650:291. INTRODUCTION TO MECHANICS OF MATERIALS (3)
Prerequisite: 14:440:221. Corequisite: 01:640:244 or 251.
Stress and strain in elastic solids such as shafts and beams. Combined stresses; statically indeterminate beams.

14:650:312. FLUID MECHANICS (3)
Prerequisite: 01:640:244.
Control volume concepts of mass, momentum, and energy transport. Hydrostatics, Euler's equations, potential flow, Navier Stokes equations, turbulence, and boundary layer theory.

14:650:342. DESIGN OF MECHANICAL COMPONENTS (3)
Prerequisites: 14:650:291, 14:440:222.
Design philosophy; stress and deflection analysis; energy methods; theories of failure; fatigue; bearings; design of such mechanical elements as springs, weldments, and gears.

14:650:349. MECHANICAL ENGINEERING MEASUREMENTS LABORATORY (1)
Corequisite: 14:650:350.
Laboratory experience in use of instrumentation.

14:650:350. MECHANICAL ENGINEERING MEASUREMENTS (3)
Pre- or corequisite: 14:332:373. Corequisite: 14:650:349.
Theory of instrumentation, selection, calibration, use of instruments. Error analysis. Sensors, signal conditioners, data acquisition, and processing systems. Design project.

14:650:351. THERMODYNAMICS (3)
Prerequisites: 01:750:228, 01:640:244.
Fundamental concepts, First Law, reversibility, Second Law, entropy, properties of fluids and perfect gases, processes, cycles, general equations, and mixtures.

14:650:401. MECHANICAL CONTROL SYSTEMS (3)
Prerequisites: 01:640:244, 14:650:231. Pre- or corequisite: 14:332:373.
Dynamic analysis of mechanical, electromechanical, thermal, hydraulic, and pneumatic feedback control systems.

14:650:431,432. MECHANICAL ENGINEERING LABORATORY I, II (1,1)
Lab. 3 hrs. Prerequisites: 14:650:312, 349, 350, 351.
Comprehensive experiments in fluid dynamics, acoustics, heat transfer, power systems, and dynamic mechanical systems. Preparation of test procedure, data analysis, presentation of results and conclusions.

14:650:433. AEROSPACE ENGINEERING LABORATORY (1)
Lab. 3 hrs. Prerequisites: 14:650:312, 349, 350. Corequisite: 14:650:481.
Open only to students enrolled in Aerospace option.
Comprehensive experiments in fluid dynamics, heat transfer, acoustics power system, and dynamic mechanical systems. Preparation of test procedure, data analysis, and presentation of reports and conclusion.

14:650:443. VIBRATIONS AND CONTROLS (3)
Prerequisite: 14:650:342.
Mechanical vibration, vibration isolation, and critical speeds. Balancing of rotating and reciprocating machinery. Feedback control systems.

14:650:447. PROBABILISTIC MODELS IN MECHANICAL AND AEROSPACE SYSTEMS (3)
Prerequisite: 14:332:321 or 14:540:210 or 01:640:477 or 01:960:379.
Probabilistic concepts and modeling in mechanical design and analysis. Reliability of mechanical systems. Introduction to turbulence modeling. Introduction to computational aspects. Design project.

14:650:449. INTRODUCTION TO MECHANICS OF COMPOSITE MATERIALS (3)
Prerequisite: 14:650:291.
Particle and fiber-reinforced composites, stress-strain relations of anisotropic materials, tensor transformation, derivation of effective moduli of composites from those of the constituents, cross-ply / angle-ply laminates, symmetric / antisymmetric laminates, and engineering applications.

14:650:455. DESIGN OF MECHANISMS (3)
Prerequisite: 14:440:222.
Motion analysis. Centrodes, analytical representation of plane motion, Euler-Savary equation, Bobillier's theorem. Linkages and cams. Two- and three-position syntheses, Freudenstein's method, and optimal methods. Design project.

14:650:458. AEROSPACE STRUCTURES (3)
Prerequisite: 14:650:291.
Load factors, stresses and deformations in thin-walled members, shear center, torsion of single-cell and multicell structures, analysis of aircraft components.

14:650:459. AEROSPACE PROPULSION (3)
Prerequisites: 14:650:312, 351.
Theory of air-breathing and rocket engines. Propulsion performance parameters and mission requirements. Operation of diffusers, combustors, rockets, and jet engines. Design project.

14:650:460. AERODYNAMICS (3)
Prerequisites: 14:650:312, 351.
Circulation and lift, Kutta-Joukowski theorem, thin airfoil theory, finite wing theory, induced drag, static and dynamic longitudinal and lateral stability and control. Design project.

14:650:461. INTERNAL COMBUSTION ENGINES (3)
Prerequisite: 14:650:351.
Thorough analysis of reciprocating engines and gas turbine. Fuel characteristics. Pollutant formation and control. Combustion and lubrication.

14:650:462. POWERPLANTS (3)
Prerequisite: 14:650:351.
Current theory and practice of cycles and design of equipment for the generation of power in central stations and industrial power plants. Design projects.

14:650:463. COMPRESSIBLE FLUID DYNAMICS (3)
Prerequisites: 14:650:312, 351.
Integral form of conservation laws. One dimensional compressible flow with friction and heat. Normal and oblique shock waves. Prandtl-Meyer expansion. Differential form of conservation laws. Unsteady wave motion. 2-D subsonic, supersonic, and hypersonic flow.

14:650:465. ORBITAL MECHANICS (3)
Open only to senior mechanical engineering majors.
Rocket principle and performance; staging; trajectories in central force field; orbit transfer; reentry dynamics and heating.

14:650:467-468. ENGINEERING PROJECTS LABORATORY I,II (1.5,1.5)
Open only to senior mechanical engineering majors.
Application of both analytical and experimental skills to an engineering research project. Individual work with weekly consultations with a faculty adviser.

14:650:474. SOLAR THERMAL ENERGY COLLECTION AND STORAGE (3)
Open only to senior engineering or physical sciences majors.
Introduction to the design and theory of systems that employ solar thermal energy as a replacement for fossil fuel energy used in buildings and homes. Design project.

14:650:477. ENVIRONMENTAL CONTROL OF BUILDINGS (3)
Prerequisite: 14:650:351. Pre- or corequisite: 14:650:481.
Methods of controlling temperature and humidity in buildings and homes. Load calculations. Use of DOE-2.1 or other computer simulation in HVAC design project.

14:650:478. MECHANICAL ENGINEERING ASPECTS OF ELECTRONIC PACKAGING (3)
Corequisite: 14:650:481.
Packaging of integrated circuits, printed circuit boards, and electronic equipment from consumer electronics and personal computers to large mainframe computers and telephone switching systems. Thermal analysis and design, stress analysis, shock and vibration, electrical analysis and design, materials, reliability, and failure mode analysis.

14:650:481. HEAT TRANSFER (3)
Prerequisites: 14:650:312, 351; 01:640:421.
Theory of heat transfer by steady and transient conduction. Heat transfer by radiation. Convection of heat by fluid motion in external and internal flow. Combined heat transfer calculations.

14:650:485. TOPICS IN MECHANICAL ENGINEERING (3)
Open only to senior mechanical engineering majors.
One or two topics of current importance and interest studied intensively. Topic examples: acoustics, combustion, energy conversion, refrigeration, urban engineering, and propulsion.

14:650:486-487. DESIGN OF MECHANICAL SYSTEMS (3,3)
Lec. 2 hrs., lab. 3 hrs Open only to senior mechanical engineering majors.
Allows students to use knowledge acquired in the curriculum on solving open-ended, multicriteria engineering problems. Emphasis placed on teamwork, project management, conceptualization, detailed design, analysis, and manufacturing.

14:650:488. COMPUTER-AIDED DESIGN IN MECHANICAL ENGINEERING (3)
Lec. 2 hrs., lab. 3 hrs. Prerequisites: 14:650:215, 231, 342 or equivalent.
Computer-aided design (CAD) applications of analysis, synthesis, and design. Automated drafting and higher-order programming languages. Development of general-purpose functions, components, and command files. Hands-on experience on CAD stations.

14:650:491,492. SPECIAL PROBLEMS (3,3)
Prerequisite: Permission of department.
Studies of special interest in aspects of mechanical and aerospace engineering.

14:650:495. INTERNSHIP IN MECHANICAL AND AEROSPACE ENGINEERING (3)
Prerequisite: Permission of department; open to MAE students only. Graded Pass/No Credit.
Provides students with opportunity to practice and / or apply knowledge and skills in various mechanical engineering professional environments.

14:650:496-497. CO-OP INTERNSHIP IN MECHANICAL AND AEROSPACE ENGINEERING (3,3)
Prerequisite: Permission of department. Graded Pass/No credit.
Intended to provide a capstone experience to the student's undergraduate studies by integrating prior course work into a working mechanical and aerospace engineering professional environment. Credits earned for the educational benefits of the experience and granted only for a continuous, six-month, full-time assignment.

Administration and Faculty

ADMINISTRATION

Michael T. Klein, Dean of the College
Fred R. Bernath, Associate Dean for Academic Affairs
Helen M. Buettner, Associate Dean for Graduate Education and Research
Abdelfattah Zebib, Associate Dean for Faculty
Jeffery L. Rankin, Assistant Dean for First-Year Students
Donald M. Brown, Assistant Dean for Special Programs

FACULTY

Professor: Michael T. Klein, B.Ch.E., Delaware; Sc.D., Massachusetts Institute of Technology

Department of Biomedical Engineering

Chairperson: Stanley M. Dunn (Interim)

Professors:

Gary M. Drzewiecki, B.S., SUNY (Buffalo); M.S., Ph.D., Pennsylvania
Stanley M. Dunn, B.S., Drexel; M.S., Ph.D., Maryland; Ph.D., Vrije Universitiet te Amsterdam
John K-J. Li, B.S., Manchester (England); M.S., Ph.D., Pennsylvania
Evangelia Micheli-Tzanakou, B.S., Athens; M.S., Ph.D., Syracuse
Thomas V. Papathomas, B.S., M.S., Ph.D., Columbia
John L. Semmlow, B.S., Ph.D., Illinois
George K. Shoane, B.S., M.S., Ph.D., California (Berkeley)

Associate Professor:

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Charles Roth, B.S., Pennsylvania; Ph.D., Delaware

Affiliated Faculty:

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Casimir Kulikowski, B.E., M.S., Yale; Ph.D., Hawaii
Prabhas Moghe, B.S., Bombay; Ph.D., Minnesota
Henrik Pedersen, B.Ch.E., Rochester; M.S., M.Phil., Ph.D., Yale

Department of Ceramic and Materials Engineering

Chairperson: Stephen C. Danforth

Professors:

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Frederic Cosandey, Dipl., Swiss Institute of Technology; M.S., Ph.D., Carnegie Mellon
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James A. Harrington, B.S., Grinnell College; M.S., Ph.D., Northwestern
James D. Idol, A.B., William Jewell College; M.S., Ph.D., D.Sc., Purdue
Bernard H. Kear, B.S., Ph.D., D.Sc., Birmingham (England)
Armen Khachaturyan, M.S., Moscow Steel and Alloy Institute; D.Sc., Ukrainian Academy of Sciences, Kiev
Lisa C. Klein, S.B., Ph.D., Massachusetts Institute of Technology
Richard L. Lehman, B.S., M.S., Ph.D., Rutgers
William E. Mayo, B.S., M.E., Carnegie Mellon; Ph.D., Rutgers
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Richard E. Riman, B.S., Rutgers; Ph.D., Massachusetts Institute of Technology
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Daniel J. Shanefield, B.S., M.S., Ph.D., Rutgers
George H. Sigel, Jr., B.S., St. Joseph's College; M.S., Ph.D., Georgetown
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John Wenzel, B.S., Stanford; Ph.D., Chicago

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Ronald A. McCauley, B.S., Missouri; M.S., Ph.D., Pennsylvania State
Jun John Xu, B.S., Science and Technology (China); Ph.D., Pennsylvania

Senior Laboratory Researcher:

Linda Geczi, B.S., M.S., Rutgers

Visiting Professor:

Grantges J. Raymus, B.E., M.S., Stevens

Department of Chemical and Biochemical Engineering

Chairperson: Alkis Constantinides

Professors:

Yee C. Chiew, B.S., Edinburgh; Ph.D., Pennsylvania
Alkis Constantinides, B.Ch.E., M.S., Ohio State; D.Sc., Columbia
Peter Couchman, B.Sc., Surrey; Ph.D., Virginia
Burton Davidson, B.S., M.S., Syracuse; Ph.D., Northwestern; P.E.
Masanori Hara, B.S., Ph.D., Kyoto (Japan)
Michael T. Klein, B.Ch.E., Delaware; Sc.D., Massachusetts Institute of Technology
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Henrik Pedersen, B.Ch.E., Rochester; M.S., M.Phil., Ph.D., Yale
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Balaji Narasimhan, B.S., Indian Institute of Technology (Bombay); Ph.D., Purdue

Department of Civil and Environmental Engineering

Chairperson: M.H. Maher

Professors:

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Edward G. Nawy, Dipl. Eng., Royal College of Engineering (Baghdad); D.I.C., Imperial College of Science and Technology (London); C.E., Massachusetts Institute of Technology; D.Eng., Pisa; P.E.
Yook-Kong Yong, B.S., Lafayette; M.S., Ph.D., Princeton; P.E.

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Husan S. Najm, B.S., American University, Beirut (Lebanon); M.S., Michigan State; Ph.D., Michigan; P.E.
Hani A. Nassif, B.S., M.E., Detroit; Ph.D., Michigan; P.E.
Kaan Ozbay, B.S., Bogazici (Istanbul); M.S., Ph.D., Virginia Polytechnic and State University

Department of Electrical and Computer Engineering

Chairperson: David G. Daut

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Thomas G. Marshall, Jr., B.S., M.S., Purdue; Ph.D., Chambers University of Technology (Sweden)
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Peter Meer, Dipl.E., Polytechnic Institute, Bucharest; D.Sc., Ph.D., Technion
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Michael A. Parker, B.S., Central Florida; Ph.D., Syracuse

Department of Industrial Engineering

Chairperson: Elsayed A. Elsayed

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James T. Luxhoj, B.S., M.S., Ph.D., Virginia Polytechnic and State University
Hoang Pham, B.S., Northeastern; M.S., Illinois; M.S., Ph.D., SUNY

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Department of Mechanical and Aerospace Engineering

Chairperson: Andrew N. Norris

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Kook D. Pae, B.S., Missouri Valley College; M.S., Missouri; Ph.D., Pennsylvania State
Richard B. Pelz, B.S., Virginia Polytechnic Institute and State University; M.S., Ph.D., Princeton
Constantine E. Polymeropoulos, B.S., Oregon State; M.S., Ph.D., Cornell; P.E.
Kyung T. Rhee, B.S., M.S., Seoul (Korea); Ph.D., Wisconsin
Samuel Temkin, B.S., Universidad de Nuevo Leon (Mexico); M.S., Ph.D., Brown
Timothy Wei, B.S., Cornell; M.S., Lehigh; Ph.D., Michigan
George J. Weng, B.S., National Taiwan; M.Phil., Ph.D., Yale
Norman J. Zabusky, B.E.E., City College of New York; M.S., Massachusetts Institute of Technology; Ph.D., California Institute of Technology
Abdelfattah M.G. Zebib, B.S., Cairo; M.S., Ph.D., Colorado

Associate Professors:

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William J. Bottega, B.E., CUNY (City College); M.S., Cornell; Ph.D., Yale
Alberto Cuitiño, Civil Eng., Argentina; M.S., Ph.D., Brown
Gregory S. Elliott, B.S., M.S., Ph.D., Ohio State
Mitsunori Denda, B.E., M.E., Kyoto; M.S., Ph.D., Harvard
Han Chang Gea, B.S., National Taiwan; M.S., Ph.D., Michigan
Madara Ogot, B.S.E., Princeton; M.S., Ph.D., Pennsylvania State

Assistant Professors:

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Assimina A. Pelegri, B.S., National Technical (Athens); M.S., Ph.D., Georgia Institute of Technology
Steven Tse, B.S.E., Princeton; M.S., Ph.D., California (Berkeley)
Dajun Zhang, B.S., M.S., Peking; Ph.D., CUNY

EDWARD J. BLOUSTEIN SCHOOL OF PLANNING AND PUBLIC POLICY (EJBSPPP)

Information on the following subjects may be found in the General Information section at the back of this catalog: Student Life and Services, Admission, Tuition and Fees, Financial Aid, and University Policies and Procedures.

General Information

HISTORY AND PURPOSE OF THE SCHOOL

Named after the university's late president, Edward J. Bloustein, the school was established in 1992 to provide a focus for all of Rutgers' programs of instruction, research, and service in planning and public policy. The school's educational programs in urban and regional planning, urban studies, public health, and public policy have established national and international reputations for excellence. The research and public service centers and institutes within the school also have extensive histories and excellent reputations. In bringing together these programs, units, and initiatives under the unified auspices of the Edward J. Bloustein School of Planning and Public Policy (EJBSPPP), a new ensemble of resources and thrusts was created to better address many of the most important and vexing issues facing the people of New Jersey, the nation, and the world community.

The school's mission parallels that of the university, for it stresses undergraduate and graduate instruction, research, and public service. The school seeks to provide a rigorous and nurturing environment for students and the larger public, timely and critical research on substantive and relevant issues, and broadening of the base of local community capacity and expertise for problem solving.

ADMISSION

Students seeking the public health or urban studies major must apply for admission to the Edward J. Bloustein School of Planning and Public Policy through a separate procedure from the one through which they apply to the university. Students already enrolled at one of the liberal arts colleges should obtain information about EJBSPPP admission procedures from the department office of the school, or from the office of academic affairs or student services at their liberal arts college. Incoming transfer students should obtain information from the department.

Students who successfully meet all of the eligibility requirements for admission and who have a cumulative grade-point average of 2.5 or better are considered for admission. Students are required to write a personal statement as part of their application and to submit their credentials for review by the admissions committee to determine suitability for admission. For more information about the Bloustein School's public health and urban studies programs, write to the Department of Urban Studies and Community Health, Edward J. Bloustein School of Planning and Public Policy, 33 Livingston Avenue, New Brunswick, NJ 08901-1958.

Academic Policies and Procedures

Note: See also the University Policies and Procedures section for regulations that pertain to all the undergraduate colleges at Rutgers–New Brunswick. In addition, EJBSPPP students are subject to the academic policies and procedures of both the Edward J. Bloustein School of Planning and Public Policy and the liberal arts college in which they are enrolled.

STUDENT RESPONSIBILITY TO KEEP INFORMED

In addition to the material in this catalog, important information about EJBSPPP is printed in the Undergraduate Schedule of Classes and the Official Notices appearing every Tuesday in the Daily Targum. EJBSPPP students are responsible for keeping themselves informed of all policies and procedures announced in these publications, distributed by the department, posted on the departmental web site (http://www.policy.rutgers.edu/usch/), and contained in official notices posted on bulletin boards in the department as well as in notices distributed to students through the campus mail system.

ACADEMIC CREDIT FOR TRANSFER COURSES

A student who has transferred from another institution may receive degree credit toward EJBSPPP majors only for those courses that are equivalent in content and credit to courses in the Rutgers curriculum. Courses must have been passed with a grade of C or better in order to transfer credit.

Transfer credit from another institution is not included in the student's cumulative grade-point average at Rutgers. Transfer credit is not given for correspondence courses of any kind.

ACADEMIC ADVISING

Students should consult an academic adviser when they plan their academic program. See the departmental web site at http://www.policy.rutgers.edu/usch/ for advisory responsibilities of faculty members. The student must assume full responsibility for satisfying the academic requirements of the school.

Programs of Study

The Department of Urban Studies and Community Health offers courses leading to the B.A. in urban studies and the B.S. in public health. These degrees are issued jointly by the Edward J. Bloustein School of Planning and Public Policy and the Rutgers–New Brunswick undergraduate colleges.

Exceptional, well-prepared students who are admitted to the Edward J. Bloustein School of Planning and Public Policy may be encouraged to pursue dual-degree programs (B.S./M.P.H. for public health, B.A./M.P.P. for public policy).

PUBLIC HEALTH

The Department of Urban Studies and Community Health offers a major in public health, leading to a bachelor of science degree. It prepares students for graduate education in public health and for entry-level positions in a broad spectrum of private and public health-care organizations. Students in the program receive a conceptual understanding of interrelated health, environmental, economic, educational, and social welfare issues.

To pursue a major in public health, students must apply and be admitted to the Edward J. Bloustein School of Planning and Public Policy, usually in the second term of their sophomore year, and after completing the prerequisite courses. Applications are available in the college dean's office and in the academic department. Students must hold a 2.5 or better cumulative grade-point average and have earned an average of 2.5 or better in the prerequisite courses. Upon acceptance into the school, students are assigned an adviser. Only grades of C or higher count toward major requirements.

Prerequisites for the Major in Public Health (13–20 credits)

01:119:150 Biology, Society, and Biomedical Issues (3) or 01:377:225 Contemporary Health Problems (3) or 01:119:101,102 General Biology (4,4) or 01:119:127,128 Anatomy and Physiology (4,4)
01:355:101 Expository Writing I (3)
10:832:232 Introduction to Public Health (3)
10:975:205 Basic Statistical Methods (4) or 01:960:211,212 (3,3) or 01:830:200 (4) or equivalent 4-credit statistics course(s)

Major Requirements (42–43 credits)*

Core Courses (24–25 credits)

10:832:101 Introduction to Urban Studies (3) or 10:975:101 Introduction to Urban Studies (3)
10:832:238 Health and Public Policy (3)
10:832:241 Computer Applications in Health Research (4)
10:832:335 Epidemiology (3) or 11:375:403 Environment and Public Health: Epidemiological Aspects (3)†
10:832:499 Research or Field Practicum (6)

At least two of the following:

10:832:332 Public Health Economics (4) or 01:220:316 Health Economics (3)
10:832:334 Introduction to Health Administration (3) or 11:375:406 Public Health Practice and Administration (3)
10:832:345 Health Program Development (3)
10:832:483 Urban Revitalization and Public Health (3)

Electives (18 credits)

Students must complete an additional six courses of at least 3 credits each, four of which must be at the 300 level or higher. Any public health (832) course qualifies as an approved elective, as do up to four preapproved electives offered by other departments (see departmental adviser for listing). Courses counted toward another major cannot be electives for public health.

URBAN STUDIES

The Department of Urban Studies and Community Health offers major and minor programs in urban studies, leading to a Bachelor of Arts degree.

To pursue a major in urban studies, students must apply and be admitted to the Edward J. Bloustein School of Planning and Public Policy, usually in the second term of their sophomore year, and after completing the prerequisite courses. Applications are available in the college dean's office and in the academic department. Students must hold a 2.5 or better cumulative grade-point average and have earned an average of 2.5 or better in the prerequisite courses. Upon acceptance into the school, students are assigned an adviser. Students seeking a minor need not apply to the school, but must register with the department. Only grades of C or higher count toward major or minor requirements.

Prerequisites for the Major or Minor in Urban Studies (6 credits)

01:355:101 Expository Writing I (3)
10:832:101 Introduction to Urban Studies (3) or 10:975:101 Introduction to Urban Studies (3)

Major Requirements (25–30 credits)

10:975:205 Basic Statistical Methods or 01:962:211,212 (3,3) or 01:830:200 (4) or equivalent 4-credit statistics course(s)
10:975:393 Internship in Urban Studies (3–6)
10:975:494 Senior Seminar in Urban Studies (3)
Minimum of five additional courses in urban studies (15)

* Cook College students have additional requirements. See the Cook College section of this catalog for the public health major.
† See prerequisites in the Cook College section of this catalog.

Minor Requirements

The minor requires five additional courses in urban studies beyond the prerequisites, including 10:975:205 (or equivalent) and excluding 10:975:393 and 494, which are for majors only.

Certificate Programs *

Environmental Geomatics Certificate

Cook College offers a certificate in environmental geomatics that is appropriate for students interested in further study of spatial analysis and geographic information systems. See the Cook College chapter for more information.

Housing and Real Estate Development Certificate

The Housing and Real Estate Development Certificate is awarded only with or subsequent to earning a bachelor's degree.

Core Courses (9 credits)

10:975:250 Introduction to Urban Housing (3)
10:975:335 Administrative Issues in Environment and Land-Use Planning (3)
10:975:440 Introduction to Real Estate (3)

Six additional courses (18 credits)

01:450:309 Location of Economic Activity (3)
10:975:306 Introduction to Urban and Environmental Planning (3)
10:975:316 Urban Design and Site Planning (3)
10:975:413 Urban Revitalization (3)
10:975:441 Health and Housing Policy (3)
10:975:444 American Land (3)
10:975:460 Economic Development Marketing (3)
10:975:481 Housing and Economic Analysis (3)

Urban Planning Certificate

Students must take eight courses (minimum of 24 credits) in urban planning to earn the certificate.

Core Courses (12 credits)

10:975:305 U.S. Urban Policy (3)
10:975:306 Introduction to Urban and Environmental Planning (3)
10:975:316 Urban Design and Site Planning (3)
10:975:335 Administrative Issues in Environment and Land-Use Planning (3)

At least one of the following (3 credits):

10:975:413 Urban Revitalization (3)
10:975:460 Economic Development Marketing (3)
10:975:473 Urban Transportation Policy (3)
10:975:481 Housing and Economic Analysis (3)

Three additional courses either from the above or from the following electives (9 credits):

10:975:417 Introduction to Population Tools and Policy (3)
10:975:420 Computers in Planning and Management (3)
10:975:454 Planning Administration (3)
10:975:474 Tourism Planning (3)
10:975:478 History of Planning Thought (3)

Substitute courses must be approved by a departmental adviser.

* Also open to non-Edward J. Bloustein School of Planning and Public Policy majors.
† The urban planning and real estate development certificate is awarded only with or subsequent to earning a bachelor's degree.

Course Listing

Explanation of Three-Part Course Numbers

The number preceding each course title is divided into three parts. The first two digits are the administrative code (standing for a faculty or a school), the next three digits are the subject code, and the final three digits are the course code.

Administrative Codes

The code for EJBSPPP is 10. For a complete list of administrative codes used in this catalog, see the beginning of the Programs of Study for Liberal Arts Students section.

Subject Codes

A subject code comprises the third through fifth digits in all course numbers and indicates the subject matter of the course. Courses with the following subject codes are listed in this chapter.

832 Public Health
975 Urban Studies

Course Codes

The course code comprises the sixth, seventh, and eighth digits in all course numbers. Course codes from 100 to 299 indicate introductory and intermediate undergraduate courses. Codes from 300 to 499 indicate advanced undergraduate courses.

Two course codes separated by a comma indicate that each term may be taken independently of the other (example: 10:832:491,492). Two course codes separated by a hyphen indicate that satisfactory completion of the first term is a prerequisite to the second term; the first term may be taken for credit without taking the second, except where a statement is added to indicate that both term courses must be completed in order to receive credit.

Credits awarded for the successful completion of each course are indicated in parentheses following the course title. The notation BA indicates that the number of credits is determined by arrangement with the department offering the course.

PUBLIC HEALTH 832

10:832:101. INTRODUCTION TO URBAN STUDIES (3)
Credit not given for both this course and 10:975:101.
Interdisciplinary perspectives on the study of cities; historical and contemporary urban processes and policies.

10:832:232. INTRODUCTION TO PUBLIC HEALTH (3)
Dimensions of personal and environmental health and their relationship to social, economic, cultural, psychological, and political factors; measurements and indices of community health status.

10:832:238. HEALTH AND PUBLIC POLICY (3)
Prerequisite: 10:832:232.
Comparative and analytical study of health services in the U.S. and selected other countries. Theoretical framework for viewing organizational issues in the delivery of health services.

10:832:241. COMPUTER APPLICATIONS IN HEALTH RESEARCH (4)
Prerequisites: 10:832:232; 10:975:205; permission of instructor. Open only to public health majors.
Computer concepts and skills in a Windows environment applied to public health survey research. Hands-on exercises in data collection and entry, analysis, and presentation of results.

10:832:252. INDIVIDUAL AND COMMUNITY HEALTH PROMOTION (3)
Corequisite: 10:832:253. Credit not given for this course and 01:377:242.
Selected health topics, intervention theories, skills, and strategies for influencing both personal and community health behavior.

10:832:253. HEALTH PROMOTION IN THE COMMUNITY (CASE) (1)
Corequisite: 10:832:252. Credit not given for this course and 01:377:253.
Application of the principles learned in 10:832:252 to the community setting.

10:832:290,291. INDEPENDENT STUDY (1-3,1-3)
Prerequisites: 10:832:232 and approval of faculty supervisor.
Independent study on a topic selected by the student in consultation with a faculty supervisor.

10:832:298,299. SPECIAL TOPICS IN PUBLIC HEALTH (BA,BA)
Prerequisites: 10:832:232 and approval of a faculty supervisor.
Topics vary. Specific titles available at the time of registration.

10:832:331. URBAN SOCIAL POLICY (3)
Credit not given for both this course and 10:975:331.
Analytic study of the development of U.S. urban social policy. Includes discussion of policies in housing, welfare, race relations, and education.

10:832:332. PUBLIC HEALTH ECONOMICS (4)
Prerequisite: 10:975:205 or equivalent. Credit not given for both this course and 01:220:316.
Principles of microeconomics are used to examine the demand for health, medical care, and health insurance and the behaviors of medical care providers. Analysis of health-care behavior.

10:832:333. FINANCIAL ASPECTS OF URBAN HEALTH (3)
Prerequisites: 10:832:232 and 10:975:205, or equivalent.
Financing management tools in various care delivery settings. Analytical skills necessary to interpret financial information and understand the processes and tasks performed by the financial departments of an institution.

10:832:334. INTRODUCTION TO HEALTH ADMINISTRATION (3)
Prerequisites: 10:832:232 and 10:975:205, or equivalent. Credit not given for both this course and 11:375:406.
Application of administrative theory to health delivery, policy, and planning. Structures and functions of management. Application of principles in a field study.

10:832:335. EPIDEMIOLOGY (3)
Prerequisites: 10:832:232 and 10:975:205, or equivalent. Credit not given for both this course and 11:375:403.
Principles and methods of epidemiology; the study of the distribution (patterns of occurrence) and determinants (causes) of disease and injury in human populations.

10:832:339. PUBLIC HEALTH LITERATURE (3)
Prerequisite: Permission of instructor.
Examines historic and current public health literature. Effective writing emphasized: correspondence, essays, reports, and critiques of public health articles.

10:832:345. HEALTH PROGRAM DEVELOPMENT (3)
Recommended: 01:830:101. Open only to public health majors.
Planning for the promotion and improvement of the public's health through individual, group, institution, and community-level interventions.

10:832:356. PUBLIC HEALTH LAW AND ETHICS (3)
Prerequisite: 10:832:232. Credit not given for both this course and 01:730:105 or 01:730:249.
Introduction to public health law and ethics stressing community health and well-being versus the rights of the individual.

10:832:415. WOMEN AND HEALTH (3)
Exploration of issues raised by women's health-care needs and by women's participation in the health labor force, in the context of contemporary feminist thought.

10:832:416. MENTAL ILLNESS: SOCIAL AND PUBLIC POLICY (3)
Credit not given for both this course and 10:975:416. Open to juniors and seniors only.
Mental-health care in U.S. history and contemporary policies. Deinstitutionalization. Public and private care facilities. Patient / consumer empowerment. Field visits.

10:832:417. INTRODUCTION TO POPULATION TOOLS AND POLICY (3)
Credit not given for both this course and 10:975:417.
Basic demographic concepts, methods, and their application. Population growth, mortality, fertility, migration, and marriage patterns. Special topics include AIDS, world population growth, teen pregnancy.

10:832:437. ISSUES IN ENVIRONMENTAL AND OCCUPATIONAL HEALTH (3)
Contemporary issues, including workers' compensation, ergonomics, hazardous waste, and air and water pollution.

10:832:483. URBAN REVITALIZATION AND PUBLIC HEALTH (3)
Exploring the role of public health compared to economic feasibility, politics, and other factors in neighborhood revitalization.

10:832:495,496. INDEPENDENT STUDY (1-3,1-3)
Prerequisites: 10:832:232 and approval of faculty supervisor.
Independent study on a topic selected by the student in consultation with a faculty supervisor.

10:832:499. RESEARCH OR FIELD PRACTICUM (6)
Prerequisites: Completion of 100 credits toward graduation and 40 credits in the major. Open only to public health majors.
Students choose one of two options: a) experience as a first-level researcher in public health, or b) selected field experience in a health-care delivery setting to develop and apply necessary skills, integrating classroom learning with on-the-job realities.

URBAN STUDIES 975

10:975:101. INTRODUCTION TO URBAN STUDIES (3)
Interdisciplinary perspectives on the study of cities; historical and contemporary urban processes and problems.

10:975:205. BASIC STATISTICAL METHODS FOR URBAN STUDIES AND COMMUNITY HEALTH (4)
Descriptive and inferential statistics, data presentation and analysis, sampling methods, probability, estimation, hypothesis testing, correlation and linear regression, chi square.

10:975:206. THIRD-WORLD URBAN POOR (3)
Causes of and governmental responses to urban poverty in the third world. Economic, historical, and cultural factors.

10:975:222. URBAN POVERTY (3)
Causes and consequences of urban poverty in the U.S. and alternative methods of eliminating it. Plight of the urban poor and governmental solutions for poverty.

10:975:249. INTRODUCTION TO URBAN MANAGEMENT AND PUBLIC ADMINISTRATION (3)
Contemporary urban management, focusing primarily on large American cities. Emphasis on different functional areas, such as welfare, police, housing, health, and transportation services, and on applied solutions.

10:975:250. INTRODUCTION TO URBAN HOUSING (3)
Major issues in urban housing and relevant historical, economic, and social factors. Political and bureaucratic dimensions of housing decision making.

10:975:260,261. INDEPENDENT STUDY (1-3,1-3)
Prerequisite: Approval of faculty supervisor.
Independent study on a topic selected by the student in consultation with a faculty supervisor.

10:975:298,299. SPECIAL TOPICS IN URBAN STUDIES (3,3)
Topics vary. Specific topics available at time of registration.

10:975:305. U.S. URBAN POLICY (3)
Introduction to the social, economic, and physical issues of urban communities. The historical emergence of the city, with focus on racial, intergovernmental, and environmental issues.

10:975:306. INTRODUCTION TO URBAN AND ENVIRONMENTAL PLANNING (3)
Overview of policy areas (e.g., land use, housing, transportation, neighborhood rehabilitation) in which planners operate, with emphasis on historical analysis and practical solutions.

10:975:307. APPLICATION OF QUANTITATIVE METHODS (3)
Mathematical and simulation methods for planning / administration applications. Population projection, location and travel behavior, traffic, linear programming, project management, waiting lines, decision analysis.

10:975:315. THEORY AND METHODS OF LAND-USE PLANNING (3)
Review of modern land planning theories and techniques. Purpose and objectives of plans and planning. Data gathering and analysis techniques. The effect of modern technology on planning methods.

10:975:316. URBAN DESIGN AND SITE PLANNING (3)
Impact of physical design on the quality of urban life. Focus on analytic processes for understanding basic elements of successful human environments. Extensive fieldwork.

10:975:324. URBAN SOCIAL MOVEMENTS (3)
How social movements translate changing social values into political forces. Issues include peace, labor, human rights, environment, health, democracy, and women.

10:975:330. URBAN FISCAL POLICY (3)
Prerequisite: 01:220:200 or 102 and 103.
Urban public sector finances; their political context; economic principles of budgeting, taxation, service delivery, and management; urban-suburban financial relations.

10:975:331. URBAN SOCIAL POLICY (3)
Credit not given for both this course and 10:832:331.
Analytical study of the development of U.S. urban social policy. Includes discussion of policies in housing, welfare, race relations, and education.

10:975:335. ADMINISTRATIVE ISSUES IN ENVIRONMENT AND LAND-USE PLANNING (3)
Administrative issues in environment and land-use planning. Zoning subdivision, housing, eminent domain, and comparative land-use systems.

10:975:393. INTERNSHIP IN URBAN STUDIES (3-6)
Prerequisites: Completion of a minimum of three courses within the student's area of concentration; permission of department. Open only to urban studies majors.
Work experience in government or private sector firm. Opportunities to apply and test theoretical concepts, and exposure to problems and realities faced by professionals in the field.

10:975:413. URBAN REVITALIZATION (3)
Causes of urban decline and subsequent renewal efforts. Emphasis on contemporary programs to stimulate revitalization. Neighborhood renovation, gentrification, historic preservation, economic development, and benefits of urban redevelopment.

10:975:416. MENTAL ILLNESS: SOCIAL AND PUBLIC POLICY (3)
Credit not given for both this course and 10:832:416. Open to juniors and seniors only.
Mental-health care in U.S. history and contemporary policies. Topics include deinstitutionalization, public and private care facilities, patient / consumer empowerment. Field visits.

10:975:417. INTRODUCTION TO POPULATION TOOLS AND POLICY (3)
Credit not given for both this course and 10:832:417.
Basic demographic concepts, methods, and their application. Population growth, mortality, fertility, migration, and marriage patterns. Special topics include AIDS, world population growth, teen pregnancy.

10:975:420. COMPUTERS IN PLANNING AND MANAGEMENT (3)
Computer concepts and methods applicable to planning, urban studies, and management, including programming, models, database management, telecommunications, graphics, and GIS.

10:975:440. INTRODUCTION TO REAL ESTATE (3)
Overview of real estate in the marketplace, the organization and services of the real estate industry, and the tools of real estate practitioners.

10:975:441. U.S. HEALTH AND HOUSING POLICY (3)
Intersection of U.S. health and public housing policies. Topics include falls, fires, safety, and needs of the elderly.

10:975:444. AMERICAN LAND (3)
Analysis of policy alternatives and practical techniques for dealing with the American land base. Focus is equally on urban, suburban, and rural issues. Emphasis on real-world applicability.

10:975:460. ECONOMIC DEVELOPMENT MARKETING (3)
How cities, states, and countries market themselves for economic development. Competition for investments, businesses, residents, and tourists. Using history, sports, and culture for economic growth.

10:975:462. HUMAN RIGHTS, HEALTH, AND VIOLENCE (3)
Open to seniors only.
Covers human rights law—its uses in wartime and theoretical reframing of women's rights, and in applications to health and health care.

10:975:473. URBAN TRANSPORTATION POLICY (3)
Major policy issues in urban transportation. Historical development and current characteristics of the urban transportation systems. Problems and alternative solutions analyzed in the context of political and institutional constraints.

10:975:474. TOURISM PLANNING (3)
Analysis of largest industry by value globally. Rise of mass tourism, marketing tourism destinations. Economic, environmental, social, and political impacts of tourism nationally and internationally.

10:975:477. IMMIGRATION, URBAN POLICY, AND PUBLIC HEALTH (3)
Open to seniors only.
Facts and controversies surrounding immigration. Legislative history, urban and public health impacts, racial implications.

10:975:478. HISTORY OF PLANNING THOUGHT (3)
Major ideas in city and regional planning since the early nineteenth century. Origin, growth, and impact of these ideas on the evolution of planning and urban development in the context of broader intellectual, social, and technological change.

10:975:481. HOUSING AND ECONOMIC ANALYSIS (3)
Quantitative approaches to the analysis of housing and employment. Emphasis on informational sources and analytical techniques employed by planners. Cost-revenue, fiscal impact, demographic, rate of return, and mortgage analysis; general employment evaluation approaches.

10:975:483. URBAN REVITALIZATION AND PUBLIC HEALTH (3)
Exploring the role of public health compared to economic feasibility, politics, and other factors in neighborhood revitalization.

10:975:485. GENDER AND INTERNATIONAL DEVELOPMENT PLANNING (3)
Open to seniors only.
Competing theories of development and feminist critiques of current theory and practice; the sexual division of labor, ecofeminism, human rights of women, and population and women's health.

10:975:493,494. SENIOR SEMINAR IN URBAN STUDIES (3,3)
Open only to senior urban studies majors. Prerequisites: 10:975:101 or equivalent; 205; 393; and at least three other courses in the department.
Assimilation and integration of past learning and experience. Multidisciplinary discussion and reading on key concepts of urban studies. Preparation of senior thesis.

10:975:498,499. SPECIAL TOPICS IN URBAN STUDIES (3,3)
Topics vary. Specific titles available at time of registration.

Administration, Centers, and Faculty

OFFICE OF THE DEAN

James W. Hughes, Ph.D., Professor and Dean of the School
Dorothea Berkhout, Ph.D., Associate Dean of the School
Michael Greenberg, Ph.D., Associate Dean of the Faculty
Richard Bochkay, B.S., Manager, Computer Systems
Joni M. Scanlon, B.A., Communications Coordinator
Donna Weber, M.S.W., Senior Development Officer
Jan S. Wells, Ph.D., Budget Analyst/Lecturer
Stephen D. Weston, B.A., Student Services Coordinator

CENTERS

Robert W. Burchell, Ph.D., and David Listokin, Ph.D., Codirectors, Center for Urban Policy Research
Henry A. Coleman, Ph.D., Director, Center for Government Services
Louis J. Gambaccini, M.P.A., Director, Alan M. Voorhees Transportation Center
Michael Greenberg, Ph.D., Director, National Center for Neighborhood and Brownfields Redevelopment
Sanford Jaffe, LL.B., Director, Center for Negotiation and Conflict Resolution
Carl E. Van Horn, Ph.D., Director, John J. Heldrich Center for Workforce Development

FACULTY

Hooshang Amirahmadi, Professor; B.S., Azarabadegan; M.S., Dallas; Ph.D., Cornell (City and Regional Planning)
Teaching and research interests include urban and regional economics, comparative regional policies, international and regional investments, and global restructuring. Area interests include the Middle East.

Clinton J. Andrews, Assistant Professor; B.S., Brown; Ph.D., Massachusetts Institute of Technology
Teaching and research interests include energy and environmental planning, regulatory reform, and planning methods.

Richard K. Brail, Professor; B.A., Rutgers; M.C.R.P., Ph.D., North Carolina
Teaching and research interests focus on urban transportation planning and the use of computer and information technology, particularly geographic information systems, urban databases, and spatial models.

Charlotte Bunch, Professor; B.A., Duke
Teaching and research interests include women's studies, gender, and development.

Philip H. Burch, Research Professor, Center for Government Services; M.A., Ph.D., Rutgers
Research interests include American government, public policy analysis, school finance, elites and interest groups.

Robert W. Burchell, Professor, Codirector, Center for Urban Policy Research; B.S.M.E., U.S. Coast Guard Academy; M.C.R.P., Ph.D., Rutgers
Teaching and research interests include real estate analyses, fiscal impact analyses, housing, and land-use planning methods and theory.

Joel Cantor, Professor; Director, Center for State Health Policy; B.A., Wisconsin; Sc.D., Johns Hopkins
Teaching and research interests include health-care financing and delivery, health-care policy, and access to health services by low-income populations.

Robert A. Catlin, Professor; B.S., Illinois Institute of Technology; M.S.U.R.P., Columbia; Ph.D., Claremont Graduate School
Teaching and research interests include housing and community development, planning administration, planning and minority group communities.

Henry A. Coleman, Associate Professor and Director, Center for Government Services; B.A., Morehouse College; M.A., Ph.D., Princeton
Research interests include the analysis of public policy issues, especially in the areas of state and local finances, income redistribution, and labor force utilization.

Jocelyn Elise Crowley, Assistant Professor; B.A., Cornell; M.P.P., Georgetown; Ph.D., Massachusetts Institute of Technology
Teaching and research interests include social policy, American politics, women and politics, and methods.

Salah El-Shakhs, Professor and Coordinator, Hubert H. Humphrey Fellowship Program; B.S., Cairo (Architecture); M.C.P., Ph.D., Harvard
Teaching and research interests include comparative urbanization, national and regional urban development strategies, spatial development and evolution of urban systems, new town, and land-uses planning. Area interests include Africa, Middle East, and Western Europe.

Bari Anhalt Erlichson, Assistant Professor; A.B., Dartmouth College; M.A. (Education), M.A. (Political Science), Ph.D., Stanford
Teaching and research interests include education policy and politics; political institutions; and race, ethnicity, and representation.

Susan S. Fainstein, Professor; A.B., Harvard (Radcliffe College); A.M., Boston; Ph.D., Massachusetts Institute of Technology (Political Science)
Teaching and research interests include political economy, social policy, and planning theory. Current research focuses on comparative urban development between Western Europe and the United States and the political economy of redevelopment.

Norman J. Glickman, University Professor; B.A., M.A., Ph.D., Pennsylvania
Teaching and research interests include international and regional economic development, econometric modeling and urban impact analysis, and urban and industrial policy.

Michael Greenberg, Professor; B.A., Hunter; M.A., Ph.D., Columbia (Geography)
Teaching and research interests include environmental planning, economic and environmental trade-offs, toxic substances, and the geography of disease.

David H. Guston, Associate Professor; B.A., Yale; Ph.D., Massachusetts Institute of Technology (Political Science)
Research interests include science and technology policy, the role of experts and policy analysis in democratic decision making, and legislative processes and organization.

Briavel Holcomb, Professor; B.Sc., Nottingham (U.K.); Dip. Ed., Oxford (U.K.); M.A., Ph.D., Colorado (Geography)
Teaching and research interests include urban revitalization; marketing and economic development; urban geography; the geography of inequality; and environmental perception and design for women, children, and the elderly.

James W. Hughes, Professor and Dean of the Edward J. Bloustein School of Planning and Public Policy; Director, Rutgers Regional Report; B.S., M.C.R.P., Ph.D., Rutgers
Teaching and research interests include demographics, housing and real estate markets, and analysis of regional and state economies.

Radha Jagannathan, Assistant Professor; B.A., School of Economics, Delhi (India); M.A., Rutgers; Ph.D., Princeton
Research interests include public welfare, child welfare, and welfare-to-work programs. Teaching interests include statistics and methods, as well as public policy and poverty, housing, and child welfare.

Donald A. Krueckeberg, Professor; B.S., Michigan State; M.C.P., Ph.D., Pennsylvania
Teaching and research interests include methods of planning analysis, planning theory, and history.

Robert W. Lake, Professor, Center for Urban Policy Research; Editor, CUPR Press; B.A., Antioch; M.A., Ph.D., Chicago (Geography)
Teaching and research interests include urban and political geography, race and housing, environmental regulation, and locational conflict.

David Listokin, Research Professor, Codirector, Center for Urban Policy Research; B.A., CUNY (Brooklyn College); M.C.R.P., Ph.D., Rutgers
Teaching and research interests include fair-share housing, urban finance, fiscal impacts, housing policy, environmental impact analysis, education finance, housing finance.

Richard Lynch, Assistant Professor; B.A., Rutgers; M.S., Temple; Ph.D., Rutgers
Teaching and research interests include risk factors and diseases in occupational health.

Jane Miller, Associate Professor; B.A., Williams College; M.A., Ph.D., Pennsylvania
Teaching and research interests include maternal and infant health, demography.

Anton E. Nelessen, Associate Professor; B.Architecture, Minnesota; M.S., Harvard (Architecture and Urban Design)
Teaching and research interests include design at all scales, urban design for new communities, neighborhood and C.B.D. rehabilitation, visual perception, communication of planning theory and practice, and three-dimensional, 360-degree environmental simulation.

Edward Ortiz, Associate Professor; B.A., CUNY (City College)
Teaching and research interests include urban poverty.

Frank J. Popper, Professor; B.A., Haverford College; M.P.A., Ph.D., Harvard
Teaching and research interests include land-use planning, the American West, politics of land use, and regional and environmental policy.

John R. Pucher, Professor; B.A., North Carolina (Chapel Hill); Ph.D., Massachusetts Institute of Technology
Teaching and research interests include urban transportation, urban economics, and public sector economics.

Alan Rosenthal, Professor; A.B., Harvard; M.P.A., M.A., Ph.D., Princeton
Research interests include state legislatures and state politics.

Dona Schneider, Associate Professor; B.A., Trenton State College; M.A., Rutgers; M.P.H., Rutgers/University of Medicine and Dentistry of New Jersey; Ph.D., Rutgers
Teaching and research interests include morbidity and mortality patterns for children and high-risk groups.

David C. Schwartz, Professor; Director, American Affordable Housing; A.B., A.M., CUNY (Brooklyn College); Ph.D., Massachusetts Institute of Technology (Political Science)
Teaching and research interests include housing policy, housing finance, housing/health-care relationship, legislative politics, and American government.

Lisa J. Servon, Assistant Professor; B.A., Bryn Mawr College; M.A., Pennsylvania; Ph.D., California (Berkeley)
Teaching and research interests include economic development, poverty and social welfare policy, and planning theory.

John A. Spry, Assistant Professor; Joint Appointment with the Center for Government Services; Ph.D., Rochester
Teaching interests include economics for public policy and local public finance. Research interests include public finance; local income and property taxes, intergovernmental fiscal relationships, education finance, and public choice.

Meredeth Turshen, Associate Professor; B.A., Oberlin College; M.S., New York; Ph.D., Sussex (U.K.)
Teaching and research interests include gender and development, international health, nutrition, third-world social policy; occupational and environmental health in the U.S. and abroad; women's studies.

Carl E. Van Horn, Professor; Director, John J. Heldrich Center for Workforce Development; B.A., Pittsburgh; M.A., Ph.D., Ohio State (Political Science)
Teaching and research interests include employment policy, policy analysis and evaluation, public policy formation, state government and politics.

Julie M. Whittaker, Assistant Professor; Joint Appointment with the John J. Heldrich Center for Workforce Development; Ph.D., Wisconsin (Madison)
Teaching interests include labor policy and advanced research methods. Research interests include income and benefit inequality, changing structure of occupations and technology, and women in the labor market.

Lyna Wiggins, Associate Professor; B.S., California Polytechnic Institute (San Luis Obispo); M.S., Stanford; Ph.D., California (Berkeley)
Teaching and research interests include geographic information science, urban applications of GIS, and planning methods.

Nancy Wolff, Associate Professor; B.A., Ph.D., Iowa State
Teaching and research interests include health economics and public finance.

Cliff Zukin, Professor; B.A., Oregon; M.A., Ph.D., Ohio State (Political Science)
Research interests include mass media and American politics, public opinion and voting behavior, survey research.

ASSOCIATED FACULTY

Caron Chess, Associate Professor, Department of Human Ecology; Director, Center for Environmental Communication, Cook College; B.A., New York; M.S., Michigan; Ph.D., New York
Teaching and research interests are public participation, deliberation, and communication concerning environmental issues.

Fern Goodhart, Health Services Director; B.A., Queens College; M.S., Massachusetts
Teaching and research interests include health education programs and state hypertension control.

Shirley Smoyak, Professor; B.S., M.S., M.Phil., Ph.D., Rutgers
Teaching and research interests include deinstitutionalization of the mentally ill, crisis services for children and adolescents.

GENERAL INFORMATION

Student Life and Services

Student life programs provide opportunities, assistance, and services designed to aid students in reaching their personal and educational objectives. The staffs of the deans of students provide a variety of educational experiences and counseling resources to supplement the classroom experience. Questions concerning residence, health, and personal affairs that are not classroom related are referred to the deans of students. Through the residence halls, campus centers, recreational facilities, and all of the cocurricular programs, the colleges seek to provide an educational experience that helps students realize their academic and developmental goals.

CAMPUS CENTERS

The campus centers at Rutgers, The State University of New Jersey, are the hubs of college community life for all members of the university community. As the centers of campus activity at the university, the campus centers provide the services, conveniences, and amenities students need in their daily life on the campus. They also provide a place for students to get to know and understand one another through informal association outside the classroom. As centers of university community life, the campus centers serve as a laboratory of citizenship. Through their governing boards, committees, and staff, they provide cultural, social, and recreational programs aimed at making free-time activity a learning experience and an extension of the classroom experience.

The Busch Campus Center, Cook Campus Center, Douglass College Center, Livingston College Center, and Rutgers Student Center (including the Rutgers College Student Activities Center) are the five campus centers serving the New Brunswick/Piscataway university community. Facilities available in the centers include offices and/or work space for major student organizations; a number of quiet, comfortable lounges for relaxing between classes; game rooms, billiard and table tennis tables, and a large selection of the latest pinball and video machines; arts and crafts centers; multipurpose rooms for concerts, lectures, and theatrical productions; an array of meeting rooms; and snack bars with a variety of menus.

PAUL ROBESON CULTURAL CENTER

The Paul Robeson Cultural Center, established in 1969, serves to document, preserve, and present the contributions of African peoples to world civilizations, with particular reference to the artistic, scientific, social, and political contributions of people of color in the Americas and New Jersey. The center provides leadership, vision, and support for more than 40,000 people each year, including more than 5,000 black students at Rutgers, through cultural programs and educational opportunities that broaden understanding and appreciation of the African diaspora. Further, the center works closely with the tiers of communities served by Rutgers University in local, state, national, and international spheres.

The center is open Monday through Thursday, from 8:30 A.M. to 10:00 P.M.; Friday, from 8:30 A.M. to 9:00 P.M.; and Saturday and Sunday, from noon to 4:00 P.M. The center is located at 600 Bartholomew Road, Busch campus, adjacent to the Busch Campus Center. For more information, call 732/445-3545.

CENTER FOR LATINO ARTS AND CULTURE

Opened in April 1992, the center's primary mission is to research, promote, document, and interpret Latino culture. The center identifies scholars, artists, and experts who help develop interdisciplinary programs that define and examine Latino culture, history, literature, and the arts. These programs, as well as special projects, are designed to foster academic excellence and advance the appreciation, growth, and well-being of the Latino cultural community.

The center builds a broader understanding of Latinos and their culture through conferences, exhibitions, lectures, theater productions, symposia, workshops, artists' forums, concerts, academic seminars, publications, and collaborative projects with community organizations outside the university.

Also housed at the center is the office of the Latino Student Council (LSC), which is made up of representatives of all Latino student organizations from the New Brunswick campuses. Located at 122 College Avenue, the center is open weekdays from 9:00 A.M. to 5:00 P.M. For special events, the center is also open on weeknights and weekends. For more information, call 732/932-1263, 1494.

STUDENT ACTIVITIES

Rutgers, The State University of New Jersey, recognizes that academic excellence is the foremost priority for students. What is learned from participation in extracurricular activities, however, is important and often as lasting. The university possesses one of the largest student activities programs in the Northeast, with approximately four hundred student organizations and clubs existing on the campuses. Together, these groups represent virtually every point on the social, recreational, cultural, and educational spectra. In addition to club activities, a diversified program of concerts, lectures, films, productions in the performing arts, and many other events is available throughout the academic year and the summer.

By participating in a service organization, striving with a team in a sports club, experiencing the closeness of a fraternity or sorority, exercising leadership in student government, or joining together with others who have similar interests or backgrounds, students can grow closer to realizing their potential. The myriad groups that exist at Rutgers present an invaluable, exciting opportunity.

Student Publications

The New Brunswick / Piscataway campuses are served by an independently incorporated daily newspaper, the Daily Targum. Founded in 1866 as a yearbook, it has been published as a newspaper since 1869 and is the oldest undergraduate newspaper in the country. The Daily Targum prints news of the university and includes local, national, and international items considered of special relevance to students. The Tuesday issues carry an Official Notices column that is required reading for all students.

Most of the undergraduate colleges have weekly newspapers that cover issues and events of special local interest. They include the Caellian (Douglass College), the Medium (Livingston College), the Rutgers Review (Rutgers College), Evening Watch (University College–New Brunswick), Green Print (Cook College), and the Apothecary News (College of Pharmacy).

Black Voice/Carta Latina, founded in 1970, is an undergraduate newspaper that offers an important forum for ideas and opinions of special relevance to black and Hispanic students. In addition, the publication provides students with the opportunity to have their work published as contributing writers.

The Rutgers Jewish Perspectives (Chabad House) prints news and literature focusing on the interests of the Jewish student community within the university.

The Scarlet Bayonet is published by students in the Army ROTC program.

Several of the colleges publish yearbooks that honor the graduating class and record the outstanding events of the academic year and the membership of social, curricular, and extracurricular groups. These include the Quair (Douglass College), Diversity (Livingston College), the Scarlet Letter (Rutgers College), Precision (School of Engineering), Wild Flower (Cook College), the Pharmascript (College of Pharmacy), the University College Yearbook (University College–New Brunswick), and Fortune (School of Business–New Brunswick).

There are a variety of literary magazines published by students at the various colleges that contain articles, stories, poems, and artwork. These include Salad Bowl and Mosaic at Douglass College; Anthologist at Rutgers College; and Discovery and Untitled at University College–New Brunswick.

Student Radio and Television

WRSU-FM (88.7), the student-owned and -operated FM radio station of Rutgers University, broadcasts a wide range of musical, informational, and sports programs twenty-four hours a day from its studios in the Rutgers Student Center. WLBS, the Livingston College AM radio station, broadcasts news, music, and sports programs to the Livingston College community, twelve to fourteen hours a day.

Participation in these activities provides valuable experience to students interested in all phases of radio and television communication.

Music Organizations

A wide range of music organizations is available through the colleges and the Mason Gross School of the Arts. Most of these organizations require an audition for participation.

Concert Band: a large ensemble providing a stimulating performance opportunity for the study and performance of concert music for band.

Kirkpatrick Choir: a highly selective mixed chorus that performs at on-campus concerts and off-campus tours.

Opera at Rutgers: an ensemble of advanced singers that prepares programs of operatic scenes as well as full productions each year.

Queens Chorale: a women's chorus that sings music of all styles and periods, often in collaboration with men's college choruses.

Rutgers Brass Ensemble: a select group of advanced students performing compositions for small brass ensembles.

Rutgers Clarinet Ensemble: a select group of advanced clarinetists performing compositions for small and large groups.

Rutgers Glee Club: one of the oldest men's choruses in the United States, sings a variety of music for male voices, frequently performs with choruses at other colleges, and embarks on extensive concert tours.

Rutgers Jazz Ensemble: a highly selective group of students, mostly in the jazz studies program, performing music for large jazz ensembles.

Rutgers Pep Band: performs at basketball games, both at home and away, and was recently named the outstanding pep band of the metropolitan area by Madison Square Garden.

Rutgers Percussion Ensemble: a select group of advanced students performing compositions for percussion instruments.

Rutgers University Marching Band: renowned throughout the East for its exciting gridiron performances at all home and some away games. The band has performed at professional football games and on national television.

Rutgers University Orchestra: a highly selective group of students performing standard orchestral works at a thoroughly professional level.

Rutgers Wind Ensemble: an advanced fifty-member ensemble giving several concerts of music for winds each year.

Rutgers Youth Orchestra: provides an opportunity for all university students to play standard orchestral literature.

Voorhees Choir: a women's chorus that performs a wide variety of music from all periods and styles, and also tours.

Other Student Organizations

A wide range of student organizations, too numerous to list, is available on the New Brunswick / Piscataway campuses. They range from academic, preprofessional, social, recreational, special interest, and service to religious, political, and community-action groups. New organizations are established each year by students through the student activities offices and the college student governing associations.

Athletics and Recreational Sports

A full program of intercollegiate competition is provided in fifteen sports for men and fifteen for women. The athletic program is conducted as part of the educational program of the university. All students are given equal opportunity to become members of the several teams. Training for participation in athletic competition contributes to the physical, social, and character development of the participants. Students are encouraged to take part in the intramural and intercollegiate programs, according to their ability. To be eligible to participate in intercollegiate athletics, student athletes must abide by university and NCAA academic and nonacademic standards while they are team members of a recognized division of intercollegiate athletics.

Each of the residential colleges has a recreational athletics program, designed to provide an opportunity for students to participate in competitive sports as regularly as their interest and time permit. Competition is open to all students, and there are women's, men's, and coeducational activities available.

A club sport program is available in a wide variety of activities and is open to all interested students. All clubs provide competition with other schools as well as instruction for interested students who may be new to the sport.

While courses offered for credit are available, a great number of noncredit recreational courses is offered at the colleges. In addition, special events and trips help to stimulate interest in new activities or provide a challenge for more experienced participants.

Division of Intercollegiate Athletics

The mission of Rutgers, The State University of New Jersey, is to offer instruction, conduct research, and provide service to the citizens of New Jersey. The mission of the Division of Intercollegiate Athletics is to provide and operate an intercollegiate athletic program that is an integral part of the university. In accordance with the university's mission, the Division of Intercollegiate Athletics operates all of its programs in a manner consistent with the pursuit of intellectual inquiry, educational discovery, and academic success. To this end, the Division of Intercollegiate Athletics conducts, supervises, and evaluates a broad-based, comprehensive program of intercollegiate athletic sports and operates an academic support program for student-athletes. The Division of Intercollegiate Athletics supports equitable opportunities for all students and staff, including women and minorities, in its programs. The intrinsic value to the participant is the primary criterion by which the worth of the program is judged. The Division of Intercollegiate Athletics provides the personnel and programs, including community service, that are necessary to enable student-athletes to pursue excellence in developing personal, academic, and athletic skills and, in so doing, supports the university in achieving its mission.

Concerts, Dramatic Productions, and Lectures

Several series of concerts by world-famous musicians, bands, dancers, and musical organizations are presented on campus each year by the departments of music and dance of the Mason Gross School of the Arts (MGSA), the student center programming boards, and the concert organizations of the different campuses. Many events are free.

The Department of Theater Arts of the Mason Gross School of the Arts presents approximately fifteen to eighteen productions a year at the Rutgers Art Center on the Douglass campus. The Cabaret Theater, along with other similar production companies, is a student organization that provides students who are not in the professional MGSA program with the opportunity to express their theatrical talents and to broaden their acting experience.

Numerous lectures are presented regularly by academic departments, lecture series groups, and other organizations.

Fraternity and Sorority Life

Rutgers University is home to twenty-seven fraternities and fifteen sororities. More than 1,400 undergraduates are members of the Greek community. This community provides a comprehensive educational and social learning experience for its members through the promotion of brotherhood and sisterhood, leadership and personal development, academics, and service to the university and the New Brunswick community. The Rutgers fraternity / sorority community has developed extensive self-governing policies concerning human rights, hazing, and substance abuse.

The Office of Fraternity and Sorority Affairs (OFSA) is housed at 15 Bartlett Street on the College Avenue campus (http://www.rutgers.edu/~ofsa). Offices for the three governing councils can be found at OFSA: Interfraternity Council, governing the twenty-two NIC men's fraternities; National Pan-Hellenic Council, governing the one Latina and seven NPC sororities; and the Panhellenic Association, governing the twelve historically African-American, Latin / a, and multicultural fraternities and sororities.

CAMPUS INFORMATION SERVICES

Rutgers Information and Referral Center

Rutgers Information and Referral Center is the gateway to Rutgers, The State University of New Jersey, and can be reached by calling 732 / 932-INFO. Trained student information assistants offer help and answers about admission or any area of campus or community life. The service is available Monday through Friday, from 8:30 A.M. to 8:30 P.M., and Saturday and Sunday, from 10:00 A.M. to 4:00 p.m., during the academic year. The hours during the rest of the year are Monday through Friday, from 8:30 A.M. to 4:30 P.M. Twenty-four hour access to the information and referral service is available via email through "Ask Colonel Henry" at colhenry@ur.rutgers.edu; information about activities and events at Rutgers also is provided online at http://www-acs.rutgers.edu/calendar. The New Brunswick official Listserv is the source for timely academic and student information. Every Tuesday during the term, a weekly bulletin of official notices is sent directly to the email account of each student on the New Brunswick campus. Students are responsible for knowing the information and taking appropriate actions contained in the notices.

Rutgers INFO Channel/ Rutgers INFO Radio

The Rutgers INFO channel, Channel 3 on the RU-TV network, is available on the New Brunswick campus and is operated by Campus Information Services. The station provides twenty-four-hour-a-day information about events, programs, activities, and services available to students. Members of the Rutgers community may request that information about activities, services, and events

be displayed on the Rutgers INFO channel. Visit http://rutv.rutgers.edu/infochannel.html for more information.

Rutgers INFO radio, on the New Brunswick campus, also is operated by Campus Information Services. The station operates twenty-four hours a day and is found at 530-AM. The station can be heard within a six-mile radius of the campus. Rutgers INFO radio broadcasts timely transportation, parking, special events, and general information, and gives weather emergency updates. The station also is available through live webcasts at http://rutgersinforadio.rutgers.edu.

Historical Tours

Campus Information Services provides historical campus tours, led by seasoned guides and lasting approximately one-and-one-half hours. Reservations are strongly encouraged, as tours are given on a first-come, first-served basis. Special tours also may be scheduled. For more information, call 732/932-9342, ext. 619.

LIBRARIES

With holdings of more than three million volumes, the Rutgers University Libraries rank among the nation's top quartile of research libraries. Comprised of twenty-six libraries, reading rooms, and collections on the university's three campuses, the libraries support a broad range and depth of faculty and student research in a wide array of disciplines.

The system's largest units are the Archibald Stevens Alexander Library on the College Avenue campus and the Library of Science and Medicine on the Busch campus, both in New Brunswick, with the former housing the principal collections of research materials in the humanities and social sciences and the latter housing the principal research collections in behavioral, biological, earth and pharmaceutical sciences, and engineering.

Other libraries in New Brunswick are the Mabel Smith Douglass Library, which houses the Blanche and Irving Laurie Music Library, on the Douglass College campus; the Kilmer Area Library on the Livingston College campus; the Mathematical Sciences, Chemistry, and Physics libraries on the Busch campus; the Art Library and the East Asian Library on the College Avenue campus; and the Chang Science Library on the Cook College campus. The specialized collections of the School of Management and Labor Relations Library are located in the Labor Education Center, Ryders Lane, New Brunswick; and those of the Center of Alcohol Studies Library are on the Busch campus. The Newark campus is served by the John Cotton Dana Library, the Institute of Jazz Studies Library, and the Criminal Justice Collection, as well as the Justice Henry Ackerson Library of Law; the Camden campus is served by the Paul Robeson Library and the Camden Law Library. Most libraries maintain one or more reserve reading rooms.

The Rutgers University Libraries function as one system. The holdings of all units in the system are accessible via IRIS, the libraries' online catalog, which contains listings for the majority of the acquisitions since 1972 and is accessible through public terminals in each library, and remotely through the libraries' web site at http://www.libraries.rutgers.edu. Each library in the system, including those located in Camden and Newark, is accessible to all members of the university community through the Rutgers Request Service and telephone and online reference services. In addition to the collections internal to the Rutgers' library system, members of the faculty and student body have access to other libraries through cooperative agreements that link Rutgers to the Princeton University library, the State Library in Trenton, and other research libraries in the nation.

Additional services provided by the libraries include online databases in a variety of disciplines, which can be accessed in the libraries or remotely. Reference librarians are available to assist with research projects, classroom instruction, or research strategies, and with intra- and interlibrary loans.

The libraries make every attempt to ensure accessibility to their facilities and services by individuals with disabilities.

LEARNING RESOURCE CENTERS

The Learning Resource Centers (LRCs) provide a comprehensive menu of academic support services designed to meet the needs of the diverse learners within the Rutgers student body. The variety of services helps students develop more efficient and effective learning strategies and cognitive insights that lead to academic success. The primary missions of the LRCs are to help learners learn more in less time with greater ease and confidence and to help students maximize their academic potential.

Every service in each LRC is available to all Rutgers students as a benefit of enrollment. Centers are located on four campuses:

College Avenue LRC
Kreeger LRC Building
732/932-1443

Cook/Douglass LRC
Loree Hall 124
732/932-1660

Livingston LRC
Tillett Hall 111
732/445-0986

Busch LRC
Allison Road Classroom Building 332
732/445-4183

Learning Resource Center hours are:

Monday–Wednesday	8:30 A.M.	to	10:00 P.M.
Thursday	8:30 A.M.	to	8:00 P.M.
Friday	8:30 A.M.	to	12:00 NOON
Sunday	5:00 P.M.	to	10:00 P.M.

Learning Assistance

Individualized learning assistance is available to any student who seeks help in learning strategies in order to reach his or her learning potential. Instructional material is available through a wide variety of presentation methods on all the skill areas necessary for efficient and effective learning: information processing, higher-level organizational skills, developing and processing notes from lectures and reading, time management, and test preparation and exam strategies. Learning specialists provide diagnosis, individualized

program design for self-improvement, and personal conferencing. Audiocassettes, video, computer instruction, texts, and other modes are used to allow the individual student to develop personal and effective learning strategies at his or her own pace.

Academic Tutoring

The academic tutoring service provides specific course assistance in difficult first- and second-level courses in disciplines such as accounting, biological sciences, chemistry, computer science, economics, introductory engineering, logic, mathematics, physics, and statistics. The tutors are Rutgers undergraduate students who meet stringent academic requirements, have completed mandatory tutor training, and are nationally certified. Students may walk into any LRC during scheduled hours for help in their specific course. Tutors work with a small group of students, and classmates may end up in the same tutoring group. Tutoring is available on a regularly scheduled basis in each LRC in the afternoon, and on weekday and Sunday evenings.

Course Support

Materials are often placed in the LRCs by professors for easy student access. Such materials as sample exams, study guides, class notes, solution manuals, videotapes, CDs, and audiotapes commonly are made available to students. Faculty are concerned deeply about their students' success and are committed to providing appropriate and timely support materials for their courses. Professors who regularly make these materials available in the LRCs represent many disciplines, ranging from astronomy, biology, chemistry, and physics to calculus, computer science, nursing, and sociology. Other courses with support materials in the LRCs are neurobiology, biochemistry, genetics, and immunology, as well as music, philosophy, public health, Spanish, and statistics.

Writing Assistance

Writing assistance provides direct guidance to students developing papers for courses other than the first-year writing sequence. Writing assistance is helpful especially in the prewriting stage, in solving problems of grammar and mechanics and the structure of writing, and in using reference citations. Writing assistance does not allow for proofing or editing, does not provide assistance on papers in progress for courses in the first-year writing sequence, and is not available for "last minute" assistance. The service is provided to complement the Writing Centers.

Supplemental Instruction

Supplemental Instruction (SI) is a formal support program designed to assist students in mastering course concepts and, at the same time, to increase their competence in learning how to learn the concepts of the discipline more effectively and efficiently. SI links course content and cognitive skills development through a regular schedule of out-of-class sessions. Trained student SI leaders guide the sessions by encouraging students to think about, question, and confirm their understanding of the content while learning more effective strategies of studying and learning the subject. When SI is available in conjunction with a specific section of a difficult course, attendance at one, two, or all sessions is optional.

HEALTH PROFESSIONS

Health Professions Office

The Health Professions Office (HPO), located on the Busch campus, offers a wide range of services to all Rutgers–New Brunswick students planning to enter one of the health-care fields. This office offers counseling and advisory services, maintains student files, and supplies application materials. It publishes a monthly newsletter and has produced a handbook and several other publications for students. The HPO also maintains a library that includes reference materials, professional school catalogs, admissions statistics, and videos.

Students interested in postgraduate study in health care are urged to visit the HPO to open a file. Students then may begin asking their instructors and others for letters of recommendation, which are to be submitted on a standard form available in the HPO. After a student has completed requirements for admission to a professional school, the HPO will schedule an interview between the student and a member of the Health Professions Advisory Committee. This interview culminates in a composite letter of evaluation that, at the student's direction, is forwarded to each school to which the student applies.

The HPO is located in Nelson Biological Laboratories, Room A-119, on the Busch campus. For further information about the HPO on the Busch campus, call 732/445-5667.

There is a second office available to Douglass College students. For more information about the Douglass College office, call 732/932-1693. Douglass students also may use the Busch campus office.

Students interested in the study of pharmacy are encouraged to contact the College of Pharmacy at 732/445-2675, ext. 605.

Office of Minority Undergraduate Science Programs (OMUSP)

The Office of Minority Undergraduate Science Programs (OMUSP) has a threefold mission to:

- increase the numbers of Hispanic, African-American, and EOF students majoring in the sciences by providing a more supportive environment;
- enhance their levels of academic achievement; and
- increase their entry into graduate or professional schools or in their chosen fields in the workforce.

The OMUSP offers several programs to further its mission. The Success in Sciences (SIS) Program provides academic advising, career counseling, motivational workshops, and assistance in gaining enriching educational experiences. An important program component is a tutorial project, cosponsored by Rutgers College, which gives students cocurricular support in key math and science courses.

The Biomedical Careers Program (BCP), offered jointly by Rutgers, The State University of New Jersey (New Brunswick) and the University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School (UMDNJ–RWJMS), is a summer enrichment program. Participants take science courses, attend seminars, gain experience at a health-care facility, and undertake research with a faculty mentor. Ninety percent of participants in this program have earned their bachelor's degree; of these, more than half have earned professional or other degrees.

The ACCESS–MED Program provides academic and other support to students applying to any medical or dental school. Of special note is their opportunity also to gain early admission to UMDNJ–RWJMS during their senior year and to begin medical school courses while completing their undergraduate degrees. The ACCESS–MED Program is a consortial venture involving Rutgers, UMDNJ–RWJMS, and Seton Hall University.

For more information, call 732/445-6878.

COMPUTER FACILITIES

Rutgers University Computing Services (RUCS) provides extensive computing and network services for students, faculty, and staff of all academic and administrative units of the university. In addition to the RUCS facilities, many departments and schools operate their own computing facilities.

Support for students centers on a set of about twelve computer labs, plus additional locations in many of the libraries. These labs have a mix of Windows, Macintosh, and Unix workstations or X terminals, as well as printers. Several of the areas are equipped for class use. There is a Digital Media Lab to help students prepare audio and video presentations. Several labs in New Brunswick are open twenty-four hours a day. Software includes word processing and spreadsheet packages, as well as tools for specialized academic uses, such as statistics, mathematics, and mapping. Much of this software also is available for students to use on their own computers in the residence halls.

Rutgers is conducting a major networking project that is expected to be completed by April 2003. As of fall 2000, 80 percent of the 15,000 beds in residence halls have Ethernet connections. Residents who use these connections have full access to computer resources at Rutgers and through the Internet.

RUCS provides central services for students, including email, net news, web-page hosting, and Unix shell access. Student services available via the web include a schedule of classes, online registration, financial aid award status, grades, transcripts and class schedules, statement of accounts, a calendar of events, and an online directory. Many courses make use of computers and web technology. Email is used widely on campus to communicate with faculty and other students, as well as to distribute announcements.

OFF-CAMPUS HOUSING SERVICE

As part of Campus Information Services, the Off-Campus Housing Service is the information and referral center for off-campus housing needs at the New Brunswick campus. It can be accessed at 732/932-7766, online at http://ruoffcampus.rutgers.edu, or via email at ochs@cis.rutgers.edu. The service is located at 542 George Street on the College Avenue campus. Trained staff offer assistance and referrals with a variety of off-campus housing questions to students, landlords, and faculty and staff members. Online, visitors may obtain up-to-date housing and roommate listings; area guides; legal information; and resources, relocation, and transportation information.

RESIDENCE HALLS

A great variety of housing accommodations is available on the various New Brunswick campuses. Students usually are housed according to the college with which they are affiliated. Rooms in the residence halls are contracted for a full academic year and require that a meal plan be purchased (except apartments with kitchen facilities). Housing is available for students entering in the spring term. Most residence halls close during the winter and spring recesses, but some are available during this period for a slight additional charge. Housing also is available for students attending Summer Session. See the four residential college sections (Douglass, Livingston, Rutgers, and Cook) for descriptions of the types of residential accommodations available. Information also is available at http://www.housing.rutgers.edu.

RUTGERS UNIVERSITY POLICE DEPARTMENT

The Rutgers University Police Department (RUPD) is dedicated to providing progressive community-policing services that focus on the prevention of crime through the development of university-based partnerships. The department provides police, security, and safety services, and is staffed by commissioned police officers, a professional security staff, students trained as community services and safety officers, and technical and administrative employees.

The department is located at 5 Huntington Street on the College Avenue campus. Officers patrol the campuses on foot, in vehicles, and on bicycles. To contact RUPD to report emergencies (police, fire, or emergency medical), dial 911. From university centrex telephones, dial 6-911. For nonemergency telephone calls to the police, dial 732/932-7211; from university centrex telephones, dial 2-7211. You also may contact the police by using any of the more than sixty blue-light emergency telephone boxes on the campuses or by using the housing telephones located near dormitory entrances.

Community policing offices are located in each of the campus student centers. These frontline, campus-based officers act as community organizers, team builders, and problem solvers. They provide a communications link between the community and the police department, serve on campus bias committees, and perform proactive patrol. Security officers also patrol the campuses, serving as "eyes and ears" for the police while securing facilities and providing escort services. A student-staffed bicycle patrol has been established on the Douglass/Cook and Livingston campuses, and student safety officers provide an evening equestrian patrol on the Douglass/Cook campus and evening walking escorts on the Livingston campus. Student safety and community services officers also control access to selected residence halls during evening hours and provide a host of other safety and security services. For more information about these programs, call 732/932-5400.

RUTGERS UNIVERSITY HEALTH SERVICES

Rutgers University Health Services provides comprehensive ambulatory medical, outpatient, and health education services for all full-time students. Part-time students may become eligible by paying the student health service and insurance fee to the Office of Student Health Insurance, Hurtado Health Center, Rutgers, The State University of New Jersey, 11 Bishop Place, New Brunswick, NJ 08901-1180.

During the fall and spring terms, three health centers provide services for students in the New Brunswick / Piscataway area. The Busch / Livingston Health Center, located at Hospital Road and Avenue E on the Livingston campus, is open Monday through Friday from 8:30 A.M. to 5:00 P.M. The Hurtado Health Center, located at 11 Bishop Place on the College Avenue campus, is open seven days a week when classes are in session during the academic year (Monday through Friday, from 8:30 A.M. to 8:00 P.M., Saturday and Sunday, from 10:00 A.M. to 4:00 P.M.). The Willets Health Center, located on Suydam Street on the Douglass campus, is open Monday through Friday, from 8:30 A.M. to 5:30 P.M. The Hurtado Health Center is the only one of these clinics that operates year-round. In the summer and during breaks, it is open Monday through Friday only, from 8:30 A.M. to 4:30 P.M.

Health centers are staffed by physicians, nurse practitioners, and registered nurses. A wide range of services is provided, including general primary care, gynecology, mental health services, alcohol and substance abuse outpatient treatment programs, health education, immunizations, allergy desensitization injections, laboratory tests, physical examinations, referrals, and X rays. Surgical and critical medical conditions are referred to the student's personal physician, the proper specialist, or an outside hospital for treatment.

The Department of Health Education, a part of Health Services, works to increase discussions, examine issues, and explore the underlying contexts of selected health behavior that focuses on, for example, the use of food and chemical substances to manage feelings and situations, relationships, and sexuality as a part of being human.

Pharmacies are located at each health center and are open during the following hours: Busch-Livingston Pharmacy, Monday through Friday, from 9:30 A.M. to 5:00 P.M.; Rutgers Pharmacy (Hurtado), Monday through Friday, from 9:30 A.M. to 5:30 P.M., and Saturday, from 10:00 A.M. to 3:00 P.M.; Willets Pharmacy, Monday through Friday, from 9:00 A.M. to 5:00 P.M. During Summer Session and breaks, the Rutgers Pharmacy (Hurtado) is open Monday through Friday, from 9:00 A.M. to 4:30 P.M.

The Rutgers University Health Services is accredited by the Joint Commission on Accreditation of Healthcare Organizations for meeting national standards of ambulatory health-care delivery.

SEXUAL ASSAULT SERVICES AND CRIME VICTIM ASSISTANCE

Sexual Assault Services and Crime Victim Assistance staff provide support and assistance to crime victims, survivors, and other members of the university community. Advocacy, crisis intervention, short-term counseling, and referrals are available. Programs and services for students, faculty, and staff promote ways of reducing the risk of being a crime victim and the availability of resources and options should a crime occur. With a special emphasis on crimes of interpersonal violence, educational programs are available to the university community on issues concerning sexual assault, dating violence, stalking, and peer harassment.

For more information or to schedule an appointment or program, call 732 / 932-1181, visit the department web page at http://www.rutgers.edu/Sexual Assault/, or email the staff at sascva@rci.rutgers.edu. The office is located at 3 Bartlett Street on the College Avenue campus, New Brunswick, NJ.

STUDENT HEALTH INSURANCE

All full-time students, by paying the student fee, and those part-time students who elect to pay the student health service and insurance fee, are insured for up to $5,000 in medical expenses brought about by illness or accident. This policy provides excess coverage over other group insurance plans. Students have the option to purchase a major medical policy sponsored by the university that provides more extensive coverage. Students also may purchase coverage for their spouse and children at additional cost. Any student not covered by individual or family policies, particularly international students, should consider this coverage. Information and applications are available from the Office of Student Health Insurance, Hurtado Health Center, Rutgers, The State University of New Jersey, 11 Bishop Place, New Brunswick, NJ 08901-1180; 732 / 932-8285.

Compulsory International Student Insurance Fee

All students in F or J immigration status whose visa documents are issued by Rutgers are required to have both the basic and the major medical insurance coverages. The costs for insurance are charged to such students on their term bills. All accompanying family members (spouse and children) also must be insured. Insurance coverage for spouses and children must be purchased through the health insurance adviser, located at the Center for International Faculty and Student Services, Rutgers, The State University of New Jersey, 180 College Avenue, New Brunswick, NJ 08901-8537; 732 / 932-7015.

COUNSELING SERVICES

Counseling Centers

Each of the general undergraduate colleges at Rutgers–New Brunswick has its own psychological counseling service. Students at the Mason Gross School of the Arts, School of Engineering, College of Pharmacy, School of Business–New Brunswick, School of Communication, Information and Library Studies, and the Edward J. Bloustein School of Planning and Public Policy may seek assistance at the counseling center of their college of affiliation.

The counseling centers provide free and confidential psychological counseling for students, on both an individual and a group basis. All centers are staffed primarily by clinical and counseling psychologists. Students are

encouraged to use the counseling centers for any of a variety of psychological or emotional concerns that may affect their academic work, including anxiety, depression, relationships, and family issues. Services are available for a range of concerns from minor situational crises to long-standing psychological issues that cause major disruptions in life. In most cases, students needing longer-term care will be referred to other nearby services.

Counseling centers also offer psychological education programs on such topics as stress management, eating and body image issues, test anxiety, interpersonal relationships, conflict resolution, and bereavement.

Appointments can be made by contacting the appropriate office: Cook College Counseling Center, Cook Campus Center, 732/932-9150; Douglass College Psychological Services, Federation Hall, 732/932-9070; Livingston College Counseling Center, Tillett Hall, 732/445-4140; Rutgers College Counseling Center, 17 Senior Street, 732/932-7884; and University College Office of Counseling, Miller Hall, 732/932-8074. Only the Rutgers College center is open during Summer Session.

There are also several peer counseling programs at the university. These student-run programs provide drop-in centers and/or telephone hotlines for students needing someone to talk to, information, or referral to campus or community agencies. Information about how to reach them can be obtained through Rutgers Information and Referral Center, 732/932-INFO.

Services for International Students

The Center for International Faculty and Student Services, 180 College Avenue (732/932-7015), coordinates services for the university's international students, scholars, and faculty. The center provides direct support in the following areas: U.S. immigration regulations and procedures; liaison to campus offices, community groups, and U.S. and foreign government agencies; and advice on nonimmigrant status, employment, medical care, adjustment to American life, cross-cultural differences, family concerns, financial planning, and other personal matters. In addition, the center sponsors programs of interest to the international community, including a comprehensive orientation, a community-based International Friendship Program that gives students the opportunity to get to know American families, informational and cross-cultural seminars, and a variety of support programs for students and their families.

To ensure personal contact, all international students are assigned an international student adviser at the center and are encouraged to establish and maintain a close working relationship with center staff throughout their stay at Rutgers.

Nonimmigrant students in F-1 or J-1 status must register with the center upon arrival and inform the center of any change in their academic program, address, or enrollment status. All questions regarding one's status as a foreign student or exchange visitor in the United States are addressed to this office.

Career Services

There are four locations of the Office of Career Services in New Brunswick and Piscataway to assist Rutgers students. Locations include the Busch Campus Center, 46 College Avenue, 56 College Avenue, and 61 Nichol Avenue. Students are welcome to use any office.

The mission of Career Services is to help students explore career options and identify suitable positions, including internships during the undergraduate years and full-time positions or graduate school after graduation. Career Services provides individual career counseling to undergraduates, graduate students, and alumni. The office also offers seminars on choosing a major, job hunting, résumé writing, job interviewing, and selecting and applying to graduate school. A computer-assisted career guidance system also is available to aid students.

Three offices offer student computer labs and career libraries. Current job listings for full-time positions and internships are available online through JOBTRAK at http://www.jobtrak.com. More than 25,000 positions are posted each year.

An online credentials service, called Interfolio and located at http://www.interfolio.com, is available for students who wish to apply to graduate school or those seeking teaching or administrative positions in educational institutions.

The Career Services office publishes the Career Services Guide annually, the "Careers" supplement to the Daily Targum five times a year, and online newsletters and updates to assist students with career planning and employment. Students also may visit http://www.careerservices.rutgers.edu.

Individual appointments may be made year-round by contacting the offices at 46 College Avenue, 732/932-7997; 61 Nichol Avenue, 732/932-9742; 56 College Avenue, 732/932-7287; and the Busch Campus Center, 732/445-6127.

Services for Students with Disabilities

Students with disabilities at Rutgers–New Brunswick are entitled to the same benefits of the university's educational mission and the same quality of student life, and are subject to the same academic and procedural requirements as other students. Rutgers is committed to providing reasonable accommodations inside and outside the classroom to meet students' diverse needs. The university's services include special assistance in academic advising, scheduling or rescheduling classes in barrier-free buildings, on-campus transportation for students with permanent or temporary mobility disabilities, assistive devices and equipment, learning assistance, and communication with faculty regarding students' general or specific needs. Each school in New Brunswick has a designated coordinator of services to students with disabilities to assist students enrolled in their school. For more information, students with disabilities also may contact the New Brunswick campus coordinator for students with disabilities at 115 College Avenue, Bishop House, Room 105; 732/932-1711.

Concerns or grievances regarding Rutgers' compliance with the Americans with Disabilities Act of 1990 or Section 504 of the Rehabilitation Act may be directed to the Director of Compliance and Student Policy Concerns at 3 Bartlett Street, College Avenue campus; 732/932-7312.

Assistance for Educational Opportunity Fund Students

Recipients of an Educational Opportunity Fund (EOF) grant as part of their financial aid package also have available to them a number of academic services. A staff of full-time, trained professionals is available to aid with problems that may arise in areas ranging from personal to academic to

financial. In addition to the counseling program, EOF offers free tutorial services to students who need assistance in basic academic skills as well as in more advanced courses. Each summer, EOF offers a six- to eight-week precollege program of developmental and / or credit-granting courses. Under regulations governing Standards of Academic Progress, EOF students are eligible to receive up to ten terms of New Jersey state aid, while non-EOF students receive only eight.

OFFICE OF DIVERSE COMMUNITY AFFAIRS AND LESBIAN-GAY CONCERNS

The Office of Diverse Community Affairs and Lesbian-Gay Concerns, established in the spring of 1992 as a resource for the campus community, provides coordination, assistance, information, educational activities, and public programs to staff, faculty, and students in the areas of lesbian-gay-bisexual and transgender awareness; the concerns of students with disabilities; and bias awareness, prevention, and intervention.

Undergraduate and graduate students interested in becoming involved in lesbian-gay-bisexual issues and programs; students with disabilities who wish to identify resources; and students who have experienced, witnessed, or are concerned about bias and intolerance on the basis of race, ethnicity, language, color, national origin, religion, sexual orientation, gender, and / or physical ability may contact the director of the office, Cheryl Clarke, 115 College Avenue, Bishop House, Room 105, College Avenue campus, 732 / 932-1711, for assistance, advising, counseling, and referral. Faculty, staff, and student groups who wish to obtain technical assistance, staff development, or in-service training in these areas may also contact the director.

RELIGIOUS AFFAIRS

The Office of Student Affairs provides information for students of all religions, backgrounds, and affiliations regarding local houses of worship. Many faiths are represented through student organizations on the various campuses.

The B'nai B'rith Hillel Foundation, at 93 College Avenue, and Chabad House, at 170 College Avenue, serve the needs of Jewish students.

A ministry to Roman Catholic students is provided by two resident chaplains from offices and residences at 17 and 29 Mine Street. Religious services are held regularly on the Rutgers and Douglass campuses.

Work among Protestant students reflects the variety of concerns and methods characteristic of the major denominations. Full-time campus pastors serving the Methodist and Lutheran churches and the United Campus Ministry (Baptist, Presbyterian, Reformed, United Church of Christ) carry on many of their activities from the Christos House at 194 College Avenue. Services for Episcopal students are centered at 5 Mine Street and at St. Michael's Chapel, adjacent to the Busch campus, under the direction of a full-time Episcopal chaplain. Christian Science, Intervarsity Christian Fellowship, Campus Crusade for Christ, and the Navigators groups meet regularly throughout the year.

Local pastors from the African Methodist Episcopal Church, the Assembly of God Church, Southern Baptist Church, Eastern Orthodox Church, Religious Society of Friends, Ukrainian Orthodox Church, and the Unitarian Universalist Association come to campus to serve the students. The Islamic and the Buddhist faiths, as well as the Integral Yoga Institute, also provide chaplains. As their numbers and interests warrant, students coming from other religious traditions, foreign and domestic, are assisted in organizing and carrying on their activities.

The university provides nonsectarian services of worship, preaching, and music each Sunday morning in Kirkpatrick and Voorhees chapels.

DINING SERVICES

The Division of Dining Services operates and maintains six student dining facilities and eleven cash facilities: Brower Commons on the College Avenue campus, Busch Dining Hall and Davidson Commons on the Busch campus, Cooper and Neilson Dining Halls on the Cook / Douglass campus, and Tillett Dining Hall on the Livingston campus.

Dining Services offers several different "block plans," which provide convenience and flexibility to fit personal lifestyle and dining habits, and feature "all you can eat dining." There is no limit on the number of meals participants may enjoy each week, and they even may bring ten guests per term.

For more information, call 732 / 932-8041 or visit http://www.rci.rutgers.edu/~rudining.

TRANSPORTATION AND PARKING

Parking facilities are available for resident and commuter students on each campus. Due to space limitations, college parking committees rule that certain categories of students are ineligible to register vehicles. Students are not permitted to keep vehicles on campus while in these categories. Penalties for failure to comply with these restrictions include ticketing and towing. In general, categories of students prohibited from keeping a vehicle include: 1) Cook College residents with fewer than 60 accumulated credits; 2) Douglass College residents with fewer than 85 accumulated credits; and 3) all students, regardless of college affiliation, with fewer than 60 accumulated credits who reside in campus housing on the College Avenue and Busch campuses.

Resident student vehicles are assigned to their specific residence lot(s) only. Commuter student vehicles are assigned to a parking zone, according to college affiliation, on a particular campus only. Maps indicating resident and commuter student lots are included in the *Parking and Transportation Services* brochure, available at the Department of Parking and Transportation Services, 26 Mine Street, College Avenue campus. Any vehicles using campus parking facilities must be registered and must display a valid permit at all times. Fees for students holding assistantships and fellowships vary according to their classification.

An intercampus bus transportation service, partially funded by student fees, is available to all Rutgers students, faculty, and staff. This bus service provides transportation within walking distance of all major campus areas and the

major public transportation centers in New Brunswick. Schedules for the campus bus service are published each fall and are available at the information booths in the college centers on each campus and at the Parking and Transportation Services office. Van transport is available for students with permanent disabilities who are unable to use campus buses to get to and from class. Requests should be made through the student's dean's office.

For more information, call 732/932-7744, send email to parktran@ru.rutgers.edu, or visit http://parktran.rutgers.edu.

BOOKSTORES

Several bookstores serve the Rutgers community. The Rutgers University Bookstore offers a full line of textbooks for courses taught on the College Avenue and Busch campuses and also carries supplies, general books, medical and scientific reference books, and Rutgers clothing and gifts. It is located in the Ferren Mall, across from the train station in downtown New Brunswick. The bookstore's catalog is available free upon request. Students also may order textbooks, general books, and Rutgers clothing and gifts online at http://www:efollet.com.

The Livingston College bookstore serves the needs of Livingston College and the departments located there. It, too, carries supplies, general books, and Rutgers clothing and gifts.

The bookstores also operate three convenience stores: the Busch Campus Center Convenience Store, the Livingston Sweet Shoppe, and the SAC Convenience Store.

POST OFFICES

Mail and Document Services provide mail services for faculty, staff, and students at Rutgers–New Brunswick. Services include handling intracampus and U.S. postal mail, and operating post office facilities—Busch Post Office (BPO)–Busch Campus Center; Cook Post Office (CPO)–PAL Building; Douglass Post Office (DPO)–Douglass College Center; Livingston Post Office (LPO)–Tillett Hall; and Rutgers Post Office (RPO)–Records Hall—on each campus. Mail and Document Services may be contacted at 732/445-3212.

All post office sites offer basic postal functions (stamp sales, processing of outbound domestic letters and packages, and "boxing" incoming student mail). All sites offer extended postal functions: money order sales, processing outbound special-service items (certified, registered, and insured services), and processing outbound international letters and packages. Postal services are available Monday through Friday, from 8:00 A.M. to 4:00 P.M. throughout the year.

Mail box numbers are assigned according to school of affiliation, not residence. With the exception of the University Center at 30 Easton Avenue, dormitory residents receive incoming mail at their assigned mail box. Students arriving for the fall term receive advance acknowledgment of their box number at their home address. Students registering late or for the spring term need to check the appropriate post office to ensure a box number has been assigned. Mail box combinations are included with the notification information. If you lose or forget your combination, visit your post office to obtain your number. Combinations are given only to the box owner, in person, with appropriate identification.

ALUMNI

Alumni Relations

The university seeks the support of its alumni and, in return, offers them a number of services and programs. The responsibility for working with the university's entire alumni body, now numbering over 300,000, is vested in the Department of Alumni Relations. The department has two main objectives. First, it maintains contact with Rutgers alumni, informing them of the university's programs with the hope that they will assist Rutgers in fulfilling its educational goals. Second, the department encourages alumni to continue their college friendships after graduation through social, educational, and reunion activities.

All undergraduate colleges and most graduate and professional schools have their own alumni associations that sponsor programs based on the interests of the alumni of that college. Active membership is maintained through payment of regular alumni dues. Many alumni associations are represented in the Rutgers University Alumni Federation, which sponsors university-wide programs such as homecoming, distinguished alumni awards, legislative receptions, group travel, and insurance. The Department of Alumni Relations provides guidance and administrative services to each of the college associations, as well as to a network of regional alumni clubs throughout the country.

The university publishes an award-winning magazine for alumni and friends of the university.

The department's New Brunswick office is located at Winants Hall, 7 College Avenue, New Brunswick, NJ 08901-1262; 732/932-7061.

Rutgers University Foundation

The Rutgers University Foundation was incorporated in 1973 as a semiautonomous division of the university responsible for soliciting funds from private sources.

With a full professional staff and a national network of volunteers who sit on advisory committees and assist in the solicitation of funds, the foundation has steadily—indeed, dramatically—increased the amount of annual private support for Rutgers. This private support provides funding for more than 1,500 university programs that encompass every division of the university and every campus.

In the process of developing new ways to finance programs at Rutgers from nonpublic sources, the foundation has garnered national recognition and awards for its fund-raising and communications. The professional staff includes experts in corporate and foundation relations, an area that accounts for more than half of the private monies received by the university. It also includes specialists in deferred and planned giving, in fund-raising for athletics, in soliciting annual gifts, in obtaining major and special gifts, and in managing campaigns to fund capital needs. The foundation manages one of the largest volunteer phonothons in the nation; more than 1,800 callers, many of whom are students, parents, and faculty members, volunteer their time to solicit funds for their schools and organizations.

In 1984, the foundation undertook the most ambitious fund-raising endeavor in the university's history, the $125 million Campaign for Rutgers. Using advanced fund-raising methods to identify new philanthropic sources for Rutgers, the foundation structured the campaign to raise funds for areas that have direct bearing on the quality of education and research at the university. Campaign funds were earmarked to support distinguished professorships, to underwrite new program development and departmental research, to allow for renovation of campus facilities, to endow scholarships and fellowships, and to establish a pool of "opportunity resources" for all university divisions. In 1990, the campaign concluded 34 percent over goal and, in the process, increased annual contributions to the university from $9 million to $27 million.

Since the conclusion of the Campaign for Rutgers, annual contributions have continued to rise, exceeding $60.7 million during the 1998–99 fiscal year, and the foundation has undertaken several successful multimillion-dollar, special-purpose campaigns: the Campaign for the Center for the Study of Jewish Life, the Campaign for the School of Law–Newark, the Campaign for Undergraduate Biological Sciences, the Campaign for Rutgers Stadium and Women's Athletic Scholarships, the Alexander Library Campaign, and the university-wide Campaign for Community, Diversity, and Educational Excellence.

More information about the foundation may be obtained from the Rutgers University Foundation, Winants Hall, 7 College Avenue, New Brunswick, NJ 08901-1261; 732 / 932-7777.

Douglass College

Douglass College is unique at Rutgers University in the organizational structure of its administration. Committed to a holistic approach to student development, all academic as well as cocurricular programs and services for students are offered within the college as a part of the combined Division of Academic and Student Affairs. In and out of the classroom, Douglass College guides women in realizing their potential in their careers, social roles, and personal lives. Building on a strong academic foundation, leadership at Douglass means a creative and collaborative process; confidence in caring, reflection, and responsibility; effecting change on behalf of others and society; and leaving a legacy to future generations of students. Through clubs and organizations, residential communities, special academic and cocurricular programs, and employment opportunities, the college promotes the capacity for leadership that will enchance each student's interactions with her peers, her effectiveness in the workforce, and her contributions to the communities in which she lives now and in the future.

Leadership Development

The student leadership education programs at Douglass College are committed to fostering leadership that is inclusive of all people and many styles and is directed toward a common good. It seeks to promote new models of leadership for women; ensure that all women can envision themselves as having leadership skills and a better understanding of their leadership potential; facilitate the participation of women in leadership and organizational change; build community partnerships; and extend beyond the campus in preparing women for socially responsible leadership in their careers, families, and communities.

To accomplish this mission, programs will:

1. provide students with opportunities to develop and enhance a personal philosophy of leadership that includes understanding of self, others, and community, and acceptance of responsibilities inherent in community relationship;
2. assist students in gaining varied leadership experience;
3. use multiple leadership techniques, theories, and models;
4. recognize and reward exemplary leadership behavior and be inclusive and accessible.

Students explore and strengthen their skills through existing programs, as well as through leadership education, training, and development programs. Two courses have been designed, and there are experiential learning opportunities in student programs, organizations, and activities. The programs stress the importance of principled leadership based on core values and emphasize leadership as a process, not a position. Viewed in this way, leadership requires the responsible actions of everyone in a community—including those in positional leadership roles.

Residence Life

The residence halls at Douglass College play an important role in the education of women. In general, the programs, services, resources, and staff help enhance women's personal and intellectual development. By creating an environment that fosters women's development, the Residence Life staff at Douglass College help teach students to learn, to question, to problem-solve, to think critically, and to achieve success both in and out of the classroom. The Residence Life program is staffed by a full-time director and assistant director, residence counselors who are graduate students, and resident assistants who are undergraduate students. The campus is divided into seven diverse residential communities, including large residence halls, apartments, and historic houses for fewer than twenty students.

Special-interest residences add another dimension for students interested in foreign languages and world cultures or math, science, and engineering. The Global Village is a cluster of language and cultural houses, including Africana, East Asian, French, German, Italian, Puerto Rican and Hispanic Caribbean, and Spanish. House residents are required to take a credit-bearing course in an appropriate language and to participate in the cultural programs of the house. Ordinarily, students wishing to complete the Certificate Program in International Studies described in the Douglass College section of the catalog are expected to live in a language house for one year. Educational and cultural programs planned by house residents with guidance from the house director enrich the academic and social climate of the Global Village as well as the Douglass community as a whole.

The Bunting-Cobb Math, Science, and Engineering Hall allows one hundred undergraduate women to share academic and career interests with one another and with six graduate women who live in residence and serve as mentors. Residents are encouraged to participate in peer study groups, career programs, and skill enhancement sessions. Residents have access to a resource library and a networked computer room.

Douglass guarantees housing to all sophomores, juniors, and seniors who sign the housing contract by a specific date announced each year. Most first-year students live in first-year residences, which focus on helping students adjust to college; develop communication and problem-solving skills; understand their responsibilities as members of a residential community; and become successful in their academic pursuits. Transfer students are assigned to a residential area of campus, with continuing students. First-year students and transfer students may opt to live in one of the special-interest residences.

Commuter Life

Commuters have a "campus" of their own located on the second floor of the Douglass College Center. Facilities for commuters include a large lounge used for programs and day-to-day informal gatherings with friends, kitchen facilities, and the commuter offices. The assistant dean for commuter life provides assistance with personal, administrative, and academic concerns of commuting students. Upper-class students called "commuter advisers" are assigned to new commuter students to help them adjust to life at Rutgers.

The Commuter Activities Board, elected by the students, plans social events and programs designed specifically for nonresident students. Commuter students also are represented on the student government assembly, the Douglass College Center Governing Board, and the Safety Committee. Assistance in finding off-campus housing is available through the Off-Campus Housing Office in Stonier Hall. Assistance with parking matters is available through the parking office at 26 Mine Street.

Mary I. Bunting Lounge and Sophia Club

The Douglass College Center is the location of the Mary I. Bunting Lounge. Both the lounge and the Sophia Club serve the students in the Mary I. Bunting Program. The program offers mature women the opportunity to pursue a full- or part-time baccalaureate program and provides special counseling and support services for women who have been graduated from high school for at least five years. Activities are geared to the needs of the group. A strong peer-group support system is provided through the Sophia Club.

Diverse Community Affairs

The Douglass Office of New Student and Diverse Community Programs works to assist students in broadening their awareness, understanding, and appreciation of the diverse community of women at Douglass College. Understanding and appreciating the dynamics of race, culture, class, sexual orientation, religion, ethnicity, and abilities all are part of the undergraduate experience. Discussions in and out of the classroom, attendance at programs in the residence halls and the college center, and participation in clubs and organizations are encouraged strongly so that students may grow in their own development. This office works with members of the college and university community to respond to acts of intolerance, insensitivity, or bias. Students interested in promoting a community that celebrates diversity are encouraged to participate in any of the cultural history months sponsored by the student activities office and to serve on the Community Diversity Team / Equal Opportunity Board.

Traditional Events

Douglass sponsors many events that long have been a significant part of the college's history and tradition. Orientation Week is designed by a student committee to acquaint the new student with life at the college. The academic year starts with a welcome assembly and is followed by Campus Night, which brings the whole community together for a fall picnic. Community Development Day, Mom's Day, Latina History Month, and the Yule Log ceremony all take place in the fall term.

The spring term features Winter Ball, Black History Month activities, Annual Women's Conference, International Spectacular, Dad's Day, the New Jersey Folk Festival, and Founder's Day. The Sacred Path Ceremony symbolizes the "moving up" of each class and recognizes students for outstanding service to the college; the Student Leadership Recognition Program honors outstanding leadership in student organizations. Senior Week is the final event of the academic year, culminating with the commencement convocation, at which academic honors and achievements are recognized.

Douglass College Student Government

The student body is represented by the Douglass College Government Association (DCGA), whose purpose is "to consolidate college activities into a closer union, to regulate the life of students while under college jurisdiction, and to prepare students to assume the duties of active world citizenship."

The legislative power of the student government is vested in an assembly of student representatives from the four classes, the student senators, the student representatives to the faculty fellows meetings, and five executive officers. The assembly meetings are held weekly and are open to all members of the university community.

Cook/Douglass Recreation

The Cook / Douglass Recreational Services Program provides activities and experiences designed to enhance the educational process. Programs exist in intramurals, sport clubs, informal recreation, and special events. Facilities include a swimming pool, fitness center, multipurpose gymnasium, racquetball courts, aerobic studio, bowling lanes, tennis courts, outdoor volleyball and basketball courts, rollerblading complex, and outdoor lighted playing fields. More information may be obtained from the program's administrative office in the Loree Recreational Facility, 732 / 932-8615, or visit http://aesop.rutgers.edu/~rec.

Douglass College Center

The Douglass College Center provides programs, services, and facilities in an informal setting where members of the campus community can gather outside of the classroom for cocurricular and experiential learning and understanding of others. Through its programs, the center encourages the exploration of ideas; promotes educational, cultural, recreational, and social events; and teaches, develops, and enhances leadership skills and personal growth. To foster the free expression of ideas, the center provides an inclusive facility that is safe, secure, and welcoming to all. Services include a large multipurpose room, several meeting rooms, computer lab, the Douglass Café, information services,

convenience store, copy center, coffee bar, gift store, student organization offices, Graduate Lounge, Bunting Lounge for returning women, ATM machine, FedEx drop box, and student post office mailboxes.

Student Activities

The mission of the student activities program at Douglass College is to be an integral part of the educational process by providing students with an environment that promotes participation and fosters student learning and development. In other words, it's where "total synergy" occurs for those who want to be involved with their campus community. It is a place where opportunities are provided for students to explore and strengthen their skills through membership; to develop leadership skills through programs, activities, and organizations; and, simply, to have fun. Some of these opportunities are offered through the Student Development Center, which houses information, resources, and workshops on a variety of skill-building topics that help student leaders, members, and organizations run more efficiently. While the Douglass College Governing Association provides a forum for citizenship, the Douglass Activities Board is responsible for campus activities for a diverse community.

PLEN

DC PLEN is the Douglass College affiliate of the Public Leadership Education Network, a consortium of women's colleges working together to prepare women for public leadership. The DC PLEN has many aspects, including workshops, lectures by state and national women leaders, internships, and national programs. Each spring, as part of the DC PLEN Spring Forum, three distinguished women leaders are invited to campus to discuss the inside story of women in politics. Students also participate in national programs in Washington, DC, that focus on women making public policy, including a one-term internship program, and programs over winter and spring breaks. Each summer, DC PLEN sponsors a summer fellowship program, placing Douglass students in internships with women in New Jersey state government.

New Student Programs

Dedicated to making the transition from high school or another college a positive one, Douglass College provides a number of programs for the new student.

First-Year Residences. Most first-year students live in one of three residences: Katzenbach, Lippincott, or Gibbons. The staff in the first-year residences include a graduate residence counselor, undergraduate resident assistants (RAs), and undergraduate peer academic leaders. Together, the staff help students adjust to college, develop communication and problem-solving skills, understand their responsibilities as members of a residential community, and become successful in their academic pursuits.

Orientation. Douglass's orientation for new students is planned by students for students. Admitted students are invited to campus in May of each year for placement testing, academic advising, and an orientation to student life. Parents also are invited to this program and participate in activities designed especially for them. Students not able to attend the May orientation are invited to participate in a similar program in the summer.

Immediately prior to beginning classes, new students participate in a four-day orientation. This program is specifically designed to introduce new students to one another, explain all the resources available to students, and give students extensive opportunities to meet the Douglass College staff members.

Redbook. The student handbook, known as the Redbook, contains all the important information needed to make the transition to Douglass positive. Compiled and edited by students, the Redbook is designed as a key resource for all students.

Shaping a Life. All first-year students enroll in Shaping a Life, an interdisciplinary course designed to make students think about women's roles in shaping the world in which we live. Students examine the lives and achievements of other women through biography, autobiography, and oral history, studying the ways that women's lives are shaped in the living and in the telling. Students also will be introduced to prominent women from diverse backgrounds—scientists, artists, business professionals, public leaders—at several plenary sessions during the term. The course is designed to develop critical thinking, reading, and writing skills, and to provide a solid introduction to the research process.

Emerging Leaders. Designed for the participant to obtain the foundation of leadership, the Emerging Leaders program offers a variety of leadership skill-building workshops in the areas of ethical and moral leadership, communication skills, gender and diversity, and teamwork. This component is designed to help students develop their own leadership potential. Students will have an opportunity to develop a leadership action plan that will be utilized throughout their tenure at Douglass College.

Livingston College

Residence Life

The residence life program at Livingston College strives to develop opportunities in the residence halls that encourage the personal growth of students in an environment that is supportive of the academic mission of the college. To this end, the residence life staff implements educational, social, and cultural programs that meet the needs of a diverse student body.

Livingston College offers its students several housing options. Students may choose to live in traditional residence halls that house first-year and upper-class students, or in a special-interest house or floor that offers a living environment centered around a specific theme. Special-interest residence hall sections include first-year student houses, a Leadership House, a Wellness Floor, quiet study areas, and upper-class/senior floor and houses.

Full-time professional staff and trained graduate and undergraduate student staff live in the residence halls. With their help, students plan and carry out a wide variety of activities throughout the year. Holiday parties, trips to Broadway, skiing, programs on health and nutrition, and movies are among the activities students enjoy.

The residence halls are equipped with furnished rooms that include microwave ovens, refrigerator units, common area lounges, and quiet study rooms. In addition, each area has a main lounge that provides a place for students to meet other students during a weekly program or movie, or to participate in a leisurely game of pool, Ping-Pong, foosball, or shuffleboard. Laundry rooms and vending machines also are available to all resident students.

Commuter Life

Based in the Commuter Lounge located in the Livingston Student Center, the commuter program is responsible for meeting a variety of needs of students who live off campus. The staff and students together plan a comprehensive range of programs and services.

The commuter program's trained student adviser staff assist commuter students in becoming an integral part of campus life. Throughout the year, a variety of cultural, social, recreational, and educational programs are planned.

In addition to the programs sponsored by the office, the Commuter Lounge serves as the commuting student's home away from home. The lounge features comfortable furniture, an on-campus phone, computers, large-screen cable television, a large selection of current popular magazines, and a kitchen.

Student Center

Conveniently located on campus, the Livingston Student Center provides many services and programs designed to meet the daily needs of the college. Located within the center are lounges, meeting rooms, and special-event space. The center also houses the largest videotape rental store, Knight Video. A modern gameroom provides billiards, foosball, and air hockey, along with the latest video arcade games. For dining, the Student Center has a Dunkin' Donuts, Sbarro's Italian Eatery, and the Rock Café. The center also includes pay telephones, a public fax machine and photocopying, a computer lab, an information service desk, and an ATM bank machine.

For those students interested in getting involved actively with their college community, the Student Center is headquarters for the college's student activity program. Several of the college's student organizations are located within the Student Center, including WRLC-FM (90.3) radio station, Livingston's Own Concert Organization (LOCO), the Livingston Program Board (LPB), and the Livingston College Governing Association (student government).

Throughout the year, the Livingston Student Center and its associated student organizations sponsor a wide assortment of programs, including concerts, lectures, films, special events, comedy shows, and dances. Staff and interested student volunteers actively plan all the Student Center's programs. Through the programs, the center offers activities designed to integrate the academic and nonacademic experiences of the students and to provide practical opportunities for leadership development.

Recreation

Livingston recreation offers a variety of activities, from intramural competition to open recreation to instruction, in an effort to involve students in programs. Focus is on friendly competition, instruction, or fitness.

Popular intramurals include basketball, floor hockey, and softball. Classes in aerobic activities, table tennis games, or martial arts practices occur in the newly renovated Multipurpose Room. Special tournaments and events can include three-on-three basketball, beach volleyball, darts, or soccer shooting challenge. A ski trip or golf tournament also can be on the schedule, and every effort is made to provide activities that will be unique and interesting for students.

The recent addition of lighting to the rehabilitated tennis courts and hockey court allows users to participate seven days a week until midnight. Additional plans include expanding the fitness center and upgrading the outside basketball courts.

Livingston College Student Government

The Livingston College Governing Association (LCGA), the student government body of the college, was organized in the spring of 1975. The purposes of the student government are to create an effective liaison among faculty, administration, and students; to coordinate student activities on the campus; to represent the needs of the students wherever and whenever possible; and to allocate student activities fees to student clubs and organizations. Elections for association members are held in October and April of each year. The LCGA maintains an office in the Livingston Student Center. Membership in the LCGA and attendance at its meetings are open to all students.

Rutgers College

The rich cocurricular life of Rutgers College reflects the commitment of the faculty, staff, and student leaders to provide opportunities for students to develop the full range of skills they will need to assume leadership positions in their chosen professions and in their communities. Whether participating at one of the many facilities or planning events and programs in collaboration with staff advisers, students develop skills, appreciations, and ethics transferable to many situations encountered after graduation.

In each of the cocurricular areas described here, staff advisers work closely with students to develop and implement programs that extend and enrich the learning that takes place in the classroom.

Student Services

The Office of Student Services provides Rutgers College and affiliated students with support and assistance as they meet the challenges and demands of college. Students who live on campus are provided with peer and professional staff who promote the academic and social success of residents in every hall and apartment through programs and advising. Students who commute from home or live in off-campus apartments are provided with similar services through professional staff and student advocacy groups. All students are provided with counseling, advising, and referral through Counseling Services and the Student Support and Referral Program, for everything from adjustment issues to health and emotional crises. Each area within Student Services offers specialized assistance and coordinates with other areas to provide efficient, seamless support to students. These units within Student Services include:

- Judicial Affairs, which addresses violations of academic and behavioral standards and promotes ethical behavior and good citizenship;
- Off-Campus and Commuter Services, which provides outreach to students who live at home or in off-campus apartments;
- Residence Life, which works to develop lively and academically supportive residence communities;
- Rutgers College Counseling Center, which provides support for students to resolve personal or psychological problems or issues;
- Services for Students with Disabilities, which provides support for the social and academic needs of students with physical, physiological, or learning disabilities;
- Student Support and Referral Program, which provides assistance to students who are facing academic difficulties resulting from nonacademic issues.

Multicultural Affairs

Rutgers supports an active program designed to meet the needs of black, Latino, and Asian students, as well as students from other ethnic, racial, or religious groups. For personal and social identity, underrepresented groups are supported through the three cultural centers at the university: Paul Robeson Cultural Center (PRCC), Center for Latino Arts and Culture (CLAC), and Asian American Cultural Center (AACC). The centers also coordinate calendars for all multicultural groups on campus and help publicize and promote both academic and cultural events. Each center holds an open house during the fall term to welcome and introduce new students to services provided.

The Office of Student Development and College Affairs also works very closely with underrepresented groups to cosponsor cultural programs and cocurricular activities. All students participate in diversity programs and training throughout the year. A Diversity Advocacy Board, comprised of students, meets regularly to plan and execute multicultural education programs for the college.

New Student Programs

The Office of New Student Programs is responsible for the orientation of new students to the community standards, history, and spirited future of Rutgers College. This office provides support and services for the first-year class through programming, training, materials development, direct support and referral, and other related activities. Special programs for transfer students introduce these new students to the resources of the university.

The primary goals of this office are to assist students in the transition from high school to college; to introduce new students to community standards of academic integrity, antibias perspectives and skills, and cultural diversity; to develop leadership skills among first-year students; and to foster college pride and community.

First-Year Interest Groups (FIGS). New students may elect to register for a 1-credit course that offers those who share a cluster of courses in common the opportunity to meet in a small group to explore a common career interest. Students studying economics and mathematics, for example, may join the learning community and visit faculty and alumni at work in finance, economics, management, or other business areas to learn more about those options. Interest groups help students form study groups and learn more about the resources of the university and their potential fields of study in a personalized, interactive setting.

Orientation. Orientation at Rutgers College occurs in several ways. First-year students come to campus for two Saturdays in May for academic counseling and testing; transfer students participate in a summer program; and both groups attend an intensive program during the weekend immediately preceding the first day of classes in September. During this orientation weekend, a new student convocation officially introduces students to the academic traditions of the liberal arts college. That event is followed by three days of educational and social programs designed to prepare students for a successful college experience.

The Scarlet Times. The Scarlet Times is a newsletter for first-year students that addresses academic, personal, health, and social issues. The text is composed of articles submitted by students, faculty, and staff on topics of current student interest. The summer issue focuses on the transition between high school and college and serves to inform new students about orientation and other relevant topics. This issue is followed by two in the fall, a winter edition, and a spring edition.

First-Year Seminar Series. Throughout their first year, students attend a series of programs designed to educate them about social and academic issues critical to their success in college. Topics include time management, academic integrity, career planning, alcohol and substance abuse, study skills, social decision making, and appreciation of cultural diversity.

Transfer Student Programs

The Office of Student Development offers programs and services throughout the year for students who have transferred from community colleges or other four-year institutions. Transfer students may elect to register for a 1-credit course, Students in Transition, which provides a comprehensive introduction to computing and other university resources. Orientation programs designed specifically for transfer students take place during the summer and during the four days of events that precede the first day of classes in the fall term. Connections, a newsletter published each term, keeps new transfer students informed of university services, programs, and events of interest.

Student Centers

The Rutgers Student Center, located at 126 College Avenue, offers a variety of services and facilities, including lounges and meeting rooms. The Rutgers Red Lion Café, located on the lower level of the Rutgers Student Center, offers causal dining. Featuring twelve large-screen televisions and three billiard tables, the café is a great place to eat and relax. The Rutgers Spirit Shop, also located on the lower level, carries many Rutgers gift items. Also available on the lower level are a public fax machine, a coin-operated copy machine, and public telephones. The Food Bazaar of the Rutgers Student Center offers quality food served quickly from a diverse array of choices, including Au Bon Pain; Gerlanda's Pizza; Gerri's Juice, Smoothies, Wraps, and Sandwiches; Szechwan Express; Steak Escape; and Wendy's.

The Student Activities Center, located at 613 George Street with a scenic view of the Raritan River, offers lounge space and study areas. The Student Fund Accounting Office, located in the lower level of the Student Activities Center, sells Suburban Transit bus tickets to Manhattan at a student discounted rate of $8 for a round trip. Also part of the Student Activities Center is "The SAC" convenience store, with a large product line customized to the needs of students, faculty, and staff.

The Busch Campus Center, located on Bartholomew Road on the Busch campus, offers many different services and activities. Meeting, recreation, and lounge space is available for use by the Rutgers community. For scheduling information, contact the Central Reservations Office at 732 / 932-8821. At the Busch Campus Center "Food Court," guests may choose from a number of restaurants, including Gerlanda's Pizza and Deli, Gerri's Juice and Java, Szechwan Express, and Wendy's. Other services include a convenience store, the Busch Post Office, Document Services, Career Services Employment Center, RU Connection Card Office, and an art gallery.

Office of Student Involvement and Leadership Development

The Office of Student Involvement, located in the Student Activities Center and Busch Campus Center, is the central location for student involvement at Rutgers College. The office serves student leaders and more than 170 registered student organizations through advising, organizational leadership programs, and support services. The professional and student staff serve as resources in program planning, leadership training, and event management.

The Office of Student Involvement and Leadership Development staff views students as partners in the development of programs and services at Rutgers College. The Student Activities Advisory Council (SAAC), a student-run group, provides advice and guidance to the student activities staff in the areas of student organization support, special activities, and Student Activities Center management. By actively participating in programs, activities, and services, Rutgers College students enhance their interpersonal, leadership, and critical thinking skills and are prepared for active citizenship beyond the collegiate experience. If students want to get involved at Rutgers or are interested in starting a new organization and don't know where to start, they may contact the Office of Student Involvement at 732 / 932-6978.

Organizational Leadership Programs

Developing future leaders and active citizens is a goal of Rutgers College. To support the development of such individuals, programs are offered through the Office of Student Involvement and are made available to all students. The goal of the programs is to provide resources and opportunities for students to develop into thoughtful, well-prepared, principled leaders. The staff provides emerging leaders with programs, skill-based workshops, conferences, peer consulting, and a Leadership Resource Center.

Rutgers College Program Council

The Rutgers College Program Council (RCPC) is the student volunteer programming organization of Rutgers College, whose constituents are students of Rutgers College, University College, and the Graduate School–New Brunswick. As an integral part of the liberal arts mission of the college, RCPC provides diverse cultural, educational, and social programs for the Rutgers community. RCPC comprises eleven committees: cabaret, coffeehouse, concerts, film, human interest, lectures, performing arts, public relations, recreation and travel, special events, and visual arts. For more information about RCPC events and how to become involved, call 732 / 745-RCPC or 732 / 699-0064.

Rutgers College Governing Association (RCGA)

The RCGA is the elected student government of Rutgers College and is composed of the president and vice president and representatives from each class, as well as fraternities, sororities, residence life, and the Off-Campus Student Association. RCGA members serve as a link between students and the administration and are often cast in the roles of advocates on behalf of student concerns. Members serve on various standing, ad-hoc, and campuswide committees charged by the college or university administration to assist in the governance of the university. The standing committees of the RCGA are the executive committee and committees on university affairs, operations, cultural affairs, elections, legislative affairs, and public relations. Active and responsible members gain knowledge of how the university works on all levels, and serve Rutgers College students by answering questions and solving problems. Elections for president, class representative, and university senators are held each spring. Elections for representative to the first-year class are held in the fall.

The RCGA Allocation Committee is an arm of the RCGA and is responsible for distributing a portion of the activity fee to Rutgers College student organizations. In addition, the committee serves as a resource for organizations on budget management and program planning. Members of the allocation committee assist the Office of Student Involvement in providing workshops for organization treasurers and for others on program and budget management.

Recreational Services

The Office of Recreational Services offers a wide variety of recreational experiences in sports, aquatics, fitness, outdoor recreation, and dance. Each year more than 20,000 members of the Rutgers community participate in the instructional classes, club sports, intramural leagues, fitness activities, special events, and trips sponsored by the Office of Recreational Services.

The College Avenue Gym, the Busch Tennis Center, the Rutgers Fitness Center, Deiner Park, University Park, the Rutgers Rock Gym, and the Werblin Recreation Center serve more than 4,000 people per day. Attractive, accessible, and well maintained, these facilities provide state-of-the-art accommodations in aquatics, tennis, fitness, and racquetball, as well as open space for basketball and volleyball. An extensive equipment loan service complements the other services provided.

University College–New Brunswick

To meet the needs and interests of its diverse adult student body, University College–New Brunswick has developed an extensive program of counseling services and student activities.

Counseling

The Office of Counseling in Miller Hall at 14 College Avenue provides academic advising, group and individual counseling, and general guidance services. Specialized agencies, both within and outside the university, serve University College–New Brunswick students upon referral. Additionally, workshops are held throughout the year in such areas as assertiveness training, improving study skills, and test anxiety.

Student Organizations

The principal purpose of the college's student life program is to extend the student's educational experience beyond the classroom by providing cultural, intellectual, and professional opportunities. Some of the student organizations are oriented to discipline-related activities; others offer excellent training as well as opportunities to participate directly in college and university governance.

University College Governing Association (UCGA). The UCGA represents the University College–New Brunswick student body's needs and interests, oversees the activities and funding of student organizations, and is responsible for undertaking the election of UC student representatives to various college and university committees. All students are encouraged to attend UCGA meetings.

Literary Magazine. An annual literary magazine written and published by University College–New Brunswick students.

UC Senior Class. The Senior Class is open to University College–New Brunswick students with 90 or more credits. The organization is designed to promote participation and unity among seniors for the general welfare and interest of the student body.

UC Yearbook. The yearbook of University College–New Brunswick is published annually by a staff of student editors.

Child Care

The College Avenue Campus Childcare Center is an independent, nonprofit organization providing day and evening childcare to children, ages two-and-one-half to ten, of students, faculty, and staff. Fees are variable, based on the hours of care provided. For an application and more information, call 732/932-8093.

Awards and Prizes

Graduating seniors who have demonstrated outstanding academic achievement are eligible for awards and prizes that are presented annually at the University College–New Brunswick Commencement Convocation or during other appropriate occasions. A complete list of the awards is available at the Office of the Dean, 35 College Avenue.

Honor Societies

Alpha Sigma Lambda. Students who have satisfied the eligibility requirements are invited to join Alpha Sigma Lambda (Beta Zeta Chapter), a National Honor Society. To be eligible, a student must have earned, at the time of induction, 75 (term) credits in academic subjects, including a minimum of 15 credits in a designated major field, including interdisciplinary majors; must have earned a minimum of 45 of these 75 credits in University College–New Brunswick, of which may be included not more than 18 credits earned under its direction at specified and approved institutions outside the university; and must have maintained a cumulative grade-point average of 3.2 or better in numerically graded courses, where 4.0 is the highest grade attainable.

Phi Beta Kappa. The membership committee elects to Phi Beta Kappa outstanding juniors and seniors whose studies are liberal in nature and whose competence in a foreign language is equivalent to the fourth college term. To be eligible for consideration, students must have completed 60 credits at University College prior to beginning their last term in residence and must be pursuing a Bachelor of Arts degree.

Cook College

The student life program at Cook College has been designed to integrate the social, cultural, and educational opportunities in the college community. It serves students and faculty by providing programs, procedures, and guidelines to facilitate the educational process. For additional information about student life and services at Cook College, contact the Office of the Dean of Students, Cook Campus Center, Rutgers, The State University of New Jersey, 59 Biel Road, New Brunswick, NJ 08901-8508 (732/932-9429). This office provides assistance in all areas pertaining to student life.

Residence Life

Cook College has three modern and attractive residence halls, which together house approximately six hundred students. First-year students are housed in these halls whenever possible because of the advantages that residence hall living offers to students new to the campus. Each hall is staffed by a professional resident director and student resident assistants, all of whom are available on a regular basis. The staff organizes hall events, handles problems, maintains study hours, and answers any questions the residents might have.

The college also has two large apartment complexes, totaling approximately 320 units, that provide housing for most of Cook's upper-class students, who enjoy the mixture of independence and practical responsibilities that apartment living entails. Professional resident directors and student resident assistants also live throughout the apartment area and generally are available to help coordinate social functions, provide counseling, or deal with residents' housing problems.

In addition, thirty-eight male students live and work together at Cook's cooperative living unit, Helyar House, a small, modern residence hall where students can reduce

college expenses by helping with maintenance, ordering supplies, and preparing meals. Residents of Helyar House are selected with preference given for financial need.

Commuter Life

The Cook Commuter Organization provides students with the opportunity to meet other commuters, to discuss commuter-related campus issues, and to implement programs that meet the needs and schedules of the Cook commuter population.

Student/Faculty Committees

Students are invited to serve on a number of faculty committees that propose policy recommendations to the faculty and administration of the college. Committees to which students are appointed include the Affirmative Action and Equal Opportunity Committee, the College Planning Committee, the Curriculum and Educational Policy Committee, the Differential Tuition / Special Projects Advisory Committee, the George H. Cook Honors Committee, the International Agriculture and Environmental Affairs Committee, the Judicial Panel, the Library Committee, the Professional and Continuing Education Committee, the Student Life and Services Committee, and the Teaching Effectiveness, Improvement, and Evaluation Committee. Students desiring to serve on these committees should notify the chairperson of the Cook College Council or the Office of Academic and Student Affairs.

Program Funding

Cook College has two boards that fund Cook College student organizations and activities: the Finance Board and the Recreation Association.

Finance Board. The Finance Board supports chartered Cook College clubs, organizations, and certain New Brunswick-wide organizations with funds from the student fee. The board provides funds for a variety of cultural and educational programs, as well as for the Annual Spring Program / Ag Field Day, college clubs, the Cook College Council, Green Print (the student newspaper), the Senior Farewell Picnic, commencement, the yearbook, campus beautification projects, and other special projects that benefit the entire college community.

Recreation Association. The Recreation Association administers the recreational services budget and oversees all recreational activities on campus. Current activities funded include intramurals, recreational swimming, the fitness center, and college sport clubs.

Student Organizations and Activities

College Clubs and Organizations. College clubs and organizations currently active and recognized include the following: Agricultural Economics; Alpha Zeta; Bioresource Engineering; Biotechnology ("Designer Genes"); Chess; Collegiate 4-H; Cook Campus Center Advisory Board; Cook College Council; Environmental Science; Exercise Science; Finance Board; Food Science; Forestry and Wildlife; Get Wet Diving; Green Print (student newspaper); Kappa Theta Epsilon; Landscape Architecture; Latino American Student Organization (LASO); Meteorology; Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS); Minority Education of Cook College Alliance (MECCA): NJAES / Cook College Farm Market; Nutrition; Organic Farm; Plant Science; Programs and Activities Council (PAC); Rutgers Naturalists; Society for Environmental Studies; Society of Animal Science; Soil and Water Conservation; Students Concerned for Animal Rights; Student Orientation Ambassadors; Students for a Free Tibet; Students for Environmental Awareness; Trout Unlimited; Turf Club; Veterinary Science; and Wild Flower (yearbook). Others include Cook / Douglass Recreation Advisory Council; Equestrian Team; Mountain Bike Patrol; Mounted Patrol; Pre-Medical / Pre-Dental Society; and Rutgers Outdoor Club.

Cook College Council. This council, made up of members from the student body representing various curricula, faculty, and administration, serves as the governing body of Cook College. It addresses many areas of student life and services.

Cook/Douglass Recreation. The Cook / Douglass Recreational Services Program provides activities and experiences designed to enhance the educational process. Programs exist in intramurals, sport clubs, informal recreation, and special events. Facilities include a swimming pool, a fitness center, a multipurpose gymnasium, racquetball courts, an aerobic studio, bowling lanes, tennis courts, outdoor volleyball and basketball courts, a rollerblading complex, and outdoor lighted playing fields. More information may be obtained from the program's administrative office in the Loree Recreational Facility, 732 / 932-8615.

Cook Newspaper. Green Print, the Cook student newspaper, began publication in the fall of 1970 and is published weekly. The paper covers information pertinent to the college community.

Leadership Development Program. All Cook students are invited to participate in an interactive program with faculty and staff that aims to develop student leadership competencies. Specific skills include knowledge acquisition, interpersonal relationship development, organizational management, and vision. The program provides students with a variety of experiences through workshops, monthly meetings, committee interactions, and retreats. The program's mission is to involve the entire community in a dynamic partnership to evaluate and resolve issues in both the academic and student life aspects of the college. Information is disseminated through an email listserve and a web site: http://www.cook.rutgers.edu/~leadership.

Program and Activities Council (PAC). The Cook College Program and Activities Council is responsible for many of the programs that are held on and off campus throughout the academic year. The council is made up of committees that include Animal Sounds Concerts, which plans small band nights to major concerts; Cultural and Ethnic Programs, which provides intercultural programs; Education Committee, which plans seminars, workshops, and craft nights; Films, which brings movie blockbusters to campus; Network Event Theater, which provides free movie premieres; PAC Tracs, which organizes off-campus trips from Broadway plays to spring break; and Special Events, which plans entertainment in the campus center.

Student Safety Officers. Students aid the university police by maintaining foot, mounted horse, and mountain bike patrols on the campus. Contact the University Police Department for further details.

Special Events

Annual Spring Program/Ag Field Day. Each year, the college sponsors a spring program for parents, alumni, high school students, and friends. Guests visit the Cook College campus to view new facilities, participate in programs and activities, and take guided tours of the various areas of the scenic campus. Student/faculty participation in competitive events, such as an egg toss, sack races, and an animal showing, is part of the spring program tradition.

Senior Farewell Picnic. At the end of the spring term, the college faculty and administration offer graduating seniors a farewell picnic at which outstanding students are recognized for their achievements in unique areas. The party is usually held at the Log Cabin, one of the most picturesque sites on the college campus.

Honor Societies

Alpha Zeta. Founded in 1922, Alpha Zeta is the national honorary agriculture fraternity. It elects to its membership only those students who have exhibited evidence of leadership and who rank in the upper two-fifths of their class after completing three full terms of college course work.

Professional Recognition Societies. Most of these societies are national in scope. Outstanding undergraduates in particular fields of endeavor are elected to membership in the following by the vote of members: Alpha Tau Alpha (agriculture education), Chi Epsilon Pi (meteorology), Kappa Kappa Psi (band), Kappa Theta Epsilon (cooperative education), Pi Alpha Xi (floriculture), Tri-Beta (biology), and Scabbard and Blade (military).

Sigma Xi. Any member of the senior class who has majored in a natural science, mathematics, or engineering, who has shown excellence in scholarship, and who has a fair prospect of engaging in scientific research at a recognized institution during the ensuing year is eligible for election as an associate member of the Society of Sigma Xi.

Cookie Jar

Cookie Jar is located next to the housing office in the center of the Newell Apartment Complex. The store is operated by and for students at Cook College. For further information, please call 732/932-9278.

Mason Gross School of the Arts

Affiliation for Residence and Commuter Life

Students enrolled in the Mason Gross School of the Arts affiliate with Rutgers College, Douglass College, Livingston College, or Cook College in order to take advantage of the residence halls, dining halls, health centers, and other student service facilities. At the time a student submits an application for admission to the school, he or she must indicate a preference regarding this affiliation. It is recommended that students affiliate with the college that is nearest the majority of their classes.

The choice of a college affiliation does not affect the student's admission, program of study, or academic standing, since students remain under the academic jurisdiction of the Mason Gross School of the Arts throughout their program.

Student Activities

In addition to participating in the activities of the clubs sponsored by the Mason Gross School of the Arts Student Government Association, students can enjoy many other cocurricular activities offered by the residential colleges and the university at large. These activities are described earlier in this chapter as well as in the student newspapers. Mason Gross students can become active in intercollegiate and intramural athletics on each of the campuses and will find numerous social activities available in the student centers.

MGSA Student Government

The MGSA Student Government Association is an elected group of students who represent the academic disciplines within the school as well as the interests of the total student body. The Student Government Association organizes and sponsors social events, performances, gallery shows, dance and music recitals, and open houses.

The Student Government Association represents the views of all students on issues that may affect policy on the college and university levels and is the organization through which students have a voice in matters that affect their educational and professional development and environment. It also provides a common meeting ground for the exchange of ideas with faculty and administrators.

College of Pharmacy

Affiliation for Residence and Commuter Life

To enable students in the College of Pharmacy to take advantage of the residence halls and commuter programs, dining halls, health centers, and other student service facilities in the New Brunswick/Piscataway area, each pharmacy student is affiliated with one of three residential colleges: Douglass College, Livingston College, or Rutgers College. Applicants to the College of Pharmacy must state a preference regarding affiliation at the time they apply. Before selecting one of these residential colleges for affiliation, applicants should read the sections in this catalog describing resident and commuter lifestyles at each of them.

The choice of a college of affiliation does not affect the pharmacy student's admission, program of study, or academic standing, since pharmacy students remain under the academic jurisdiction of the College of Pharmacy throughout their six-year program. All matters pertaining to student life should be referred to the Office of the Dean of Students at the respective college of affiliation.

Student Activities

Pharmacy students can enjoy all the extracurricular activities of their chosen college of affiliation, as well as those of the larger university, including interdisciplinary lectures and seminars, concerts, athletics, and social events. These activities are described earlier in this chapter.

Publications. Pharmacy students publish the Apothecary News and the yearbook Pharmascript. The college also publishes, in cooperation with the College of Pharmacy Alumni Association, a semiannual newsletter that is mailed to alumni and pharmacists in New Jersey.

Career-Oriented Activities

In addition to general extracurricular activities, pharmacy students may participate in a large number of professional, cultural, and scientific programs that contribute to their professional and personal maturity. The college has chapters of two national professional fraternities, Alpha Zeta Omega and Phi Delta Chi, and one sorority, Lambda Kappa Sigma. Students who have shown academic excellence are eligible for election to the Rho Chi Society, the national pharmacy honor society. Student leaders are invited to join Phi Lambda Sigma, the national pharmacy leadership society. These groups, the local chapters of the Academy of Students of Pharmacy of the American Pharmaceutical Association, as well as the National Pharmaceutical Association, the National Community Pharmacists' Association, the American Society of Health-Systems Pharmacists, and the college itself sponsor lectures and other educational programs as well as various social gatherings for pharmacy students.

College of Pharmacy Student Government

The Pharmacy Governing Council, comprised of representatives from each of the five classes, is the student governing body.

Academic Support Programs

Educational Opportunity Fund. Recipients of an EOF grant as part of their financial aid package have available to them a number of special academic and counseling services provided by the college's own EOF program.

Office of Student Development. Provides tutoring and study group opportunities in addition to a variety of study skills workshops, to any member of the college community in need of this type of assistance.

Pharmacy Education Program. Designed to introduce pharmacy as a career opportunity for disadvantaged high school students throughout New Jersey, this program is administered by the Office of the Dean. See the College of Pharmacy Programs of Study chapter for more information.

School of Business–New Brunswick

The School of Business–New Brunswick has many opportunities for students to engage in activities that allow them to focus their creative efforts, meet others with similar interests, make contacts with potential employers, interact with School of Business–New Brunswick faculty, and generally develop outside of the classroom in order to better prepare for their postgraduation endeavors.

Joint Enrollment for Residence and Commuter Life

Students are jointly enrolled in the School of Business–New Brunswick and one of the four liberal arts colleges: Rutgers College, Douglass College, Livingston College, or University College–New Brunswick. This allows students to take advantage of the residence halls, dining halls, health centers, and other student service facilities. All matters pertaining to these aspects of student life should be referred to the Office of the Dean of Students at the student's liberal arts college.

School of Business–New Brunswick Honor Societies

Beta Gamma Sigma. This is the honor society for collegiate schools of business. School of Business–New Brunswick students who are in the top 7.5 percent of the School of Business junior class or in the top 10 percent of the School of Business senior class are eligible to join.

Beta Alpha Psi. This is the national honor society of accounting. Accounting majors are invited to join this organization based on their academic performance.

School of Business–New Brunswick Governing Association

The School of Business–New Brunswick Governing Association (SBGA) represents the interests of the School of Business–New Brunswick student body in matters pertaining to the School of Business–New Brunswick, the student's college of joint enrollment, and the university. The SBGA is composed of a president, vice president, treasurer, secretary, senator, and discipline representatives. It is responsible for overseeing the activities of the School of Business–New Brunswick societies and for organizing schoolwide activities such as the annual semiformal, annual faculty-student volleyball game, and picnics.

School of Business–New Brunswick Societies

The Accounting Society, Finance Society, Management Society, and Marketing Society work to bring their respective majors together outside of the classroom. Club activities include trips, career seminars, meetings with prospective employers, speakers, and a wide variety of social activities. Membership in these organizations is encouraged.

Minority Business Students Association

The Minority Business Students Association (MBSA) provides assistance and guidance to all minority students interested in business. The MBSA helps minority students work toward entering the School of Business–New Brunswick, conducts social activities, and helps members identify career objectives.

Little Investment Bankers of Rutgers

Little Investment Bankers of Rutgers (LIBOR) is an organization that involves students in investing. The members of LIBOR serve as analysts for an investment fund and listen to speakers who are prominent in the field.

School of Communication, Information and Library Studies

Joint Enrollment for Residence and Commuter Life

Students enrolled in the School of Communication, Information and Library Studies maintain their affiliation with one of the residential colleges in New Brunswick: Cook College, Douglass College, Livingston College, or Rutgers College. This allows students to take advantage of the residence halls, dining halls, health centers, and other student service facilities available to all students at the residential colleges. All matters pertaining to these aspects of student life should be referred to the Office of the Dean of Students at the student's residential college.

SCILS Societies

Lambda Phi Eta. Lambda Phi Eta is the honor society of the National Communication Association. Its purposes are (1) to recognize outstanding achievement in communication studies, (2) to stimulate interest in the field, (3) to promote professional development, (4) to provide opportunities for discussion, (5) to establish relationships between faculty and students, and (6) to explore graduate education opportunities in communication. Lambda Phi Eta has a yearly induction ceremony, and students are accepted by application. More information is available in the communication department offices or on the department's portion of the SCILS web site (http://www.scils.rutgers.edu).

Public Relations Student Society of America (PRSSA). The Rutgers chapter of the Public Relations Student Society of America (PRSSA) is affiliated with the national professional organization (PRSA). Membership is open to undergraduate and graduate students. The chapter holds regular meetings featuring speakers, career workshops, and participation in a student-run public relations agency called Public Image.

Society of Professional Journalists (SPJ). The Rutgers chapter of the Society of Professional Journalists (SPJ) offers students the opportunity to network with print and electronic media professionals throughout the New Jersey and greater New York area. Student SPJ members benefit from having their work critiqued by professional journalists. Other benefits include participating in workshops and seminars at regional and national SPJ conventions.

School of Engineering

Affiliation for Residence and Commuter Life

To enable students in the School of Engineering to take advantage of the residence halls and commuter programs, dining halls, health centers, and other student service facilities in the New Brunswick / Piscataway area, each engineering student is affiliated with one of three residential colleges: Douglass College, Livingston College, or Rutgers College. Four-year bioresource engineering students may affiliate with Cook College after the first year. Students affiliated with Cook College have their campus post office boxes assigned on the Cook College campus. Affiliates of all other colleges have post office box assignments at the Busch Campus Post Office. Applicants to the School of Engineering must state a preference regarding affiliation at the time they acknowledge their admission. Before selecting one of these residential colleges for affiliation, applicants should read the relevant sections in this catalog describing resident and commuter lifestyles.

The choice of a college of affiliation does not affect the engineering student's admission, program of study, or academic standing, since engineering students remain under the academic jurisdiction of the School of Engineering throughout their four-year program.

Student Activities

Engineering students have access to all extracurricular activities at their chosen college of affiliation, as well as of the larger university, including concerts, athletics, and social events. These activities are described earlier in this chapter.

Publications. Undergraduate engineering students publish a semiannual magazine, the Rutgers Engineer, and a newsletter, the Moment. They also may participate in the publications of their college of affiliation.

Engineering Student Government

The student body of the School of Engineering is represented by the Engineering Governing Council. The council coordinates the activities of the various student groups and arranges programs of general interest. The council also provides liaison between the engineering student body and the university senate.

Technical Societies

To help students become more aware of their civic and social responsibilities as professional engineers, several national societies have established student branches at Rutgers. These include the American Ceramic Society, American Institute of Aeronautics and Astronautics, American Institute of Chemical Engineers, American Institute of Industrial Engineers, American Production and Inventory Control Society, American Society of Agricultural Engineers, American Society of Civil Engineers, American Society of Mechanical Engineers, Institute of Electrical and Electronics Engineers, National Society of Black Engineers, Optical Society of America, Society of American Military Engineers, Society of Automotive Engineers, Society of Hispanic Engineers, Society of Manufacturing Engineers, Society of Packaging Engineers, and Society of Women Engineers. In addition, there are two local student organizations: Minority Engineering Educational Task provides academic assistance and opportunities for social and intellectual growth for minority engineering students; Sigma Beta Epsilon is a sorority for minority engineering students.

An excellent opportunity to maintain continued contact with the School of Engineering is provided by the Rutgers Engineering Society. This is the alumni organization dedicated to supporting engineering education at Rutgers.

Honor Societies

Outstanding engineering students in all fields may be elected to Tau Beta Pi, the national engineering honor society. Membership is open to students who rank in the top fifth of the senior class or the top eighth of the junior class. Character, personality, professional promise, and high scholastic standing are criteria for eligibility.

Students in ceramic engineering with superior records are eligible for membership in the New Jersey Chapter of Keramos, the national honorary ceramics fraternity. Chemical engineering juniors and seniors are eligible for election to Omega Chi Epsilon. Membership in Chi Epsilon is available to selected juniors and seniors in civil engineering who have superior academic records. Leading electrical and computer engineering students of the junior and senior classes may be admitted to the Gamma Epsilon Chapter of Eta Kappa Nu. Outstanding junior and senior students majoring in industrial engineering may be elected to Alpha Pi Mu. Juniors and seniors who do outstanding work in mechanical engineering may be elected to the Tau Iota Chapter of Pi Tau Sigma.

Associate membership in Sigma Xi may be attained by senior students who have exhibited excellence in scholarship and who show promise of good work in scientific research. Students who are enrolled in the dual-degree (B.S./B.A.) program also are eligible for induction into Phi Beta Kappa.

Prizes and Awards

Engineering students may compete for a number of prizes and awards sponsored by various professional associations and individuals. More detailed information is available from the departmental offices.

Educational Opportunity Fund (EOF)

The School of Engineering Educational Opportunity Fund Program was founded in 1974 for the purpose of providing grants and educational support for financially and educationally disadvantaged students who are New Jersey residents. To apply for admission to the program, students must complete the admission application materials, including the Rutgers University EOF questionnaire. All potential EOF students must complete the Free Application for Federal Student Aid (FAFSA) and should complete all other admissions requirements as early as possible. See the Undergraduate Application Packet for deadlines.

Students admitted to the Educational Opportunity Fund Program at the School of Engineering receive academic support in addition to the financial aid package. The program includes a summer mini-term preceding the first year of college; tutorial programs; skills and orientation workshops; and counseling on academic and career choices, finances, and personal problems.

More information may be obtained from the Office of Special Programs, School of Engineering, or by calling 732/445-2687.

Edward J. Bloustein School of Planning and Public Policy

Joint Enrollment for Residence and Commuter Life

Students enrolled in the Edward J. Bloustein School of Planning and Public Policy affiliate with one of the residential colleges in New Brunswick: Cook College, Douglass College, Livingston College, or Rutgers College. This allows students to take advantage of the residence halls, dining halls, health centers, and other student service facilities available to all students at the residential colleges. All matters pertaining to these aspects of student life should be referred to the Office of the Dean of Students at the student's residential college.

Student Activities

EJBSPPP students can enjoy all the extracurricular activities of their chosen college of affiliation, as well as those of the larger university, including interdisciplinary lectures and seminars, concerts, athletics, and social events. These activities are described earlier in this chapter.

Admission

The information in this chapter pertains to admission to the following New Brunswick degree-granting undergraduate colleges: Douglass College, Livingston College, Rutgers College, University College–New Brunswick, Cook College, Mason Gross School of the Arts, College of Pharmacy, and School of Engineering. For information about admission to the School of Business–New Brunswick, the School of Communication, Information and Library Studies, and the Edward J. Bloustein School of Planning and Public Policy, see their sections in this catalog. All students interested in applying to the undergraduate colleges of Rutgers also may contact the Office of University Undergraduate Admissions.*

Rutgers, The State University of New Jersey, enrolls a diverse student population. While preference is given to New Jersey residents, qualified students from other states and countries are encouraged to apply. The university is committed to the goal of equal educational opportunity for all students; no candidate is denied admission because of race, creed, color, sex, sexual orientation, marital status, age, handicap or disability, veteran status, or national origin.

The primary emphasis in admissions is academic promise. All the required material submitted by the applicant—application, transcripts, test results—is reviewed carefully for evidence of promise in grades, trend in grades, rank in class, strength of program (such as the number of academic subjects, honors courses, advanced placement courses), and test scores.

Applicants are encouraged to apply to more than one college at the university, but applicants should verify that their intended program of study is offered by the college(s) to which they apply. Because admission in any given year depends upon the number of applicants and the number of available spaces, every qualified applicant cannot be guaranteed admission to a particular college. Also, admission to a college does not ensure admission into any specific program within the college; however, every effort is made to place admitted students in the programs of their choice or to assist them in selecting suitable alternatives.

Admitted students are expected to complete satisfactorily any work in progress with no significant decline in grades. An offer of admission may be reevaluated in the event of a decline in grades, and a serious decline can result in cancellation of admission.

HOW TO APPLY

First-Year and Transfer Students †

Applications for undergraduate admission for first-year and transfer students are reviewed by the Office of University Undergraduate Admissions, Rutgers, The State University of New Jersey, 65 Davidson Road, Room 202, Piscataway, NJ 08854-8097; 732/932-INFO. The office is located in the Administrative Services Building on the Busch campus and is open Monday through Friday, from 8:30 A.M. to 4:30 P.M.

Students may apply online or download an application form from the Rutgers web site at http://www.rutgers.edu. New Jersey residents also may obtain an application from their high school guidance office, the transfer counselor at their community college, or any Rutgers admissions office. Prospective candidates from other states may call or write to the Office of University Undergraduate Admissions.

A nonrefundable application fee is required. Rutgers participates in the College Board Fee Waiver Program for applicants claiming economic hardship. Students claiming economic hardship should ask their counselor for the College Board Fee Waiver Form and attach it to the application materials. The undergraduate admissions office will acknowledge receipt of the application and fee. It is the candidate's responsibility to submit the supporting credentials specified in this chapter.

Transfers from One New Brunswick College to Another (Dean-to-Dean Transfers)

Students who currently are enrolled at the university in one New Brunswick college and wish to transfer to another New Brunswick college should write or call their academic dean for procedures. They should not use the standard undergraduate application form. For further information, see Intercollege Transfer Policy later in this chapter.

Students Seeking Readmission

Students who interrupt their enrollment in an undergraduate college of Rutgers and wish to return to that college must apply to the academic dean's office of that college for readmission. They do not use the standard undergraduate application form. Since readmission policies vary from college to college, interested students should refer to the appropriate college section in this catalog for further information.

WHEN TO APPLY

Applicants should refer to the university web site (http://www.rutgers.edu) or the undergraduate application packet for specific information about fall and spring priority application dates. It is to the applicant's advantage to apply by the priority application date to receive full scholarship and admission consideration. Applicants may still apply after the priority dates as long as space is available.

CREDENTIALS

Transcripts

Applicants must submit official transcripts for all work taken in grades nine through twelve and in other colleges and universities. The secondary school record should

* For information about admission to an undergraduate college of the university in Camden or Newark, students may refer to the catalogs from these campuses. They also may write or call the appropriate admissions office or visit the university's web site at http://www.rutgers.edu. For Camden colleges, write to: Office of Undergraduate Admissions, 406 Penn Street, Camden, NJ 08102-1499; 856/225-6104. For Newark colleges, write to: Office of Undergraduate Admissions, Blumenthal Hall, 249 University Avenue, Newark, NJ 07102-1896; 973/353-5205.

† Except students currently enrolled at Rutgers who are transferring from one New Brunswick college to another New Brunswick college.

include rank in class (if available) or grade distribution information, grades for all courses taken, a listing of courses in progress, and credit granted and anticipated.

A transfer applicant for the fall term must submit high school and college transcripts that include all prior course work.

Entrance Examinations

Official scores on the Scholastic Assessment Test I (SAT I) of the College Board or on the American College Testing (ACT) Program are required of all candidates, with the exception of those who have been out of high school for two or more years by the time of entrance and transfer candidates (applicants with 12 or more college credits by the time of entrance). Unofficial test scores will not be accepted. Applicants should take the test no later than the December before graduation from secondary school. Students who are not required to submit SAT I or ACT scores may choose to provide them if they believe it will enhance their credentials.

Applications for the SAT I and ACT may be obtained from the secondary school or by calling the College Board or the American College Testing Program. Candidates should have the College Board or the American College Testing Program send only one test score report to Rutgers, using College Board code 2765 or ACT code 2592 when requesting that reports be sent. Test results are automatically sent to all colleges within the university to which the candidate has applied.

The College Board and the American College Testing Program offer special testing arrangements for students with visual, physical, hearing, or learning disabilities. Questions regarding these arrangements may be directed to the College Board or the American College Testing Program.

Subject Tests (SAT II). Candidates applying for admission by examination (see below) must submit scores for three SAT II subject tests of the College Board. Other candidates are not required to take SAT II tests, but may submit scores if they wish.

Pharmacy College Admission Test (PCAT). PCATs are strongly recommended for all transfer applicants to the College of Pharmacy.

High School Entrance Courses

The high school transcript must show that the candidate will graduate (or has already graduated) and will have completed a minimum of 16 academic courses in grades nine through twelve. Courses taken in the eighth grade may be used to meet requirements in mathematics and foreign language, but are not counted among the 16 academic courses. See the high school entrance courses chart for the specific subject requirements of each college.

Transfer applicants are required to submit their high school transcripts, although primary emphasis for admission is placed on completed college work.

High School Entrance Courses

College	English	Foreign Languages	College Preparatory Mathematics	Other Entrance Courses	Total
Douglass College	4 years	2 years of 1 language	3 years [ae]	2 science; 5 other academic subjects [bc]	16
Livingston College	4 years	2 years of 1 language	3 years [ae]	2 science; 5 other academic subjects [bc]	16
Rutgers College	4 years	2 years of 1 language	3 years [ae]	2 science; 5 other academic subjects [bc]	16
Cook College	4 years	0	3 years [ae]	2 science; 7 other academic subjects [bc]	16
Mason Gross School of the Arts	4 years	0 [d]	3 years [e]	9 other academic subjects [c]	16
College of Pharmacy	4 years	2 years of 1 language	3 years [e]	1 biology; 1 chemistry; 5 other academic subjects [c] (physics recommended)	16
School of Engineering	4 years	0 [d]	4 years (through precalculus)	1 chemistry; 1 physics; 6 other academic subjects [c] (computer programming strongly recommended)	16

[a] Four years of mathematics are required for the five-year engineering programs.
[b] Chemistry and physics are required for the five-year engineering programs.
[c] Academic subjects ordinarily approved by admission committees include English, college preparatory mathematics (algebra, geometry, trigonometry, calculus), foreign language, natural and social sciences, music history and theory, and art history. If offered in addition to required college preparatory mathematics, courses in computer science, computer mathematics, and statistics are accepted. Other courses are subject to admission committee approval.
[d] Two years of one language are recommended.
e One year each of algebra I, algebra II, and geometry. A fourth year of college preparatory mathematics is strongly recommended.

Interviews, Auditions, and Portfolios

Personal interviews are not required, except for applicants to the Mason Gross School of the Arts or unless requested by the admissions office. Arrangements for personal interviews vary from college to college.

Students applying to the professional programs at the Mason Gross School of the Arts are required to present a portfolio (visual arts) or to audition and/or be interviewed (dance, music, and theater arts). See the Mason Gross School of the Arts section for more information.

OTHER ADMISSION OPTIONS

Admission by Examination

Prospective candidates who have not completed high school, have a diploma from a nonaccredited high school, or have been home-schooled, may apply for admission by examination. This involves taking the SAT I or ACT and three SAT II subject tests of the College Board, including English and mathematics. The third examination may be taken in any subject except in the case of candidates applying to the School of Engineering, the College of Pharmacy, or the College of Nursing, whose third subject examination must be in a science.

Students who do not have the required college preparatory courses may be admitted on the basis of scores on the relevant SAT II subject tests, or they may be required to make up specific subject deficiencies. Questions about admission by examination may be directed to the admissions office.

Applicants who have earned a GED generally are asked to apply for admission by examination. However, for exceptionally strong candidates, the SAT II subject tests may be waived by the appropriate admission committee.

Early Admission

Students may enter college immediately following their junior year in high school. Those planning to apply should present a strong academic record and demonstrate readiness for college. Results of three SAT II subject tests also are required, unless the candidate will receive a diploma by the time of enrollment and can offer the required academic courses.

Educational Opportunity Fund Support

The Educational Opportunity Fund (EOF) provides financial and academic support services for economically disadvantaged New Jersey students who may not meet standard entrance requirements. Students who believe they may be eligible should write or call the Office of University Undergraduate Admissions and/or submit the EOF questionnaire in the undergraduate application packet.

Part-Time Admission

Many of the undergraduate colleges provide opportunities for men and women of all ages who are interested in part-time study. Douglass College offers the Mary I. Bunting Program for women who have been out of high school for at least five years. University College–New Brunswick also offers part-time evening study for credit. Prospective applicants may write or call the admissions office.

International Students

Applications from academically qualified international students are welcome, although no financial aid is available. Because of the delays sometimes encountered in the transmission of application materials overseas, international students are urged to write to Rutgers, The State University of New Jersey, Office of University Undergraduate Admissions, 65 Davidson Road, Room 202, Piscataway, NJ 08854-8097, to request special application materials and instructions as early as possible. International students may apply online and obtain special information and forms by visiting the Rutgers web site: http://www.rutgers.edu.

NOTIFICATION AND CANDIDATE'S REPLY

Students receive an independent decision from each college to which they have applied. Notification is in the form of a letter signed by the associate vice president for enrollment management. Correspondence or statements, verbal or written, regarding admission from other university representatives are not considered official.

Rutgers subscribes to the May 1 Candidate's Reply Date of the College Board for first-year students. Candidates offered admission after April 15 will be asked to reply within two weeks of the date of the letter of acceptance.

Deferred Admission

It is our general policy to reactivate applications rather than grant deferrals of admissions. Because we store applicants' materials for up to one year, admitted students who decide not to enroll during that time can reactivate their applications without having to submit a new application and fee.

ACADEMIC CREDIT

Advanced Placement

Entering students may request advanced placement and/or degree credit on the basis of results of the College Board Advanced Placement Examinations. Advanced placement and/or degree credit are awarded for scores of 4 and 5; the colleges ask the appropriate academic department to evaluate scores of 3; and no advanced placement or degree credit is given for grades of 1 and 2. Final decisions are made by each college before the term begins. See the Academic Policies and Procedures chapter in each college section for further information.

Transfer Credit

Credit for work completed at another accredited institution is evaluated after acceptance to a particular college. As a general rule, students receive credit for courses that are equivalent to Rutgers courses, provided a grade of C or better has been earned. Academic departments also may award credit on the basis of their own proficiency examinations or College Level Examination Program (CLEP) tests of the College Board. See the Academic Policies and Procedures chapter in each college section for further information.

Students attending one of New Jersey's two-year colleges may access our computerized data information system, known as ARTSYS, at http://www.artsys.rutgers.edu, to obtain detailed information about transferring to Rutgers. Students may determine course requirements for the first two years of each major program of study offered by Rutgers' undergraduate colleges and assess the transferability of courses at their community college.

INTERCOLLEGE TRANSFER POLICY
(Dean-to-Dean Transfer)

The following policy pertains to students enrolled in one New Brunswick college who wish to transfer to another New Brunswick college. Such an intercollege transfer is commonly termed a "dean-to-dean transfer."

1. Each incoming student (first-year or transfer) who has been admitted to one college and wishes to transfer to another before the first day of classes, regardless of whether that student originally sought admission to that college, must contact the Office of University Undergraduate Admissions for a decision on the possibility of transfer.
2. Students may seek a dean-to-dean transfer from any professional school to any liberal arts college and vice versa. Minimum grade-point averages for acceptance may vary from year to year and from program to program, as determined by the admitting college. Housing may not be available in a dean-to-dean transfer, especially if the student transfers outside the affiliated college.
3. All professional school students may seek a dean-to-dean transfer to any other professional school.
4. Students may seek a dean-to-dean transfer between any two liberal arts colleges or between a liberal arts college and a professional school, depending on the enrollment of the college/school.
5. Students may apply to only one college at a time in a dean-to-dean transfer.
6. Dean-to-dean transfer applications are accepted until November 15 for the spring term and until May 15 for the fall term (March 15 for the Mason Gross School of the Arts, which requires an audition and/or interview). There are no dean-to-dean transfers in the spring term to the Mason Gross School of the Arts (with the exception of the music and dance departments) or the College of Pharmacy. The approval of dean-to-dean transfers is based on the student's previous performance.
7. Students in their first term in a liberal arts college ordinarily are not eligible for dean-to-dean transfer. Students in professional schools, however, may transfer to liberal arts colleges at the end of their first term.
8. Mason Gross students who are dropped for artistic reasons may seek a dean-to-dean transfer to any liberal arts college or professional school. The accepting unit determines the conditions and deadlines for a dean-to-dean transfer under these circumstances.
9. Students wishing to apply for a dean-to-dean transfer may pick up the application form from any appropriate undergraduate dean's office.
10. Dean-to-dean transfer students are not guaranteed housing on the receiving campus, but ordinarily housing is available in the fall.
11. Students who decide not to complete a transfer must inform the college to which they applied as well as the college they currently attend.

CAMPUS VISITS AND TOURS

Prospective students and their families are encouraged to visit the university. Informal visits to the New Brunswick-area campuses may be made at any time. Information sessions and bus tours are available on most weekdays and on selected Saturdays. Group information meetings consist of an informal discussion with an admissions counselor followed by a student-guided bus tour of the New Brunswick-area campuses. To obtain a schedule of information meetings and tours, students and parents may write to Rutgers, The State University of New Jersey, Office of University Undergraduate Admissions, 65 Davidson Road, Room 202, Piscataway, NJ 08854-8097, or call 732/932-INFO. The university's tour schedule, along with maps and directions to the campus, also is available at the university web site: http://www.rutgers.edu.

Tuition and Fees

FEE SCHEDULE

2000–2001 Academic Year

Note: The university reserves the right to alter the amounts indicated on the following schedule at any time before the first day of classes of a term.

Application Fee, nonrefundable*	$ 50.00
Tuition	
Full-time New Jersey resident, per term †‡	2,500.00
Full-time non-New Jersey resident, per term	5,089.00
Part-time New Jersey resident, per credit	161.60
Part-time non-New Jersey resident, per credit	329.90
Cook/Engineering/Pharmacy Tuition	
Full-time New Jersey resident, per term ‡	2,776.00
Full-time non-New Jersey resident, per term	5,647.00
Part-time New Jersey resident, per credit	182.40
Part-time non-New Jersey resident, per credit	375.75
School of Business Tuition	
Full-time New Jersey resident, per term ‡	2,551.00
Full-time non-New Jersey resident, per term	5,190.00
Part-time New Jersey resident, per credit	166.30
Part-time non-New Jersey resident, per credit	336.05
Student Fee, Per Term (see below)	
Full-time (12 or more credits)†	548.00–566.50
Part-time (11 or fewer credits)	89.50–121.50
Meal Plans, Per Term	
Any 105 meals to any 285 meals	1,010.00–1,415.00
Any 50 meals to any 75 meals	420.00–600.00
Computer Fees	
Full-time	100.00
Part-time †	20.00
Housing, Per Term **	
Residence hall	1,873.00
University apartment	1,967.00
Resident Education Fee	
Douglass College	111.00
Livingston College	106.00
Rutgers College	103.50
Cook College	111.00

* This is a one-time, nonrefundable fee. The application fee is $50 for up to three colleges to which application is made.

† University College students pay according to the number of credits taken and are assessed the part-time student fee regardless of the number of credits carried.

‡ For an explanation of New Jersey residency status, see Student Residency for Tuition Purposes in the University Policies and Procedures section.

** Housing rates may be slightly higher or lower depending on location and whether it is single or double occupancy.

Miscellaneous Fees	
Drop / add fee	5.00
Late registration fee	50.00
Late payment fee	
For one week and / or check not honored for payment	50.00
Partial payment fee	10.00
Late payment fee for partial payments	
For one day to one week late	10.00
For each additional week or part thereof	5.00
Reexamination and deferred examination fee	5.00
Proficiency examination fee	30.00
Transcript of record fee (per copy)	3.00
Deposit fees	Variable
Douglass cultural house fee	60.00
Douglass commuter fee	41.50

Note: All breakage and damage to university property is charged for in full. The university is not responsible for loss by fire or theft of private property in its buildings.

STUDENT FEE

The student fee provides financial support for student activities, student health services and insurance, and intercollegiate athletics. In addition, the fee is used to amortize the construction loan for the local college center and to provide partial support for overhead operating costs of general facilities that are available to students.

The per-term student fee varies according to college as follows:

	Full-Time	Part-Time
Douglass College	$548.00	$121.50
Livingston College	550.50	89.50
Rutgers College	566.50	100.00
University College	109.00	109.00
Cook College	549.00	114.00

Students at the Mason Gross School of the Arts, the College of Pharmacy, the School of Business, and the School of Engineering pay the fee indicated for their college of affiliation.

TERM BILLS

Instructions for registration and payment of term bills are sent by mail to all students for the first and second terms with due dates indicated. Fall term bills begin mailing the third week in July, for preregistered students, and weekly thereafter, depending on the date of registration. Spring term bills begin mailing the third week in November and weekly thereafter. Students who do not receive a term bill for the fall or spring term should notify their local student accounting office promptly.

It is the student's responsibility to obtain, complete, and return the term bill on time. Students who fail to do so are charged a late payment fee of $50. In addition, for all balances not paid in full when due, the student is responsible for all costs incurred by the university to collect such debt. This may include, but is not limited to, collection costs, litigation / attorneys fees, and court costs.

Full-time students who are unable to pay in full by the stipulated time may pay their term bills according to the partial payment plan outlined below.

Payment of the term bill may be made in person or by mail. Checks or money orders should be made payable to Rutgers, The State University of New Jersey. The university also accepts Visa, MasterCard, and Discover credit cards. Cash should not be sent through the mail.

Returned Checks

A service charge of $10 is assessed if a check presented for payment of fee is returned to the university as uncollectible. If collectible payment is not made before late payment deadlines, the applicable late payment fees also are charged.

PARTIAL PAYMENT PLAN

Full-time students enrolled in 12 or more credits who are unable to pay their term bill in full may arrange with the local cashier's office to pay their bill, if it indicates a net balance due of $200 or more, in three installments under the partial payment plan, as follows:

1. First payment: 50 percent of the net balance due on or before the date indicated on the term bill.
2. Second payment: 25 percent of the net balance due plus the $10 nonrefundable partial payment fee on or before September 15 for the fall term and on or before February 1 for the spring term.
3. Third payment: Net balance due on or before October 15 for the fall term and on or before March 1 for the spring term.

Any student submitting a term bill after classes have begun for the term must make payment according to the following schedule:

1. First payment: 50 percent of the net balance due plus the $10 nonrefundable partial payment fee.
2. Second payment: Net balance due on or before October 15 for the fall term and on or before March 1 for the spring term.

Any installment not paid according to the schedule incurs an initial late fee of $10 for the first week or part of a week that a payment is late, plus a $5 late fee for each additional week or part of a week thereof.

In addition, for all balances not paid in full when due, the student is responsible for all costs incurred by the university to collect such debt. This may include, but is not limited to, collection costs, litigation / attorneys fees, and court costs.

REGISTRATION

Activation of Registration

A student's registration is activated through the proper submission of a term bill, accompanied by payment, or a financial aid award letter. Activation of registration does not take place if there are "holds" placed on the student's records because of failure to meet outstanding obligations.

Termination of Registration

The university exercises the right to terminate the registration of any student who has an outstanding financial obligation to the university, after sufficient notice has been given to the student. The university reserves the right to "hold" transcripts and diplomas as a result of nonpayment of obligations and to forward delinquent accounts to collection agencies and to levy a collection fee. "Holds" are removed upon satisfaction of the outstanding obligation. The terminated student may petition for reinstatement of enrollment by satisfying the indebtedness to the university and paying a $50 reinstatement fee.

Cancellation of Registration

To cancel registration and obtain a full refund of tuition and fees, students must notify the registrar in writing prior to the first day of classes. A student whose registration is canceled by the registrar will receive a full refund of tuition and fees, and prorated charges for room and board, if applicable. Notification of cancellation received on or after the first day of classes is treated, for billing purposes, as a withdrawal, and a refund will be made based on the general refund policy.

Senior Citizen Audit Program

By action of the University Board of Governors, New Jersey senior citizens (age 62 and retired) may audit on a space-available basis, without credit, any regular course taught at the university. For more information, contact the Office of Community Affairs at 732 / 932-7823.

GENERAL REFUND POLICY

A student who voluntarily withdraws from all courses during the first six weeks of a term will receive a partial reduction of tuition (and charges for room and board, if applicable) according to the week of withdrawal as follows:

First to second week:	80%
Third to fourth week:	60%
Fifth to sixth week:	40%

No reduction is granted after the sixth week. The effective date of withdrawal is the date on which a written statement of withdrawal is received by the registrar. Student fees are not refundable.

No reduction is granted after the tenth day of classes to students who withdraw from one or more courses, but remain registered in others. No adjustment is made from full-time to part-time status after the tenth day of classes. If withdrawal from one or more courses amounts to complete withdrawal from a program, the provision for full withdrawal applies. A student cannot complete a full withdrawal from class using the student telephone registration system.

Failure to attend class is not equivalent to a withdrawal, and a student will not receive an adjustment of charges unless a formal withdrawal is filed with and approved by the registrar, regardless of whether the student actually attended classes or took examinations.

RESIDENCE HALLS

A variety of housing accommodations is available on the various New Brunswick campuses. Rooms in the college residence halls are taken for a full academic year. They may not be available for occupancy during the winter and spring recesses. Only seniors, undergraduates who are to participate in commencement activities, and students employed by the college (if their services are needed) may remain on campus after the completion of their examinations at the end of the school year. See the four residential college sections (Douglass, Livingston, Rutgers, and Cook) for descriptions of the types of residential accommodations available.

Financial Aid

The staff of the Office of Financial Aid at Rutgers, The State University of New Jersey, is committed to providing students with educational access through a variety of financial assistance programs. Each year, more than 28,500 Rutgers students receive some form of financial assistance from the university. Key considerations for obtaining financial aid are understanding both the types of aid available and the aid process itself. This chapter provides the basic information to satisfy these needs; however, the staff of the financial aid office always is available to offer assistance in the aid process and to help clarify the options available.

Most aid processed through the Office of Financial Aid is available to students who demonstrate financial need and are enrolled full time in a degree program. The amount of aid offered is dependent upon the availability of funds and both family and student need as determined by federal and state guidelines.

Assistance to students usually is offered in a "package" that consists of some combination of scholarships, grants, loans, and campus employment. Continuance of need-based assistance is dependent upon the availability of funds and the student's completion of a renewal application, demonstration of continued need, satisfactory academic progress, and compliance with federal and state regulations.

Students or parents seeking detailed answers to particular questions about eligibility or award processing should request an appointment with a financial aid counselor. In cases of particular sensitivity or complexity, an appointment may be made with the staff of the Office of Financial Aid, who are especially prepared to assist students and parents in these matters. All information is kept strictly confidential.

Rutgers participates in the full range of state and federal financial aid programs and has a large number of university supported scholarships. A brief description of each program follows. All students are encouraged to file an application for financial assistance.

HOW TO APPLY

Application Procedure. All students interested in applying for financial aid must submit annually a Free Application for Federal Student Aid (FAFSA). This form should be mailed to the federal processor in the envelope provided inside the form no later than March 1 prior to the academic year for which aid is sought.

Free Application for Federal Student Aid forms are available through high school guidance offices or the financial aid office. Students who apply after March 15 will be considered as funds become available; however, late applicants cannot be assured consideration. Renewal forms usually are mailed in January to continuing students. Applicants should request that the federal processor forward information to Rutgers, The State University (002629). Be sure to authorize the release of the information to Rutgers. The FAFSA also may be filed electronically via the web at http://www.fafsa.ed.gov.

Notification. First-year and transfer applicants who apply for aid can expect to receive a preliminary offer letter beginning in mid-February. Students admitted after March 1 receive notification of their financial aid after May 1. All applicants for aid are notified.

Spring Term Application Procedure. Applications for financial aid for the spring term are considered if funds are available. The FAFSA should be submitted to the federal processor no later than October 1 preceding the spring term.

Procedure for Part-Time Students. Students enrolled part-time (minimum 6 credits each term) may be eligible for the federal student aid programs described below. The amounts they are eligible to receive, however, are prorated according to direct incurred educational expenses.

Study Abroad. It is recommended that all students planning to study abroad come to the Office of Financial Aid for a personal interview to discuss their plans and their eligibility for aid. In general, aid is not transferable, and only those students enrolled in Rutgers' study abroad programs are eligible.

Academic Progress. In order for aid to be offered to returning students, satisfactory academic progress must be made. This includes maintaining a cumulative grade-point average that meets the college scholastic standing committee's requirements and earning a certain number of credits during each year of enrollment. Specifics detailing the policy are available upon request from the Office of Financial Aid and are provided each year to students with their renewal aid applications.

SOURCES OF FINANCIAL AID

There are three basic kinds of financial aid: gift aid (scholarships and grants), loans, and employment. Gift aid does not require repayment, grant terms stipulate that need be demonstrated, while scholarships and awards generally have academic or other special requirements. Loans must be repaid, usually after the student leaves college. Employment programs allow students to earn money for personal and other expenses through a part-time job.

Putting the different types of aid together to meet financial need is the responsibility of the Office of Financial Aid and is referred to as "aid packaging." Decisions are based upon financial need, qualifications, and the funds available.

After financial need has been established, the student is informed by letter of the exact nature of aid offered. The total amount of each offer is revised annually based upon the university's aid budget and information provided by the student on the aid application filed each year.

Scholarships and Grants

Funds are available from a variety of sources for scholarship awards and grants. These include university-endowed scholarships, federal grants, and state grants.

In most cases, it is not necessary to submit special applications for particular scholarships administered by the university, provided a financial aid application has been filed. However, a few forms of gift aid require separate application. More detailed information regarding scholarship awards follows in this section and can be found in the section entitled "University Scholarships and Grants" later in this chapter.

Federal Grants

Federal Pell Grants. These grants are available to students who are enrolled for a minimum of 6 credits per term. Eligibility for the Pell Grant extends to the time required for completion of the first bachelor's degree, provided that the student is in good standing and is making satisfactory academic progress as defined by Rutgers. The award ranges from approximately $400 to $3,300. Students must be citizens or permanent residents of the United States. Application is made by submitting a completed FAFSA.

Federal Supplemental Educational Opportunity Grants (SEOG). Grants are provided by the federal government through the university to assist undergraduates who have significant financial need. Application is made by submitting a completed financial aid form. Grants range from $200 to $3,000, depending on financial need and the availability of funds.

State Grants

New Jersey Tuition Aid Grants (TAG). These grants are restricted to New Jersey residents who are enrolled full time; that is, for a minimum of 12 credits per term in a degree program. The award amount varies, based on student need, from $400 to almost full tuition costs at Rutgers. Students who wish to be considered for the Tuition Aid Grant must file the FAFSA and release information to the state. The New Jersey Higher Education Student Assistance Authority (NJHESAA) will send a Student Eligibility Notice (SEN) to the student with accompanying instructions. The filing deadline for incoming first-year students to be considered for a TAG is October 1 of each year. The deadline for returning upper-class students is June 1 of each year.

New Jersey Educational Opportunity Fund Grants (EOF). These grants are restricted to students from educationally and economically disadvantaged families that have exceptional financial need. The award may range from $200 to $1,100 per academic year. Students must be enrolled full time in a degree program and be residents of the state of New Jersey. Students should contact the college EOF director, the Office of University Undergraduate Admissions, or the Office of Financial Aid for additional information. Each student is required to submit the FAFSA.

Beyond the grant, the EOF program offers significant support services in areas such as reading and writing skills development, tutoring, and individualized counseling.

Edward J. Bloustein Distinguished Scholars Program (DSP). This program, which began in the 1985–1986 academic year, awards outstanding high school students in New Jersey an annual $1,000 scholarship. Selection is made by a state-level committee and is based on nominations made by high schools throughout the state.

Students are notified of their eligibility directly by the New Jersey Higher Education Student Assistance Authority (NJHESAA). Although submission of the financial aid form is not necessary, students are encouraged to file the FAFSA in order to be considered for additional assistance. Receiving the Distinguished Scholars Program award does not preclude eligibility for other programs. Additional information is available at New Jersey high schools.

University Scholarships and Grants

Rutgers, The State University of New Jersey, has available a substantial number of scholarships and grants, both need-based and merit-based. Please refer to the University Scholarships and Grants heading in this chapter located after the Change in Financial Resources section.

Nonuniversity Scholarships and Grants

A number of companies, unions, civic groups, and other associations sponsor scholarships for students at Rutgers. Some of these awards, such as the New Jersey Golf Association Scholarship, are administered through Rutgers, and the Office of Financial Aid can provide application information about them.

Direct application to the sponsoring group must be made for many of the other sponsored awards. High school guidance counselors may be able to assist students in exploring various possibilities.

See the "University Scholarships and Grants" section in this chapter for information about specific employer-related scholarships. Students may contact the financial aid office for additional information about nonuniversity awards.

Loans

William D. Ford Federal Direct Loan Program

Federal Direct Student Loans allow students and parents to borrow money from the federal government to pay for education, eliminating the need for an outside lender, such as a bank. In order to be considered for a Federal Direct Student Loan, students must complete the FAFSA. The financial aid award letter lists eligibility for the program. Money for which students are eligible is credited directly to their accounts. Because Rutgers participates in this program, it cannot accept any Federal Stafford / Ford Loan applications from students or their lenders. Since the U.S. Department of Education (USDOE) is the lender for the Federal Direct Student Loan program, borrowers send all loan repayments to the USDOE rather than to several lenders.

In general, to be eligible for a Federal Direct Student Loan, a student must have a high school diploma or a General Education Development (GED) certificate or meet other standards approved by the USDOE, be a United States citizen or an eligible noncitizen, be enrolled at least half-time per term, be making satisfactory academic progress, have a Social Security number, sign a statement of educational purpose, not be in default on prior loans or owe refunds to federal grant programs, and, for males, have registered with the Selective Service Administration.

In addition to these requirements, all first-time Federal Direct Stafford / Ford and Federal Direct Unsubsidized Stafford / Ford Loan borrowers must attend an entrance interview in order to be informed of their rights and responsibilities regarding the loan and an exit interview prior to withdrawal from college or graduation.

Federal Direct Stafford/Ford Loan. This subsidized loan is based on financial need. The federal government pays the interest on the loan while the student is attending school. The interest rate is variable; that is, it is adjusted each year. The 2000–2001 rate is 7.59 percent. Additionally, borrowers are charged an origination fee of 3 percent. Students may borrow $2,625 for first-year undergraduate study, $3,500 for the second year, and $5,500 for each of the third, fourth, and fifth years.

Federal Direct Unsubsidized Stafford/Ford Loan. This loan is not based on need. All interest charges must be paid by the student. The interest rate and loan maximums are the same as for the Federal Direct Stafford / Ford Loan. However, students who have proven independence may borrow an additional $4,000 in each of the first and second years, and an additional $5,000 in each of the third, fourth, and fifth years.

Federal Direct PLUS Loan. Parents of dependent students can borrow from this program to help pay for college expenses. Applications and promissory notes are available at the financial aid office. Similar to the Federal Direct Stafford / Ford Loan, the interest rate is variable. The 2000–2001 rate for a Federal Direct PLUS Loan is 8.99 percent. Additionally, borrowers are charged an origination fee of 4 percent. This loan allows parents to borrow up to the cost of education minus other financial aid received by the student.

Federal Perkins Loan (formerly the National Direct Student Loan—NDSL)

These loans are available to students who are enrolled for a minimum of 6 credits per term, who are citizens or permanent residents of the United States, and who demonstrate need through the financial aid form. The maximum amount a student can borrow under this program is $3,000 per academic year for an undergraduate who has not completed a program leading to the baccalaureate degree.

Simple interest at the rate of 5 percent begins six months after the borrower ceases to be enrolled for a minimum of 6 credits per term and extends over a maximum repayment period of ten years. Monthly payments of at least $40 are required. Deferment of repayment is permitted for certain kinds of federal service, and cancellation of loans is permitted for certain public services.

All recipients are required to attend an entrance interview in order to be informed of their rights and responsibilities regarding the loan. In addition, recipients must attend an exit interview prior to graduation or withdrawal from college. Further details and procedures regarding the repayment of this loan will be sent to each student recipient by the Student Loan Office of the university's Division of Accounting.

Emergency Loans. Students who are experiencing a financial emergency may apply for a university loan of up to $500. Students need not be recipients of financial aid nor have filed a financial aid form (FAFSA) to be considered. The service charge is 3 percent per year, and the loan must be repaid within the same term. An emergency need must be demonstrated and funds must be available.

Students should contact the Office of Financial Aid for additional information. If loans in excess of this amount are required, an appointment with a financial aid counselor is recommended.

University College students are also eligible for Walter T. Elder Loans, which are established through gifts of alumni and friends of Walter T. Elder, former business manager of University College. Loans are of a short-term nature, usually for one term, and are interest-free until the due date. Delinquent loans are subject to a 3 percent charge per year. Loans are available to students who have completed a minimum of 15 credits in University College with a cumulative grade-point average of 2.0 (C) or better.

Employment

Federal Work-Study Program (FWSP). The Federal Work-Study Program provides work opportunities to students who have filed the FAFSA and show a demonstrated financial need. Employment is available on campus and with non-profit, off-campus agencies. Every effort is made to place students in jobs related to their skills, interests, and fields of study. Students in the program may work up to a maximum of fifteen hours per week during the academic year and thirty-five hours per week during approved periods when classes and exams are not scheduled. Students are paid biweekly. Payment is determined by the hourly wage multiplied by the number of hours that the student worked.

Assignments to on-campus jobs are made based on the preferences listed by the student and the availability of authorized positions within university departments. Students interested in working in paid FWSP community service positions should speak to a staff member in the Student Employment Office for instructions.

Other Employment. Students who do not qualify for FWSP funds may find employment from a number of sources. Many university departments hire students directly. Examples of some of these departments are the libraries, the student centers, the gyms, and Dining Services. Contact departments directly to determine if they are hiring. Additionally the student employment office (part of the Office of Financial Aid, located in Room 202 in Records Hall) lists part-time and seasonal employment from local area employers. Contact the student employment office for information and hours of operation. (Please note that although the student employment office is upstairs and not accessible by wheelchair, staff members will make necessary accommodations.) The Career Services offices also have part-time job listings and should be contacted directly for their hours and programs.

Military Service Education Assistance

Veterans' Benefits. The U.S. Veterans Administration operates various education assistance programs for eligible veterans, war orphans, surviving spouse or child of any veteran killed while on duty with the Armed Forces, disabled veterans, dependents of a veteran with service-related total disability, and certain members of the selected reserve. Inquiries concerning eligibility may be directed to the Veterans Administration office in Newark, New Jersey (800/242-5867) or to the veterans coordinator on each campus. For New Brunswick, the number is 732/932-7067.

Veterans and others mentioned above who plan to make use of veterans' education benefits should initially present the Veterans Administration Certificate of Eligibility Form(s) and/or discharge papers (certified copy of the DD214) when registering for courses. If applying for other financial aid with the university, veterans must report the fact that they will receive veterans' education benefits to the Office of Financial Aid.

Veterans planning to train under Chapter 32 VEAP, Chapter 30 of the New (Montgomery) GI Bill of 1984, or Chapter 1606 for Reservists, are required by the university to pay cash for tuition, fees, books, and supplies, when due. Veterans, in turn, receive an allowance for each month of schooling based upon credit hours and the number of dependents.

No veteran may officially withdraw from a course (or courses) without prior approval from the college dean of academic affairs and dean of students offices. All withdrawal requests must be submitted in writing. The date of official withdrawal will be the determining date for changes in benefits. Failure to comply with the official college withdrawal procedure may affect both future and prior benefit payments. Any change in schedule must also be reported to the appropriate certifying official (college registrar).

Army and Air Force ROTC Scholarships. Competitive scholarships are made directly to students by the Army and the Air Force in accordance with Department of Defense policies. The university is precluded from providing institutional support to ROTC scholarships because Department of Defense policies discriminate on the basis of sexual orientation, which contradicts university policy.

Army scholarships provide full tuition and fees and a $205 per term flat rate allowance for textbooks. Air Force scholarships cover tuition, fees, and textbook costs up to $8,000 per year. Successful Army and Air Force scholarship winners also receive a $150 per month personal allowance during the academic year.

To apply, students may contact the Army or Air Force ROTC departments on the New Brunswick campus or ROTC representatives at the Newark or Camden campuses.

CHANGE IN FINANCIAL RESOURCES

Changes may occur in a family's financial situation throughout the year. Therefore, students may wish to appeal their financial aid award. This may be done by submitting a detailed letter (with figures) or by requesting an appointment with a financial aid counselor. It is university and federal policy that students cannot receive assistance in excess of their calculated financial need.

If unusual situations occur, such as loss of employment, death, incapacitation of a wage earner, or loss of some form of untaxed income, the Office of Financial Aid will provide professional advice on how forms can be reprocessed with the state and federal government. Students are encouraged to make an appointment with a financial aid counselor to discuss these situations.

Students are required to report all changes in financial resources or other financial assistance to their campus financial aid office as soon as they have knowledge of the change. Failure to do so may jeopardize continuation of all assistance.

UNIVERSITY SCHOLARSHIPS AND GRANTS

The following pages list university- and college-sponsored scholarships and grants. The first section presents scholarships and grants limited to students enrolled in specific colleges. The second section presents scholarships administered by various university offices; these scholarships may be awarded to students enrolled at any of the undergraduate colleges (unless specifically noted in the narrative).

In most cases, students are automatically considered for need-based scholarship awards when they file the Free Application for Federal Student Aid (FAFSA). Scholarships specifically for first-year students are awarded by the Office of University Undergraduate Admissions and the Office of Financial Aid in consultation with the deans, as appropriate.

College-based scholarships are awarded by the deans of each college in accordance with current individual college practices. The college-based scholarship application procedures vary from college to college. Please consult the headings of the individual colleges for information regarding the scholarship application procedure at each college.

In some cases, individual scholarships have established a separate application procedure specific to that scholarship. Information about any such separate application procedures is included when appropriate.

Certain scholarships are available to students whose parent(s) work for the following organizations: Grand Union Food Store Corporation, Twin County Grocers and member stores, and Littman Jewelers. Students may contact the Office of Financial Aid for information about these employer-related awards.

College Scholarships

Awards in this section are listed by college and are available only to students enrolled in the named college, unless indicated otherwise.

DOUGLASS COLLEGE

In February, students are notified by the Douglass College dean's office of the start of the annual scholarship application process. This mailing includes information on eligibility criteria (primarily academic merit and financial need), the value of the scholarships (generally ranging from $300 to $1,000), and instructions for completing the Douglass College scholarship application.

Ernst Albers-Schonberg Scholarship. Sponsored by the Associate Alumnae of Douglass College for women majoring in scientific fields.

Bertha and James Allen Scholarship. Sponsored by the Associate Alumnae of Douglass College for students majoring in mathematics and music.

Elizabeth A. Allen Scholarship. Two awards, one established by the Associate Alumnae of Douglass College, given to juniors or seniors seeking a teaching certificate.

Alumnae Scholar Athlete Award. For an athlete with an excellent academic record.

Alumnae Science Scholarship. Established by the Associate Alumnae of Douglass College for an outstanding student of science.

Grace Argiumbau Memorial. For a graduate of a public high school in Union County, New Jersey.

A. Loraine Ayers Scholarship. Designated by the Board of the Associate Alumnae of Douglass College to support a student at Douglass College.

Alice Ayvad Scholarship. Sponsored by the Associate Alumnae of Douglass College.

Carrie Whiton Bailey Bacon. For a student who is a resident of Jersey City, New Jersey.

Louise Ann Bartles Memorial Scholarship. Awarded through the Associate Alumnae of Douglass College to students interested in special education for the physically and mentally challenged, preferably from Hunterdon County.

Florence E. Becker. Established by the family of Florence Becker for students with demonstrated financial need.

Margaret Burnett Beldon Scholarship. Sponsored by the Associate Alumnae of Douglass College for a student in any sport with good SAT scores.

Bell Atlantic Scholarship. For an outstanding New Jersey resident(s) enrolled in Douglass College, Rutgers College, or the School of Engineering who demonstrates active participation in extracurricular and community events.

Beatrice Berner Scholarship. For students majoring in mathematics or the sciences.

G. Reginald Bishop, Jr., Scholarship. Awarded through the Associate Alumnae of Douglass College to a high-achieving senior student in French.

Bunting Program Scholarship. Sponsored by the Associate Alumnae of Douglass College for a student in the Mary I. Bunting Program.

Edward and Ellen Capell Scholarship. Sponsored by the Associate Alumnae of Douglass College for a junior or senior majoring in history or the humanities.

Cape May Scholarship. Awarded on behalf of the Associate Alumnae of Douglass College to students from South Jersey, preferably Cape May County.

Class of 1928 Scholarship. Two awards, one established by the Associate Alumnae of Douglass College, for eligible students; based on financial need.

Class of 1930, 1932, and 1934 Scholarship. Based on financial need.

Class of 1934 Spence Memorial Scholarship. Based on academic merit, financial need, and leadership or service to the university or community, and granted to a student (or students) attending Rutgers, Douglass, or Cook College, with preference given to students who are lineal descendants of alumnae of the Class of 1934.

Class of 1950 Millennium Scholarship. Awarded through the Associate Alumnae of Douglass College.

Class of 1963 Scholarship. Based on financial need.

Class of 1964 Scholarship. Awarded through the Associate Alumnae of Douglass College.

Class of 1965 Scholarship. Awarded through the Associate Alumnae of Douglass College.

Christine Reith Collard Memorial Scholarship. For an athlete with an outstanding academic record.

Marion M. Cook Scholarship. For a Douglass College student.

Margaret T. Corwin Scholarship. A one-year award granted by the Associate Alumnae of Douglass College to a first-year student of high academic potential who is an out-of-state resident.

Coult Memorial. For a student who graduated from Barringer High School in Newark, New Jersey, on recommendation of the high school's principal.

Helen J. Creveling. Awarded by the Douglass College Parents' Association, based on academic merit and contributions to student life.

Jerome and Suzanne Deady Memorial Scholarship. Two awards, one sponsored by the Associate Alumnae of Douglass College, for an outstanding student.

Lillian Desch Scholarship. Sponsored by the Associate Alumnae of Douglass College for a music student.

K.F. Dickerson Fund. Awarded to a student preparing for a career in the ministry or religious work.

Bina DiMarzo Scholarship. Awarded through the Associate Alumnae of Douglass College.

Janet M. Duncan Scholars Award. Awarded through the Associate Alumnae of Douglass College to students in the Douglass Scholars Program.

Lillian S. Dunlop Scholarship. Awarded through the Associate Alumnae of Douglass College.

Mary E.P. Eagleton. Established in memory of Mary Emma Phillips Eagleton; based on financial need.

Miriam Adler Earle Scholarship. Awarded through the Associate Alumnae of Douglass College to an English and / or theater arts major.

Martha E. Feakes Scholarship. Awarded through the Associate Alumnae of Douglass College for students in the Douglass Scholars Program.

Mary S. and Frank Finnerty Scholarship. Sponsored by the Associate Alumnae of Douglass College for two undergraduates, one in history and one in science or technology.

Gloria Flaherty Scholarship. Awarded through the Associate Alumnae of Douglass College.

Marion Taylor French. Awarded through the Associate Alumnae of Douglass College.

Lucille Axelrad Goff Scholarship. Awarded through the Associate Alumnae of Douglass College to a student studying some phase of home economics; based on academic promise and financial need.

Herman and Jeanne B. Goldfine Scholarship. Awarded through the Associate Alumnae of Douglass College to a student at Douglass College and Rutgers College in alternating years; based on academic promise and financial need.

Dr. Mildred Rust Groder Scholarship. Provided through the Associate Alumnae of Douglass College to a student who attended the Ann Street School in Newark, New Jersey.

Bernadette Terango Gsell Scholarship. Sponsored by the Associate Alumnae of Douglass College for a first-year student.

James W. and Evelyn B. Guthrie Scholarship. An award of the Associate Alumnae of Douglass College for students with high academic potential or demonstrated financial need.

Margaret Hastings Scholar. Awarded by the Associate Alumnae of Douglass College to a high-achieving senior-year student majoring in history or medieval studies.

William Randolph Hearst. For students intending to study in the field of science, mathematics, technology, or engineering.

Mary and Kenneth Heilman. Awarded through the Associate Alumnae of Douglass College to a student in science; based on merit and need.

Regina Best Heldrich Scholars Endowment Fund for Chemistry Majors. Awarded through the Associate Alumnae of Douglass College to students majoring in chemistry, based on academic promise and financial need.

Alfred Reed Henderson. For a student who is a resident of Middlesex County, New Jersey.

Richard W. Herbert. Based on financial need.

Rayburn A. Higgins Fund. Awarded through the Associate Alumnae of Douglass College in support of the Douglass Scholars Program.

Tillie Hoitsma Scholarship. Sponsored by the Associate Alumnae of Douglass College.

Lois Holt Scholarship. Sponsored by the Associate Alumnae of Douglass College for a student from Florida.

Jane C. Inge. For a student with financial need, with preference given to drama majors.

Lydia Kern Scholarship. Awarded by the Associate Alumnae of Douglass College to a student of high academic potential or who demonstrates financial need.

Gail Kraidman Memorial Bunting Scholarship. A scholarship of the Associate Alumnae of Douglass College presented to a student in the Mary I. Bunting Program, preferably a student of English.

Elizabeth Sophie Krauss and Adam Krauss Permanent Memorial Scholarship. Awarded through the Associate Alumnae of Douglass College; based on academic promise and financial need.

Mary Mitchell Kydd. Awarded by the College Club of Jersey City to a graduate of a Jersey City, New Jersey, high school.

Gertrude Lauber. For students majoring in music or foreign languages; based on academic merit and financial need.

Stephanie E. Laucius Annual Chemistry Scholarship. Awarded through the Associate Alumnae of Douglass College to the chemistry major with the best overall record in her first three years who plans to complete her senior year at Douglass.

Ruth Sutton Leary. Awarded through the Associate Alumnae of Douglass College for students in the field of biology.

Bonnie W. LeClear. Based on academic merit and character.

Frances B. L'Hommedieu Community College Scholarship. An award of the Associate Alumnae of Douglass College for students who have earned an associate degree from a New Jersey community college.

Frances B. L'Hommedieu Science Scholarship. An award of the Associate Alumnae of Douglass College for students studying science.

Susan T. Little. Awarded through the Associate Alumnae of Douglass College to a student who intends to enter the teaching profession.

Beatrice London Scholarship. Scholarship of the Associate Alumnae of Douglass College for students in the Mary I. Bunting Program; based on academic merit and financial need.

Lowe Foundation Scholarship. Made possible through the Associate Alumnae of Douglass College.

Eleanor B. MacLaurin Scholarship. An award of the Associate Alumnae of Douglass College.

Stephanie Morris Marryott Fund. Awarded through the Associate Alumnae of Douglass College to students studying music.

Mona Beth Marx Memorial. An award of the Associate Alumnae of Douglass College.

Elizabeth Nufer Mazarin Scholarship. Awarded through the Associate Alumnae of Douglass College to upper-class students of the liberal arts, preferably for those majoring in English.

Mary and Bertha McClymonds. For a student preparing for a career in the ministry.

Catherine Lee McDermott Scholarship. Awarded through the Associate Alumnae of Douglass College to a woman entering her junior or senior year in good academic standing and preparing for a career in the field of special education.

Barbara Metzger Scholarship. Awarded through the Associate Alumnae of Douglass College to an undergraduate, preferably whose major involves an interest in the environment; based on academic merit and need.

Winifred DeSpirit Meyer Memorial Scholarship. Awarded by the Associate Alumnae of Douglass College to a student who is active in PLEN or student governance or who majors in political science.

Minority Bunting Scholarship. Awarded through the Associate Alumnae of Douglass College.

Anna I. Morgan. For students interested in pursuing a career in any field of religion.

Morris County Scholarship. Awarded by the Associate Alumnae of Douglass College to a student who is a resident of Morris County, New Jersey.

Jessie Munger. Based on financial need.

Rosalind S. Myers Scholarship. Awarded through the Associate Alumnae of Douglass College; based on academic promise.

Ann P. Neupauer. Awarded through the Associate Alumnae of Douglass College to students in the Douglass Scholars Program.

Charlotte W. Newcombe. Awarded to women resuming their education through the Mary I. Bunting Program.

New Jersey Network of Business and Professional Women Scholarship. Awarded through the Associate Alumnae of Douglass College to an incoming or current Bunting student with excellent academic credentials.

New Jersey State Federation of Women's Clubs. For New Jersey residents in various fields; based on academic merit or financial need.

New Jersey State Federation of Women's Clubs Continuing Education. For New Jersey residents who are resuming their education at Douglass College through the Mary I. Bunting Program.

New Jersey State Federation of Women's Clubs Girls Citizens Institute. For first-year students who participated in the New Jersey State Federation of Women's Clubs Girls Citizens Institute.

North Monmouth American Association of University Women Scholarship. Presented by the Associate Alumnae of Douglass College to a student of outstanding academic ability who is a resident of a municipality in north Monmouth County, New Jersey.

Northeast Bergen Club Scholarship. An award of the Associate Alumnae of Douglass College for an upper-division student who is a resident of northeast Bergen County, New Jersey.

Jo-Ann Paige Memorial Scholarship. Award provided by the Associate Alumnae of Douglass College for a student majoring in journalism or communication.

Hortense Peshine. Based on academic merit and financial need.

Roberta Liberman Platt Memorial Scholarship. Awarded through the Associate Alumnae of Douglass College to a student in the SCILS joint-degree program; based on merit and need.

Rhoda Lowden Plume. For students who are residents of Elizabeth, New Jersey.

Anna M. Prentice Scholarship. Awarded through the Associate Alumnae of Douglass College for a student enrolled in the Bunting program.

Norman and Syril Reitman Science Scholarship. Sponsored by the Associate Alumnae of Douglass College for students in science.

Frances E. Riche In-State Scholarship. A one-year award of the Associate Alumnae of Douglass College for a first-year student who is a New Jersey resident and demonstrates high academic potential.

Christine DiMarino Roberts Memorial Scholarship. Awarded through the Associate Alumnae of Douglass College to a New Jersey student studying education, preferably enrolled in the five-year teacher-preparation program leading to a bachelor's degree and culminating in a master's degree in education.

Ruth Feller Rosenberg. Two awards of the Associate Alumnae of Douglass College, one for a student in the Douglass Scholars Program in the field of technology or science, and one for a student in the cultural arts.

Amelia L. Ruggles Scholarship. Sponsored by the Associate Alumnae of Douglass College for students in the botanical sciences.

Anna and David Salny Scholarship. Awarded through the Associate Alumnae of Douglass College for students majoring in the sciences.

Cynthia Sass Scholarship. A scholarship of the Associate Alumnae of Douglass College for students in the Mary I. Bunting Program who are working toward a career in the health professions, science, or mathematics.

George P. Schmidt Scholarship. Presented by the Associate Alumnae of Douglass College.

Marjorie Schoepps Scholarship. Sponsored by the Associate Alumnae of Douglass College, based on merit and financial need.

Mary Moore Shannon Out-of-State Scholarship. Awarded through the Associate Alumnae of Douglass College.

Minnie J. Smith. Based on academic merit and financial need.

Nelle Smither Scholarship. A renewable Associate Alumnae of Douglass College award for entering students who have outstanding academic records. Students in the Douglass Scholars Program are not eligible for this award.

Chester W. Snedeker. Awarded to a student who resides in the greater New Brunswick area; based on academic merit or financial need.

Edna Sostman Memorial Scholarship. Awarded by the Associate Alumnae of Douglass College; based on high academic performance.

Suburban Women's Club of Irvington Scholarship. Awarded by the Associate Alumnae of Douglass College to students of high academic ability who, preferably, reside in Irvington, New Jersey.

Jennie Sussman Memorial Scholarship. Award from the Associate Alumnae of Douglass College to a high-achieving junior- or senior-year student majoring in public health, women's studies, or sociology, with a focus on health, gender, or environmental issues.

John Thomas Memorial Scholarship. Sponsored by the Associate Alumnae of Douglass College for a physically impaired student.

Elizabeth R. Voorhees. Awards made from the Voorhees Scholarship and Loan fund on the basis of academic record and financial need.

Voorhees Family Undergraduate Support Enhancement Fund. Awarded through the Associate Alumnae of Douglass College to a student with financial need.

Alice Vose. For a student who is a resident of Hightstown, New Jersey.

Doris S. Warner. Awarded through the Associate Alumnae of Douglass College; based on merit and need.

Amelia T.C. Watkins Scholarship. Sponsored by the Associate Alumnae of Douglass College for a black student in the first-year class.

Amelia T.C. Watkins Endowed Scholarship. For a black student; based on academic achievement, community service, and financial need.

Elizabeth Wehr Scholarship. For a student(s) attending Douglass College or Rutgers College majoring in the humanities; based on academic performance.

Angela White-Petersen Memorial Scholarship. Awarded through the Associate Alumnae of Douglass College for an undergraduate student, preferably a major in art history, the performing arts, or art; based on merit and need.

Jeanette Whitener Woodruff Scholarship. Awarded through the Associate Alumnae of Douglass College to a student, preferably involved in community service; based on academic promise and financial need.

Agnes T. and Charles F. Wiebush. Awarded through the Associate Alumnae of Douglass College to a student in the sciences, preferably physics.

LIVINGSTON COLLEGE

Livingston College Scholarships are administered by the Dean's Scholarship Committee and special committees established for awarding named scholarships. Named scholarships are awarded by a search by the committee, and all eligible students automatically are considered.

Kenneth Christman Memorial Scholarship. Awarded annually to a junior or senior majoring in social work; based on academic merit and financial need.

Claire Hernandez Scholarship Award. For a Latino/Latina, full-time student; based on academic merit.

Livingston Scholarship Fund. Based on academic merit or financial need. Interested students must apply at the dean's office by May 15 and November 15 for fall and spring terms, respectively.

Lynton Fellows Scholarship. For a junior or senior who demonstrates commitment to and experience in working toward racial understanding in society.

Ronca Memorial Scholarship. For a Livingston College student(s) in the Honors Program who may otherwise not be able to continue studies at Livingston College. Preference given to disadvantaged and/or minority students, with special consideration given to a student who is interested in pursuing a career in teaching. Applications are available through the Honors Program.

Meyer (Max) Weinreb Scholarship. For a junior or senior majoring in political science; based on academic merit and financial need, with preference given to Union County residents.

RUTGERS COLLEGE

Through the Rutgers College Merit Scholarship Program, eligible students are invited to apply for consideration for a Rutgers College Merit Scholarship, funded through the awards and scholarships listed below. Eligible entering students are invited to apply for a Rutgers College Merit Scholarship shortly after their offer of admission to Rutgers College. Eligible continuing students are invited to apply for a Rutgers College Merit Scholarship at the end of each academic year. All Rutgers College Merit Scholarships are processed through the Office of the Dean.

Mitchell Adelman Memorial Scholarship. For sophomores, juniors, or seniors who are in the top third of their class and have an interest in creative writing. Applicants submit short stories or poems to a selection committee.

Antonio Africano Endowed Scholarship. For full-time undergraduate students based on academic merit and financial need, with preference for student(s) who attended Emerson High School or Union Hill High School, Union City, New Jersey.

Dr. Scipio Africano Endowed Scholarship. For full-time undergraduate students based on academic merit, with preference for student(s) who attended Emerson High School, Union City, New Jersey.

Jerome and Lorraine Aresty Scholarship. For an outstanding student(s) who is a resident of New Jersey. Financial need also is a consideration.

Jerome and Lorraine Aresty Research Scholarship. For students who submit a proposal for the Henry Rutgers Scholars Program; based on academic accomplishments and the quality of the research proposal.

Bell Atlantic Scholarship. For an outstanding New Jersey resident(s) enrolled in Douglass College, Rutgers College, or the School of Engineering who demonstrates active participation in extracurricular and community events.

David and Dorothy Bernstein Scholarship. For students in the Rutgers College General Honors Program in support of a summer research experience in a biophysical chemistry/molecular biophysics laboratory at Rutgers. Applicants submit materials to the Bernstein Selection Committee.

Bloomberg Financial Markets. For sophomores majoring in mathematics or economics; based on academic merit and financial need.

William Taylor Buck and Gertrude Havens Truex Buck Memorial Scholarship. Based on academic merit and financial need.

Edward M. Burnett Scholarship. For a student(s) who is a resident of Union Township, New Jersey.

Class of 1909 Scholarship. Based on academic merit and financial need.

Class of 1915 Waksman Scholarship. For a student(s) with high academic achievement and financial need who demonstrates strong personal character through participation in community and extracurricular activities.

Class of 1917, 1766 Fund. For a graduating senior(s) who is a descendant of the Rutgers College Class of 1917.

Class of 1920 Endowed Merit Scholarship. For a student(s) at Rutgers College or the School of Engineering; based on academic merit.

Class of 1922 Old Guard Scholarship. Granted annually to students who are New Jersey residents and are enrolled at Rutgers College, Cook College, and the School of Engineering; based on academic merit.

Class of 1923 Scholarship. Based on academic merit and financial need.

Class of 1924 Scholarship. Preference given to students who are children of Rutgers College alumni.

Class of 1925 Scholarship. For student(s) of Cook College, Rutgers College, and the School of Engineering, with preference given to descendants of the Class of 1925; based on academic performance.

Class of 1929 Scholarship. Based on academic merit and financial need.

Class of 1931 Scholarship. Based on academic merit and financial need.

Class of 1932 Scholarship. Based on academic merit.

Class of 1934 Spence Memorial Scholarship. For a student(s) attending Rutgers, Douglass, or Cook College, with preference given to students who are lineal descendants of alumni of the Class of 1934; based on academic merit, financial need, and leadership or service to the university or community.

Class of 1938 Memorial Scholarship. Based on academic merit.

Class of 1944—Crandon Clark Scholarship. For Rutgers College sophomores, and renewable through the senior year, on the basis of academic merit, character, and financial need. Preference given to graduates of Hasbrouck Heights, New Jersey, High School; Ridgewood, New Jersey, High School; Teaneck, New Jersey, High School; or Cheshire Academy, Cheshire, Connecticut. Preference also given to members of the Rutgers football or track teams, or ROTC members who plan to participate in advanced ROTC.

Class of 1944 Endowed Scholarship. Based on academic merit.

Class of 1954 Merit Scholarship. Based on academic merit.

Class of 1963 Good Citizen Scholarship. For a full-time junior or senior; based on academic merit, achievement, leadership, and community service.

Class of 1964 Honors Scholarship. For participant(s) in the Rutgers College General Honors Program.

Class of 1966 Scholarship. Based on academic merit.

Class of 1969 Scholarship. For participant(s) in the Rutgers College General Honors Program; based on financial need.

Class of 1979 Merit Scholarship. Based on academic merit, with preference given to a student(s) who is a descendant of a member of the Class of 1979.

1929 Sara C. Clavin Memorial Scholarship. For full-time students; based on academic excellence.

College Scholars Scholarship. Based on academic merit.

Jerome and Suzanne Deady Memorial Scholarship. For a student (s) enrolled in Rutgers College or Douglass College.

William H.S. Demarest Scholarship. For a first-year student(s), preferably one who is preparing for a career in the ministry and who is a resident of New Brunswick or its vicinity.

Harriett and Robert Druskin Endowed Scholarship. Based on academic merit and financial need.

Ervin S. Fulop Scholarship Fund. For a full-time student(s); based on academic merit and financial need.

Gaipa Endowment Scholarship. Based on financial need.

Robert E. Galbraith Scholarship. For a student(s) in a premedical major.

Garretson Scholarship. For an undergraduate Rutgers University–New Brunswick student(s) based on academic merit, financial need, good character, and instructor recommendations, with preference given to Somerset County residents and those students studying for the Christian ministry.

Frank T. Gorman, Jr., Scholarship. Award for excellence in the humanities to students who participate in the Rutgers College General Honors Program.

Richard E. Gruen Memorial Scholarship. For a New Jersey resident(s) who is majoring in the arts or sciences.

Oswald Haldane, '73 Scholarship. Based on academic merit and financial need.

Raymond Hill Memorial Scholarship. For a full-time student(s) majoring in economics or accounting; based primarily on academic standing and financial need.

Timothy Hubbard Scholarship. Based on academic merit or financial need.

Henry N. Johnson Memorial Scholarship. Based on academic merit or financial need.

Elizabeth and Adam Krauss Permanent Memorial Scholarship.

Norma and Sol D. Kugler Endowed Scholarship. For juniors based on academic merit or financial need. Recipient must reside in Bergen County and must major in a School of Business discipline or in Jewish studies, with preference given to underrepresented minorities to increase diversity in these areas of study.

Hans Lagerloef Scholarship. For a student(s) who is a resident of New Jersey, with preference given to those from the Township of Weehawken.

Lambda Chi Alpha–Paul V. Maggio Scholarship. Based on academic merit.

Bonnie Wallace LeClear Scholarship. Based on academic merit or financial need.

Egbert LeFavre Scholarship. For a premedical or biological sciences major(s).

Duncan and Nancy MacMillan. For full-time students, based on academic merit and financial need, with preference to veterans and students who are between the ages of twenty-one and thirty.

Peter F.E. Marapodi Scholarship. For a full-time student majoring in chemistry, with preference for a student who is a New Jersey resident; based on academic merit.

Franklin J. Marryott Endowed Scholarship. For full-time undergraduate students studying music or history, with preference given to students whose hometown is Jamesburg, New Jersey.

Louis B. Migliorini Scholarship. For a resident(s) of Middlesex County, New Jersey.

George Morris Scholarship. Based on academic merit and financial need.

David Murray Scholarship. For a student(s) who is a resident of Middlesex County, New Jersey; based on academic merit and financial need.

Susan and George Parker Memorial Scholarship. For a full-time junior(s) or senior(s) majoring in economics or a School of Business–New Brunswick student, based on academic excellence.

John W. and Irene B. Perrine Scholarship. For a New Jersey resident who is majoring in English; based on academic merit.

Frances Stafford Peshine Scholarship. For a student(s) who is majoring in public administration, political science, or government administration.

Estate of Ada Piltz Scholarship. Based on academic merit or financial need.

Jules and Jane Plangere Scholarship. For a full-time undergraduate student who is a graduate of a) Asbury Park, New Jersey, High School; or b) any public high school in Monmouth County, New Jersey; based on financial need.

Rahway Scholarship. For a student(s) who is a resident of Rahway, New Jersey.

Wendell P. Reid Memorial Scholarship. Based on academic merit and financial need.

Norman and Syril Reitman Premed Scholarship. For an outstanding premedical student(s) who has demonstrated financial need.

Rutgers College Honors Scholarship. For a full-time member of the Rutgers College General Honors Program; based on academic merit.

Rutgers College Parents' Association Scholarship. For a student(s) who has contributed to the college community.

Rutgers College Scholarship. Based on academic merit.

Rutgers University Alumni Scholarship. Based on academic merit.

Rutgers University Premed Scholarship. For a premedical student(s) who is a junior or senior.

William L. Schoonover Scholarship. Based on academic performance and financial need.

Alan Marc Schreiber Memorial Undergraduate Research Award. For full-time Rutgers College students who submit a proposal for the Henry Rutgers Scholars Program for completion of a thesis in mathematics, economics, or a related topic; based on the academic accomplishments of the student and the quality of the research proposal.

Jim Sierk Scholar Athlete Scholarship. For a full-time undergraduate student wrestler; based on academic merit and demonstrated athletic ability.

Hugh E. Thompson Memorial Scholarship. For a sophomore, junior, or senior; based on academic merit and financial need.

George W. Triblehorn, Jr., Scholarship. For a junior or senior majoring in economics or business.

Jane W. Triblehorn Memorial Scholarship. For a full-time junior or senior majoring in economics or business; based on academic merit.

Francesco G. Urbano Scholarship. Based on academic performance and financial need.

John A. Van Der Poel Scholarship. For a student(s) majoring in science, with preference given to chemistry majors; based on academic performance.

Cornelia B. Van Pelt Scholarship. For students who are studying art and music.

War Memorial Scholarship. For a first-year student(s) on the basis of academic merit and personal leadership qualities.

Elizabeth Wehr Scholarship. For a student(s) attending Douglass College or Rutgers College majoring in the humanities; based on academic performance.

Charles H. Winfield Scholarship. Based on academic merit or financial need.

UNIVERSITY COLLEGE

University College scholarships are awarded by the University College–New Brunswick dean's office subject to the availability of funds. Part-time students are eligible for any of these scholarships. Student inquiries regarding these scholarships should be addressed to the dean's office.

Atrion Corporation Endowed Scholarship. For a student pursuing a business major; based on academic merit and need.

Bell Atlantic Foundation Scholarship. For a New Jersey resident; based on academic merit and need.

Fund for Student Diversity Award. Awarded at the discretion of the dean to enhance the diversity of the student body.

John J. and Regina Heldrich Endowed Scholarship. For students entering their first year at Rutgers University, with preference for graduates of Highland Park High School.

Helen B. Hurd Endowment Award. For outstanding New Jersey community college graduates transferring to University College–New Brunswick, with preference given to part-time students.

Frank J. and Kathleen McGuire Endowed Scholarship. For a student demonstrating academic merit or financial need.

Jason Minken Memorial Award. For students entering University College who have overcome a significant life challenge.

Moms Off-Duty Scholarship. For a female student with a dependent child or children; based on financial need.

Charlotte W. Newcombe Award. For mature women who are pursuing degrees as a means to a new career; based on financial need.

Edward B. Snyder Award. For students who have returned to college after an extended period of time in other life experiences.

Ethan Stein Endowment Award. For students who have completed the Transition Program and are in their first term at University College.

University College Governing Association Transition Program Award. For a Transition Program graduate who has completed at least 15 credits in University College with a GPA of 3.2 or better.

University College Honors Program Award. For students enrolled in the University College Honors Program and taking an honors course.

University College Merit Scholarship. For students who have completed at least 12 credits in University College with a GPA of 3.2 or better.

University College–New Brunswick Alumni Association Endowed Scholarship. Awarded on the basis of a 500-word essay describing how the student has benefited from the uniqueness of University College.

COOK COLLEGE

In February, matriculated Cook College students (except seniors) are notified by the Office of Academic and Student Affairs of the start of the annual scholarship application process for the following academic year. Students who receive awards are chosen from among those invited to apply for the college's need- and merit-based scholarships.

Additionally, a number of academic prizes and departmental scholarships are awarded through academic departments to Cook College students in various fields of study, often on the recommendation of the faculty in the appropriate curriculum. Students automatically are considered for all awards for which they are eligible.

David H. Agans Memorial. For a New Jersey resident based upon personal and leadership characteristics and demonstrated financial need.

Phillip Alampi. Based on academic potential and financial need.

Edgar B. Bacon. For students who are Cumberland County residents majoring in agriculture or related fields, and Hudson County residents majoring in journalism; based on academic merit and financial need.

C. Olin Ball. Department of Food Science award to a food science major for outstanding scholarship in food engineering courses.

Dr. John W. Bartlett. For a student majoring in animal science.

Ernest Bell. For a junior or senior with an interest in equine studies.

Benjamin Moore & Company Scholarship. For students whose course of study is in the environmental field; based on academic merit and financial need.

Betances Latino and Hellenic Scholarship Fund. For juniors or seniors, with preference to active members of Hellenic Cultural Society and Latin American Student Organization (LASO); based on academic merit, community service, and financial need. Preference also to students involved with activities that help discourage peers from alcohol and drug use.

Jayanth Bhatt Memorial Scholarship. For a sophomore, with special consideration to students who actively participate in the life of the university or community and have interest(s) in music, environment, religion, and/or languages; based on academic merit and financial need.

B'nai B'rith Food Industry. Department of Food Science award for sophomores or juniors majoring in food science.

James Drake Brown Memorial Award. For a junior or senior undergraduate food science major at Cook College (preferably male), with preference to a recipient active in intramural sports and/or extracurricular activities and member of the Food Science Club with average ability and outgoing personality.

Samuel W. and Berta Thomson Brown Memorial Scholarship Fund. For a junior or senior enrolled in environmental science, international environmental studies, human ecology, natural resource management, and bioresource engineering (five-year bioenvironmental program).

Murray and Helen Buell Scholarship Fund. Based on academic merit and financial need, with preference to environmental science majors.

Linda Rudolph Burns Memorial Scholarship. For a senior enrolled in the environmental science program, with preference given to a transfer student from Middlesex County College and/or a Middlesex County resident; based on academic merit and financial need.

Dr. Kenneth Baird and Mrs. Jane Charlesworth Endowed Scholarship. For students in the agricultural or environmental field, with preference given to students who express an interest in a Scottish exchange student or study abroad program; based on academic merit and financial need.

Norman F. Childers Award. Plant Science award for a junior, senior, or graduate student; based on academic excellence, interest in pomology or horticulture, and financial need.

Class of 1922. Based on academic merit.

Class of 1925. Based on academic performance and personal character.

Class of 1929. Based on financial need.

Class of 1931. Based on academic merit and financial need, with preference given to direct descendants of members of the Class of 1931.

Class of 1933 Lipman Family Scholarship. Based on academic merit and financial need.

Class of 1934 Walter Spence Memorial. For a Cook College junior or senior nominated by faculty member or adviser, with preference given to a qualified competitive swimmer an/or lineal descendant of the Class of 1934: based on academic merit, financial need, and community or university leadership or service.

Class of 1944 Endowment Scholarship. Based on academic merit.

Class of 1951 Memorial Scholarship. For student(s) participating in the athletic program.

Class of 1954. Based on academic merit, with preference given to students who are children of Cook College alumni.

College of Agriculture and Environmental Science (CAES). For academically meritorious students of high personal character who are majoring in agriculture and environmental science.

College Scholars. Based on academic merit.

Dr. Charles H. Connors Award. Garden Club of New Jersey award to a student(s) majoring in landscape architecture or ornamental horticulture for use in the senior year.

Cook/CAES Alumni Association Scholarships. Awards include a Heritage Scholarship for an entering first-year student based on academic merit, with preference to the daughter/son/grandchild of Cook College alumni, and the Upper-Class Scholarships for all class years, based on academic merit and financial need. Additional consideration will be based on a broad spectrum of student leadership activities including university or community volunteerism, university or community club participation, campus leadership activities, or any related areas of leadership participation.

Cook College Parents' Association Scholarships. For members of all class years, based on high academic achievement and community service. Additional awards include: Dr. Grant F. Walton Award, based on academic excellence and community service, and Against All Odds Award, based on succeeding through personally challenging circumstances.

Cook Educational Assistance Fund (CEAF). For first-year students and transfer students and to assist in the retention of students. Recipients must maintain satisfactory academic performance.

Spencer H. Davis, Jr., Award. Department of Plant Pathology award granted to a senior undergraduate student(s) and/or graduate student(s) of outstanding scholarship in plant biology with particular interest in plant pathology studies.

Roy H. De Boer Prize in Landscape Architecture. Department of Landscape Architecture award for a student who has exhibited outstanding scholastic achievement and financial need.

Samuel C. DeCou Memorial. For an agricultural and environmental science major who demonstrates high academic achievement and financial need.

Richard T. Dewling. For a junior or senior who is majoring in environmental science and demonstrates an interest in the study of water pollution or related areas; based on academic merit.

Joseph DiConzo Memorial. For a sophomore majoring in environmental science, based on academic excellence; financial need; and an interest in water, air, and soil pollution and related areas.

Dingler Foundation. For students who are residents of Newark or suburban Essex County, New Jersey; based on academic promise and financial need.

Kevin Dorko Memorial. For a junior majoring in landscape architecture who ranks in the top third of the junior class and demonstrates great academic promise.

Duell and Hanna Soil and Water Conservation Club. For undergraduate students majoring in plant science, environmental science, natural resource management, and related fields, with interest in soil and water conservation, involvement in the club, and academic merit.

Eastern Dairy Deli Association. For a student majoring in food science.

Eastern Produce Council. For a student majoring in agricultural business or food science, based on character, academic achievement, financial need, and an interest in food distribution.

Edison Garden Club. Department of Landscape Architecture award based on academic excellence, financial need, and demonstrated evidence of future contributions to subject area; with preference given to New Jersey and/or Middlesex County residents.

Dr. Samuel D. Faust Memorial. Department of Environmental Sciences award for a graduating senior majoring in environmental sciences who intends to enroll in graduate school.

Dr. Melvin S. Finstein Scholarship. Department of Environmental Sciences award to an upper-class undergraduate student; based on academic merit.

Colonel Arthur F. Foran. For a senior majoring in agriculture and demonstrating a career interest in the dairy industry.

Hilda S. Foster Endowed Scholarship/Fellowship. For undergraduate and graduate students based on academic merit.

Garden Club of New Jersey. For a student majoring in landscape architecture.

Gardeners of Watchung Hills Scholarship. For a Somerset, Union, or Morris County resident with demonstrated academic excellence, who is entering the sophomore year and majoring in the field of horticulture, plant science, or landscape architecture.

Ralph Geiger Scholarship in Turfgrass Science. Center for Turfgrass Science award for students in turfgrass studies, based on academic merit, leadership qualities, and interest in the turfgrass field.

General Honors Program. For incoming first-year students with high academic promise who participate in the four-year honors program. Awards are subject to renewal.

Rex L. Gilbreath Memorial Award. For a student majoring in agricultural or biological sciences, nominated by the respective academic department; based on need, special circumstances, merit, and academic performance.

Jacob Groendyke. For a student majoring in horticulture, forestry, and related fields; based on academic merit, financial need, demonstrated interest, and New Jersey residency.

Hamo Hachnasarian. For a student majoring in agricultural or biological sciences, nominated by the respective academic department; based on need, special circumstances, merit, and academic performance.

Robert Hanna Soil and Water Conservation Club. For undergraduate students majoring in plant science, environmental science, natural resource management, and related fields, with interest in soil and water conservation, involvement in the club, and academic merit.

Helyar House. For students who reside in the Helyar House dormitory.

Richard W. Herbert Memorial. Based on academic performance.

Herbert Memorial Fund (Estate of Kelly). Based on academic performance.

Kimberly M. Hershhorn Scholarship in Animal Science. For seniors in recognition of excellence in academics, research, and service to the department, college, and university.

Harriet Dalton Hird. For a junior or senior who is a resident of Bergen County, New Jersey, and who demonstrates financial need and high personal leadership qualities.

W.R. Hutchinson Memorial Scholarship. Department of Animal Science award for a student with an interest in sheep studies.

Stanley Wall Frozen Food Age and Kings Supermarket. For a junior or senior who has an interest in agribusiness or food science.

Kings/Bildner Scholarship. For a full-time student with good academic performance, majoring in agricultural marketing, horticulture, food science, or horticulture engineering, with preference given to students interested in studies relating to quality of perishable foods.

R.G. Kingslandsmith. For a student majoring in agriculture and interested in conducting research.

Dick H. Kleyn Memorial. For a first-year student who is a declared food science major; based on academic merit and participation in extracurricular activities.

Deskin Taylor Knoll Memorial. Department of Landscape Architecture award for a junior majoring in landscape architecture, based on academic merit and demonstrated evidence of most artistic talent in the execution of a landscape design project.

Michael Kuser. For an outstanding junior or senior based upon merit, leadership, financial need, and interest in natural resource management and applied ecology.

Peter Selmer Loft. For a student of agriculture who has an interest in studying turfgrass.

Raymond M. Manganelli Award. For a junior or senior majoring in environmental studies/science based on academic performance, scholastic ability, and interest in environmental studies.

Elizabeth and Karl Ehricke/Maplewood Garden Club Scholarship. For students majoring in plant science, landscape architecture, horticulture engineering, or natural resource management; based on academic merit and financial need.

Richard Walter/Maplewood Garden Club Scholarship. For students majoring in plant science, landscape architecture, horticulture engineering, or natural resource management; based on academic merit and financial need.

Marquand Park. For a student who has an interest in studying and preserving the trees of Marquand Park in Princeton, New Jersey.

William J. Martin. For a high-performing student who is preparing to enter graduate school.

Philip E. Marucci Scholarship. Alternated yearly to: a) a senior enrolled in an agriculturally related major, and b) a student planning to attend medical school.

Florence S. McNeill Scholarship. Awarded by the Garden Club of New Jersey each year to students majoring in landscape architecture for use in the senior year.

Elizabeth B. Merriam Award. Garden Club of New Jersey award to a senior(s) majoring in landscape architecture or ornamental horticulture for use in the senior year.

Charles Messer Memorial. For a senior participant in the George H. Cook Scholars Program who is conducting research on a topic related to food, nutrition, or agriculture; based on financial need.

Metropolitan Golf Writers. For a student who participates in golf and whose primary career interest is golf course management.

Mid-Atlantic States Section, Air and Waste Management Association Achievement Award. For a junior or senior majoring in environmental science who is interested in air and waste management field, and who actively participates in the Air and Waste Management Association.

Middlesex County Fair Association. For high school graduates and/or residents of Middlesex County, New Jersey, who have a broad interest in agriculture or a related field and demonstrate financial need.

Charles Miller. Based on character, academic merit, and financial need.

Ralph G. Mitchell Memorial Award. For a student majoring in animal science; based on academic merit and financial need.

Doris C. Murphy Endowed Equine Scholarship. Department of Animal Science award for women students majoring in equine science; based on academic merit and financial need.

Nellis Memorial. Two awards granted to New Jersey residents who have transferred from a community college, one of whom is majoring in agriculture and environmental science and the other in nutritional science.

Mary Nevius. For a student majoring in agriculture; based on merit.

New Jersey Division Woman's Farm and Garden Association. For students of agriculture who have an interest in national horticulture or related fields.

New Jersey Water Environment Association/Raymond Manganelli Scholarship. Based on academic merit and demonstrated interest in environmental sciences or engineering or a closely related field with strong component in appropriate technical aspects of environmental protection, water pollution control, and/or hazardous waste management.

New York Farmers Club Scholarship. For students majoring in agriculturally related fields. One award is to a first-year student who has declared the major by the second term. One award is to an entering transfer student from a New Jersey community college who plans to major in a relevant area of study.

New York Institute of Food Technology. For a junior or senior majoring in food science.

New York Junior Breeders Fund. For a student majoring in food science or vocational agriculture.

Winston E. Parker Memorial. Awarded by Moorestown Rotary Charities to a junior, senior, or graduate student studying forestry, arboriculture, ornamental horticulture, or related areas. Based on academic performance, financial need, and residency in the New Jersey counties of Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, or Salem.

Francis Stafford Peshine. For a student who is interested in public affairs.

Sally H. Peterson. For a student majoring in agriculture.

Elizabeth and Arthur Reich Urban and Minority Access Project. For students majoring in environmental sciences or related majors with demonstrated academic performance at the high school and college levels, minimum cumulative grade-point average of 2.8, financial need, and interest in related activities and graduate study. Preference given to: (a) African-American and Hispanic-American U.S. citizens; (b) graduates of public or private high schools in Atlantic City, Camden, East Orange, Elizabeth, Hoboken, Jersey City, Newark, New Brunswick, Passaic, Paterson, Perth Amboy, Plainfield, Union City, and Trenton, New Jersey.

Lloyd K. Riggs. Department of Food Science award to student majoring in food science based on academic achievement and involvement in the Food Science Club.

Dana Eve Roth Memorial Award Fund. For a student with a 3.5 cumulative grade-point average and an avid interest in animals.

Amelia L. Ruggles. For students participating in the Cook College General Honors Program.

Alfredo Santiago Endowed Scholarship. For an outstanding student, with preference given to Latino students majoring in areas of study such as math, science, engineering, and premed; based on academic merit and financial need.

Kurt Schaeffer Memorial. For a graduating senior who is preparing for a career with the mentally or physically disabled; based on academic merit and demonstrated interest.

Scharring-Hausen. For a student majoring in environmental science; based on academic merit and financial need.

John B. Schmitt. For a student who demonstrates an interest in entomology.

Sears Roebuck Foundation. Based on financial need.

William C. Skelly Memorial. For a student majoring in animal science; based on academic performance.

William E. Snyder. For a junior and senior majoring in plant science, environmental planning and design, or agricultural science, with an emphasis on floral, ornamental, or horticultural studies; based on academic merit, financial need, and interest in the horticultural/ornamental industry.

Snyder Research and Extension Farm Summer Fellowship. For a sophomore or junior who demonstrates a need for hands-on education and in the field of sustainable agriculture, possesses a minimum 2.5 cumulative grade-point average, and who has financial need. Preference for New Jersey residents. Minorities and women without farm background or experience given strong consideration.

Soils and Crops. For students who are interested in studying turfgrass, soils, or agronomy.

Myron and Rona Solberg Renaissance Scholarship. For a junior or senior with demonstrated interest and / or accomplishment in the fine or performing arts. First preference to a student majoring in food science; some consideration to biology, biochemistry, or related sciences.

Professor M.A. Sprague Award. Department of Plant Sciences award for an outstanding agronomy undergraduate student.

Elizabeth F. Stier Scholarship. Department of Food Science award for female student majoring in food science who has been active in the Food Science Club and with the New York Chapter of the Institute of Food Technologists.

Willard C. Thompson. For a student majoring in agriculture; based on leadership capabilities and demonstrated financial need.

USDA Multicultural Scholarship. For African-American, Hispanic, and Native American students based on a combination of SAT scores, class rank, student essays, and faculty interviews.

Rudolf W. and Ans van derGoot Memorial Scholarship. Awarded by Gardeners of Somerset Valley, Inc., to a Somerset, Middlesex, or Hunterdon County resident (in order of preference) with demonstrated academic excellence, who is entering the sophomore year and majoring in the field of horticulture, plant science, or landscape architecture.

Vegetable Growers Association. For a sophomore or junior based on demonstrated interest in the vegetable industry, academic performance, financial need, and academic or work-related experience.

Garrett Scott Voorhees, Sr., Memorial Award. Based on academic merit and willingness to contribute to the academic community.

W & N Foundation Scholarship. Department of Bioresource Engineering award granted to a student majoring in bioresource engineering; based on academic performance.

Hilda A. and Gustave J. Walter Memorial Scholarship. For a junior, senior, or potential graduate student with preference to environmental and business economics majors. Students should demonstrate academic excellence, financial need, or self-efforts to support their own education. Preference given to any Walter family member who meets the above criteria.

John H. Weber, Jr., Memorial. For a graduating senior majoring in environmental science, based on academic merit, need, and demonstrated interest in the environment.

Elizabeth Wehr. Based on academic performance and financial need.

Theodore A. Weston Memorial. For students who major in plant science.

Harold Wetterberg Foundation. For students majoring in agriculture and environmental science, with preference given to those studying animal science.

Widzenas Memorial. For a high school graduate and resident of Burlington County, New Jersey, majoring in agriculture, agricultural economics, or a related field; based on academic performance.

Windeler Family. For a senior enrolled in the nutritional sciences program; based on academic merit and financial need.

James J. Winston Memorial. Department of Food Science award for a student majoring in food science, based on academic merit.

Estelle M. Wolff Memorial Scholarship. Based on academic merit, character, and participation in leadership activities.

Woodbridge Garden Club. For a student majoring in horticulture or related field who demonstrates high scholastic achievement and is a resident of Woodbridge Township or Middlesex County, New Jersey.

Don Paul Yaquinto Award in Landscape Architecture. Department of Landscape Architecture award for the most outstanding student in the sophomore class.

MASON GROSS SCHOOL OF THE ARTS

Students are selected for these awards by the Mason Gross School of the Arts Scholarship Committee. Inquiries should be addressed to the Office of the Dean.

Barbara and James Betts. For an undergraduate student in the visual arts; based on artistic talent and financial need.

Giza Daniels-Endesha. For an outstanding undergraduate and graduate student in the visual arts.

James O. Dumont. For a visual arts student and used to help in the purchase of art material; based on merit and financial need.

Charlotte Durham Frazier Memorial Scholarship. For a student of music who is interested in the study of keyboard instruments.

Leila Durham Gladwell Memorial Scholarship. For a student of music who is interested in the study of keyboard instruments.

Eugene H. Lockfeld Memorial Scholarship. For a student of music who is interested in jazz studies.

Marching Band. For members of the Rutgers University Marching Band.

Edna S. Mason Scholarship. For a student of music who is interested in the study of keyboard instruments.

Mason Gross School of the Arts. For students majoring in the creative and performing arts.

Catherine Mortola Saldarini Scholarship. For a student of music who is interested in the study of keyboard instruments.

Pee Wee Russell. For a student of music who is interested in jazz studies.

Paul Trilling. For black and Hispanic-American music majors, with preference given to majors in violin, viola, and cello; based on academic merit and financial need.

Turner Choreography Award. For the most promising student choreographer.

The Women's League of Rutgers. For an artistically promising junior in theater arts whose academic work also is excellent.

COLLEGE OF NURSING

These scholarships are administered by the College of Nursing. Students should address inquiries regarding these awards to the Office of the Associate Dean for Student Affairs the College of Nursing on the Newark campus.

College of Nursing. Based on merit or financial need.

Patricia Scola Memorial. Awarded to students in good academic standing; based on merit and financial need.

Victoria Caballero Van Allen Scholarship. Granted on the basis of academic merit and need, preferably to Hispanic nursing students.

COLLEGE OF PHARMACY

Scholarships

The following scholarships, in varying amounts, are awarded annually to pharmacy undergraduates and Pharm.D. degree candidates on the basis of financial need, scholastic achievement, and character. Inquiries regarding these scholarships should be addressed to the College of Pharmacy Business Office; 732/445-2675, ext. 614.

Acme Markets Scholarship. Provides annual tuition assistance to three, third-year pharmacy students, with preference given to one woman and one underrepresented minority.

Area VII Physicians Review Organization Scholarships. For five students who demonstrate high academic ability and evidence of financial need, and who are New Jersey residents from Hunterdon, Mercer, Middlesex, Monmouth, Ocean, or Somerset County.

Auxiliary of the New Jersey Pharmacists Association Scholarship. For a student entering the third, fourth, fifth, or sixth year; based on academic achievement, financial need, extracurricular activities, and interest in the community pharmacy practice.

Lucille and Michael Bongiovanni Endowed Scholarship. Based on academic merit.

Harriet and Roy Bowers Memorial Scholarship For undergraduate and Pharm.D. candidates enrolled at the College of Pharmacy.

John and Josephine Calasibetta Endowed Scholarship. For students registered in the Pharm.D. program; based on academic merit.

Class of 1934 Pharmacy Scholarship. For students in the Pharm.D. program; based on academic merit and need.

Croucher/Eli Lilly Endowed Scholarship. For New Jersey residents exhibiting leadership and community involvement; based on financial need.

CVS Scholarships. For students entering their third, fourth, fifth, or sixth year; based on academic achievement, financial need, extracurricular activities, and interest in community pharmacy practice.

Martin G. Daffner Endowed Scholarship Fund. For students entering their first professional year.

Eckerd Drug Company Scholarship. For a full-time undergraduate student entering the first professional year; based on academic merit and need and an interest or orientation to community pharmacy practice.

Oswald Fechner Endowed Scholarship. For first-year students; based on academic excellence and financial need.

Louis E. Feinerman Scholarship. Based on academic merit and financial need.

Foxcroft Pharmacy Endowed Scholarship. For a student entering the third, fourth, fifth, or sixth year; based on academic achievement, financial need, extracurricular activities, and interest in community pharmacy practice.

Philemon E. Hommell Scholarship. For a student entering the third, fourth, fifth, or sixth year.

William and Helen Levine Endowed Pharm.D. Scholarship. For students enrolled in the Pharm.D. program.

Walter J. Lewit Scholarship. Based on financial need, good moral character, and other criteria.

Seymour A. Lubman Endowed Scholarship. Based on academic excellence and/or financial need.

Emil P. Martini, Sr., Memorial Scholarship. For a student demonstrating outstanding scholastic achievement and character and financial need.

Jack Mazer Endowed Scholarship. For a third-, fourth-, fifth-, or sixth-year student; based on scholastic achievement and financial need.

Medco Containment Services, Inc., Scholarship. Awarded annually to a full-time student entering the fifth year who excels academically and demonstrates financial need.

Thomas Nevin Memorial Scholarship. For a student entering the third, fourth, fifth, or sixth year; based on academic achievement, financial need, extracurricular activities, and interest in community pharmacy practice.

Novartis Endowed Scholarship. Based on academic merit and financial need.

Organon, Inc., Scholarship Based on academic merit and financial need.

Betty and Harold Perl Endowed Scholarship. For entering first-year students and/or transfer students; based on merit and need.

Pharmacy Alumni Scholarships. For pharmacy students entering their third, fourth, fifth, or sixth year; based on academic achievement, financial need, or extracurricular activities.

Amalia R. and R. Raymond Ricciardi Endowed Scholarship. For a full-time student; based on academic merit.

Rite Aid Scholarship. For a student entering the third, fourth, fifth, or sixth year; based on academic achievement, financial need, extracurricular activities, and interest in community pharmacy practice.

Jacob Robbins Memorial Scholarship. Awarded annually; based on academic merit and financial need.

Schering-Plough Scholarship. For undergraduates or graduate students; based on academic performance and financial need.

Eric D. Seifert Memorial Scholarship. Awarded annually to a full-time Pharm.D. student.

Wal-Mart Scholarship. For a student entering the third, fourth, fifth, or sixth year; based on academic achievement, financial need, extracurricular activities, and interest in community pharmacy practice.

Prizes and Awards

The following prizes and awards are presented annually to pharmacy students in recognition of specified achievements.

Cordasco-Iannarone.

John J. Debus Memorial Pharmaceutics Departmental Award.

Alvin Felmeister Award in Clinical Pharmacokinetics.

Philemon E. Hommell—Pharmacology and Toxicology Departmental Award.

Samuel and Gertrude Kaufman—Pharmacy Practice and Administration Departmental Award.

William O. Kuebler—Pharmacy Practice and Administration Departmental Award.

Thelma M. Moss Memorial Award—To a Graduating Minority Student.

New Jersey Pharmacists Association Award for Scholarship and Leadership.

Pharmaceutics Excellence Award—Pharmaceutics Departmental Award.

Pharmaceutics Excellence in Research—Pharmaceutics Departmental Award.

Pharmacokinetics Excellence Award—Pharmaceutics Departmental Award.

Herbert Remmer—Pharmacology and Toxicology Departmental Award.

SCHOOL OF ENGINEERING

Funds from the following scholarships are awarded annually to new first-year students and to continuing students. Candidates for first-year scholarships must be eligible to enroll in the School of Engineering Honors Program and are evaluated on the basis of standard admissions parameters such as math and verbal SAT scores and high school rank in class. Continuing students apply each year to the School of Engineering Scholarship Committee and are awarded on the basis of a combination of criteria including their cumulative grade-point average earned at Rutgers, demonstrated financial need, and community service. This listing does not include other university-wide scholarships that are available to engineering students.

Inquiries regarding all School of Engineering scholarships, awards, and prizes should be referred to the Office of Academic Affairs in Room B100 of the Engineering Building; 732 / 445-2212.

Leroy W. Allison. For a high-achieving student majoring in ceramic engineering.

Alumni of Rutgers Ceramics. For high-achieving students majoring in ceramic engineering.

American Ceramic Society. For high-achieving students majoring in ceramic engineering.

Auchter 1912 Award. Based on academic merit or financial need.

Bell Atlantic Scholarship. For an outstanding New Jersey resident(s) enrolled in Douglass College, Rutgers College, or the School of Engineering who demonstrates active participation in extracurricular and community events.

George H. Brown. For a student majoring in ceramic engineering.

Maria and Louis Caballero. For students of Hispanic heritage; based on academic performance and financial need.

Ceramic Association of New Jersey. For a senior majoring in ceramic engineering.

Edward Dudley Chase. Based on high academic performance.

Class of 1920 Endowed Merit Scholarship. For a student(s) at Rutgers College or the School of Engineering; based on academic merit.

Class of 1922 Old Guard Scholarship. For New Jersey residents enrolled at Rutgers College, Cook College, and the School of Engineering; based on academic merit.

Class of 1925 Scholarship. For a student(s) of Cook College, Rutgers College, or the School of Engineering; based on academic performance, with preference given to descendants of members of the Class of 1925.

Class of 1944 Endowed Scholarship. Based on academic merit.

David S. Chen Memorial. For a full-time student majoring in industrial engineering; based on academic merit and financial need.

Anthony Delmastro Memorial Fund. For a student majoring in civil engineering who ranks academically in the top 20 percent of the junior class and displays outstanding promise for professional leadership.

Louis A. DiMarzo. For engineering students who are active in extracurricular activities; based on academic merit and financial need.

Engineering. For first-year students who participate in the college honors program.

W. Farrington Wells. For a student majoring in electrical engineering; based on academic merit.

Folensbee Memorial. Based on academic performance and financial need.

Edwin L. Gidley. For a student majoring in civil engineering; based on financial need.

Colonel Hugh A. Kelly. For first-year students.

Donald R. Knapp. For full-time students; based on academic merit and financial need, with preference given to students working part time to defray college costs, or one who is significantly involved in community service.

Laurence M. and Dorothy L. Leeds. For worthy, promising, and deserving students enrolled at the School of Engineering.

Charles V. Longo Memorial. For upper-class electrical engineering majors who demonstrate financial need and are maintaining a 2.5 cumulative grade-point average or better.

Noe Memorial. For a student majoring in electrical engineering.

Gordon Ott. For a sophomore; based on academic performance or financial need.

Ross and Ross. Based on academic merit or financial need.

Ernest R. Schultz 1930 Scholarship. For students who are entering their senior year as civil engineering majors; based on academic merit and financial need.

Eleanor Aumack and Samuel Sneath. For full-time students majoring in engineering; based on academic merit and financial need.

Fritz Steudel. Based on financial need.

Emanuel Terner. For students majoring in packaging engineering; based on academic merit and financial need.

Frank Thompson. For a student majoring in electrical, civil, or mechanical engineering; based on financial need.

Ethel M. Toomey. Based on high academic achievement or financial need.

Scholarships Administered by Various University Offices

The following scholarships are available to students registered in any of the university undergraduate colleges, unless otherwise noted.

OFFICE OF UNIVERSITY UNDERGRADUATE ADMISSIONS

All admitted students who apply for admission by the official admissions deadline are automatically considered for the merit awards administered by the Office of University Undergraduate Admissions. Separate applications forms are not required. All scholarships are renewable unless otherwise stated. All recipients will be informed as to the renewal eligibility requirements. Questions concerning these scholarships may be directed to the Office of University Undergraduate Admissions at 732/445-3770.

James T. Bryan. For first-year African-American students who reside in the greater New Brunswick area and enroll in Rutgers College, Douglass College, Newark College of Arts and Sciences, or the College of Nursing.

James Dickson Carr Scholarship. For minority students on the basis of academic promise as demonstrated in high school work and SAT or ACT scores, and on the basis of participation in extracurricular activities in school and community.

Robert B. Clark-Roche. For first-year students majoring in mathematics or a natural science. Merit and financial need are considered and preference is given to women and students of color.

Class of 1940 Merit. For first-year students who enroll at Cook College, Rutgers College, or the School of Engineering.

Class of 1941 Scholarship. Preference given to descendants of members of the Class of 1941. Contact the Rutgers Alumni Association.

Class of 1970 Scholarship. Preference given to descendants of members of the Class of 1970. Contact the Rutgers Alumni Association.

Herman T. Hopper Scholarship. Two awards each year: one each to a first-year student and a transfer student who are residents of Rockland County, New York.

Theodore J. and F. Elizabeth Kirsch Southern California Scholarship Fund. For students who reside and attend public high school in the California communities of San Jose, San Mateo, and Palm Desert. Both merit and financial need are considered.

Frances B. and Paige D. L'Hommedieu Scholarship Fund. For transfer students who complete the associate degree at a New Jersey county college. Must be residents of New Jersey. Application required—inquire at county college transfer office.

Casper Nannes Alumni Club of Washington, DC. For first-year students who reside in Washington, DC, Virginia, or Maryland. Merit, financial need, and extracurricular activities are considered.

National Merit Scholarship. For first-year students. Eligible students are selected by the National Merit Corporation and must select Rutgers, The State University of New Jersey, as their first choice college.

National Achievement Scholarship. For first-year African-American students. Eligible students are selected by the National Merit Corporation and must select Rutgers, The State University of New Jersey, as their first-choice college.

Outstanding Scholars Recruitment Program (OSRP). For first-year New Jersey residents on the basis of academic merit and SAT scores; renewable for four years based on academic performance.

Phi Theta Kappa Honor Society Scholarship. For graduates of New Jersey county colleges, based on academic performance, and students who have been selected to participate in the New Jersey State Academic Team Competition.

Rutgers National Scholarship. For outstanding first-year, out-of-state (non-New Jersey residents) students on the basis of academic merit and SAT scores; renewable for four years based on academic performance.

Rutgers University Alumni Federation Legacy Scholarship. Established by the Alumni Federation in 1995 to provide merit scholarship awards to outstanding sons and daughters of alumni in their first year of undergraduate study at Rutgers. Nonrenewable.

Rutgers University Award for Academic Achievement. Awarded to first-year students of color.

Wal-Mart Competitive Edge Scholarship. For a first-year New Jersey resident majoring in computer science, engineering, mathematics, or natural science. Merit, financial need, and community service are considered.

DIVISION OF INTERCOLLEGIATE ATHLETICS

All athletic scholarships administered by the Division of Intercollegiate Athletics are restricted to members of Rutgers' athletic teams. Any questions concerning these scholarships may be directed to the Athletic Office at 732/445-7842.

Adler Scholarship Fund. For student athletes participating in nonrevenue sports.

Aquatic Club Scholarship. Annual awards for students participating in men's or women's intercollegiate swimming.

Aresty Scholarship for Olympic Sports. For a full-time male or female undergraduate participating in any of the Olympic sports.

Thomas T. Barr, Jr., Memorial. For student athletes enrolled in a New Brunswick college, with preference given to members of the intercollegiate football team.

David J. Bender. For deserving students who are members of athletic teams.

David Benjamin Scholarship. For full-time undergraduates participating in either the men's or women's golf program, with preference given to a resident of Hunterdon County.

William P. Bohus. Annual award for a New Jersey resident who is a member of the men's intercollegiate lacrosse team.

Floyd H. Bragg. For a student who participates in intercollegiate football.

Kurt Brinkman Memorial. For students who participate in the men's intercollegiate soccer or baseball teams.

Fred and Helen Brown. For a Rutgers College student who is preferably an engineering major and who is participating either in women's golf, men's golf, or track and field.

Bruskin Scholarship. For a student participating in football or basketball.

Frank Burns Scholarship. For full-time undergraduates participating in football at Rutgers.

Byrne Golf Scholarship. For men or women participating in intercollegiate golf.

Cagers Club. For a member of, or candidate for, the Rutgers women's intercollegiate basketball team.

CIT Group. One annual in-state tuition award presented to a female undergraduate student who is active in a varsity intercollegiate sport.

Class of 1933–Davey. For students participating in intercollegiate golf.

Class of 1935. Awards granted initially on the basis of financial need to students who participate in athletics; additional awards granted on academic merit.

Robert Collett. For students who participate in intercollegiate lacrosse; based on academic merit and financial need.

Kevin and Helen Collins. Two awards: one is presented to an undergraduate student who is a member of, or candidate for, the men's intercollegiate lacrosse team; the other is given to an undergraduate female participating in athletics.

H.B. Copleman. For a student athlete who is majoring in the biological sciences, with preference given to a premed major.

Isadore Copleman. For a member of, or candidate for, an intercollegiate team, with preference given to students majoring in journalism or communications.

Court Club. For a member of or candidate for the men's intercollegiate basketball team.

Leonard and Arline Dubrow. Two awards to undergraduate students participating in the sports of men's tennis and women's tennis.

Charles Erickson. For members of the intercollegiate tennis teams or other intercollegiate athletic teams.

Fazekas Family Scholarship. Two scholarships for full-time undergraduates participating in either baseball or men's soccer.

Robert C. Galbraith. For a student who is a member of, or candidate for, the intercollegiate diving team.

Gardner Memorial. For a resident of Somerset County, New Jersey, who participates in a major athletic activity, with preference given to intercollegiate football.

Goldfinger Scholarship. For a student participating in intercollegiate athletics.

Bernard M. Goldsmith III. For undergraduates who are members of, or candidates for, the men's intercollegiate lacrosse team.

Herbert Goodkind. For an undergraduate who is a member of, or candidate for, the intercollegiate football or basketball team, with preference given to engineering majors.

Goodman Tennis Scholarship. Annual award to a student in men's tennis.

Arthur Gottlieb. Annual award to a senior member of the intercollegiate football team possessing the highest cumulative grade-point average at the completion of the fall term of his junior year.

Frederick and Peter Hall. For an undergraduate who is a member of, or candidate for, the intercollegiate baseball team, with preference given to students majoring in urban planning, prelaw, or political science.

Lee A. Harris Memorial Scholarship. For a full-time undergraduate participating in either football or men's basketball.

Abner and Evelyn L. Headley. For a New Jersey resident student who is a member of, or candidate for, an intercollegiate athletic team, with preference given to football or women's basketball.

Hering Football Letterwinners. For a student athlete participating in football.

Fred Hill Annual Scholarship. For a full-time undergraduate participating in baseball.

Sally Hobson. For a member of, or candidate for, an intercollegiate golf team, with preference given to women's golf; based on academic merit.

James Humsey Football Scholarship. For a full-time undergraduate participating in football.

Jenusaitus Golf Scholarship. For a student participating in men's golf.

Lacrosse Stick Fund. For student athletes who are members of an intercollegiate lacrosse team.

Leib Scholarship. For a student athlete in either men's basketball or football.

Benjamin S. Leon. For outstanding participants in men's intercollegiate baseball.

Herbert Littman. For students who participate in intercollegiate athletics.

Charles Logg. For a student who is a member of, or candidate for, an intercollegiate crew team.

Robert Lusardi Memorial. For an undergraduate student athlete who is a member of, or candidate for, the varsity intercollegiate football team.

Joseph McCabe Memorial Scholarship. Two scholarships for one male and one female full-time undergraduate participating in the men's and women's golf programs, respectively.

Colin D. McManus. For a member of the intercollegiate cross-country or track and field teams.

Mendrey Scholarship. For a female student athlete.

William B. Merrell. For a female who is member of, or candidate for, the intercollegiate women's softball team, with preference given to a New Jersey resident.

Millard Scholarship. For a student who is deemed to be the best prospect for the intercollegiate football team.

Herbert Monheit Scholarship. Two scholarships for one male and one female full-time undergraduate participating in the men's and women's golf programs, respectively.

Samuel Mudie. For an undergraduate who is participating in intercollegiate athletics.

Doris Murphy Women's Lacrosse Scholarship. For members of, or candidates for, the women's lacrosse team.

Thomas J. Nagy. For a full-time undergraduate who is a New Jersey resident and is a member of, or candidate for, the men's intercollegiate basketball team.

Phyllis O'Connell Scholarship. For a member of, or candidate for, the women's tennis team.

Orlick Lacrosse Scholarship. For members of, or candidates for, the men's lacrosse team.

Joseph and Pat O'Rourke. For an undergraduate who is a member of the intercollegiate football team and who preferably is a New Jersey resident from Middlesex County.

Morgan Pellowski Memorial. For a student who is participating in intercollegiate athletics.

Peterson Family Scholarship. For members of, or candidates for, the men's lacrosse team.

Philadelphia Area Crew Scholarship. For an undergraduate who is a member of, or candidate for, either the men's or women's intercollegiate crew teams.

Jules L. Plangere. For an undergraduate who is a member of, or candidate for, the men's intercollegiate tennis team.

Price Scholarship. For a member of, or candidate for, the women's basketball team.

Nicholas G. Rutgers. For undergraduates who are members of, or candidates for, the men's intercollegiate soccer team, with preference given to New Jersey residents.

Rutgers Spike Shoe Fund. For student athletes who participate in track and field.

Rutgers Swimming. For undergraduates who are members of, or candidates for, either the men's or women's intercollegiate swimming teams.

Rutgers University FAST. For students who are members of the intercollegiate track and field teams.

Rutgers Women's Golf Association. For students who are members of the women's golf team.

Willard H. Sahloff. For an eligible student athlete participating in intercollegiate basketball; based on financial need.

Scarlet 'R' Women's Basketball. For members of the intercollegiate women's basketball team.

Scarlet 'R' Men's Basketball. For a member of the intercollegiate men's basketball team.

Scarlet 'R' Football. For a member of the intercollegiate football team.

Scarlet 'R' Other Sports. For members of intercollegiate athletic teams other than football and basketball.

Adelbert F. Schefter. For an undergraduate who is involved in pursuing an accounting career and who is a member of, or candidate for, the men's intercollegiate baseball team.

Scientific Management Scholarship. For undergraduates majoring in business or industrial engineering who participate in athletics.

Sheehan Award. For an undergraduate who is a member of either the men's or women's intercollegiate crew teams.

Simonson Memorial Scholarship. For a full-time undergraduate participating in baseball.

Mike Stang. For members of, or candidates for, the intercollegiate baseball team, with preference to students who also demonstrate financial need.

Milton Strauss. For members of the intercollegiate basketball teams.

Theodore Strong. For a member of the varsity intercollegiate football team.

Kenneth J. Tjaden. For a scholar athlete to promote the ideal of excellence in both academics and athletics.

Torborg Scholarship. For a full-time undergraduate who is a member of, or candidate for, the men's intercollegiate baseball team.

Touchdown Club Scholarship. For a member of, or a candidate for, the football team.

Triblehorn Scholarship. For an undergraduate who is a member of, or candidate for, either the football team or the men's basketball team.

Trimmer Award. For a full-time undergraduate senior participating in intercollegiate athletics and who intends to pursue graduate studies at Rutgers.

Jan Unger Scholarship. For a member of the women's golf team.

James T. Valvano. For meritorious students who are also members of, or candidates for, an intercollegiate sports team.

Lester C. Wallack Scholarship. For a full-time undergraduate participating in the men's track and field program.

Ted and Lee Werblin. For students who participate in the intercollegiate swimming or golf programs.

Women's Athletic Endowed Scholarship. For female students participating in athletics.

Xerox Corporation Minority Women. For female undergraduates who are minorities participating in intercollegiate athletics.

Ronald N. Yurcak. For an undergraduate who is a resident of Long Island, New York, and who is a member of, or candidate for, the men's intercollegiate lacrosse team.

ACADEMIC DISCIPLINES

For more information regarding these scholarships, contact each department directly.

Biology

Pedro Barboza. For Hispanic students majoring in the biological, chemical, or natural sciences.

Ralph J. DeFalco. For juniors or seniors majoring in biology or the health-related sciences at Rutgers College or Douglass College.

Thurlow and Dorothy Nelson. For students majoring in biology; based on academic achievement.

Chemistry

Pedro Barboza. For Hispanic students majoring in the biological, chemical, or natural sciences.

Bruce Garth Memorial. For a senior who demonstrates outstanding research in chemistry.

J. Livingston Rutgers Morgan. For a high-achieving student majoring in chemistry, with preference given to physical chemistry.

Economics

Bear, Stearns & Co. For a student majoring in economics in preparation for a career in business.

English

Drioux Scholarship. For a student majoring in English literature; based on financial need.

Jonathan Wilcox Scholarship. For a junior or senior in recognition of outstanding academic achievement; selected by the chairperson of the Department of English in cooperation with the Office of Financial Aid.

Food Science

New Jersey Food Council. For students majoring in business management or food science who have at least one year experience in the New Jersey food distribution industry, with preference given to juniors or seniors.

German

Karl and Franziska Lederer. For a student who is majoring in German studies; based on financial need.

Juliana Ratych. For a meritorious member of Delta Phi Alpha, with preference to a member of the German Honor Society who is a participant in a college sport.

Hungarian

Hungarian Alumni Association Scholarship. For a sophomore, junior, or senior student minoring in Hungarian; based on high academic achievement and financial need. Students apply through the Institute of Hungarian Studies.

Italian

Italian Scholarship Fund. For a deserving student majoring in Italian language and culture.

Jewish Studies

Leonard and Adele Blumberg Student Award. For students who have achieved excellence in the field of Jewish studies.

Andrew Feinerman Memorial Scholarship Fund. For a full-time junior or senior majoring in Jewish studies; based on academic merit and financial need.

Louis Fishman Memorial Student Support Fund. For students enrolled in an undergraduate or graduate program of Jewish studies; based on academic merit and financial need.

Betty and Julius Gillman Memorial Student Support Fund. For students enrolled in an undergraduate or graduate program of Jewish studies; based on academic merit and financial need.

Sandra and Stephen M. Greenberg Student Award. Research stipends to promising students enrolled at Rutgers majoring in Jewish studies to support a research program in their field. Merit, as determined by scholarly achievement and promise in Jewish studies, is the major criteria for selection.

Gertrude and Jacob Henoch Memorial Student Support Fund. For students enrolled in Jewish studies at the Center for the Study of Jewish Life in New Brunswick; based on academic merit and financial need.

Rudolph and Mary Solomon Klein Undergraduate Scholarship. For full-time undergraduate students majoring in Jewish studies; based on academic merit and financial need, with preference given to residents of Middlesex County.

Norma U. and David M. Levitt Student Award. Research stipends for students in support of research in the field of Jewish studies; based on the merit of their research project.

Bernice and Milton I. Luxemburg Student Award Fund. For seniors who have achieved excellence in their field as Jewish studies majors, preferably to those who show evidence of commitment to further studies related to Judaism, or a career in this area.

Maurice Meyer III and Irma Meyer Endowed Student Support Fund. For students majoring in Jewish studies; based on academic merit and financial need.

Harold and Betty Perl Endowed Scholarship. For full-time undergraduate students majoring in Jewish studies for one or two years; based on academic merit and financial need. Graduate students doing research on a Jewish studies topic also are eligible for consideration.

Reitman Family Student Award Fund. Research stipends for students in support of research in the field of Jewish studies; based on the merit of their research project.

Baruch S. and Pearl W. Seidman Scholarship Fund. For full-time undergraduate and graduate students majoring in Jewish studies; merit, as determined by scholarly achievement and promise, is the major criteria for selection, although need may be introduced as a consideration in instances when two or more students of similar achievement and promise show a substantial disparity in funds available.

Luba Shapira. For students who are pursuing the study of Russian and Soviet Jewish history.

Journalism

Edgar B. Bacon. For a resident of Hudson County majoring in journalism and media studies.

John H. Cook. For students in the field of writing and reporting for newspapers. Selected by the Journalism Resource Institute.

Eliot Frankel. For a minority student majoring in journalism and media studies with a strong interest in broadcast journalism.

Kenneth O. and Viola W. Jennings Memorial. For a junior entering his or her senior year in journalism and media studies; based on academic merit and financial need.

School of Journalism. For students majoring in journalism and media studies; based on academic achievement or financial need.

Music

Steven M. Keneely. Presented by the Rutgers University Alumni Band Association to a student who is a dedicated member of the Rutgers University Marching Band.

Marching Band. For a student who participates in the Rutgers University Marching Band.

Physics

Mary Wheeler Wigner Memorial. For juniors or seniors majoring in physics.

Portuguese

Victor Fernandez-Fragosa. Awarded for outstanding achievement in the areas of Caribbean literature and Hispanic poetry and theater to students who major in Spanish, Portuguese, or Puerto Rican and Hispanic Caribbean studies.

Puerto Rican and Hispanic Caribbean Studies

Victor Fernandez-Fragosa. Awarded for outstanding achievement in the areas of Caribbean literature and Hispanic poetry and theater to students who major in Spanish, Portuguese, or Puerto Rican and Hispanic Caribbean studies.

Spanish

Victor Fernandez-Fragosa. Awarded for outstanding achievement in the areas of Caribbean literature and Hispanic poetry and theater to students who major in Spanish, Portuguese, or Puerto Rican and Hispanic Caribbean studies.

OFFICE OF FINANCIAL AID

Awards listed in this section are available to students at (1) more than one college, but not all colleges, depending on the academic program, or (2) any college of the university unless specific colleges are named in the narrative. Students automatically are considered for these awards upon admission to the university and the filing of the Free Application for Federal Student Aid (FAFSA) by the due date of March 15. A separate scholarship application is not required, except where noted. Recipients are informed at the time of the initial award whether the scholarship is renewable. If the scholarship is renewable, guidelines as to the renewal eligibility requirements will be given. Any inquiries concerning these scholarships should be directed to the Office of Financial Aid.

AFSCME Local 888. For students who are the children of members of AFSCME Local 888 at Rutgers.

Reginald B. Allen. For a student majoring in either mathematics or engineering; based on academic merit or financial need.

Esther Magerdich and Eugenia Ayvad Memorial. Based on financial need.

Edgar B. Bacon. For a resident of Hudson County enrolled in any major.

Balbach, Edward, Jr., Scholarship. Based on financial need.

Bartel, Class of 1945 Merit Scholarship. For first-year students enrolled in a four- or five-year program, citizen of the United States, and resident of New Jersey and based on financial need and high school academic achievement with a cumulative grade-point average of 3.5. Scholarship is renewable if student maintains academic excellence (cumulative grade-point average of 3.5) and financial need.

Battin High School. For a first-year student who attended public school in Elizabeth, New Jersey.

Henry Berger Educational Foundation. Based on high academic performance, potential, and financial need.

Louis Brodsky. For students enrolled in Rutgers College or Douglass College who are residents Sayreville, New Brunswick, East Brunswick, South River, or Highland Park, New Jersey.

Philip L. Bruskin. For undergraduates at the New Brunswick campus, except those enrolled at Douglass College; based on financial need.

Imogene V.H. Bush. Based on academic performance or financial need.

Charles F. Cantine. For a student who is a resident of Ulster County, New York.

Michael Chasnoff Burgess S.E. Florida Scholarship. For a student who is a resident of Florida; based on academic achievement or financial need. Students apply through the Florida Alumni Association.

Class of 1931 Endowed Scholarship. For full-time undergraduates; based on academic merit and financial need. Qualified students must submit the Free Application for Federal Student Aid (FAFSA) by March 1 of each year to be eligible for an award. Preference given to direct descendants of members of the Class of 1931 who identify themselves on the admissions application.

Class of 1942 Memorial. For juniors enrolled at Rutgers College, Cook College, or the School of Engineering; based on academic excellence and financial need.

Class of 1945, J.L. Dempsey Memorial. For first-year students who are attending a college on the New Brunswick campus; based on financial need.

Class of 1946 Memorial Scholarship. Tuition assistance for undergraduates enrolled at Rutgers College, the School of Engineering, Mason Gross School of the Arts, and Cook College; based on financial need.

Class of 1947 Endowed Scholarship. Awarded to full-time undergraduates; based on academic merit and financial need. Qualified students must submit the FAFSA by March 1 of each year to be eligible for an award. May be renewed.

Class of 1952. For students at Cook College, Rutgers College, the School of Engineering, and undergraduates at Mason Gross School of the Arts.

Class of 1957 Academic Scholarship. For full-time undergraduates, based on academic merit and financial need, as determined by the program administrator. Qualified students must submit the FAFSA by March 1 of each year to be eligible for this award.

Class of 1971 Merit Scholarship. For full-time undergraduates at the university; based on merit.

Class of 1972 Scholarship. Tuition assistance for full-time undergraduates at the university, with preference given to children of members of the Class of 1972 who identify themselves by writing to the director of funds management in the Office of Financial Aid; based on merit and need.

Class of 1979 Merit Scholarship. For undergraduates at Rutgers College, the School of Engineering, or Mason Gross School of the Arts. Recipients must have graduated in the top 10 percent of their high school classes and must maintain at least a 3.0 GPA, with preference given to descendants of members of the Class of 1979.

Class of 1993 Memorial Scholarship. For full-time undergraduates based on merit. Award to be given to direct descendants of the members of the Class of 1993 who are identified in writing to the Director of Funds Management in the Office of Financial Aid. Award may be renewed for up to four academic years.

Clearview-Rutgers Scholarship. For graduates of the Clearview Regional High School who will be pursuing a career in agriculture, science, technology, engineering, medicine, nursing, or public health. The recipient shall not participate in ROTC. Selection made by high school official in consultation with donor; based on academic merit.

Robert A. Cooke. Based on high academic potential or financial need.

Raymond E. Cray. For a graduate of Hunterdon High School with excellent academic and personal achievement who also demonstrates financial need.

Peter John Curtin Memorial. For a full-time student; based on financial need.

Joseph and Marie Dannhauser. Based on academic merit and financial need for incoming first-year students, with preference given to an applicant who is the son or daughter of immigrants.

Leroy Davidson Memorial Scholarship Fund. Four-year renewable awards of full or half tuition and fees granted to any undergraduate, with preference is given to employees of Twin County Grocers, Inc., and family members of employees.

Elmer R. Deaver Foundation Scholarship. For full-time undergraduates based on need, with preference to persons who were employees and the spouse, parent, or children of those employees of Quaker City Life Insurance Company at any time during the lifetime of Mr. Deaver.

Frank and Rose DiMuccio. For a graduate of Summit High School based on academic merit and financial need. Selected by Summit school officials in consultation with the Office of Financial Aid.

Sandra Dowdy. Granted by the Alpha Kappa Alpha sorority on the basis of academic performance or financial need to a student majoring in business administration or economics. Students apply through the Alpha Kappa Alpha sorority.

Jane E. Duffy-Stach. For a student who has been identified as having a learning disability, with special consideration given to students with dyslexia.

Harold T. Edgar. For male students; based on financial need.

Chester Edwards. For a sophomore, junior, or senior enrolled in a premed major; based on academic potential or financial need.

Eliou Family. For a student majoring in Greek language and culture.

Ethel S. Elmer. Based on financial need and academic promise.

Fight for Education Scholarship. For two full-time students, one from the Camden campus and one from the New Brunswick campus; based on financial need. Candidates should be entering first-year students from the Philadelphia area. Scholarships are not renewable.

Fort Lee Neighborhood Preservation Committee. For two students whose primary residence is in the Lincoln Heights section of Fort Lee; selected by committee.

Foxcroft Memorial. Award to assist financially needy students, either through loans or grants, to purchase books.

Gary S. Freedman. For a full-time undergraduate; based on academic merit and financial need and renewable as long as student continues to meet the criteria.

Freehold Cartage, Inc., Endowed Scholarship. For children of Freehold Cartage Company employees who are enrolled as undergraduates; based on academic merit and financial need and renewable for up to three years. Recipients must maintain a cumulative grade-point average of at least 2.5 to be considered for renewal. Application must be made through the human resources department of the company. Applications will be forwarded before June 1 to the Office of Financial Aid.

Samuel and Marcella Geltman. For first-year students who are residents of Bellville, Barrington, Edgewater Park, Fort Lee, Hackettstown, Hamilton Township, North Arlington, Lindenwold, Cedar Grove, Toms River, Teaneck, Bloomfield, Burlington, Haddon Heights, Highland Park, Morristown, or Overbrook, New Jersey.

Hazel B. Gillespie Scholarship. For full-time undergraduates; based on financial need, with preference given to female students. Recipients must have a grade-point average of at least 2.0.

Bernard Goldsmith Memorial. Based on financial need.

Isaac W. Gowen. For a first-year male student who is a graduate of a high school in Elizabeth, New Jersey.

Dr. Jerome Gross Memorial Scholarship. For full-time undergraduate premed students and/or students majoring in biological science; based on academic merit and financial need and renewable.

Gulick/Coleman Scholarship. For an undergraduate student coming into his/her senior year with 90 credits or more with at least 30 credits taken at Rutgers–Camden; based on academic excellence and financial need.

Paul W. and Laura E. Haasis Scholarship. Based on academic merit and financial need. Scholarships may be renewed for up to three years (four years if students are in a five-year program.

Rabbi Saul Habas. Based on demonstrated financial need.

Michael Harasimik. For a graduate or undergraduate student; based on financial need and academic potential.

Frances B. and Paige D. L'Hommedieu Middlesex County Scholarship. Two-year awards for financially needy students who transfer to Rutgers from Middlesex County College.

Hughes, Congressman William J. For a full-time undergraduate student attending Rutgers from Penns Grove High School; based on financial need and academic merit, with preference given to student majoring in political science.

George Hutt Premedical. For full-time undergraduates who have declared their intention of pursuing a medical degree immediately after completing their undergraduate work at Rutgers; based on financial need and renewable.

Jan and Paula Ilavsky. For a student majoring or minoring in Slovak languages and cultures; based on need.

Jefferson School. For a student from Jefferson Elementary School in Plainfield, New Jersey, in memory of Robert Biunno.

Walter Joyce Targum Fund. For a full-time student who has worked in the Daily Targum business office for at least one year.

Jurgensen Family Scholarship Fund. For students from high schools selected by a family representative, who attend any undergraduate college in New Brunswick.

Kingston First Dutch Church. For a student nominated by the First Dutch Church in Kingston, New York.

Kingsway–Rutgers. For a graduate of Kingsway Regional High School who will be pursuing a career in agriculture, science, engineering, medicine, nursing, or teaching. The recipient shall not participate in ROTC. Selected by high school official in consultation with the donor; based on academic merit.

Morris Kreeger. Based on academic potential or financial need.

Paul Krenicki. For a graduate of Clifton High School in Clifton, New Jersey, who has completed one or more undergraduate years majoring in either physical science or engineering.

Mary and John Krok. Two scholarships annually; based on academic merit and financial need.

Robert Lefferts. Based on academic performance or financial need.

Harold G. Lundberg Scholarship. A renewable scholarship for a first-year student who is a U.S. citizen or permanent resident, with preference given to students from outside of New Jersey. Student must be a high achiever in academics and other activities and must maintain a GPA of 3.2.

MacManus Glassman Scholarship. A four-year, renewable, university-wide scholarship awarded to a minority student of good academic ability who demonstrates financial need, with preference given to a veteran or a descendant of a veteran of the Vietnam War.

Jacqueline R. and Charles P. Malesky Scholarship. For entering first-year students; based on academic merit and financial need.

Isaac Manning Memorial. Based on financial need.

Harold H. Martin Scholarship. For juniors or seniors enrolled at any New Brunswick undergraduate college. Students must demonstrate a financial need as a result of filing the FAFSA, and must have a cumulative grade-point average of at least 3.0 and be ineligible for grant aid.

Millard Family Fund. For students attending any of the undergraduate colleges in either New Brunswick, Newark, or Camden; based on financial need.

Joseph and Helen Monchak Memorial. For students majoring in music, the performing arts, prelaw, premedicine, predentistry, pharmacy, any physical science, or engineering; based on financial need and academic merit, with preference given to members of the choir(s) of Three Saints Russian Orthodox Church, Garfield, New Jersey.

George and Clara Muller. For students who are residents of the New Jersey counties of Warren, Sussex, Hunterdon, or Morris.

Herman D. Mytelka Scholarship. For full-time undergraduates who have completed their third year in school, and who intend to pursue a career in mathematics or computer science. Based on academic merit and financial need. Qualified students must submit the FAFSA by March 1 of each year to be eligible for an award.

New Brunswick Mutual. For first-year students who are residents of Franklin, Highland Park, Milltown, New Brunswick, North Brunswick, or Piscataway, New Jersey.

New Brunswick Senior Challenge. For students who have attended one of the New Brunswick area high schools for at least two years; based on need and high school academic record.

New Jersey Jaycees. Based on character, leadership, scholastic ability, participation in school and community activities, and financial need.

New Jersey Mortgage Bankers Association. For New Jersey residents who have demonstrated high academic achievement and financial need and who are majoring in economics or business. Students must be children of employees of the New Jersey Mortgage Bankers Association.

New Jersey State Golf Association. For students who are New Jersey residents and who worked as caddies at member clubs of the New Jersey State Golf Association. Applications are available by contacting the Caddie Scholarship Foundation, P.O. Box 6947, Freehold, New Jersey 07728.

Old Bridge/Sayreville Rotary. For residents of Old Bridge, and Sayreville, New Jersey, who are entering the university either directly from high school or as Old Bridge / Sayreville Rotary Scholars transferring from Middlesex County College; based on academic merit, financial need, and service to the community.

Harold Osborn. Based on financial need and academic performance.

Paulsboro–Rutgers Scholarship. For a full-time undergraduate and a graduate of Paulsboro High School who is pursuing a career in one of the following fields: agriculture, science, technology, engineering, medicine, nursing, public health, or teaching. The recipient may not participate in ROTC. Selected by high school official in consultation with the donor.

David Pavlovsky Memorial Scholarship. For a full-time undergraduate enrolled in the Rutgers College prelaw program; based on academic merit and financial need.

Edgar S. Peierls. Scholarship to deserving students.

Sil Pelosi Memorial. For incoming first-year student studying engineering, any of the physical sciences, or computer science, based on financial need, with preference to New Jersey residents who demonstrate leadership ability in community work and / or high school government or activity club.

Dr. Orin Penfield and Esther Dales Memorial Scholarship. For Passaic High School seniors who have applied and have been accepted to Rutgers on either the New Brunswick or Newark campus. May also be given to graduates of Passaic High School who are enrolled currently at the university. Based on academic merit and financial need; renewable for up to three years (four years if students are in a five-year program).

Stephen G. Perger Memorial. For junior or senior political science majors who reside in Union or Middlesex County, New Jersey.

Francis Strafford Peshine. For students pursuing curriculum introductory to government services.

Thomas A. Peterson. For citizens and permanent residents of the United States.

Joseph J. Polonko, Jr., Memorial Fund. For children of alumni and enrolled in either Rutgers College, Cook College, or the School of Engineering; based on financial need.

William T. Quinn, Sr., Memorial. For a New Jersey resident, sophomore-year student in conjunction with the student internship program of the W.T. Quinn Advertising Company; based on financial need and academic potential. Submit résumés to the Office of Financial Aid.

John Reynolds Scholarship. For full-time undergraduates; based on academic merit and financial need.

Richmond Foundation. Based on financial need and academic potential.

Arthur E. Richmond Memorial. For a full-time student; based on academic merit (minimum cumulative grade-point average of 3.2) and financial need.

Paul Robeson Scholarship. For full-time undergraduates based on academic promise and financial need, with preference given to students of African-American / black descent. Approved biographical information form must be filed with FAFSA; renewable for up to five years.

Rutgers Club of Chicago. For first-year students who are graduates of high schools in the Chicago area. Students apply through the Rutgers Club of Chicago.

Rutgers Club of Cranford. For a first-year student who graduated from Cranford High School in Cranford, New Jersey. Students apply through the Rutgers Club of Cranford.

Rutgers Club of New England Scholarship. For a New England area student who will become a first-year student; based on academic performance and potential for success, with preference to children of Rutgers alumni.

Rutgers Foreign Students. For international students to assist with their out-of-state tuition cost.

Rutgers University Faculty Memorial Fund. For undergraduates based on academic performance and financial need.

Alfredo Santiago Endowed Scholarship. For a full-time junior or senior, based on academic merit and financial need, with preference given to Latino students majoring in nontraditional areas of study such as math, science, engineering, or premed. Qualified students must submit the FAFSA by March 1 of each year to be eligible for an award. Scholarship may be renewed for one year.

Donald T. Saunders Memorial Scholarship. For full-time upper-class students who are African-American citizens of the United States residing in the greater Newark, New Jersey, area. Students must have a grade-point average of at least 3.0 and demonstrate financial need.

Adelbert F. Schefter Scholarship. For any promising student; based on financial need and/or academic merit, with preference given to students pursuing a career in baseball or accounting.

Alan Marc Schreiber. For students majoring in mathematics; based on academic merit and financial need.

Louis Selitto Award. For full-time undergraduates in the School of Business, majoring in finance; based on academic merit and financial need; renewable for up to two years.

Senior Citizens Scholarship Fund. For graduates of Delaware Valley Regional High School attending one of the New Brunswick undergraduate colleges. Selected by officials of the high school.

Servicemen's Center Association. For Newark residents, who preferably who have at least one parent who served or is serving in the armed forces of the United States; based on need and merit.

BRV Sharma Family Foundation Scholarship. For full-time undergraduates based on academic merit. Students must achieve a 3.0 GPA; renewable for up to three years.

Ming Nang Sheng. For a high-achieving first-year student who is a resident of New Jersey majoring in chemistry at one of the New Brunswick undergraduate colleges.

Samuel Sheng Fellowship. For students majoring in the natural sciences and engineering. Recipients must have a minimum of a B average in high school, or, if they are transfer students, a B average is necessary in their previous college work.

Sophia Sheng Scholarship in Computer Science or Electrical Engineering. For undergraduates in the fields of computer science or electrical engineering who have a minimum secondary school average of B and a minimum college grade-point average of 3.0 or B.

Lansing P. Shield. Based on financial need, with preference given to employees of Grand Union supermarkets, students who are children of Grand Union employees, or students who are residents of New Jersey counties in which Grand Union stores are located.

John F. Socolofsky. For a deserving first-year student who graduated from Glassboro High School in Glassboro, New Jersey. Selection made by the high school.

Harold and Jean Stavitsky Memorial Scholarship. For full-time undergraduates based on academic merit and financial need. Qualified students must submit the FAFSA by March 1 of each year to be eligible for an award. Scholarship may be renewed for up to three years.

Clarkson P. Stelle II. For any undergraduate or graduate student at the university.

Estate of Adelaide Thomson. For any undergraduate or graduate student at the university.

Thompson, Susan W. and Herbert A. Scholarship. For a first-year student from Allegheny County, New York, based on high school academic achievement and financial need. The Free Application for Federal Student Aid (FAFSA) must be submitted by March 15.

312th Infantry Association Memorial. For any student; based on academic merit or financial need.

Mary R. Tyler. For any student at any division or class level at the university; based on need.

Emanuel M. and Mathilda Terner. For full-time students; based on academic merit and financial need.

Francesco G. Urbano. Based on academic potential and financial need.

Joseph E. Valentine. Based on financial need.

Estate of Ralph Decker Van Duzer. For any student in any college of the university.

Kenneth H. Ward. For any students at any college of the university; based on need.

Selma and Deborah Waksman. For any students at the university.

Mary Wolt. Based on financial need and academic potential.

Women's League of Rutgers. For a student in the senior year at one of the New Brunswick colleges. Selection made by the Women's League committee.

Jerome D. Yaguda Scholarship. For a full-time student who demonstrates academic excellence and is involved in productive extracurricular activities, with preference given to students who have worked for Wakefern or Shop Rite during their school years and/or those whose parents or grandparents are Wakefern/Shop Rite Associates.

University Policies and Procedures

REGISTRATION

In the fall and spring, at a time designated by the university registrar, each student must register through the Rutgers Touchtone Telephone Registration System (RTTRS) or the web registration system, selecting courses previously approved by his or her adviser. Both systems are accessible Monday through Friday from 6:30 A.M. to midnight and on Saturday from 6:30 A.M. to 2:00 P.M. The access numbers for RTTRS are 732/445-1999, 973/353-1999, or 856/225-1999. The web registration address is http://webreg.rutgers.edu.

Students who fail to register during the initial period described above may register during the late registration period or the first five class days of the term and will be required to pay a $50 late registration fee. Students are not considered registered until final arrangements have been made to pay their term bills and satisfy any other outstanding financial obligations.

Policy for Changing Courses (Drop/Add)

The policy followed by the undergraduate colleges in New Brunswick for adding and dropping courses after a term begins is outlined below:

1. Students of all units in New Brunswick may add classes from the first through the fifth day of classes of each term. In special circumstances, students may add classes beyond this period only with permission of the dean of the college in which they are enrolled and the instructors of the classes involved.
2. Students in New Brunswick units may drop courses during the first two full weeks of classes, and no record is made on transcripts of such withdrawals.
3. Students who withdraw from classes from the third through the eighth week of the term will have a W recorded on their transcript.
4. After the eighth week and through the twelfth week, permission of the college dean is required for students wishing to withdraw from a class with a grade of W.

GRADES AND RECORDS

Grades represent the level or quality of the student's performance measured against standards of knowledge, skill, and understanding as evaluated by the instructor. Grades are reported to the university registrar at the end of each term by the following symbols:

Grade	Definition	Numerical Equivalent
A	Outstanding	4.0
B+		3.5
B	Good	3.0
C+		2.5
C	Satisfactory	2.0
D	Poor	1.0
F	Failing	0.0

Note: Livingston College students receive a grade of NC (No Credit) in place of F, including a temporary grade of TNC, on official grade notification announcements. No credit toward degree requirements is awarded for NC grades.

Other Grade Symbols

P/NC (Pass/No Credit). A nonnumerical grade of Pass (equivalent to grades of A, B+, B, C+, and C) or No Credit (equivalent to grades of D and F) is assigned to any student who has registered for his or her course on that basis, when such registration is in accord with the regulations of the student's college and the faculty offering the course.

T (Temporary). Grades of TB+, TB, TC+, TC, TD, TF, and TZ are used for all incomplete and temporary grades. Temporary grades are given at the discretion of the instructor when the student has not completed properly the course work requirements (i.e., major assignments or examinations). Students enrolled in courses in the School of Engineering receive a grade of TF if the final examination is not taken at the scheduled time. The letter grade following the T represents the grade the instructor would assign if the outstanding work were to remain uncompleted, except for the TZ grade. The TZ grade should be assigned only when a student is unable to finish his or her work due to a verifiable emergency situation. The student and faculty member are urged to reach an agreement as soon as possible as to how the course should be completed. The TZ will have no immediate effect on a student's GPA; however, if the situation is not resolved within the following term, the TZ will convert to an F, and the GPA will be recalculated accordingly. Temporary grades become permanent if the work is not completed as required and no notice is received from the instructor to convert the temporary grade to a permanent one. In no case is this permanent grade lower than the assigned letter grade. Fall term T grades must be completed by May 1; spring and summer T grades by December 1. However, it remains the prerogative of an individual faculty member and/or the office of the dean of the faculty offering the course to set earlier deadlines and internal procedures for completing the work required. It is the responsibility of the student to contact the instructor for an interpretation of the T grade and to establish a timetable for the completion of course work.

W (Withdrawal). Grades of W, WP, or WF are used when a student has withdrawn from a course. A W is assigned when a student has withdrawn from a course, without any evaluation made of course work, on or before the completion of eight weeks of any regular term with the permission of the appropriate authority designated by each faculty. Letter grades following the W indicate that the student has withdrawn with a passing (P) or a failing (F) grade. Under no circumstances shall the assignment of W, WP, or WF

be allowed when the withdrawal from a college is dated during the last two full weeks of instruction in any term. Should withdrawal occur without permission, the instructor will give the appropriate letter grade.

NG (No Grade Given). Where no grade is assigned on the final grade roster by the faculty member, an NG (No Grade Given) will be assigned. The NG will have no immediate effect on the student's GPA; however, if the situation is not resolved within the following term, the NG will convert to an F, and the GPA will be recalculated accordingly.

H (Honors). Used in lieu of a grade for the first term of a full-year college or departmental honors course. Credits for H grades are not calculated into the student's cumulative grade-point average until the final grade is assigned upon completion of the honors course. Course credits are included, however, in the total number of degree credits.

S/U (Satisfactory/Unsatisfactory). Grades used in courses where the N credit prefix is used.

Credit Prefixes

E. The symbol E preceding course credits indicates no credit earned toward the degree and no grade computed in the cumulative grade-point average.

J. The symbol J preceding course credits indicates that those credits are earned toward the degree, but the grade is not computed in the cumulative grade-point average.

K. The symbol K preceding course credits indicates that those credits are not earned toward the degree, but the grade is computed in the cumulative grade-point average.

N. The symbol N is a negotiated symbol agreed upon between the student and instructor at the time the student registers for the course. It indicates no credit earned toward the degree, no grade computed in the grade-point average, no final exam taken, and the student receives a grade of S or U.

P/NC. This symbol preceding course credits indicates a course taken on a Pass/No Credit basis.

Courses Completed by High School Students

Individuals who complete courses at Rutgers as non-matriculating students while enrolled in high school are offered the option of receiving E credits for such courses upon matriculation at Rutgers. If this option is pursued, the courses do not earn degree credits and grades are not counted in the cumulative grade-point average; course titles and grades appear on the academic transcript with an E prefix. If degree credit is granted, grades are computed in the cumulative grade-point average. This policy includes courses taken during the summer following high school graduation.

Term Grades

Grades received for the term are available through the Rutgers Touchtone Telephone Registration System by calling any of the following three telephone numbers: 732 / 445-1999; 973 / 353-1999; 856 / 225-1999. Grades also are available on the web: http://registrar.rutgers.edu. Available hours are Monday through Friday from 3:00 P.M. to midnight and on Saturday from 7:00 A.M. to 2:00 P.M.

Warning Notices

At the end of the seventh week of the term, instructors normally report to the university registrar the name of each student making unsatisfactory progress in a course, if appropriate to the course. Warning notices are then mailed to the students at the same addresses indicated for term grade reports. The instructors may also personally warn a student or post a warning list. Students are advised to consult with each instructor concerning such warning and with advisers if warned in more than one subject.

Student Complaints about Grades

Students wishing to file a complaint about a course grade, or a grade received for a particular piece of work in a course, should first attempt to resolve the matter through discussion with the instructor. If the issue cannot be satisfactorily resolved between student and instructor, the student may specify in writing the basis for the complaint and request a review by the departmental chairperson. A written complaint about a grade for work completed while the course is in progress must be submitted to the departmental chairperson no later than two weeks after notification of the grade. A student must submit a written complaint about a final course grade with the departmental chairperson no later than four weeks after the end of the exam period for that term.

A student who wishes to appeal the decision of the department should appeal in writing to the office of the dean of the faculty offering the course. Written notification of the action taken by either the chairperson or by the dean will be sent to the student within four weeks of the filing of the appeal, excluding those weeks in which classes are not in regular session.

Cumulative Grade-Point Average

A student's cumulative grade-point average is computed by multiplying the grade received in each course taken for credit (and to be included in the average) by the number of credits the course is worth. The grade points earned in all such courses are then added together and the sum divided by the total credits of those courses.

Grade (numerical equivalent) x Credits = Grade Points

$$\frac{\text{Total Grade Points}}{\text{Total Credit Hours}} = \text{Cumulative Grade-Point Average}$$

Students should refer to Scholastic Standing in each college section to determine the use of the cumulative grade-point average by the college and the courses that must be included in it.

Transcripts

Requests for official transcripts of a student's academic record should be made in writing to Rutgers, The State University of New Jersey, Office of the Registrar, Department of Records and Transcripts, 65 Davidson Road, Piscataway, NJ 08854-5603 (except for University College students, who should write to the Office of Student Services, University College–New Brunswick, Rutgers, The State University of New Jersey, 14 College Avenue, New Brunswick, NJ 08901-1164). Requests should include the college of enrollment and the dates of attendance. A fee of $3 per copy, payable to Rutgers, The State University, must accompany the request.

At least ten days should be allowed for processing the request. Students at some of the undergraduate colleges may order transcripts through their college cashier's office. No present or former student may obtain a transcript if under any financial obligation to the university.

Transcripts of academic work include all courses taken and grades received at the university. Students may request a transcript that includes all courses taken while enrolled as an undergraduate student (matriculating, nonmatriculating, and Summer Session), all courses taken while enrolled as a graduate student (matriculating, nonmatriculating, and Summer Session), or all courses taken while enrolled in all schools.

Holds

The privileges of registration, advance registration, receipt of a diploma at commencement, and receipt of transcripts of record are barred to students having outstanding obligations to the university. Obligations may take the form of unpaid monies, unreturned or damaged books and equipment, parking fines, other charges for which a student may become legally indebted to the university, and failure to meet immunization requirements or to comply with disciplinary sanctions or administrative actions.

University departments and offices may place "holds" on registration, diplomas, and transcripts for any students having an outstanding obligation.

ATTENDANCE

Students are expected to attend all scheduled course meetings, although no special provisions normally are made for reporting occasional absences from class.

It is the policy of the university to excuse without penalty students who are absent because of religious observance and to allow the makeup of work missed because of such absences. A student absent from an examination because of required religious observance will be given an opportunity to make up the examination without penalty.

CANCELLATION OF CLASSES

It is the general policy of the university not to cancel classes because of inclement weather. However, because of the occasional hazards of night driving in winter, exceptions may be made for evening classes and, under exceptionally hazardous conditions, exceptions may be made for daytime classes.

During severe weather conditions, announcements concerning the cancellation of classes are made over the following radio stations: WCTC, WMGQ, WRSU, WCBS, WINS, WHWH, WPST, WJLK, WRNJ, WBUD, WXKW, INFO, and WADB.

Arrangements for makeup work are announced by individual instructors.

In addition, class cancellation and office closing information is available on the recorded message system at 732/932-7799 for the New Brunswick campuses and at 973/353-1766 for the Newark campus.

POLICY ON ACADEMIC INTEGRITY SUMMARY

"Academic freedom is a fundamental right in any institution of higher learning. Honesty and integrity are necessary preconditions to this freedom. Academic integrity requires that all academic work be wholly the product of an identified individual or individuals. Joint efforts are legitimate only when the assistance of others is explicitly acknowledged. Ethical conduct is the obligation of every member of the university community and breaches of academic integrity constitute serious offenses" (Academic Integrity Policy, p. 1).

The principles of academic integrity entail simple standards of honesty and truth. Each member of the university has a responsibility to uphold the standards of the community and to take action when others violate them.

Faculty members have an obligation to educate students to the standards of academic integrity and to report violations of these standards to the appropriate deans.

Students are responsible for knowing what the standards are and for adhering to them. Students also should bring any violations of which they are aware to the attention of their instructors.

Violations of Academic Integrity

Any involvement with cheating, the fabrication or invention of information used in an academic exercise, plagiarism, facilitating academic dishonesty, or denying others access to information or material may result in disciplinary action being taken at either the college or university level. Breaches of academic integrity can result in serious consequences ranging from reprimand to expulsion.

Violations of academic integrity are classified into four categories based on the level of seriousness of the behaviors. Brief descriptions are provided below. This is a general description and is not to be considered as all-inclusive.

Level One Violations

These violations may occur because of ignorance or inexperience on the part of the person(s) committing the violation and ordinarily involve a very minor portion of the course work. These violations are considered on academic merit and not as disciplinary offenses.

Examples: Improper footnoting or unauthorized assistance on academic work.

Recommended Sanctions: Makeup assignment.

Level Two Violations

Level two violations involve incidents of a more serious nature and affect a more significant aspect or portion of the course.

Examples: Quoting directly or paraphrasing without proper acknowledgement on a moderate portion of the assignment; failure to acknowledge all sources of information and contributors who helped with an assignment.

Recommended Sanctions: Probation, a failing grade on the assignment, or a failing grade in the course.

Level Three Violations

Level three offenses involve dishonesty on a significant portion of course work, such as a major paper, an hourly, or a final examination. Violations that are premeditated or involve repeat offenses of level one or level two are considered level three violations.

Examples: Copying from or giving others assistance on an hourly or a final examination, plagiarizing major portions of an assignment, using forbidden material on an hourly or final examination, using a purchased term paper, presenting the work of another as one's own, altering a graded examination for the purposes of regrading.

Recommended Sanctions: Suspension from the university for one or more terms, with a notation of "academic disciplinary suspension" placed on a student's transcript for the period of suspension, and a failing grade in the course.

Level Four Violations

Level four violations are the most serious breaches of academic integrity. They include repeat offenses of level three violations.

Examples: Forgery of grade change forms, theft of examinations, having a substitute take an examination, dishonesty relating to senior thesis, master's thesis, or doctoral dissertation, sabotaging another's work, the violation of the ethical code of a profession, or all infractions committed after return from suspension for a previous violation.

Recommended Sanctions: Expulsion from the university and a permanent notation on the student's transcript.

Faculty who believe that violations have occurred should immediately contact the Office of the Dean. Students who suspect that other students are involved in actions of academic dishonesty should speak to the instructor of the course. Questions on reporting procedures may be directed to the Office of the Dean.

UNIVERSITY CODE OF STUDENT CONDUCT SUMMARY

A university in a free society must be devoted to the pursuit of truth and knowledge through reason and open communication among its members. Its rules should be conceived for the purpose of furthering and protecting the rights of all members of the university community in achieving these ends.

All members of the Rutgers University community are expected to behave in an ethical and moral fashion, respecting the human dignity of all members of the community and resisting behavior that may cause danger or harm to others through violence, theft, or bigotry. All members of the Rutgers University community are expected to adhere to the civil and criminal laws of the local community, state, and nation, and to regulations promulgated by the university. All members of the Rutgers University community are expected to observe established standards of scholarship and academic freedom by respecting the intellectual property of others and by honoring the right of all students to pursue their education in an environment free from harassment and intimidation.

Preamble
University Code of Student Conduct

Overview

Communities establish standards in order to ensure that they are able to fulfill their mission and keep their members from harm. The University Code of Student Conduct (referred to as "the code" in the remainder of this summary) defines those kinds of behavior that violate the standards of the Rutgers University community and also provides the mechanism for addressing alleged violations. In doing so, the code protects the rights of those accused of offenses (referred to as "respondents" in the remainder of this summary) by providing due process while also protecting victims of those offenses and the university community as a whole.

Process

The following summary presents key aspects of the code. Students should consult the code itself for complete information on each point.

Filing a Complaint

Any individual may file a complaint against a student suspected of violating the code by notifying the dean of students (or equivalent) of the respondent's college or school, or the director of judicial affairs in the Division of Student Affairs.

Preliminary Review

Upon receipt of a complaint, a preliminary review is conducted by the dean of students (or equivalent) or his or her designee to assess the evidence and determine if it is sufficient to proceed to a hearing. The dean conducting this review also assesses the seriousness of the charges. The most serious charges can, upon a finding of responsibility, result in separation from the university (suspension or expulsion) and are heard at university hearings. Less serious offenses (nonseparable offenses) are heard according to the procedures in place at the student's college or school of affiliation.

Separable Offenses

The following offenses are deemed serious enough to result potentially in separation from the university should a student be found responsible at a hearing:

1. violations of academic integrity
2. forgery, unauthorized alteration or unauthorized use of any university documents or records or any instrument or form of identification
3. intentionally furnishing false information to the university or intentionally initiating or causing to be initiated any false report, warning, or threat of fire, explosion, or other emergency
4. use of force against any person or property or the threat of such force
5. sexual assault or nonconsensual sexual contact
6. hazing
7. violation of the university's Student Life Policy against Verbal Assault, Defamation, and Harassment (Copies are available from the judicial affairs office or dean of students' office.)
8. unauthorized entry into, unauthorized use of, or misuse of university property, including computers and data and voice communication networks

9. intentionally or recklessly endangering the welfare of any individual or intentionally or recklessly interfering with any university activity or university sponsored activity
10. use, possession, or storage of any weapon, dangerous chemical, fireworks, or explosive, whether or not a federal or state license to possess the same has been issued to the possessor
11. the distribution of alcohol, narcotics, or dangerous drugs on university property or among members of the university community, if such distribution is illegal, or the possession of a sufficiently large quantity as to indicate an intention to distribute illegally
12. theft of university services or theft of, or intentional or reckless damage to, university property or property in the possession of, or owned by, a member of the university community, including the knowing possession of stolen property (Intentional or reckless misuse of fire safety equipment is regarded as damage under this section of the code.)
13. the violation of the ethical code of one's intended profession either by graduate students enrolled in any of the university's professional or graduate schools or by undergraduate students in clinical courses or settings related to their intended profession
14. violations of federal, state, or local law where such violations have an adverse effect on the educational mission of the university
15. failure to comply with the lawful directions of university officials, including campus police officers acting in performance of their duties
16. knowingly providing false testimony or evidence; disruption or interference with the orderly conduct of a disciplinary conference or hearing; violating the terms of any disciplinary sanction imposed in accordance with this code, or any other abuse of the university's disciplinary procedures.

Campus Advisers

Both complainants and respondents may select a campus adviser to assist them during the disciplinary process. Campus advisers may fully represent students, including speaking on their behalf. The Office of the Vice President for Student Affairs maintains a list of trained campus advisers for this purpose. Students are free to select any member of the university community to serve as their advisers, whether or not they are on the list.

Attorneys

Complainants and respondents also may, at their own expense, seek the advice of an attorney in addition to that of a campus adviser. Attorneys are free to advise students, to assist in the preparation of their cases, and to attend hearings, but may not speak on behalf of their clients or question witnesses at a hearing.

University Hearings

University hearings are presided over by a hearing officer and heard by a hearing board usually composed of three students and two faculty members. It is the hearing board's responsibility to determine whether the accused student is responsible or not responsible for violating the code. If the hearing board determines a student to be responsible by the standard of clear and convincing evidence, it also recommends a sanction for the offense to the vice president for student affairs. The vice president for student affairs considers the hearing board recommendation and determines the sanction.

Appeals

A student found responsible for violating the code may appeal the finding, the sanction, or both. Appeals are filed through the Office of the Vice President for Student Affairs, which forwards them to the Appeals Committee of the appropriate campus (Camden, Newark, New Brunswick).

Authority for Student Discipline

Ultimate authority for student discipline is vested with the Board of Governors of Rutgers, The State University of New Jersey. This authority has been delegated to university administrators, faculty, students, committees, and organizations as set forth in the University Code of Student Conduct. The above summary is intended to present some key facts of the code. Copies of the code are available from all dean of students' offices and have been placed at the reference desks of all university libraries. In addition, the director of judicial affairs in the Division of Student Affairs will provide copies of the code upon request and is available to answer any questions about the code or related judicial matters.

UNIVERSITY SAFETY AND SECURITY

Providing a safe and secure environment for all members of the university community is the highest priority of the university's public safety staff. The staff is comprised of commissioned police officers with full investigative and arrest authority, trained emergency medical technicians, fire inspectors, security officers, dispatchers, and students employed as community services and student safety officers. Members of the public safety staff patrol each campus and respond to emergencies and requests for assistance 24 hours a day, 365 days a year.

Rutgers' public safety employees are part of the university-wide crime prevention team that includes all members of the university community. It is everyone's duty to maintain actively a safe environment and to be careful while complying with all local, state, and university regulations.

The executive director for public safety is responsible for safety and security services on the New Brunswick/Piscataway campus. On the Newark and Camden campuses, these responsibilities reside in the Office of the Provost.

Information regarding public safety at Rutgers is available from the campus police departments. Safety Matters, a brochure outlining public safety statistics, services, and programs on each of Rutgers' regional campuses, is published annually and distributed free of charge. To receive a copy of Safety Matters, please call the appropriate Rutgers Police Department office at one of the following numbers:

Camden: 856/225-6009
Newark: 973/353-5547
New Brunswick: 732/932-8407

ADMINISTRATIVE PROCEDURES FOR RESPONDING TO DISRUPTIONS

An academic community, where people assemble to inquire, to learn, to teach, and to reason together, must be protected for those purposes. While all members of the community are encouraged to register their dissent from any decision on any issue and to demonstrate that dissent by orderly means, and while the university commits itself to a continual examination of its policies and practices to ensure that causes of disruption are eliminated, the university cannot tolerate demonstrations that unduly interfere with the freedom of other members of the academic community.

With this in mind, the following administrative procedures have been formulated to guide the implementation of university policy:

1. The president of the university and the vice president for academic affairs will have the authority throughout the university to declare a particular activity to be disruptive. When neither the president nor the vice president for academic affairs is available to make such a decision, the senior vice president and treasurer or the provosts of Newark and Camden have the same authority.
2. Broadly defined, a disruption is any action that significantly or substantially interferes with the rights of members of the academic community to go about their normal business or that otherwise unreasonably interrupts the activities of the university.
3. A statement will be read by the appropriate officers as specified in (1) or by such officers as they may designate for the purpose of such reading and will constitute the official warning that the activity is in violation of university policy, that it must cease within a specified time limit, and where appropriate, that no commitments made by university officials will be honored if those commitments are made under duress.
4. If the activity continues beyond the specified time limit as determined by the official in authority, the authorized officers as specified in (1) will have the discretion to call upon the university police to contain the disruption. Ordinarily, the president of the university alone, or in his or her absence the vice president for academic affairs, will have the authority to decide that civil authorities beyond the campus are to be called upon to contain those disruptions that the university police are unable to handle. In extraordinary circumstances, where neither the president nor the vice president for academic affairs is available to make such a decision, the senior vice president and treasurer or the provosts of Newark and Camden have the same authority.
5. The deans of students are the chief representatives of the deans of the colleges in all matters of student life. Members of the university community who are aware of potentially disruptive situations are to report this to the deans of students on their respective campuses. In a disruption, the deans of students and their staff members have a twofold responsibility: to protect against personal injury and to aid in providing for the order of the university. In the latter case, the deans of students, as well as other university personnel, may be called upon to coordinate or assist members of the academic community in ending the disruption, directing it to legitimate channels for solution, or identifying those who have violated the rights of others.

POLICY PROHIBITING HARASSMENT

The university prohibits harassment based on race, religion, color, national origin, ancestry, age, sex, sexual orientation, disability, marital status, or veteran status. Harassment is a kind of discrimination that violates state and federal civil rights laws, and is defined for purposes of those laws and the university's policy as any behavior that:

1. is unwelcome,
2. targets a person because he or she has one or more of the protected characteristics,
3. is engaged in by a person employed by or doing business with the university, and
4. is sufficiently severe or pervasive to alter negatively that person's or a group member's living, educational, or working environment.

Sexual harassment can take the form of unwelcome sexual advances; requests for sexual favors; or other unwelcome written, verbal, electronic, telephonic, or physical conduct of a sexual nature. Hostile environment harassment on the basis of sex, race, religion, color, national origin, ancestry, age, sexual orientation, disability, marital status, or veteran status is severe or persistent behavior that has the purpose or effect of unreasonably interfering with a person's work or academic performance or creating a hostile environment.

If you think you have been harassed on the basis of any of the protected categories listed above, have observed harassing behavior, or need more information, you are encouraged to contact the Office of University Harassment Compliance, Rutgers, The State University of New Jersey, 3 Bartlett Street, New Brunswick, NJ 08901-1190, by telephone at 732/932-3122, or by email at uhr@rci.rutgers.edu. Copies of the Policy Prohibiting Harassment and the Harassment Complaint Process may be obtained through our web page at http://www.rci.rutgers.edu/~msgriff/.

POLICY AGAINST VERBAL ASSAULT, DEFAMATION, AND HARASSMENT

Statement of Principles

Intolerance and bigotry are antithetical to the values of the university and unacceptable within the Rutgers community. One of the ways the university seeks to effect this value is through a policy of nondiscrimination, which prohibits discrimination on the basis of race, religion, color, sex, age, sexual orientation, national origin, ancestry, disability, marital status, or veteran status in university programs. In order to reinforce institutional goals of nondiscrimination, tolerance, and civility, the following policy against verbal assault, defamation, and harassment makes clear to students that such behavior toward others violates acceptable standards of conduct within the university. (This policy is not intended to supersede the university's policy against harassment.)

Verbal assault, defamation, or harassment interferes with the mission of the university. Each member of this community is expected to be sufficiently tolerant of others so that all students are free to pursue their goals in an open environment, able to participate in the free exchange of ideas, and able to share equally in the benefits of our educational opportunities. Beyond that, each member of the community is encouraged to do all that she or he can to ensure that the university is fair, humane, and responsible to all students.

A community establishes standards in order to be able to fulfill its mission. The policy against verbal assault, defamation, and harassment seeks to guarantee certain minimum standards. Free speech and the open discussion of ideas are an integral part of the university community and are fully encouraged, but acts that restrict the rights and opportunities of others through violence, intimidation, the destruction of property, or verbal assault, even if communicative in nature, are not protected speech and are to be condemned.

Prohibited Conduct

Any of the following acts, even if communicative in nature, are prohibited "separation offenses" (charges that could lead to suspension or expulsion from the university) under the provisions of the University Code of Student Conduct:

1. Use of force against the person or property of any member of the university community or against the person or property of anyone on university premises, or the threat of such physical abuse. (Verbal assault may be prosecuted as a "threat of . . . physical abuse.")
2. Theft of, or intentional damage to, university property, or property in the possession of, or owned by, a member of the university. (Acts of graffiti or other vandalism may be prosecuted as "intentional damage to . . . property.")
3. Harassment, which is statutorily defined by New Jersey law to mean, and here means, purposefully making or causing to be made a communication or communications anonymously or at extremely inconvenient hours, or in offensively coarse language, or in any other manner likely to cause annoyance or alarm, or subjecting or threatening to subject another to striking, kicking, shoving, or other offensive touching, or engaging in any other course of conduct or of repeatedly committed acts with purpose to alarm or seriously annoy any other person. Harassment is considered a separation offense under the University Code of Student Conduct.
4. Defamation, which is judicially defined to mean, and here means, the unprivileged oral or written publication of a false statement of fact that exposes the person about whom it is made to hatred, contempt, or ridicule, or subjects that person to loss of the goodwill and confidence of others, or so harms that person's reputation as to deter others from associating with her or him. Defamation is considered a separation offense under the University Code of Student Conduct.

While any of the four categories of acts listed above is a separation offense that, if proven, could lead to a sanction of expulsion or suspension from the university under the provisions of the University Code of Student Conduct, clearly minor instances of such prohibited behavior should be resolved at the college level and not be treated as separation offenses requiring a university-level hearing. The initial judgments of whether a particular act is of a separable or nonseparable level are made by the appropriate college official and are subject to review by the Office of the Vice President for Student Affairs.

Students who believe themselves to be victims of verbal assault, harassment, or defamation should report such incidents to the dean or the dean of students of their college or school. In addition, the following individuals have been identified to handle complaints:

Brian T. Rose, director of compliance and student policy concerns, 3 Bartlett Street, College Avenue campus, 732/932-7312;

Cheryl Clarke, director of diverse community affairs and lesbian/gay concerns, Bishop House, Room 105, College Avenue campus, 732/932-1711;

Rory P. Maradonna, associate provost for student life, Armitage Hall, Room 248, Camden campus, 856/225-6050;

Raymond T. Smith, associate provost for student affairs, Center for Law and Justice, Newark campus, 973/353-5541.

Some complaints can and should be resolved by informal methods, while others will require the implementation of formal procedures. All complaints are treated confidentially; complainants are encouraged to report incidents even if they do not wish to pursue the matter beyond the reporting stage.

NONDISCRIMINATION POLICY

It is the policy of Rutgers, The State University of New Jersey, to make the benefits and services of its educational programs available to students without discrimination on the basis of race, religion, color, national origin, ancestry, age, sex (except Douglass College, which is entitled under the law to remain a single-sex institution), sexual orientation, disability, marital status, or veteran status. The university complies with Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and the Americans with Disabilities Act of 1990. Questions about these laws, or allegations of student rights violations, should be directed to Brian T. Rose, Director of Compliance and Student Policy Concerns and Designated Employee for Student Rights Compliance, Rutgers, The State University of New Jersey, 3 Bartlett Street, New Brunswick, NJ 08901-1190; 732/932-7312.

Discrimination Based on Sexual Orientation

Rutgers, The State University of New Jersey, has a clear policy that seeks to guarantee that the services and benefits offered to its students are available equally to all. This includes equality regardless of sexual orientation. However, ROTC programs are governed by the United States Department of Defense, which maintains a policy of discrimination against gays, lesbians, and bisexuals. Hence, equal opportunities are not guaranteed to all who may wish to fully participate in ROTC programs.

The university's opposition to the Department of Defense policy of discrimination will be actively maintained until full equality of access and benefits is available to all, regardless of sexual orientation. In the meantime, the university

has secured the rights of all students to enroll in and receive academic credit for ROTC courses. Students who believe that they have been subjected to discrimination by ROTC, or by any other division of the university, should contact Dr. Emmet A. Dennis, Vice President for Student Affairs; 732/932-8576.

EQUITY IN ATHLETICS DISCLOSURE ACT REPORTS

In compliance with the Equity in Athletics Disclosure Act, Rutgers provides information on men's and women's athletic programs, and the participation rates for male and female athletes. The first report was issued in October 1996 with annual updates thereafter. The reports are available at the reference desks of the main branches of the university library system (Alexander Library, Library of Science and Medicine, Robeson Library, and Dana Library) and at the intercollegiate athletics offices.

STUDENT RECORDS AND PRIVACY RIGHTS

Rutgers, The State University of New Jersey, complies with the Family Educational Rights and Privacy Act of 1974 (FERPA) and makes public announcement of the law. FERPA was designed to protect the confidentiality of student records, guarantee student access to certain records, regulate disclosure of information from student files, provide opportunities for students to correct or amend records and add explanatory statements, and provide opportunities for students to file complaints with the U.S. Department of Education alleging infractions of the law.

The confidentiality of student educational records is protected by FERPA. However, the university is permitted to provide directory information without the student's consent unless he or she requests in writing that such information be kept confidential. Rutgers defines directory information to be the following: name, campus address, campus post office address, campus telephone number, Rutgers email address, RUCS user name, permanent (home) address, permanent (home) telephone number, school of attendance, major field of study, class year, dates of attendance, current credit load, credit hours earned, degrees received, dates of degrees, weight and height of intercollegiate athletes, and most recent previous school attended.

The most common ways by which the university releases student directory information are:

- through the verifications division of the Office of the Registrar or similar offices that have access to student records. (The office is called upon to verify that a student is enrolled at the university by potential employers and credit agencies, among others.)
- through the campuswide information system known as INFO on the Rutgers University Computer Network (RUNet), which is accessible via the Internet.

Students may request that directory information be kept confidential by obtaining a form for this purpose from their dean's office or from the registrar's office. Students should be aware that requesting confidentiality of directory information makes this information unavailable to all, including prospective employers, credit agencies, and others to whom you may want this information known or verified. Thus, it is recommended that students carefully consider whether personal privacy concerns outweigh the possible inconvenience and detriments of having directory information withheld. Subsequent to filing the request, directory information remains confidential while a student is enrolled or until a written request that this restriction be lifted is received from the student by the registrar's office. As with all confidential records, Rutgers will release a student's confidential directory information only with the student's written consent or if otherwise required by law.

The university uses a student's social security number as a student identification number. While this number is not released as directory information and its confidentiality is protected in the same manner as are other educational records as defined by FERPA, the university offers students the opportunity to acquire a substitute student number. Students wishing to have a substitute number assigned should fill out the appropriate forms in the registrar's office. The university recommends that those receiving financial aid not acquire a substitute number because the social security number is key to student identification by state and federal financial aid agencies. Thus, it is recommended that a substitute number be obtained only if student privacy concerns outweigh the possibility of a serious disruption in financial aid.

Further information on the law and Rutgers' policy and procedures on compliance with FERPA is available from the director of compliance and student policy concerns in the Division of Student Affairs; 732/932-7312.

STUDENT RESIDENCY FOR TUITION PURPOSES

A determination of residency status for the purpose of tuition assessment is made by the university based on information provided by the applicant in accordance with the procedure outlined in the policy. A copy of the policy may be secured from the registrar's office or the admissions office.

Procedure

The Initial Determination

At the time an individual initially applies for admission into any graduate or undergraduate college or division of the university, the respective admissions office determines an admitted applicant's resident status for tuition assessment.

The determination made at this time shall prevail for each term unless a change is authorized as provided hereinafter.

After the Initial Determination

The status of residency for tuition purposes of students continuing in a college or division of the university is determined by the registrar of the respective college or division. The determination made by the registrar either conforms to the initial determination of the admissions office or reflects a change as provided hereinafter.

Request for a Change of Status

Requests for a change in residency status are accepted no later than the last week of the term for which changed status is sought. All supporting affidavits, deemed appropriate by the adjudicating official pursuant to New Jersey Administrative Code, Volume 9, Section 5 et seq., must be filed by the petitioner in accordance with the time limit specified in the preceding sentence, but in no case later than four weeks from the conclusion of the term for which the residency assessment is requested. Failure to comply with this provision, unless judged otherwise by the adjudicating official, voids the petition for the term in question. If, based on the information submitted in the request, the student qualifies for resident tuition assessment, such change relates only to the current and subsequent terms. No adjustments in tuition assessments are made and no refund vouchers are processed for any prior term.

Appeals

Appeals from the initial determination and any determination made after a request by a student for a change in residency status are accepted no later than three months after the date of notification of any such determination. Unresolved appeals are forwarded to either the university director of graduate admissions or to the university registrar. These officers respond to the student within thirty working days of the receipt of the appeal in the appropriate office. Appeals from this determination should be submitted to the vice president for university budgeting by the student within two weeks after the director of admissions or the university registrar has issued a determination. The decision of the vice president for university budgeting will be final.

Students' Responsibilities

Students are responsible for providing relevant information upon which a residency determination can be made. The burden of proving his or her residency status lies solely upon the student. Moreover, it is considered the obligation of the student to seek advice when in doubt regarding eligibility for in-state tuition assessment. If the student delays or neglects to question his or her eligibility status beyond the period specified above, the student forfeits his or her right to a residency assessment to which he or she might have been deemed to be eligible had he or she filed an appeal at the appropriate time.

Penalties

If a student has obtained or seeks to obtain resident classification by deliberate concealment of facts or misrepresentation of facts or if he or she fails to come forward with notification upon becoming a nonresident, he or she is subject to disciplinary action.

RESEARCH POLICY AND RESEARCH CENTERS

Research at the university, apart from that conducted by students in connection with their academic course work, is in general intended to lead to publication in some form so that its results are available to interested persons everywhere. The university does not accept grants from or enter into contracts with governmental agencies or any other sponsors for research projects of which the results may not be made publicly accessible; all university-conducted research must be available for public scrutiny and use.

Most research projects at the university are carried on by faculty members and students within the facilities offered by their own departments, but for on-campus research that cannot be conducted in department facilities, laboratories, or the library, the university has provided a number of cooperative research centers and bureaus. A list of the university's research centers may be found in the Divisions of the University chapter.

Many members of these organizations are active in graduate instruction. Information about their programs and activities may be found in Research at Rutgers, a handbook and bibliography published by the Research Council, the university agency that sponsors and coordinates faculty research.

PATENT POLICY

All students are governed by the university's patent policy, which is described in a statement available in the Office of Research and Sponsored Programs and the offices of all deans and department chairpersons.

POLICY REGARDING SOLICITATIONS

The university does not permit personal or mail solicitations or requests for contributions for charitable or other purposes, including the sale of chances, lottery tickets, and raffle tickets or the sale of magazines, Christmas cards, and similar items. Exceptions are made for the United Fund Drive and the Annual Hospitals Appeal.

The issuance or distribution of products or samples of products or leaflets or other printed materials and the posting of signs or advertisements in any building of the university require the approval and permission of the vice president and treasurer or of the appropriate business manager.

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Divisions of the University

ACADEMIC DIVISIONS

Rutgers, The State University of New Jersey, provides educational and research services throughout the state on campuses located in Camden, Newark, and New Brunswick. The principal university center is located in New Brunswick, where Rutgers originated two centuries ago.

Camden

Camden offers programs at three undergraduate colleges and at five graduate schools. With an enrollment of 5,000 students, it offers exceptional educational opportunities in addition to providing the advantages and resources associated with a major state university.

Faculty of Arts and Sciences–Camden
Margaret Marsh, Ph.D., Dean

Established in 1983 as a result of academic reorganization of the Camden campus, the Faculty of Arts and Sciences–Camden offers academic programs for undergraduate and graduate work in twenty-three arts and sciences disciplines and in a variety of interdisciplinary areas.

School of Business–Camden
Milton Leontiades, Ph.D., Dean

Established in 1988, the School of Business–Camden sets major requirements and teaches all courses leading to the Bachelor of Science degree in the professional areas of accounting and management. The School of Business also sets the major requirements and teaches all courses leading to a Master of Business Administration degree.

Camden College of Arts and Sciences
Margaret Marsh, Ph.D., Dean

A coeducational, liberal arts college, CCAS is the successor institution to the College of South Jersey, which was established in 1927 and became part of the state university in 1950.

University College–Camden
Margaret Marsh, Ph.D., Dean

University College–Camden is an evening college of liberal arts and professional studies serving part-time students since 1950.

Graduate School–Camden
Margaret Marsh, Ph.D., Dean

Graduate programs in the liberal arts were started in Camden in 1971 under the jurisdiction of the Graduate School–New Brunswick. The Graduate School–Camden was established as an autonomous unit in 1981.

School of Law–Camden
Rayman L. Solomon, J.D., Ph.D., Dean

Founded in 1926, the School of Law–Camden joined the university in 1950 as the South Jersey division of the School of Law–Newark. It became an independent unit of the university in 1967. The law school offers a curriculum leading to the degree of Juris Doctor, including advanced study in special areas.

Summer Session–Camden
Thomas Venables, Ed.D.

The Summer Session, begun in 1913 and established as a division of the university in 1960, offers a wide variety of graduate and undergraduate courses during three sessions in the summer months.

Newark

Newark offers programs at three undergraduate colleges and at four graduate schools. With an enrollment of approximately 10,000 students, it offers strong academic programs, excellent facilities, and an outstanding faculty.

Faculty of Arts and Sciences–Newark
Steven J. Diner, Ph.D., Dean

The Faculty of Arts and Sciences–Newark was established in 1985 to expand and strengthen the instructional program for undergraduate students at the Newark campus. The combined faculties of Newark College of Arts and Sciences and University College–Newark offer courses and academic programs in more than sixty subject areas.

Newark College of Arts and Sciences
Steven J. Diner, Ph.D., Dean

Founded in 1930 as Dana College, this undergraduate, coeducational, liberal arts college became part of Rutgers when the University of Newark was integrated into the state university in 1946.

College of Nursing
Hurdis Margaret Ann Griffith, Ph.D., Dean

The College of Nursing was established in 1956 as an expansion of the university's offerings in the former School of Nursing of the Newark College of Arts and Sciences. Its graduate program is conducted through the Graduate School–Newark.

University College–Newark
Steven J. Diner, Ph.D., Dean

University College–Newark is an evening and weekend college of liberal arts and professional studies serving part-time students since 1934. Within the context of the liberal arts tradition, University College students are offered a full range of courses and curricula, including programs in business and preparation for the professions leading to the degrees of Bachelor of Arts and Bachelor of Science.

Faculty of Management
Howard Tuckman, Ph.D., Dean

Established in 1993, the Faculty of Management encompasses the Graduate School of Management and the School of Management. The School of Management is an upper-division undergraduate school, founded in 1993, that offers the Bachelor of Science degree jointly with either the Newark College of Arts and Sciences or University College–Newark. Degree programs are available in accounting, finance, management, and marketing. The Graduate School of Management, founded in 1929 as the Seth Boyden School of Business and incorporated into Rutgers in 1946, offers three programs. Two of these programs, management and professional accounting, lead to the Master of Business Administration degree. The third program offers the Ph.D. degree in management jointly with the Graduate School–Newark and the New Jersey Institute of Technology.

Graduate School–Newark
Norman Samuels, Ph.D., Dean

The Graduate School–Newark was established as a separate instructional division of the university with degree-granting authority in 1976.

School of Criminal Justice
Leslie W. Kennedy, Ph.D., Dean

The School of Criminal Justice, which opened in 1974, offers a graduate program that provides students with a sound foundation for work in teaching, research, or criminal justice management. The Master of Arts degree is offered through the school, and the Ph.D. degree is offered in conjunction with the Graduate School–Newark.

School of Law–Newark
Stuart L. Deutsch, J.D., Dean

The university's graduate programs in law originated in other institutions. The New Jersey School of Law, founded in 1908, and the Mercer Beasley School of Law, founded in 1926, merged in 1936 to become the University of Newark School of Law, which became part of Rutgers in 1946.

Summer Session–Newark

The Summer Session, begun in 1913 and established as a division of the university in 1960, offers a wide variety of graduate and undergraduate courses during three sessions in the summer months.

New Brunswick

The New Brunswick campus is the largest and most diversified of the university's three campuses with 16 academic units, 1,800 faculty, and 33,000 students enrolled in undergraduate and graduate programs.

Faculty of Arts and Sciences–New Brunswick
Richard S. Falk, Ph.D., Acting Dean

Established in 1981 as a result of academic reorganization of the New Brunswick campus, the Faculty of Arts and Sciences–New Brunswick teaches all arts and science courses for undergraduate and graduate students in degree-granting units and sets the major requirements for all arts and science majors. Organized into disciplines and departments, it offers forty-four undergraduate major programs and twenty-nine graduate programs, which are administered by the Graduate School–New Brunswick.

Douglass College
Barbara Shailor, Ph.D., Dean

Founded in 1918 as the New Jersey College for Women, Douglass is the largest women's college in the nation. While maintaining rigorous standards of instruction in the fundamental disciplines of the liberal arts, Douglass supports and develops programs which link major courses of study to future careers. The college also implements special programs as well as independent activities designed to help women students develop the qualities required for achievement in any field of endeavor.

Livingston College
Arnold Hyndman, Ph.D., Dean

Livingston College opened in 1969 as a coeducational institution dedicated to serving a diverse student body reflecting the racial, ethnic, and socioeconomic composition of today's society. As a college of the liberal arts and professions, Livingston is committed to a multidisciplinary program that brings together a diverse group of students, faculty, and staff in a cosmopolitan community dedicated to learning.

Rutgers College
Carl Kirschner, Ph.D., Dean

Rutgers College was chartered in 1766 and is the original nucleus around which the university developed. Formerly an undergraduate college for men, it is now coeducational. Dedicated to the promotion of excellence in undergraduate education, Rutgers College provides its students with clear guidelines in the pursuit of a liberal arts education.

University College–New Brunswick
Emmet A. Dennis, Ph.D., Dean

University College–New Brunswick is an evening college of liberal arts and professional studies serving part-time students since 1934. Within the context of the liberal arts tradition, University College–New Brunswick students are offered a full range of courses and curricula, including programs in business and preparation for the professions leading to the degrees of Bachelor of Arts and Bachelor of Science.

Cook College
Bruce C. Carlton, Ph.D., Dean

A coeducational and residential college, Cook offers undergraduate programs in various applied disciplines with emphasis on environmental, agricultural, food, and marine sciences. Formerly the College of Agriculture and later the College of Agriculture and Environmental Science, Cook College adopted its present name in 1973. Graduate programs are offered through the Graduate School–New Brunswick.

College of Pharmacy
John L. Colaizzi, Ph.D., Dean

First organized in 1892 and incorporated into the state university in 1927, the College of Pharmacy offers a six-year professional program leading to the Doctor of Pharmacy (Pharm.D.) degree and a graduate program offering a post-B.S. Pharm.D. degree (both traditional two-year and nontraditional). Other graduate programs leading to advanced degrees through the Graduate School–New Brunswick also are available. In addition, the college sponsors a continuing education program for the benefit of practicing pharmacists throughout the state.

Mason Gross School of the Arts
George B. Stauffer, Ph.D., Dean

This branch of Rutgers opened in July 1976. The school grants both undergraduate and graduate degrees. Formed to provide an education in the arts of the highest professional caliber, the school offers an M.F.A. degree in visual arts and theater arts; D.M.A., A.Dpl., M.M., and B.Mus. degrees in music; and a B.F.A. degree in visual arts, dance, and theater arts.

School of Business–New Brunswick
Howard Tuckman, Ph.D., Dean

Approved by the New Jersey Department of Higher Education in 1986, the School of Business–New Brunswick offers both undergraduate and graduate degrees. On the undergraduate level, it is a two-year, upper-division school offering programs in accounting, finance, management, and marketing. The school admits students from Douglass, Livingston, Rutgers, and University colleges in their junior year. The Bachelor of Science degree is jointly awarded by the School of Business–New Brunswick and the undergraduate college. The school's graduate program offers the Master of Accounting degree.

School of Communication, Information and Library Studies
Gustav Friedrich, Ph.D., Dean

This school was formed in 1982 by a merger of two schools to provide academic programs that focus on various facets of communication and information science. The school offers undergraduate programs of study in communication, and journalism and mass media. Students are admitted to the school in their junior year from the five residential undergraduate colleges in New Brunswick: Cook, Douglass, Livingston, Rutgers, and University colleges. Bachelor of Arts degrees are awarded jointly by the School of Communication, Information and Library Studies and the undergraduate college. At the graduate level, programs are offered that lead to the degree of Master of Library Service, the Master of Communication and Information Studies, and, jointly with the Graduate School–New Brunswick, the Doctor of Philosophy degree. Courses for in-service librarians also are provided.

School of Engineering
Michael T. Klein, Sc.D., Dean

Instruction in engineering began at Rutgers in 1864, when New Jersey designated Rutgers College to be the State College for the Benefit of Agriculture and Mechanic Arts. The College of Engineering became a separate unit in 1914, and was renamed the School of Engineering in 1999. The school is dedicated to the sound technical and general education of the student. It offers a Bachelor of Science degree in seven disciplines as well as a curriculum in applied sciences. Its graduate programs are conducted through the Graduate School–New Brunswick.

Edward J. Bloustein School of Planning and Public Policy
James W. Hughes, Ph.D., Dean

Founded in 1992, the Edward J. Bloustein School of Planning and Public Policy provides focus for all of Rutgers' programs of instruction, research, and service in planning and public policy. The school offers undergraduate programs in urban studies and public health, each leading to the baccalaureate degree. On the graduate level, the school confers Master of City and Regional Planning, Master of City and Regional Studies, Master of Public Affairs and Politics, Master of Public Policy, Master of Public Health, and Doctor of Public Health degrees; the latter two degrees are offered jointly with the University of Medicine and Dentistry of New Jersey–School of Public Health. A dual-degree program in public health and applied psychology leading to the Master of Public Health and Doctor of Psychology degrees is offered with the Graduate School of Applied and Professional Psychology. A program also is offered that leads to the Doctor of Philosophy degree in urban planning and policy development; this degree is conferred by the Graduate School–New Brunswick. In addition, the school offers joint-degree programs with Rutgers' two law schools, with the Graduate School of Management, and with the Graduate School–New Brunswick.

School of Management and Labor Relations
Barbara A. Lee, Ph.D., J.D., Dean

The School of Management and Labor Relations, formed in 1994, provides undergraduate instruction in labor studies and employment relations. At the graduate level, programs are offered that lead to the degrees of Master of Science in Human Resource Management, Master of Arts in Labor and Employment Relations, and Doctor of Philosophy in Industrial Relations and Human Resources.

Graduate School–New Brunswick
Richard S. Falk, Ph.D., Acting Dean

Graduate programs in the arts and sciences have been offered since 1876. The Graduate School–New Brunswick awards advanced degrees in more than sixty disciplines and is responsible for all Doctor of Philosophy degrees at Rutgers–New Brunswick. The faculty is drawn from virtually all academic divisions of the university.

Graduate School of Applied and Professional Psychology
Sandra L. Harris, Ph.D., Dean

The GSAPP was established in 1974 to train direct-service psychologists who have a special commitment to community involvement. It offers the Doctor of Psychology (Psy.D.) degree in professional psychology with specializations in the areas of clinical psychology, school psychology, and organizational psychology. The GSAPP also awards the Master of Psychology (Psy.M.) degree en passant to the doctorate; the Psy.M. is not offered as a terminal degree.

Graduate School of Education
Louise C. Wilkinson, Ed.D., Dean

Courses in education were first offered by Rutgers College in the late nineteenth century. A separate school offering its own curricula was organized in 1924. The GSE offers programs leading to the degrees of Master of Education, Specialist in Education, and Doctor of Education.

School of Social Work
Mary E. Davidson, Ph.D., Dean

Established in 1954 to prepare students for professional social work practice, the SSW offers a two-year graduate curriculum leading to the Master of Social Work degree. Jointly with the Graduate School–New Brunswick, it offers a program leading to the Doctor of Philosophy degree, and its faculty also teaches an undergraduate social work program.

Summer Session–New Brunswick
Thomas A. Kujawski, Ed.M.

The Summer Session, begun in 1913 and established as a division of the university in 1960, offers a wide variety of graduate and undergraduate courses during three sessions in the summer months.

ACADEMIC CENTERS, BUREAUS, AND INSTITUTES

Advanced Food Technology, Center for. Nabisco Institute for Advanced Food Technology, Cook Campus

Advanced Information Processing, Center for. CoRE Building, Busch Campus

Agricultural Experiment Station, New Jersey. Martin Hall, Cook Campus

Alcohol Studies, Center of. Smithers Hall, Busch Campus

American Woman and Politics, Center for the. Wood Lawn, Douglass Campus

Art Museum, Jane Voorhees Zimmerli. College Avenue Campus

Biological Research, Bureau of. Nelson Biology Laboratories, Busch Campus

Biostatistics, Institute for. Hill Center, Busch Campus

Biotechnology Center for Agriculture and the Environment. Cook Campus

Ceramic Research, Malcolm G. McLaren Center for. 607 Taylor Road, Busch Campus

Coastal and Environmental Studies, Center for. Doolittle Hall, Busch Campus

Computer Science Research, Laboratory for. Hill Center, Busch Campus

Controlled Drug-Delivery Research Center. Pharmacy Building, Busch Campus

Crime Prevention Studies, Center for. S.I. Newhouse Center for Law and Justice, Newark Campus

Criminological Research, Institute for. Lucy Stone Hall, Livingston Campus

Critical Analysis of Contemporary Culture, Center for the. 8 Bishop Place, College Avenue Campus

Discrete Mathematics and Theoretical Computer Science, Center for. CoRE Building, Busch Campus

Eagleton Institute of Politics. Wood Lawn, Douglass Campus

Economic Research, Bureau of. New Jersey Hall, College Avenue Campus

Edison Papers, Thomas A. 16 Seminary Place, College Avenue Campus

Engineered Materials, Institute for. Engineering Building, Busch Campus

Engineering Research, Bureau of. Engineering Building, Busch Campus

Fiber Optic Materials Research Program. 607 Taylor Road, Busch Campus

Fisheries and Aquaculture Technology Extension Center. Martin Hall, Cook Campus

Government Services, Center for. Edward J. Bloustein School of Planning and Public Policy, 33 Livingston Avenue, College Avenue Campus

Health, Health Care Policy, and Aging Research, Institute for. 30 College Avenue, College Avenue Campus

Historical Analysis, Rutgers Center for. 88 College Avenue, College Avenue Campus

Human Evolutionary Studies, Center for. 131 George Street, College Avenue Campus

International Business Education, Center for. Janice H. Levin Building, Livingston Campus

International Conflict Resolution and Peace Studies, Center for. Hickman Hall, Douglass Campus

International Faculty and Student Services, Center for. 180 College Avenue, College Avenue Campus

Jazz Studies, Institute of. Dana Library, Newark Campus

Jewish Life, Center for the Study of. 12 College Avenue, College Avenue Campus

Journalism Resources Institute. 185 College Avenue, College Avenue Campus

Marine and Coastal Sciences, Institute of. 71 Dudley Road, Cook Campus

Materials Synthesis, Center for. Engineering Building, Busch Campus

Mathematical Sciences Research, Center for. Hill Center, Busch Campus

Mathematics, Science, and Computer Education, Center for. Science and Engineering Resource Center, Busch Campus

Metropolitan Studies, Joseph C. Cornwall Center for. Smith Hall, Newark Campus

Molecular and Behavioral Neuroscience, Center for. Aidekman Center, Newark Campus

Negotiation and Conflict Resolution, Center for. Edward J. Bloustein School of Planning and Public Policy, 33 Livingston Avenue, College Avenue Campus

Neighborhood and Brownfields Redevelopment, National Center for. Edward J. Bloustein School of Planning and Public Policy, 33 Livingston Avenue, College Avenue Campus

Operations Research, Center for. Hill Center, Busch Campus

Packaging Science and Engineering, Center for. Engineering Building, Busch Campus

Physics Research, Bureau of. Serin Physics Laboratories, Busch Campus

Rutgers Cooperative Extension. Martin Hall, Cook Campus

Surface Modification, Laboratory for. Serin Physics Laboratories, Busch Campus

Transportation Center, Alan M. Voorhees. Edward J. Bloustein School of Planning and Public Policy, 33 Livingston Avenue, College Avenue Campus

Urban Policy Research, Center for. 33 Livingston Avenue, College Avenue Campus

Waksman Institute of Microbiology. 190 Frelinghuysen Road, Busch Campus

Walt Whitman Center for the Culture and Politics of Democracy. Hickman Hall, Douglass Campus

Wireless Information Network Laboratory. Electrical Engineering Building, Busch Campus

Women, Institute for Research on. 160 Ryders Lane, Douglass Campus

Women's Leadership, Institute for. 162 Ryders Lane, Douglass Campus

Workforce Development, John J. Heldrich Center for. Edward J. Bloustein School of Planning and Public Policy, 33 Livingston Avenue, College Avenue Campus

Centers Operated Jointly

Biotechnology and Medicine, Center for Advanced.

Environmental and Occupational Health Sciences Institute.

Hazardous Substance Management Research Center.

UNIVERSITY LIBRARY SYSTEM

Alcohol Studies Library. Smithers Hall, Busch Campus

Annex. Annex Building, Busch Campus

Archibald Stevens Alexander Library. 169 College Avenue, College Avenue Campus

Art Library. Hamilton Street, College Avenue Campus

Bailey B. Pepper Entomology Library. John B. Smith Hall, Georges Road and Jones Street, Cook Campus

Blanche and Irving Laurie Music Library. Douglass Library, Chapel Drive and George Street, Douglass Campus

Chemistry Library. Wright Chemistry Laboratory Building, Busch Campus

Chrysler Herbarium Library. Nelson Biology Laboratories, Busch Campus

Criminal Justice Library. S.I. Newhouse Center, 15 Washington Street, Newark Campus

East Asian Library. Alexander Library, College Avenue Campus

Institute of Jazz Studies Library. Bradley Hall, Newark Campus

John Cotton Dana Library. 185 University Avenue, Newark Campus

Kilmer Area Library. Avenue E, Livingston Campus

Library of Science and Medicine. Bevier Road, Busch Campus

Mabel Smith Douglass Library. Chapel Drive and George Street, Douglass Campus

Mathematical Sciences Library. Hill Center, Busch Campus

Media Services. Kilmer Area Library, Livingston Campus

Paul Robeson Library. 300 North Fourth Street, Camden Campus

Physics Library. Serin Physics Laboratories, Busch Campus

School of Law–Camden Library. Fifth and Penn Streets, Camden Campus

School of Law–Newark Library. S.I. Newhouse Center, Washington Street, Newark Campus

School of Management and Labor Relations Library. Ryders Lane, Cook Campus

SERC Reading Room. Science and Engineering Resource Center, Frelinghuysen Road, Busch Campus

Special Collections and University Archives. Alexander Library, College Avenue Campus

Stephen and Lucy Chang Science Library. Foran Hall, Cook Campus

TRANSPORTATION TO THE NEW BRUNSWICK AREA CAMPUSES

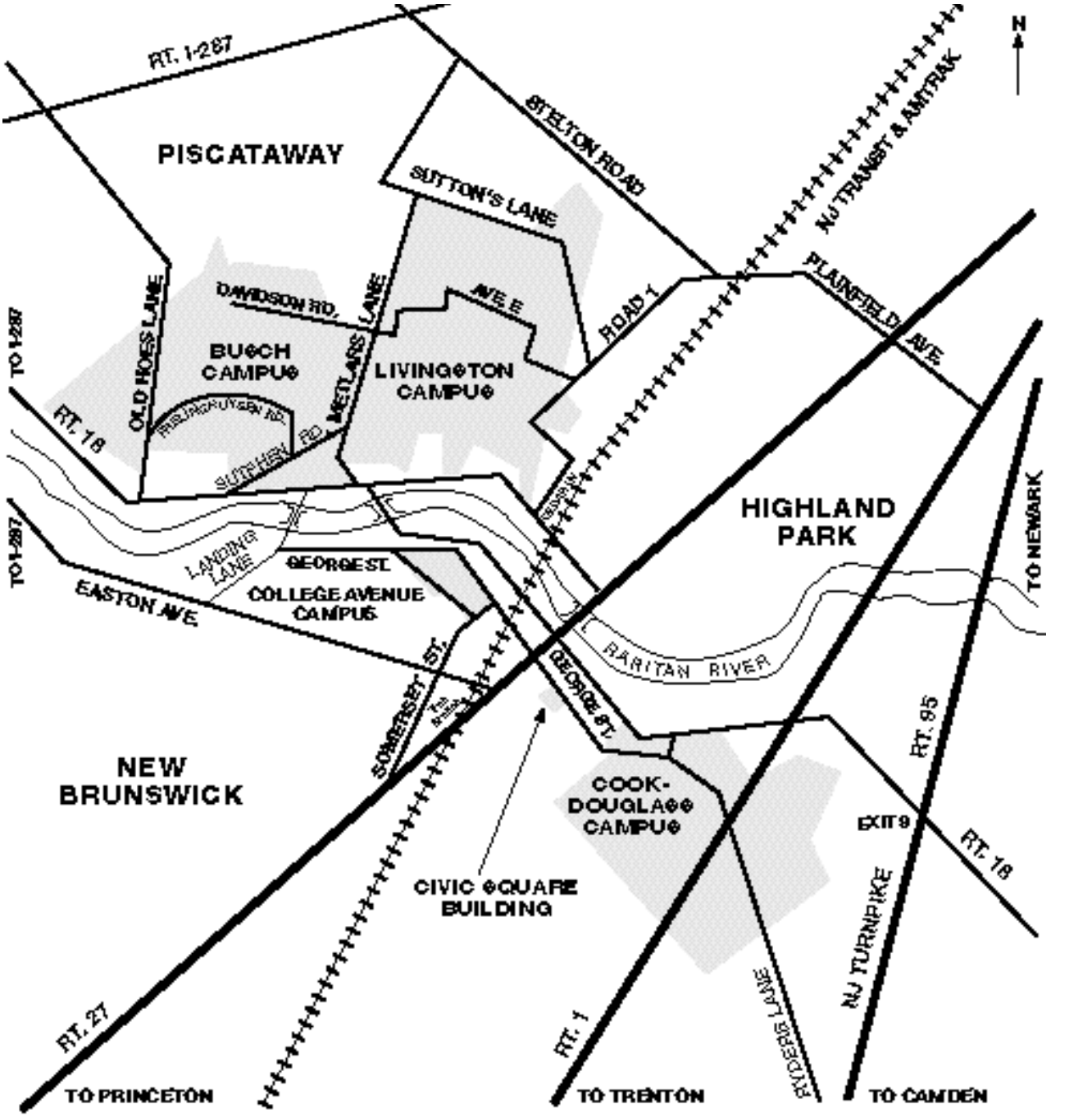
BUSCH CAMPUS
College of Engineering
College of Pharmacy
Rutgers College

COLLEGE AVENUE CAMPUS
Rutgers College
University College–New Brunswick
School of Communication, Information and Library Studies

COOK-DOUGLASS CAMPUS
Cook College
Douglass College
Mason Gross School of the Arts
School of Management and Labor Relations

LIVINGSTON CAMPUS
Livingston College
School of Business – New Brunswick
School of Management and Labor Relations

CIVIC SQUARE BUILDING
Edward J. Bloustein School of Planning and Public Policy
Mason Gross School of the Arts



TRAVEL DIRECTIONS TO RUTGERS–NEWARK

From New Jersey Turnpike (North or South)

- Take exit 15W to Route 280 West. After drawbridge, take Exit 14B (Broad Street/King Boulevard).
- At bottom of the exit ramp, turn left and continue to stop sign.
- At stop sign, turn left onto King Boulevard.

To Center for Law and Justice:
- Proceed straight on King Boulevard to Warren Street. Turn left onto Warren Street.
- Proceed on Warren Street to Washington Street. Turn left onto Washington Street.
- The Center for Law and Justice is immediately on the left.

To Main Campus:
- Continue five blocks to Warren Street and make a left at this intersection.
- Proceed to the first traffic light and make a right onto University Avenue.
- Continue past the athletic field on your right; you will see Blumenthal Hall, directly past Alumni Field, on your right.

From Garden State Parkway (North or South)

- Take exit 145 to Route 280 East, Newark-Harrison.
- Once on Route 280, stay in the right lane, following signs for Harrison.
- Continue to Exit 14A, King Boulevard. Take this exit and make a left at the first light onto King Boulevard.

To Center for Law and Justice:
- Proceed straight on King Boulevard to Warren Street. Turn left onto Warren Street.
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To Main Campus:
- Continue five blocks to Warren Street and make a left at this intersection.
- Proceed to the first traffic light and make a right onto University Avenue.
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From Route 280

Route 280 East
- Take Exit 14B (Broad Street/King Boulevard).
- At bottom of the exit ramp, turn left and continue to stop sign.
- At stop sign, turn left onto King Boulevard.

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To Main Campus:
- Continue five blocks to Warren Street and make a left at this intersection.
- Proceed to the first traffic light and make a right onto University Avenue.
- Continue past the athletic field on your right; you will see Blumenthal Hall, directly past Alumni Field, on your right.

Route 280 West
- Proceed on Route 280 West to Exit 14A, King Boulevard.
- Make a right at the first light onto King Boulevard.

To Center for Law and Justice:
- Proceed straight on King Boulevard to Warren Street. Turn left onto Warren Street.
- Proceed on Warren Street to Washington Street. Turn left onto Washington Street.
- The Center for Law and Justice is immediately on the left.

To Main Campus:
- Continue five blocks to Warren Street and make a left at this intersection.
- Proceed to the first traffic light and make a right onto University Avenue.
- Continue past the athletic field on your right; you will see Blumenthal Hall, directly past Alumni Field, on your right.

From Route 21

Route 21 North
- Route 21 becomes McCarter Highway in Newark.
- At junction of McCarter Highway and Raymond Boulevard (the Don Pepe restaurant is ahead on your right), turn left onto Raymond Boulevard.
- Continue on Raymond Boulevard to the Washington Street intersection.

To Center for Law and Justice:
- Turn right onto Washington Street.
- The Center for Law and Justice is located on the left side, at the corner of New Street and Washington Street.

To Main Campus:
- Turn right on Washington Street, and immediately move to the left lane.
- Make the first left onto Warren Street and continue to the first traffic light.
- At the light, turn left onto University Avenue and immediately move into the right lane.
- Continue past the athletic field on your right; you will see Blumenthal Hall, directly past Alumni Field, on your right.

Route 21 South
- Make right turn on Clay Street and continue to first traffic light.
- Turn left and stay in right lane to next light.
- Bear right where road splits and you will be on University Avenue.

To Center for Law and Justice:
- Proceed on University Avenue to Warren Street. Turn left onto Warren Street.
- Proceed on Warren Street to Washington Street. Turn left onto Washington Street.
- The Center for Law and Justice is immediately on the left.

To Main Campus:
- Continue past the athletic field on your right; you will see Blumenthal Hall,directly past Alumni Field, on your right.

From the Holland Tunnel

- Take Routes 1 and 9 South (Pulaski Skyway) for five miles to the "Newark and the Oranges" exit. This exit will put you on Raymond Boulevard.
- Continue on Raymond Boulevard past Penn Station-Newark (on your left) for approximately two miles to the intersection of Raymond Boulevard and Washington Street.

To Center for Law and Justice:
- Turn right onto Washington Street.
- The Center for Law and Justice is located on the left side, at the corner of New Street and Washington Street.

To Main Campus:
- Turn right on Washington Street, and immediately move to the left lane.
- Make the first left onto Warren Street and continue to the first traffic light.
- At the light, turn left onto University Avenue and immediately move into the right lane.
- Continue past the athletic field on your right; you will see Blumenthal Hall, directly past Alumni Field, on your right.

From the Lincoln Tunnel

- Follow signs to New Jersey Turnpike.
- From the New Jersey Turnpike:
  - Take exit 15W to Route 280 and continue to the exit marked "King Boulevard Newark."
  - At bottom of the exit ramp, turn left and continue to stop sign.
  - At stop sign, turn left onto King Boulevard.

To Center for Law and Justice:
- Proceed straight on King Boulevard to Warren Street. Turn left onto Warren Street.
- Proceed on Warren Street to Washington Street. Turn left onto Washington Street.
- The Center for Law and Justice is immediately on the left.

To Main Campus:
- Continue five blocks to Warren Street and make a left at this intersection.
- Proceed to the first traffic light and make a right onto University Avenue.
- Continue past the athletic field on your right; you will see Blumenthal Hall, directly past Alumni Field, on your right.

Via Public Transit

Rail
- From Harrison, Jersey City, Hoboken, New York City:
  - PATH to Penn Station-Newark
  - AMTRAK (1-800-872-7245; *www.amtrak.com)* and New Jersey Transit (1-800-772-2222; *www.nj.com/njtransit)* trains also stop at Penn Station-Newark. Please call the appropriate toll-free number for scheduling and fare information.
  - From Penn Station-Newark to campus:
    You may take a $4 taxi ride to campus
    OR
    Take the city subway (entrance is by McDonald's) to Washington Street (second stop) for 45 cents.

Buses
- Greyhound (1-800-231-2222) provides service to Penn Station-Newark.
- New Jersey Transit bus routes serve Union, Essex, Morris, Passaic, Bergen, and Hudson counties, as well as New York City, to Newark.

Newark Subway
- From Penn Station-Newark, take the city subway (entrance is by McDonald's) to Washington Street (second stop). Fare is 45 cents.

CAMDEN CAMPUS

TRAVEL DIRECTIONS TO RUTGERS–CAMDEN

From the North: New Jersey Turnpike to Exit 4; proceed on Route 73 North for approximately one mile to Route 38 West; *or* Route 295 South to Route 38 West exit at Moorestown. Route 38 West will merge with Route 30 West. Proceed on Route 30 West for approximately one mile to where the road forks. Take the right fork marked "Camden Business District–Rutgers University. Last Exit Before Toll." Continue straight ahead to Seventh Street, or the fifth traffic light.

From the South: Route 295 North to the North–South Freeway (Route 42). Follow signs to Camden, exiting at Route 676. Proceed on Route 676 to Exit 5B marked "Camden Business District–Rutgers University. Last Exit Before Toll." At the first traffic light, turn left onto Linden Street; continue one block to Seventh Street, or the next traffic light.

From the Atlantic City Expressway: Pick up the North–South Freeway (Route 42). Follow signs to Camden, exiting at Route 676. Proceed on Route 676 to Exit 5B marked "Camden Business District–Rutgers University. Last Exit Before Toll." At the first traffic light, turn left onto Linden Street; continue one block to Seventh Street, or the next traffic light.

From Admiral Wilson Boulevard (Route 30 West): Proceed for approximately one mile from the Airport Circle where the road forks. Take the right fork marked "Camden Business District–Rutgers University. Last Exit Before Toll." Continue straight ahead to Seventh Street, or the fifth traffic light.

From the Benjamin Franklin Bridge: Stay in right-hand lane and pass through the far right toll booth lane. Make a sharp right turn onto Penn Street. Proceed one block to stop sign. See campus straight ahead with the law school to your left.

From the Walt Whitman Bridge: Take the Camden/Gloucester City exit. Proceed in left lane about 1,000 feet to Camden exit; turn left and continue on Route 676 to Exit 5B marked "Camden Business District–Rutgers University. Last Exit Before Toll." At the first traffic light, turn left onto Linden Street; continue one block to Seventh Street, or the next traffic light.

From the Patco High-Speed Line: Exit at Camden City Hall. Walk north on Fifth Street for two blocks to the Camden campus. *Please note:* the Camden City Hall stop is not open on Saturdays. Get off at the Transportation Center (Broadway stop). Once above ground, proceed north on Broadway (toward Benjamin Franklin Bridge) to Cooper Street; make a left on Cooper to Fifth Street, right on Fifth Street to campus. The law school is on your left.

Index

Note: The following abbreviations are used in this index:

DC: Douglass College
LC: Livingston College
RC: Rutgers College
UC: University College–New Brunswick
CC: Cook College
MGSA: Mason Gross School of the Arts
CP: College of Pharmacy
SB: School of Business–New Brunswick
SCILS: School of Communication, Information and Library Studies
SE: School of Engineering
EJBSPPP: Edward J. Bloustein School of Planning and Public Policy

Page references to these schools always appear in the above order.

Cover: Voorhees Mall in the Fall
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