

# ERNEST MARIO SCHOOL 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>

<b>General Information</b>	<b>390</b>
<b>Academic Policies and Procedures</b>	<b>392</b>
<b>Degree Requirements</b>	<b>396</b>
<b>Programs of Study</b>	<b>397</b>
<b>Course Listing</b>	<b>399</b>
<b>Administration and Faculty</b>	<b>403</b>

# General Information

## HISTORY AND AIMS OF THE SCHOOL

The Ernest Mario School 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. In December 2001, the school was renamed from the College of Pharmacy to the Ernest Mario School of Pharmacy in recognition of the many significant contributions and achievements of alumnus Ernest Mario and to reflect the fact that the school only offers a doctoral professional degree. Ernest Mario is a 1961 graduate of the school and is recognized as one of the most distinguished executives in the pharmaceutical industry.

Today the school 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 biological, physical, and social sciences and the humanities, and an expansive variety of new clinical field experiences, which is 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, pharmaceuticals, pharmacology, the natural and social sciences and the humanities, and a structured clinical experience program.

## 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, hypertension, 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 homes, health maintenance organizations, clinics, home health care agencies, governmental agencies, 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 many advantages. The Ernest Mario School 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 school. 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 school'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 Ernest Mario School 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, pharmaceuticals and industrial pharmacy, pharmacology, or toxicology. These programs are described in the catalog of the Graduate School—New Brunswick.

## 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, pharmaceuticals, and pharmacology. Specialized facilities accommodate work in animal experimentation, radioisotopes, electronic instrumentation, and pharmaceutical manufacturing. Computers and modern analytical instrumentation are available for instruction. The Ernest Mario School of Pharmacy faculty are located in this building as well as in several other buildings throughout the campus, including the newly expanded Susan Lehman Cullman Laboratory for Cancer Research, which is attached to William Levine Hall.

### Libraries

Pharmacy students make use of extensive pharmacy, science, and health-related collections in the Library of Science and Medicine adjacent to the school. 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 Ernest Mario School 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 reciprocity 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 at <http://www.nabp.net>).

## OFFICE OF CONTINUING EDUCATION

The mission of the Office of Continuing 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>.

## ACCREDITATION

### Accreditation Council for Pharmacy Education

The Pharm.D. degree program of the Ernest Mario School of Pharmacy is accredited by the Accreditation Council for Pharmacy Education, 30 North Clark Street, Suite 2500, Chicago, IL 60602-5109 (312/664-3575; Fax: 312/664-4652). The B.S. degree is no longer awarded. The Accreditation Council for Pharmacy Education is made up of 10 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 Ernest Mario School of Pharmacy as an approved continuing education provider.

### **American Association of Colleges of Pharmacy**

The Ernest Mario School 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 school 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/Piscataway.

## **STUDENT RESPONSIBILITY TO KEEP INFORMED**

In addition to the material in this catalog, important information about the Ernest Mario School of Pharmacy is printed in the *Ernest Mario School of Pharmacy Student Handbook*, the *Undergraduate Schedule of Classes*, and the Official Notices sent to students via email from Campus Information Services. 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 may take the College Board Advanced Placement Examinations. A maximum of 8 degree credits may be earned by advanced placement. Test scores of 4 or 5 may be sent to the University Office of Undergraduate Admissions for review. Credit is not given for scores of 3, 2, or 1. Test scores are reviewed by the Office of Academic Services in consultation with the department that offers the course.

### **Proficiency Examinations**

With the approval of the dean of the Ernest Mario School 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 Ernest Mario School 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, including Internet-based course work. Whether or not transfer credit is requested, the school 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 the staff of the Office of Academic Services and Student Records. The 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 school, 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 assistant dean for 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 online registration system, WebReg (<http://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. 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. The most

up-to-date listing of prerequisites is available through the online schedule of classes (<http://scheduling.rutgers.edu>).

### Course Load

The curriculum of the Ernest Mario School 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 later in this section.

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 prerequisites 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 Scholastic Standing Committee 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 Ernest Mario School of Pharmacy does not have any provision for part-time students, except in those cases where the Scholastic Standing Committee 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 school 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 school 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 12th week of the term.

**Readmission.** Students who interrupt their registration at the Ernest Mario School of Pharmacy and wish to return must apply for readmission by contacting the Office of Academic Services in writing. 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 school'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, Ernest Mario School of Pharmacy, 160 Frelinghuysen Road, Room 102, 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/Piscataway. 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 Ernest Mario School of Pharmacy. Registration must be completed through the Office of the Registrar with authorization by the academic dean.

**Auditing Courses.** With the permission of the instructor and subject to the availability of space, full-time students of the school 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 school 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 102. 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 Ernest Mario School of Pharmacy.

Professional courses may be taken at other colleges of pharmacy during summer sessions *only* after having failed the same course at Ernest Mario School 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 chair of the Scholastic Standing Committee.

For more information about Summer Session courses, contact the Office of Academic Services, Room 102.

*No degree credit is granted for any Summer Session course work that has not been authorized by the dean's office of the Ernest Mario School 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 Ernest Mario School of Pharmacy 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 Ernest Mario School 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 associate 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. Students are required to be available throughout the term and during the entire final exam period to complete exams.

## 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.

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 school 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 at the end of each academic term by the Scholastic Standing Committee, which is composed of appointed faculty of the school. The faculty must ratify any recommendations made by the committee before a student's academic status is changed.

**Standards.** Failure to maintain the school'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 2.5 cumulative grade-point average at the end of each academic term for the first two years of the preprofessional program;
2. achieving a 2.5 cumulative grade-point average at the end of the second term of the second year;
3. maintaining a minimum 2.5 cumulative and professional grade-point average throughout the professional portion of the program;
4. grades of *C* or better in the core science courses and labs during the preprofessional years. Core science courses include general chemistry, organic chemistry, biology, and systems physiology;
5. repeating of any *D* grades in Advanced Practice Experience course work.

Entry into the first professional year (third year) of the program requires a minimum cumulative grade-point average of 2.5 and completion of *all* course work from the preprofessional portion of the curriculum, including humanities, social sciences, core mathematics, science, and English courses. An interview may be required for entry into the first professional year.

Students who earn a grade of *D* or *F* in a course may be required, at the discretion of the Scholastic Standing Committee, to repeat the course; however, *both* grades are included in the students' averages. Grades in repeated courses must be a *C* or better. Grades of *D* in any of the core science courses in the preprofessional years or Advanced Practice Experiences must be repeated for a grade of *C* or better. 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 chairperson of the Scholastic Standing Committee before initiating summer course work related to curricular deficiency (see the section below on Academic Progress). Students pursuing course work during the summer are expected to meet the above academic progression standards.

**Academic Progress.** Students are expected to follow the sequence of courses specified in the doctor of pharmacy curriculum approved by the faculty. Failure to follow the approved curriculum will result in a dismissal or place-

ment 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.** Placement 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 Ernest Mario School of Pharmacy.

Students on probation must meet any conditions set by the Scholastic Standing Committee and approved by the school 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 chairperson of the Scholastic Standing Committee. 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.

**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 school for the intervening period may be required either due to the lack of 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.

**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 school, and academic credit is not given for any college courses taken during a period of one term following dismissal, not including a summer. Dismissal may be conditional with the option to return or permanent without the option to return at the discretion of the Scholastic Standing Committee. The minimum time before readmission to the school after dismissal is one full term, not including the summer.

**Appeal.** Students dismissed or suspended from the Ernest Mario School of Pharmacy by the faculty may appeal within five business days of the date of the dismissal letter. Grounds for appeal include technical error, grade changes, extenuating circumstances, and/or additional information not previously available to the committee. Appeal forms are available from the Office of Academic Services. Recommen-

ditions to reinstate students require the approval of the faculty of the Ernest Mario School of Pharmacy. Students are notified of the faculty's decision by mail.

**Readmission.** Students who have been dismissed for academic reasons with the option to return 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 Ernest Mario School 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 chairperson of the Scholastic Standing Committee
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.*

## 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 Ernest Mario School 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 Ernest Mario School 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 the Ernest Mario School of Pharmacy
5. candidate must be adjudged by the faculty to be of good ethical 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 school 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) \*

#### Second Term

- 01:119:102 General Biology II (4)  
01:160:162 General Chemistry II (4)  
01:355:201 Research in the Disciplines (3) †  
30:725:104 Pharmacy Convocations (1) ‡  
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 elective (3)  
psychology/sociology elective (3)

#### 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 Introductory 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)  
30:\_\_:\_\_ 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 I (2)  
30:\_\_:\_\_ 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 II (2)  
31:725:590 Endocrine Therapy and Special Patient Populations (3)  
31:725:595 Neuropsychiatric Therapeutics (3)  
30:\_\_:\_\_ 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.

† Please note that students may take one of the following courses in lieu of Research in the Disciplines: 04:192:201 Interpersonal Communication Processes (3), 04:192:220 Fundamentals of Speaking and Listening (3).

‡ 30:725:104 is required of first-year students only. Transfer students entering the first professional (third) year of the program *do not* take this course.

§ 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:\_\_\_ Advanced Practice Experience VI (5)
- 31:725:\_\_\_ Advanced Practice Experience VII (5)
- 31:725:600 Clinical Seminar (2)

## TWO-YEAR PREPHARMACY CURRICULUM

This program outlines the courses required by students who currently are not enrolled at the Ernest Mario School of Pharmacy but who are interested in the profession of pharmacy and wish to apply to the school as transfer students. Upon satisfactory completion of one or both years of the program, students are eligible to apply for transfer to the Ernest Mario School 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 with laboratory (3,1)
- 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)

\* These are college-level English and writing courses that include training in the successful writing of a research paper.

## HONORS AND AWARDS

### Honors Program

A program is available for qualified pharmacy students that offers 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 Ernest Mario School of Pharmacy are eligible for election to Rho Chi Honor Society, the national pharmacy honor society. After completion of no less than one-half of the required professional didactic course work, students ranked in the top 20th 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 Ernest Mario School 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 groups that historically have been underrepresented in the areas of math and science. The goal of the program is to increase the enrollment of these multicultural communities through active recruitment, networking, and participation in a pre-college 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 Ernest Mario School 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 Ernest Mario School of Pharmacy, Office for Student Development (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 Ernest Mario School of Pharmacy, Office for Student Development (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 Ernest Mario School 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 courses later in this section.

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)**  
*Hu. 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. Prerequisite: 11:115:301.*  
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. 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)**  
*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.

**30:715:450. DRUGS: STRUCTURE AND FUNCTION (3)**  
*LaVoie, Rice. Prerequisite: Undergraduate organic chemistry. Open only to nonpharmacy undergraduate students.*  
Provides a survey of the major pharmaceutical agents in clinical use. Emphasis is placed on the influence of chemical structure in the elicitation of pharmacological effects.

**30:715:451. MEDICINAL CHEMISTRY: RESEARCH TECHNIQUES AND PRINCIPLES (3)**  
*Rice. Prerequisite: Undergraduate organic chemistry.*  
Basic course for students preparing to do research in medicinal chemistry. Topics covered include information management, computer methods, basic laboratory techniques, bioassay techniques, metabolism, prodrugs, and quantitative structure-activity relationships.

**30:715:452. PRINCIPLES OF DRUG DESIGN (3)**  
*Hu. Prerequisite: Undergraduate organic chemistry.*  
Topics covered include identifying new drug leads, drug absorption and distribution, pharmacomodulation, enzymes and receptors as targets, peptidomimetics, computer-aided drug design, and combinatorial chemistry.

**30:715:453. HERBAL MEDICINES AND NUTRACEUTICALS (2)**  
*LaVoie*  
Introduction to basic aspects of natural products chemistry as well as mechanisms associated with absorption, distribution, metabolism, and excretion of endogenous compounds and xenobiotics. Topics covered include disease states wherein herbal medicines and nutraceuticals have been suggested as having beneficial effects.

**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; 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, Kauffman. Prerequisite: 01:694:301.*  
Chemical structure, physicochemical 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)**  
*Gerecke, Lowndes. 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)

*Kong. 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)

*Kong 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)

*Kong 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)

*Kong and staff. Prerequisite: 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)

*Kong 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)

*You. 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)

*Minko. 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)

*Kong. 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)

*Pharmaceutics faculty. 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 practice of pharmacy as a component of the health care system. Discusses the role of pharmacists and the goals and trends of pharmaceutical education and the career pathways available to pharmacists.

### 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. For third-year pharmacy students or students in their first professional year in the Ernest Mario School 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. Pharmaceutical nomenclature and medical terminology are emphasized.

### 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 pharmacoconomics 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.

### 30:725:421. 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.

**30:725:427. COMMUNITY PRACTICE MANAGEMENT (2)**

*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 Ernest Mario School 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 Ernest Mario School 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 Ernest Mario School 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.

**30:725:483. 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.

**30:725:484. WOMEN'S HEALTH ISSUES (2)**

*Jessen*

Investigate, explore, and discuss issues important to women's health. An in-depth presentation of the female reproductive system, along with related diseases and disorders, is covered in addition to broad coverage of other disorders prevalent in women.

**30:725:485. HERBAL AND ALTERNATIVE MEDICINE (2)**

*Hermes-DeSantis*

Reviews the herbal/alternative medicine used to alleviate the common disease states. Topics include overview of the history of alternative medicine, in-depth analysis of the most popular herbs, and patient counseling for herbal use.

**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/or administration.

**31:725:530. CLINICAL RESEARCH DESIGN (2)**

*Sub*

Delineates the principles of clinical research design, characteristics and types of clinical trials, selection and usage of statistical methods appropriate to various designs, and methods and issues related to outcomes assessment alongside clinical trials.

**31:725:540. PHARMACOECONOMICS (3)**

*Sub*

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 analyses, clinical trials, evaluation studies, applications and current issues, and critique of methods.

**31:725:545. PHARMACY LAW AND BIOETHICS (4)**

*Cifaldi, Colaizzi, Kane. 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)**

*Feudo and 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. Prerequisite: 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)**

*Spoooner and 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.

**31:725:583. PHARMACEUTICAL ADVERTISING AND PROMOTION (2)**

*Epstein*

Educates on the skills that pharmaceutical marketers will need to master to be successful. Provides an in-depth understanding of the development of pharmaceutical advertising, promotional pieces and messages. Also provides information on potential marketing career options in the pharmaceutical industry.

**31:725:584. MANAGED CARE PHARMACY PRACTICE (2)**

*Jan. Prerequisite: Third year student or higher.*

Focuses on issues surrounding practice of pharmacy in a managed care environment, including cost, payment, and recognition of stakeholders. Discusses the impact of managed care on other pharmaceutical environments.

**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 pre-therapeutics 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 (2)**

*Pharmacy practice faculty. Prerequisite: Successful completion of all prior didactic course work.*

Provides instruction and experience, with seminar preparation and presentation.

**31:725:791 THROUGH 799. ADVANCED PRACTICE EXPERIENCE  
ROTATIONS (5)**

*Pharmacy practice faculty. Prerequisites: 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, and general medicine practice experience. One elective practice experience can be selected from available sites and preceptors.

# Administration and Faculty

## ADMINISTRATION

John Louis Colaizzi, *Dean*  
Robert Snyder, *Associate Dean for Research*  
Donald K. Woodward, *Associate Dean*  
Marc C. Kollar, *Assistant Dean for Academic Services*  
Nancy Cintron-Budet, *Assistant Dean for Student Development*  
Darrin Garrison, *Director of Development*

## FACULTY

### Department of Chemical Biology

*Chairperson:* Chung S. Yang

*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*  
Renping Zhou, *B.S., Nanjing Teacher's College (China); Ph.D., California (Berkeley)*

*Associate Professor:*

Suzie Chen, *B.S., Trinity College; M.S., Ph.D., Albert Einstein College of Medicine*

*Assistant Professors:*

Fang Liu, *B.S., Beijing (China); Ph.D., Harvard*  
Nanjoo Suh, *B.S., M.S., Ph.D., Illinois (Chicago)*

*Associate Research Professor:*

Khew-Voon Chin, *Ph.D., Rutgers*

*Assistant Research Professors:*

Xiaoxin Chen, *M.D., Beijing Medical; Ph.D., Rutgers*  
Guang-Yu Yang, *M.D., M.S., Ph.D., China Medical*

*Director, Biochemistry Research Laboratory:*

Mou-Tuan Huang, *B.S., National Taiwan; Ph.D., North Carolina*

*Adjunct Professors:*

Adelaide Carothers, *M.S., Ph.D., New York*  
Hsiang-Fu Kung, *Ph.D., Vanderbilt*  
Ronald Kuntzman, *M.S., Ph.D., George Washington*  
Anthony Lu, *Ph.D., North Carolina*  
Xiaofeng Meng, *Ph.D., Rutgers*  
George H. Miller, *M.Sc., Philadelphia College of Pharmacy; 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)*  
Chi-Kwong So, *Ph.D., Rutgers*  
Nitin T. Telang, *M.Sc., Ph.D., Poona (India)*  
Milan Uskokovic, *Ph.D., Clark*  
Li-Dong Wang, *M.D., M.S., Henan Medical (China)*  
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:*

Longqin Hu, *B.S., M.S., Second Military Medical (China); Ph.D., Kansas*  
Joseph E. Rice, *B.S., M.S., Ph.D., Polytechnic Institute of New York*

**Ernest Mario School of Pharmacy**  
**ADMINISTRATION AND FACULTY**

**Adjunct Professors:**

Hamed M. Abdou, B.S., M.S., Cairo; Ph.D., Rutgers  
Christopher Cimarusti, B.S., Providence College; Ph.D., Purdue  
David Kimball, B.A., Ph.D., SUNY (Stony Brook)  
Gary L. Olson, A.B., Columbia College; Ph.D., Stanford  
Timothy A. Roy, B.A., M.S., SUNY; Ph.D., Florida

**Adjunct Assistant Professor:**

Qun Sun, B.S., Science and Technology of China; Ph.D., Rutgers

**Department of Pharmacology and Toxicology**

**Chairperson:** Debra L. Laskin

**Professors:**

Frederick C. Kauffman, B.A., Knox College; Ph.D., Illinois  
Debra L. 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:**

Donald R. Gerecke, B.S., M.S., Rutgers; Ph.D., Harvard  
Michael M. Iba, B.S., Wisconsin; Ph.D., Illinois College of Medicine  
Sungchul Ji, B.A., Minnesota; Ph.D., SUNY (Albany)

**Associate Research Professors:**

Carol R. Gardner, B.A., SUNY (Potsdam); M.S., Southern Illinois; Ph.D.,  
Texas Woman's  
Marion K. Gordon, B.A., Rutgers; Ph.D., Rutgers/UMDNJ  
Diane Heck, B.A., Douglass; Ph.D., Rutgers/UMDNJ

**Assistant Research Professors:**

Alycia Halladay, B.A., Texas (Austin); Ph.D., Rutgers  
Vasanthi Sunil, M.S., Ph.D., Rutgers/UMDNJ

**Visiting Professors:**

Michael A. Gallo, Ph.D., Albany Medical College  
George M. Rusch, B.S., Hobart; M.A., CUNY; Ph.D., Adelphi

**Visiting Associate Professors:**

Markus P. Dey, B.S., Rutgers; Ph.D., Rutgers/UMDNJ  
James G. Mitroka, B.S., Michigan State; M.S., Rutgers; Ph.D., Rutgers/UMDNJ

**Department of Pharmaceutics**

**Chairperson:** Patrick J. Sinko

**Professors:**

Ah-Ng Tony Kong, B.S., Alberta (Edmonton); Ph.D., SUNY (Buffalo)  
Patrick J. Sinko, B.S., Rutgers; Ph.D., Michigan

**Associate Professors:**

Bozena Michniak, B.S., Ph.D., Leicester Polytechnic (England)  
Tamara Minko, M.S., Mordovsky State (Russia); Ph.D., Institute of Physiology/  
Ukrainian Academy of Sciences (Ukraine)  
Guofeng You, B.S., Beijing Medical; Ph.D., Clark (Massachusetts)

**Assistant Professors:**

Thomas J. Cook, B.S., Northeastern; M.S., Ph.D., Michigan  
Gregory Thomas Knipp, B.S., Rutgers; M.S., Ph.D., Kansas

**Department of Pharmacy Practice  
and Administration**

**Chairperson:** Joseph A. Barone

**Vice Chair:** Lois M. Jessen

**Professors:**

Joseph A. Barone, B.S., Pharm.D., St. John's (New York)  
John Louis Colaizzi, B.S., Pittsburgh; M.S., Ph.D., Purdue  
David L. Cowen (Emeritus), B.S., M.S., Rutgers

**Associate Professors:**

Marc G. Sturgill, B.S., Pharm.D., Kentucky  
Doug-Churl Suh, B.S., M.S., Chung-Ang (South Korea); M.B.A., Yonsei (South  
Korea); M.B.A., SUNY (Buffalo); Ph.D., Minnesota  
Mary L. Wagner, M.S., Minnesota; Pharm.D., California (San Francisco)

**Clinical Associate Professors:**

Evelyn Hermes-DeSantis, B.S., Pharm.D., Rutgers  
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  
Jeffrey J. Kuper, B.S., South Dakota State; Pharm.D., Ohio State  
Scott Mathis, Pharm.D., Philadelphia College of Pharmacy and Science  
Enid Morales, B.S., Puerto Rico; Pharm.D., Maryland  
Constance Pfeiffer, B.S., Pharm.D., Rutgers  
Kevin O. Rynn, B.S., Rutgers; Pharm.D., Duquesne  
Julie A. Saleh, B.S., Pharm.D., Minnesota  
Michael Wynd, B.S., Temple; Pharm.D., Rutgers

**Clinical Assistant Professors:**

Peter Anley, B.S., Pharm.D., Philadelphia College of Pharmacy  
Liza Barbarello, B.S., Pharm.D., Rutgers  
Hoytin Lee Ghin, B.S., Pharm.D., St. John's College of Pharmacy  
Frank Hughes, Pharm.D., Rhode Island  
Alissa Lee, B.S., Pharm.D., Cincinnati  
Leila Mohassel, Pharm.D., University of the Sciences in Philadelphia  
Jacqueline Olin, B.S., M.S., Pharm.D., Rutgers  
Rolee Pathak, B.S., Pharm.D., Rutgers  
Jennifer Potter, B.A., Pharm.D., North Carolina  
Christine Robinson, B.S., Pharm.D., Rutgers  
Linda Spooner, B.S., Connecticut; Pharm.D., Oklahoma  
Sarah Tomasello, B.F.A., Massachusetts; Pharm.D., Massachusetts College of  
Pharmacy and Health Sciences

**Part-Time Clinical Assistant Professor:**

Donna Feudo, B.S., Philadelphia College of Pharmacy and Science

**Part-Time Lecturers:**

Angelo Cifaldi, B.S., Rutgers; J.D., Seton Hall  
Bruce E. Ruck, Pharm.D., St. John's (New York)

**Adjunct Professors:**

Jean Gagnon, Ph.D., Ohio State  
William N. Hait, M.D., Ph.D., Medical College of Pennsylvania  
Michael E. Kafriksen, M.D., Temple  
John Louis Parascandola, Ph.D., Wisconsin  
Melvin P. Weinstein, M.D., George Washington

**Adjunct Associate Professors:**

Susan E. Boruchoff, M.D., Columbia  
Lawrence I. Golbe, M.D., Brown  
Mark Grebenau, M.D., Ph.D., New York  
George H. Lambert, M.D., Illinois  
Henry A. Lubinski, M.S., Rutgers  
Mark Monane, M.D., M.S., New York  
Linda A. Nichols, Pharm.D., Rutgers  
Eric Racine, Pharm.D., Wayne State  
J. Russell Teagarden, M.A., Loyola University Chicago

**Adjunct Assistant Professors:**

Robert T. Adamson, Pharm.D., Rutgers  
Samy A. Ayoub, M.S., Pharm.D., Rutgers  
Walter Bender, B.S., OSNI  
Rami Ben-Joseph, B.S., Hebrew (Israel); Ph.D., Florida  
Tracy A. Benson, B.S., Pharm.D., Rutgers  
Keri Bicking, Pharm.D., Rutgers  
Jennifer Bui, Pharm.D., Maryland  
Nancy Castanheira, Pharm.D., Rutgers  
Joseph DiCesare, M.P.H., Rutgers  
Eileen F. Duffy, B.S., University of the Sciences in Philadelphia  
George D. Hartpence, B.S., University of the Sciences in Philadelphia  
Eric Tomasz Hola, B.S., Ohio State  
David H. Kaplan, M.S., Temple  
Joseph M. Kenny, B.S., Rutgers  
Nancy Lisowski, Pharm.D., Maryland  
Laura Litzenberger, Pharm.D., Pacific  
Timothy Nguyen, B.S., Pharm.D., University of the Sciences in Philadelphia  
John O'Brien, Pharm.D., Nova Southeastern  
James L. Perhach, Ph.D., Pittsburgh  
Stanley Reuben, M.B.A., Fairleigh Dickinson  
Mitch Rusay, B.S., Rutgers  
Monica Shah, Pharm.D., Rutgers  
Thomas F. Turco, B.S., Pharm.D., Philadelphia College of Pharmacy and Science  
Calbert V. Valencia, Pharm.D., Rutgers  
Will Zachok, Pharm.D., St. John's

**Adjunct Instructors:**

Kurtis J. Barry, B.S., Wyoming  
Floyd Farano, M.S., Fairleigh Dickinson  
Marcy Portnoff Gever, B.S., Rutgers  
Michael P. Kane, B.S., Rutgers  
Jerry E. Silverman, B.S., Duquesne

**Adjunct Clinical Assistant Professor:**

Mona Mahal, M.D., Christian Medical College (India)