



College of Pharmacy

College of Pharmacy



Lisa Deziel, B.S.,
Pharm.D., Ph.D.
Dean

Mission Statement

To educate professionals who will address the pharmacy-related needs of society.

Vision Statement

Through our programs of innovative teaching, service, research, and scholarship, we will achieve the distinction of being a premier college of pharmacy.

Values

- entrepreneurship
- excellence
- innovation
- integrity
- professionalism
- respect for diversity
- service
- teamwork

Administration

Lisa Deziel, B.S., Pharm.D., Ph.D.
Dean

Hugh M. McLean, B.S., M.S., Pharm.D., Ph.D.
Associate Dean, Research and Graduate Education

Appu Rathinavelu, B.S., M.S., Ph.D.
Associate Dean, Institutional Planning
and Development

Carsten Evans, B.S., M.S., Ph.D.
Assistant Dean, Continuing Pharmacy Education and
Professional Affairs

Elizabeth Frenzel-Shepherd, B.S., M.B.A., Pharm.D.
Assistant Dean, Experiential Education
and Student Services

Nile M. Khanfar, B.S., M.B.A., Ph.D.
Assistant Dean, Palm Beach Program

Manuel J. Carvajal, B.A., M.S.A, Ph.D.
Chair, Sociobehavioral and Administrative Pharmacy

Michelle Clark, B.A., M.S., Ph.D.
Chair, Pharmaceutical Sciences

Matthew J. Seamon, Pharm.D., J.D.
Chair, Pharmacy Practice

Goar Alvarez, B.S., Pharm.D.
Director, Pharmacy Services

Blanca Ortiz, Pharm.D.
Associate Director, Academic Affairs

William D. Hardigan, B.S., M.S., Ph.D.
Dean Emeritus

Pharmacy

With the nation struggling to deliver high quality, affordable health care, there has come a greater appreciation of the importance of pharmacists as members of today's health care team. The pharmacist's role has expanded rapidly from drug compounding and distribution to a more patient-oriented role. The College of Pharmacy is educating its students in practices vital to meeting the challenges facing the profession and important to improving health and reducing health care costs.

The College of Pharmacy admitted its first class in 1987 to become the first College of Pharmacy in South Florida. Since then, it has graduated more than 3,000 pharmacy professionals. The college offers the Doctor of Pharmacy (Pharm.D.) degree program and began offering a graduate Ph.D. program in 2010.

Pharmacists are experts on drugs and therapeutic goals, their biological action and uses, formulation, adverse effects, and potential for drug interactions. Pharmacists must be able to think quickly and accurately in an organized manner, despite environmental distractions; be able to communicate effectively; and have interpersonal abilities sufficient to interact with others. They consider both the medication and the patient to ensure the patient has the right drug, in the right amount, for the right length of time, and with minimal adverse effects. The result is improved health care.

Most pharmacists practice in patient-oriented settings: in community pharmacies, hospitals, extended care facilities, or public health clinics. In addition, pharmacists are

employed by the pharmaceutical industry in research and development, in manufacturing, or as medical service representatives. They work in academic institutions, government, health maintenance organizations, and home health care programs.

It is because of these challenges and opportunities that pharmacy has assumed a wider role and become an increasingly rewarding profession involving patient counseling, compliance, and education.

Accreditation

The Accreditation Council for Pharmacy Education, 135 S. LaSalle Street, Suite 4100, Chicago, IL 60603, (312) 664-3575, 800-533-3606; Fax (312) 664-4652, Web site: www.acpe-accredit.org, has accredited the Doctor of Pharmacy Program of the College of Pharmacy, Nova Southeastern University. The College of Pharmacy is a member of the American Association of Colleges of Pharmacy.

Facilities

The College of Pharmacy is headquartered on the third floor of the Health Professions Division Administration Building. Pharmacy practice and research laboratories are located on the third floor of the Library/Laboratories Building, near the Health Professions Division's research laboratories. Experiential sites are primarily located throughout Central and South Florida.

In the fall of 2000, the NSU College of Pharmacy opened a West Palm Beach program. After spending many years in a shared site, NSU was happy to move to its own four-story, 75,000-square-foot facility. Classes began at the new location in the fall of 2011. The Palm Beach Student Educational Center features 26 classrooms, including four labs. It also includes a student lounge, a fitness area, a pharmacy library, and offices. In the fall of 2001, a full-time program on the campus of Pontificia Universidad Catolica de Puerto Rico in Ponce, Puerto Rico, was opened. The Puerto Rico program is anticipating a move to San Juan in the summer of 2014, with classes beginning in the fall at the new location. Each location has administrators and faculty and staff members. Interactive video technology is used to provide lectures among the three sites simultaneously. This provides for live interaction between lecturer and students regardless of location. Identical handouts, tests, and texts are used. Communication through telephone, fax, online technologies, and email are available to students at all sites. All students have access to the Health Professions Division Library, computer labs, online learning resources, and the vast technological innovations provided by NSU, which has been a leader in distance education programs for many years.

The pharmaceutical care center and pharmacy are adjacent to the health clinic in Fort Lauderdale. This is a

community pharmacy with disease management services for diabetes, hypertension, hyperlipidemia, osteoporosis, and anticoagulation. It also manages pharmacy services, including drug regimen review, consultation, and teaching. As part of its innovative approach to research, education, and service, Nova Southeastern University College of Pharmacy has created the first Center for Consumer Health Informatics Research (CCHIR) in the country. The mission of the CCHIR is to generate discoveries that leverage the potential of consumer health informatics to improve patient health. This will be realized through the foci of consumer health informatics, medicines information, and public health.

Financial Aid

The purpose of the Student Financial Assistance Program at Nova Southeastern University is to help as many qualified students as possible to complete their pharmacy education. Various loans, scholarships, and grants are available to qualified students to help ease the high cost of a health professions education. Approximately 90 percent of College of Pharmacy students receive some form of financial assistance. These financial assistance programs are described in a variety of separate university publications. Although most first-year pharmacy students will be classified as graduate students for financial aid purposes, students who matriculate with fewer than 90 semester hours and students in the dual-admission program will be classified as undergraduates for the first year in the College of Pharmacy.

Transfer Credits

Requests for transfer credit must be submitted in writing to the executive associate dean. The request must include a copy of the transcript (containing the course title and final grade) and a course syllabus. Transfer credit will only be considered for courses taken at pharmacy schools accredited by ACPE or for those courses given prior approval by the executive associate dean. An official transcript from the institution attended must be provided before transfer credit will be awarded. All transfer credit requests must be received prior to August 1 of the first year of pharmacy school.

The dean's office will evaluate the courses and determine appropriate credits. A minimum of 16 credit hours of didactic coursework and a minimum of five advanced pharmacy practice experiences must be completed at Nova Southeastern University.

Official transcripts must be sent to Nova Southeastern University, Enrollment Processing Services, 3301 College Avenue, P.O. Box 299000, Fort Lauderdale, Florida 33329-9905. Electronic transcripts may be sent to electronictranscript@nova.edu.

Class Cancellation Policy

The university reserves the right to cancel any class. Students may be eligible for a refund for summer semester only (P1–P3); cancelled elective classes during the fall and winter semesters are not eligible for refund.

Entry-Level Program Doctor of Pharmacy Degree

Admissions Requirements

The College of Pharmacy selects students based on pre-pharmacy academic performance, Pharmacy College Admission Test (PCAT) scores, personal interviews, written applications, and letters of recommendation.

Pre-Pharmacy Studies

1. Prior to matriculation, College of Pharmacy applicants must complete a minimum of 76 semester hours of coursework at a regionally accredited college or university, including the following required courses:

- general biology (including laboratory)—8 semester hours
- advanced biology (cellular or molecular biology, microbiology, or genetics)—3 semester hours
- anatomy and physiology (including laboratory)—8 semester hours
- general chemistry (including laboratory)—8 semester hours
- organic chemistry (including laboratory)—8 semester hours
- general physics (including laboratory)—8 semester hours
- English—6 semester hours
- calculus—3 semester hours
- speech—3 semester hours
- statistics—3 semester hours
- macroeconomics or microeconomics—3 semester hours
- humanities and social/behavioral sciences—15 semester hours
 - social/behavioral sciences—3 semester hours
 - humanities—3 semester hours
 - social/behavioral sciences or humanities—9 semester hours

2. Students must have a GPA of 2.75 or higher on a 4.0 scale. To ensure a well-rounded background for professional studies and adequate preparation in mathematics and sciences, the college requires students to earn a grade of 2.0 or better in each required pre-pharmacy course and a minimum grade of 2.0 in all biology, chemistry, and

mathematics courses. Preference will be given to students with a cumulative grade point average of 3.0 or higher. However, the dean is empowered to evaluate the total qualifications of every student and to modify requirements in unusual circumstances.

3. Applicants are required to submit official scores from the Pharmacy College Admission Test (PCAT). A national, standardized examination, the PCAT is designed to measure verbal and quantitative abilities, reading comprehension, and knowledge of biology and chemistry. PCAT scores must be dated within five years of the time of interview. Applicants should take the PCAT no later than October or January prior to the expected date of matriculation.

Candidates should schedule pre-pharmacy coursework so they complete biology and some chemistry courses before taking the PCAT. Application brochures for the PCAT may be available at your college. You can also receive the brochure from the Office of Admissions, NSU College of Pharmacy or by visiting www.pcatweb.info, or by forwarding a written request to

Pharmacy College Admission Test
The Psychological Corporation
555 Academic Court
San Antonio, Texas 78204

800-622-3231
www.pcatweb.info

Foreign Coursework

Coursework taken at a foreign institution must be evaluated for U.S. institution equivalence by an approved National Association of Credential Evaluation Services (NACES) organization, such as one of the services listed below.

- World Education Services
Bowling Green Station
P.O. Box 5087
New York, New York 10274-5087
(212) 966-6311
www.wes.org
- Josef Silny & Associates
7101 SW 102nd Avenue
Miami, Florida 33173
(305) 273-1616
(305) 273-1338 fax
www.jsilny.com
- Educational Credential Evaluators, Inc.
P.O. Box 514070
Milwaukee, Wisconsin 53203-3470
(414) 289-3400
www.ece.org

It is the applicant's responsibility to have this coursework evaluated. An official course-by-course evaluation with a cumulative grade point average must be sent directly from the evaluation service to Nova Southeastern University,

Enrollment Processing Services, College of Pharmacy, Office of Admissions, 3301 College Avenue, P.O. Box 299000, Fort Lauderdale, Florida 33329-9905.

Application Procedures

Initial Application Process

The college participates in the Pharmacy College Application Service (PharmCAS) for the receipt and processing of all applications for students wishing to enter our Fort Lauderdale, Palm Beach, or Puerto Rico sites. PharmCAS takes no part in the selection of students.

To start the application process, please visit the PharmCAS Web site (www.pharmacas.org). Applicants choosing to submit a paper application may contact PharmCAS directly for an application packet at

PharmCAS
P.O. Box 9109
Watertown, Massachusetts 02471
(617) 612-2050

Listed below are the steps necessary to complete the initial application process.

The applicant should submit the following materials to PharmCAS:

- a completed PharmCAS application
- an official transcript from the registrars of all colleges and universities attended (This must be mailed directly to PharmCAS by the college or university.)
- a letter of recommendation from the pre-professional committee, (if such a committee does not exist, letters of evaluation from two science professors and a liberal arts professor are necessary)
- a letter of evaluation from a pharmacist is highly recommended and may substitute for a letter from a professor
- PCAT score(s) within the past five years

The PharmCAS application process could take four to six weeks.

The deadline for submitting a PharmCAS application for NSU-COP is January 1.

Supplemental Application Process

Nova Southeastern University requires the completion of a supplemental application. Upon receipt of the PharmCAS application, NSU-COP will electronically forward a supplemental application.

Listed below are the steps necessary to complete the supplemental application process.

The applicant should submit the following materials to Nova Southeastern University:

- a completed supplemental application
- a nonrefundable application fee of \$50

The deadline date for submitting the supplemental application for NSU-COP is March 1.

All admission materials sent to Nova Southeastern University should be sent to

Nova Southeastern University
Enrollment Processing Services
College of Pharmacy, Office of Admissions
3301 College Avenue, P.O. Box 299000
Fort Lauderdale, Florida 33329-9905

Interview Process

Upon receipt of the completed application and the required credentials, the most-qualified applicants will be selected for an interview. Those selected will be notified in writing of the time and place. All applicants who are admitted by the college must be interviewed, but an invitation to appear for an interview should not be construed as evidence of acceptance.

Notice of Acceptance

Notice of acceptance or other action by the committee on admissions will be on a “rolling” or periodic schedule.

Early completion of the application process is in the best interest of the applicant.

Transcripts

After acceptance, final and official transcripts from all colleges and universities attended, and/or final and official documents must be received within 90 calendar days from the start of the term. If these final and official transcripts and/or documents are not received by that time, the student will not be allowed to continue class attendance. In addition, financial aid will not be disbursed to a student until he or she provides all the necessary documents required to be fully admitted as a regular student.

Program Requirements

All students are required to have ongoing access to a computer and an active account with an Internet service provider. Entering students must purchase an iPad or iPad mini for in-class online testing. Specifics will be provided by the college. Nova Southeastern University will provide access to email, online databases, and library resources.

Students must also provide their own transportation to experiential sites. Puerto Rico students should anticipate completion of experiential education at sites outside of the commonwealth of Puerto Rico. During the final month of the fourth professional year, all students return to their respective sites for a week of live instruction and board exam preparation.

Computer Requirements

Entering students must purchase a device for in-class online testing. Specifics will be provided by the college. Students are also required to have ongoing access to a

computer capable of connecting to the Internet and playing streaming video files. Online course notes and discussions will be provided to the student through an online course management system. All students are required to have a computer with the following minimum specifications:

- CD/DVD
- sound capability and speakers
- Internet connection with private Internet service provider (ISP) for access from home to the Internet (If a laptop computer is utilized, a wireless modem will allow access to NSU's campus-wide wireless network.)
- current Windows operating system
- current Microsoft Office software
- convenient access to a printer

NOTE: A laptop PC or tablet is the preferred format.

Tuition and Fees

- Tuition—Fort Lauderdale and Palm Beach, Florida
Tuition for 2013–2014 (subject to change by the board of trustees without notice) is \$28,550 for Florida residents and \$32,250 for out-of-state students.

Eligible students must request in-state tuition on the application. For tuition purposes, students' Florida residency status (in-state or out-of-state) will be determined at initial matriculation and will remain the same throughout the entire enrollment of the student at NSU. Accordingly, tuition will not be adjusted as a result of any change in residency status after initial enrollment registration.

- Tuition—Ponce, Puerto Rico
Tuition for 2013–2014 (subject to change by the board of trustees without notice) is \$28,550 (U.S.) for Florida and Puerto Rico residents and \$32,250 (U.S.) for non-Florida and non-Puerto Rico residents.
- A Health Professions Division general access fee of \$145 is required each year. An NSU student services fee of \$900 is also required annually.
- Acceptance fee is \$500.
This fee is required to reserve the accepted applicant's place in the entering first-year class. This advance payment will be deducted from the tuition payment due on registration day, but is not refundable in the event of a withdrawal. It is payable within three weeks of an applicant's acceptance.
- Preregistration fee is \$500.
This is due March 15, under the same terms as the acceptance fee.

The first semester's tuition and fees, less the \$1,000 previously paid, are due on or before registration day. Tuition for each subsequent semester is due on or before the appropriate registration day. Students will not be permitted to register or attend classes until their financial obligations have been met. The financial ability of applicants to complete their training at the college is important because of the limited number of positions available in each class. Applicants should have specific plans for financing four years of professional education. This should include tuition, living expenses, books, equipment, and miscellaneous expenses.

Each student is required to carry adequate personal medical and hospital insurance. For more information about NSU's required health insurance, visit our Web site at www.nova.edu/smc/health_insurance.html.

Undergraduate/Pharm.D. Dual Admission Program

Nova Southeastern University Health Professions Division has established a dual admission program with the Nova Southeastern University Farquhar College of Arts and Sciences, Pontificia Universidad Catolica de Puerto Rico, and International College in Naples, Florida, for a select number of highly motivated, qualified students interested in pursuing both an undergraduate education and professional studies in pharmacy. This allows students to receive their undergraduate bachelor of science degree and a doctor of pharmacy degree in a six- to eight-year period.

Candidates must maintain a specified GPA and achieve acceptable scores on the Pharmacy College Admissions Test (PCAT). Students will spend two to three years in the undergraduate school and then will be awarded a B.S. degree upon successful completion of the second/third year at Nova Southeastern University College of Pharmacy. Students will receive the Doctor of Pharmacy degree after successfully completing the four-year Pharm.D. program at Nova Southeastern University College of Pharmacy.

For information and requirements, contact one of the following:

- Office of Admissions
Farquhar College of Arts and Sciences
Nova Southeastern University
3301 College Avenue
Fort Lauderdale, Florida 33314-7796
- Office of Admissions
Pontificia Universidad Catolica de Puerto Rico
2250 Avenida Las Americas
Suite 584
Ponce, Puerto Rico 00717-0777
- Office of Admissions
International College
2655 Northbrooke Drive
Naples, Florida 34119

Internship

An internship is a requirement for licensure. The internship must be completed within the guidelines of the Florida Board of Pharmacy as set forth in the Rule, Chapter 64B16-26.400(4), or by the Board of Pharmacy in the state in which the student plans to fulfill the requirements for internship. A Social Security number is necessary in order to obtain an intern license from the state of Florida. All efforts should be made by the student to obtain a Social Security number prior to matriculation. It is the responsibility of any student who does not have U.S. citizenship or permanent resident status to ensure that his or her visa status allows for the issue of a Social Security number. An intern license is a requirement for placement on practice experiences. Without practice experiences, a student cannot complete the curriculum or the requirements of the Pharm.D. degree program. Any student who has concerns regarding visa or Social Security status should contact the Office of International Students and Scholars by phone at (954) 262-7240 or 800-541-6682, extension 27240, or by email at intl@nsu.nova.edu. The directors of experiential education will provide assistance and guidance to students regarding pharmacy practice experiences/earning required intern hours.

Course of Study

The Doctor of Pharmacy degree is awarded after successful completion of four years of professional study in the College of Pharmacy. The curriculum stresses innovative teaching delivery and assessment methods. Students are provided an initial orientation during which they are exposed to library and online resources, professionalism, and academic expectations.

The curriculum is designed so courses integrate information and build on one another in order to provide students with the knowledge and skills necessary to be successful in the profession. The didactic component of the curriculum builds a foundation in the medical and pharmaceutical sciences. Traditional courses in physiology and pathophysiology, biochemistry, microbiology, research design, and statistics are provided in order to develop a solid foundation. Pharmaceutical sciences courses including Pharmaceutics, Pharmacokinetics, and Nonprescription Therapies are designed to provide students with a strong understanding of the principles of drug therapy. The innovative curriculum also includes the integration of medicinal chemistry and pharmacology into one course titled Pharmacodynamics, which runs five semesters. Insight into the business, human relations, communication, marketing, and legal aspects of pharmacy and the health care system are also provided. Students are actively involved in the two-semester Introduction to Professionalism and Leadership course that covers topics such as ethics and professionalism and promotes student advocacy in the profession and the community.

Additionally, the curriculum includes courses that focus on application of material learned in previous semesters. Pharmacotherapy addresses the use of drugs in the disease process and physical assessment provides students with hands-on opportunities to develop skills essential to monitoring and managing medication therapy. Students hone their analytical skills with courses in pharmacoeconomics and outcomes research and biomedical literature evaluation. All students must complete a minimum of 6 semester hours of elective credit.

Unique aspects of the curriculum include an introductory pharmacy practice experience program and an integrated laboratory. Opportunities for the students to experience pharmacy practice first hand are provided early in the curriculum. In the first year, students participate in the Introduction to Professionalism and Leadership course, which is designed to begin the development of abilities including thinking and learning; social and cultural awareness; active citizenship and leadership; personal, ethical, and legal judgment; and communication. In the second year of the curriculum, students spend four hours per week in a community pharmacy setting. Practice experiences in the third year involve eight hours per week in hospital and pharmacy service preclinical settings. Patient Care Management Lab is initiated during the second year and continues through the third. This provides an opportunity for students to integrate information learned in all courses of the curriculum in order to facilitate application of the material in real-life practice settings.

During the fourth year, through experiential coursework, students will complete nine 160-hour Advanced Pharmacy Practice Experience (APPE) courses, six in direct patient care areas and three selective experiences in specialty health care areas. APPEs continue the student's education by providing opportunities for the clinical application of patient care in a broad variety of health care environments and systems. At this point in the curriculum, it is expected that student pharmacists practice drug therapy monitoring with more independence. Each term of the fourth year curriculum includes a Professional Development Capstone course that offers student-initiated review and update of calculations and case-based drug therapy evaluations. During the final month of the fourth professional year, all students return to their respective sites for a week of live instruction and board exam preparation.

Note: The advanced pharmacy practice experiences are full-time commitments for the students (a minimum of 40 hours per week). Students are responsible for having reliable transportation to attend assigned IPPE and APPE sites. Students may be required to secure accommodation at APPE sites away from their home location. Experiences may be taken in any sequence, however students may not enroll in advanced practice experiences until all didactic work has been satisfactorily completed. There are several APPE sites available in Puerto Rico. However, students

should expect to attend sites outside of the commonwealth of Puerto Rico for the completion of APPEs. Students must expect to use Florida sites for most experiences. The curriculum is designed so that knowledge gained in one semester becomes the foundation for material covered in subsequent semesters. Therefore, if students do not successfully complete the coursework specified for one semester, it will impede their ability to take courses in the future semesters. (Students have 60 days after the end of the semester to resolve any grade disputes; after that, the instructor may discard all materials from the semester.) This may lead to a delay in graduation. The program must be completed within six years from the date of matriculation.

Travel Study

Opportunities for travel study programs may be provided during the summer.

Graduation Requirements

To receive a degree, a student must fulfill the following requirements:

- be of good moral character
- pass all required courses

- complete a minimum of 145 semester hours of coursework in the College of Pharmacy within six years
- satisfactorily complete the assigned curriculum requirements for the degree, including all assignments, with a GPA of 2.0 on a four-point scale or a numerical average of 70 percent or above
- satisfactorily complete the P3 capstone examination
- satisfactorily meet all financial and library obligations
- complete a minimum of 30 credit hours of didactic coursework in addition to five advanced pharmacy practice experiences if transferring from another college of pharmacy
- submit to the registrar's office an application for degree/diploma by March 15. Applications received after March 15 will not be considered for that year's commencement, unless approved by the dean
- must satisfactorily complete all professional development capstone requirements
- must attend the commencement program in person
- receive approval by a College of Pharmacy faculty vote

Entry-Level Curriculum Outline

First Year—Fall Semester			Credits
PHRC	4000	Medical Terminology (online)	0
PHRC	4110	Pharmaceutics I	3
PHRC	4200	Pharmacy Calculations (online)	1
PHRC	4210	Pharmacodynamics I	3
PHRC	4300	Pharmacy and the U.S. Health Care Systems	2
PHRC	4410	Physiology and Pathophysiology I	4
PHRC	4580	Introduction to Professionalism and Leadership I	1
PHRC	4700	Biochemistry	4
Total			18

First Year—Winter Semester			Credits
PHRC	4120	Pharmaceutics II	2
PHRL	4130	Pharmaceutics Compounding Lab	1
PHRC	4220	Pharmacodynamics II	3
PHRC	4250	Pharmacokinetics	4

PHRC	4420	Physiology and Pathophysiology II	4
PHRC	4550	Introduction to Drug Information Resources and Health Informatics	2
PHRC	4680	Introduction to Professionalism and Leadership II	1
Total			17

Second Year—Fall Semester			Credits
PHRC	5000	Physical Assessment (hybrid)	2
PHRC	5230	Pharmacodynamics III	4
PHRC	5300	Social and Behavioral Pharmacy	2
PHRC	5350	Research Design and Statistics	3
PHRC	5380	Pharmacy Law	2
PHRC	5410	Pharmacotherapy I	3
PHRC	5580	IPPE: Community I	1.5
PHRC	5700	Microbiology	3
Total			20.5

Second Year—Winter Semester			Credits
PHRC	5150	Nonprescription Therapies	3
PHRC	5240	Pharmacodynamics IV	4
PHRC	5330	Communication in Patient Care	2
PHRC	5420	Pharmacotherapy II	5
PHRC	5570	Biomedical Literature Evaluation	2
PHRC	5680	IPPE: Community II	1.5
PHRC	5710	Patient Care Management Theory I	1
PHRL	5710	Patient Care Management Lab I	0
Total			18.5

Third Year—Fall Semester			Credits
PHRC	6250	Pharmacodynamics V	3
PHRC	6350	Pharmacy Management	3
PHRC	6370	Pharmacoeconomics/Outcomes Research	2
PHRC	6430	Pharmacotherapy III	6
PHRC	6580	IPPE: Health System	2
PHRC	6720	Patient Care Management Theory II	1
PHRL	6720	Patient Care Management Lab II	0
PHRE		Elective 1	2
Total			19

Third Year—Winter Semester			Credits
PHRC	6380	Public Health	2
PHRC	6440	Pharmacotherapy IV	6
PHRC	6540	Pharmacy Practice Seminar	1
PHRC	6680	IPPE: Pharmacy Service	2
PHRC	6730	Patient Care Management Theory III	1
PHRL	6730	Patient Care Management Lab III	0
PHRE		Elective 2	2
PHRE		Elective 3	2
Total			16

Fourth Year—Summer/Fall/Winter			Credits
PHRC	7610	APPE: Internal Medicine	4
PHRC	7620	APPE: Ambulatory Care	4
PHRC	7630	APPE: Community Patient Care I	4
PHRC	7640	APPE: Community Patient Care II	4
PHRC	7650	APPE: Acute Patient Care I	4
PHRC	7660	APPE: Acute Patient Care II	4
PHRC	7670	APPE: Selective I	4
PHRC	7680	APPE: Selective II	4
PHRC	7690	APPE: Selective III	4
PHRC	7801	Professional Development Capstone I	0
PHRC	7802	Professional Development Capstone II	0
PHRC	7803	Professional Development Capstone III	0
Total			36

IPPE = Introductory Pharmacy Practice Experience

APPE = Advanced Pharmacy Practice Experience

The curriculum is frequently being revised and modified to meet the demands of the profession. These courses are representative of the overall requirements of the program at the time of publication.

International Pharmacy Graduates Doctor of Pharmacy Degree

In an effort to meet the growing demands of the pharmacy profession, the Nova Southeastern University College of Pharmacy provides an opportunity for international pharmacy graduates to enter the Pharm.D. degree program with advanced standing. Upon completion of the degree program, students are eligible to take the North American Pharmacy Licensing Examination (NAPLEX). This opportunity is designed exclusively for graduates of pharmacy degree programs outside of the United States jurisdiction, allowing them to build upon their pharmacy education and prepare them for clinical pharmacy practice.

The International Pharmacy Graduate curriculum educates students to achieve the same outcomes as the Entry-level Pharm.D. Degree Program. Courses integrate information and build on one another to provide students with the knowledge and skills necessary to be successful in the profession. Pharmacodynamics/Pharmacology and Nonprescription Therapies courses provide a strong understanding of the principles of drug therapy. The business, human relation, communication, and legal aspects of pharmacy and the health care system are also studied. Courses focus on application of material learned, the use of drugs in the disease process, and developing skills essential to monitoring drug therapy. Students hone their analytical skills with courses in pharmacoconomics and outcomes research and biomedical literature evaluation. All students must complete a minimum of 4 semester hours of elective credit.

Pharmacy practice experiences in community, hospital, and other traditional pharmacy settings facilitate real-life application of the material and provide opportunities to integrate information learned. Full-time practice experiences facilitate application of drug therapy monitoring with more independence. International pharmacists applying for the entry-level program may be awarded advanced standing based on their previous coursework. Advanced standing and the actual degree curriculum will vary based on the matriculant's previous pharmacy coursework. The curriculum provided is representative of a typical international pharmacist entering the entry-level program.

The curriculum stresses innovative delivery and assessment methods. Courses will be on campus and will be taught by interactive video; the college's experiential sites will be used extensively. All lectures, handouts, reading materials, and exams will be in English.

Admissions Requirements

The College of Pharmacy selects students based on previous academic performance, TOEFL scores (if applicable), GRE or PCAT scores, written applications, and letters of recommendation.

Prior to matriculation, College of Pharmacy applicants must complete and receive a Bachelor of Science degree in Pharmacy from a program accredited by the country of residence. Applicants may be required to complete some pre-pharmacy coursework from the College of Pharmacy.

The Test of English as a Foreign Language (TOEFL) is required of all applicants whose native language is not English. The TOEFL, administered worldwide, measures the ability of non-native speakers to understand and use North American English. Preference will be given to students with scores of at least 213 on the computer-based exam or 79–80 on the Internet-based exam. TOEFL scores must be no more than two years old at the time of application.

You can receive the TOEFL brochure from the Office of Admissions, by visiting TOEFL's Web site (www.toefl.org), or by forwarding a written request to

TOEFL/TSE Services
P.O. Box 6153
Princeton, NJ 08541-6153
(609) 771-7100

The following coursework, with a grade of C or higher, is currently required for admission:

- anatomy and physiology (6 semester hours)
- biochemistry (4 semester hours)
- microbiology (3 semester hours)
- pharmacology (6 semester hours)
- pharmaceuticals (6 semester hours)
- pharmacokinetics (4 semester hours)

It is required that applicants have a minimum 2.75 GPA on a 4.0 scale.

Application Procedures

Candidates for admission are responsible for submitting an application form, application fee, a complete set of official transcripts, official foreign coursework evaluation if applicable, official TOEFL scores if applicable, and letters of evaluation.

A completed international application form along with a \$50 (U.S.), nonrefundable application fee must be submitted to the Office of Admissions no later than February 1 of the year of anticipated entry. An application is available on our Web site (<http://pharmacy.nova.edu/intpharmd/admissions.html>) or by contacting the Office of Admissions.

In order to complete an application, a candidate must arrange to have his or her transcripts, test scores, and letters of evaluation forwarded to the Office of Admissions no later than March 1 of the year of anticipated entry.

Interview Process

Upon receipt of the completed application and the required credentials, the most qualified applicants will be invited to interview. Those applicants selected will be notified in writing of the time and place. All applicants who are admitted to the college must be interviewed, but an invitation to appear for an interview should not be construed as evidence of acceptance.

Transcripts

Official college transcripts from all undergraduate and graduate institutions attended in the United States or U.S. territories must be forwarded directly from the institutions to

Nova Southeastern University
Enrollment Processing Services
College of Pharmacy, Office of Admissions
3301 College Avenue, P.O. Box 299000
Fort Lauderdale, Florida 33329-9905

It is the applicant's responsibility to ensure that arrangements are made for these to be sent. Final transcripts of all of the applicant's work must be forwarded to the Office of Admissions prior to matriculation. Photocopies and facsimiles will not be accepted. A transcript is required for each college or university even though transfer credit from one institution may appear on another institution's transcript.

Foreign Coursework

Coursework taken at a foreign institution must be evaluated for U.S. institution equivalence by an approved National Association of Credential Evaluation Services (NACES) organization, such as one of the services listed below.

- World Education Services
Bowling Green Station
P.O. Box 5087
New York, New York 10274-5087
(212) 966-6311
www.wes.org
- Josef Silny & Associates
7101 SW 102nd Avenue
Miami, Florida 33173
(305) 273-1616
(305) 273-1338 fax
www.jsilny.com
- Educational Credential Evaluators, Inc.
P.O. Box 514070
Milwaukee, Wisconsin 53203-3470
(414) 289-3400
www.ece.org

It is the applicant's responsibility to have this coursework evaluated. An official course-by-course evaluation with a cumulative grade point average must be sent directly from the evaluation service to Nova Southeastern University, Enrollment Processing Services, College of Pharmacy,

Office of Admissions, 3301 College Avenue, P.O. Box 299000, Fort Lauderdale, Florida 33329-9905.

Proof of English proficiency is required of all applicants. The following standardized tests currently satisfy NSU College of Pharmacy English requirements for non-native English speakers:

- Test of English as a Foreign Language (TOEFL)*—213 on a computer-based test; 79–80 on the Internet-based test
- International English Language Testing System (IELTS)—6.0 on the test module

*TOEFL scores may be no more than two years old at the time of application.

Candidates who have taken college courses in the United States may also prove English proficiency by completing two college-level English composition courses at a regionally accredited college or university in the United States.

Graduate Record Examination or Pharmacy College Admission Test

It is required that applicants submit official scores from either the Graduate Record Examination (GRE) or the Pharmacy College Admission Test (PCAT). A combined GRE score greater than 1000 is preferred. The PCAT is designed to measure verbal ability, quantitative ability, reading comprehension, and knowledge of biology and chemistry. PCAT scores must be no more than five years old at the time of the interview.

Letters of Evaluation

Three letters of recommendation/evaluation are required. One should be from the dean/director of a pharmacy program. In addition, a letter of reference from a registered pharmacist is recommended. Forms for letters of evaluation are available on our Web site (<http://pharmacy.nova.edu/intpharmd/admissions.html>) or by contacting the Office of Admissions.

Note: All documents submitted to the Office of Admissions become the property of Nova Southeastern University. Originals or copies of originals will not be returned to the applicant or forwarded to another institution, agency, or person.

Admission inquiries should be directed to

Nova Southeastern University
Attention: Pharmacy Admissions
3200 South University Drive
Fort Lauderdale, Florida 33328-2018
(954) 262-1101
877-640-0218
www.nova.edu

Requirements

All students are required to have ongoing access to a computer and an active account with an Internet service provider (ISP).

This curriculum requires a student's full effort. Students are responsible for having reliable transportation to attend assigned IPPE and APPE sites. Students may be required to secure accommodation at APPE sites away from their home location.

Computer Requirements

Entering students must purchase a device for in-class online testing. Specifics will be provided by the college. Students are also required to have ongoing access to a computer capable of connecting to the Internet and playing streaming video files. Online course notes and discussions will be provided to the student through an online course management system. All students are required to have a computer with the following minimum specifications:

- CD/DVD
- sound capability and speakers
- Internet connection with private Internet service provider (ISP) for access from home to the Internet (If a laptop computer is utilized, a wireless modem will allow access to NSU's campus-wide wireless network.)
- current Windows operating system
- current Microsoft Office software
- convenient access to a printer

NOTE: A laptop PC or tablet is the preferred format.

Tuition and Fees

The board of trustees has established the following tuition and fees for 2013–2014, which are subject to change at any time at the board's discretion:

- Tuition is \$39,660 (U.S.). A Health Professions Division general access fee of \$145 is required each year. An NSU student services fee of \$900 is also required annually.
- Preregistration fee is \$1,000.

This fee is due May 15, and is required to reserve the accepted applicant's place in the entering first-year class. This advance payment will be deducted from the tuition payment due on registration day, but is not refundable in the event of a withdrawal.

The first semester's tuition and fees, less the \$1,000 previously paid, are due on or before registration day. Tuition for each subsequent semester is due on or before the appropriate registration day. Students will not be permitted to register until their financial obligations have been met.

Graduation Requirements

Graduation requirements of International Pharmacy Graduates are the same as the Entry-level Pharm.D. Program, except international students must complete a minimum of 108 credit hours of coursework at the College of Pharmacy within five years.

International/Immigration Information

It is the responsibility of the applicant to contact the Office of International Students and Scholars for information on immigration regulations and student visa requirements. Inquiries can be directed to

Nova Southeastern University
Attention: Office of International Students and Scholars
3301 College Avenue
Fort Lauderdale, Florida 33314-7796

(954) 262-7240
800-541-6682, ext. 27240
Fax: (954) 262-3846
Email: intl@nsu.nova.edu
www.nova.edu/internationalstudents/index.html

Internship

An internship is required for licensure. The internship must be completed within the guidelines of the Florida Board of Pharmacy as set forth in the Rule, Chapter 64B16-26.400(4), or by the Board of Pharmacy in the state in which the student plans to fulfill the requirements for licensure. A Social Security number is necessary in order to obtain an intern license in the state of Florida, and must be obtained within the first few weeks of a student's first semester. The directors of experiential education will provide assistance and guidance to students regarding IPPEs, APPEs, and earning required intern hours. It is the responsibility of any student who does not have U.S. citizenship or permanent resident status to ensure that his or her visa status allows for the issue of a Social Security number. An intern license is a requirement for placement on IPPEs and APPEs. Without these experiences, a student can not complete the curriculum or the requirements of the Pharm.D. degree program. Students are responsible for having reliable transportation to attend assigned IPPE and APPE sites. Students may be required to secure accommodation at APPE sites away from their home location.

International Advanced Standing Curriculum Outline

First Year—Fall Semester			Credits
PHRC	4000	Medical Terminology (online)	0
PHRC	4200	Pharmacy Calculations (online)	1
PHRC	6260	Clinical Pharmacology	4
PHRC	4300	Pharmacy and the U.S. Health Care Systems	2
PHRC	4580	Introduction to Professionalism and Leadership I	1
PHRC	5300	Social and Behavioral Pharmacy	2
PHRC	5350	Research Design and Statistics	3
PHRC	5380	Pharmacy Law	2
PHRC	5410	Pharmacotherapy I	3
PHRC	5580	IPPE: Community I	1.5
Total			19.5

First Year—Winter Semester			Credits
PHRC	4550	Introduction to Drug Information Resources and Health Informatics	2
PHRC	4680	Introduction to Professionalism and Leadership II	1
PHRC	5150	Nonprescription Therapies	3
PHRC	5330	Communication in Patient Care	2
PHRC	5420	Pharmacotherapy II	5
PHRC	5680	IPPE: Community II	1.5
PHRC	5710	Patient Care Management Theory I	1
PHRL	5710	Patient Care Management Lab I	0
PHRE		Elective 1	2
Total			17.5

Second Year—Fall Semester			Credits
PHRC	5000	Physical Assessment (hybrid)	2
PHRC	6250	Pharmacodynamics V	3
PHRC	6350	Pharmacy Management	3
PHRC	6370	Pharmacoeconomics/Outcomes Research	2
PHRC	6430	Pharmacotherapy III	6
PHRC	6580	IPPE: Health System	2
PHRC	6720	Patient Care Management Theory II	1
PHRL	6720	Patient Care Management Lab II	0
Total			19

Second Year—Winter Semester			Credits
PHRC	5570	Biomedical Literature Evaluation	2
PHRC	6380	Public Health	2
PHRC	6440	Pharmacotherapy IV	6
PHRC	6540	Pharmacy Practice Seminar	1
PHRC	6680	IPPE: Pharmacy Service	2
PHRC	6730	Patient Care Management Theory III	1
PHRL	6730	Patient Care Management Lab III	0
PHRE		Elective 2	2
			Total 16

Third Year—Summer/Fall/Winter			Credits
PHRC	7610	APPE: Internal Medicine	4
PHRC	7620	APPE: Ambulatory Care	4
PHRC	7630	APPE: Community Patient Care I	4
PHRC	7640	APPE: Community Patient Care II	4
PHRC	7650	APPE: Acute Patient Care I	4
PHRC	7660	APPE: Acute Patient Care II	4
PHRC	7670	APPE: Selective I	4
PHRC	7680	APPE: Selective II	4
PHRC	7690	APPE: Selective III	4
PHRC	7801	Professional Development Capstone I	0
PHRC	7802	Professional Development Capstone II	0
PHRC	7803	Professional Development Capstone III	0
			Total 36

IPPE = Introductory Pharmacy Practice Experience

APPE = Advanced Pharmacy Practice Experience

The curriculum is frequently being revised and modified to meet the demands of the profession. These courses are representative of the overall requirements of the program at the time of publication.

Entry-Level and International Advanced Standing Course Descriptions

Note: Listed at the end of each entry are lecture clock hours, laboratory clock hours, and credit hours.

Basic Medical Sciences

PHRC 4410—Physiology and Pathophysiology I

This two-semester course reviews the physical and chemical processes occurring in the human body that are responsible for the maintenance of health and the pathophysiology of disease. Topics covered during the first semester include membrane and cellular physiology, genetic diseases, and the physiology and pathophysiology of the integumentary, musculoskeletal, nervous, lymphatic, and cardiovascular systems. The second semester (PHRC 4420) addresses the physiology and pathophysiology of the digestive, urinary, respiratory, endocrine, and reproductive systems. (64-0-4)

PHRC 4420—Physiology and Pathophysiology II

This two-semester course reviews the physical and chemical processes occurring in the human body that are responsible for the maintenance of health and the pathophysiology of disease. The second semester reviews the physiology and pathophysiology of the digestive, urinary, respiratory, endocrine, and reproductive systems. (64-0-4)

PHRC 4700—Biochemistry

Covers the structures, functions, and metabolism of lipids, proteins, carbohydrates, nucleic acids, and body systems. Includes pharmaceutical application of material. (64-0-4)

PHRC 5700—Microbiology

Covers the underlying nature of infectious microorganisms. Emphasizes cause, prevention, and control of infectious diseases; immunology; mycology; parasitology; bacteriology; virology. (48-0-3)

Pharmacy—Required Courses

PHRC 4000—Medical Terminology

This online course will provide an overview of medical terminology. Upon completion, students will demonstrate proficiency in the medical terminology required to be successful in pharmacy education. (8-0-0)

PHRC 4110—Pharmaceutics I

Pharmaceutics I emphasizes the theories and applications of underlying physicochemical principles in preparation of pharmaceutical dosage form. It also emphasizes biopharmaceutics principles, as well as drug development and approval processes. (48-0-3)

PHRC 4120—Pharmaceutics II

This course deals with the study of traditional and basic pharmaceutical dosage forms, their fundamental characteristics, and their routes of administration. The dosage forms that are examined in the course include oral liquids, parenterals, solids, molded solids, semi-solids, nasal, pulmonary, buccal, sublingual, otic, ophthalmic, transdermal, and controlled release dosage forms and systems. **Prerequisites:** PHRC 4110 and 4200 **Corequisite:** PHRC 4130 (32-0-2)

PHRL 4130—Pharmaceutics Compounding Laboratory

This course is a compounding laboratory for the basic pharmaceutical formulations that can be prepared and dispensed in a pharmacy setting. Preparation and dispensing of pharmaceutical solutions, emulsions, suspensions, semi-solids, and solid dosage forms are studied in the laboratory. **Prerequisites:** PHRC 4110 and 4200 **Corequisite:** PHRC 4120 (16-48-1)

PHRC 4200—Pharmacy Calculations

Pharmacy Calculations includes the study of different methods used by the pharmacist in the process of solving the mathematical problems typically found in the practice of the profession of pharmacy. This course also emphasizes metric and common systems conversions, fundamentals of measurements, percentages, dose calculation, specific gravity, dilution, concentration, and dosage adjustment. (16-0-1)

PHRC 4210—Pharmacodynamics I

This is the first course in the pharmacodynamics sequence. This course applies the principles of organic chemistry in order to understand drug actions at the molecular level. It introduces students to the basic pharmacokinetic principles (absorption, distribution, metabolism, and elimination) as it pertains to pharmacology. The remainder of the course covers physiological receptors and key pharmacogenomic concepts. (48-0-3)

PHRC 4220—Pharmacodynamics II

This is the second course in the pharmacodynamics sequence. This course applies the principles of biochemistry, physiology, and pathophysiology to help students understand drug actions at the receptor, cellular, and system levels under normal physiological and pathological conditions. It focuses on the drugs that act on the autonomic nervous system, cardiovascular system, and blood components. **Prerequisites:** PHRC 4210 and 4410 **Corequisite:** PHRC 4420 (48-0-3)

PHRC 4250—Pharmacokinetics

The principles involved in drug absorption, distribution, metabolism, and elimination in the body are discussed. Mechanisms and rates of these processes are covered. Examines how the fate of drugs in the body is influenced by physiologic and biochemical processes. Examines the mathematical techniques involved in the graph analysis of drug-blood-level kinetic curves to determine pharmacokinetic parameters. This course describes the application of basic pharmacokinetic principles in therapeutic drug monitoring and in toxicology. (64-0-4)

PHRC 4300—Pharmacy and the U.S. Health Care Systems

This course covers concepts related to the structure and functioning of the United States health care system. Emphasis is placed on the analysis of issues associated with personnel; the organization, financing, and regulation of the health care system; and the provision of pharmacy services in the context of the health care enterprise. (32-0-2)

PHRC 4550—Introduction to Drug Information Resources and Health Informatics

This course will provide the fundamental tools necessary to identify the quality of health care information available in primary, secondary, and tertiary resources. It will also provide an introduction and overview of consumer health informatics used in health care. (32-0-2)

PHRC 4580—Introduction to Professionalism and Leadership I

Through active participation, students will achieve a basic understanding of leadership issues and the role of the pharmacist in caring for patients in all patient care settings (community, acute, assisted, and long-term care health systems). Part I of this course will introduce the student pharmacist to the profession of pharmacy in social and cultural awareness with active citizenship, leadership, and service. Student pharmacists will learn and understand licensure requirements involved in the practice of student pharmacist internship. This course will also provide an introduction to, and overview of, organized pharmacy on a local, state, and national level. It will explore the development of, and changes in, pharmacy practice acts as well as implementation of grass roots advocacy for pharmacy. The course will be driven by discussion, self direction, presentation, and analysis of social topics in pharmacy. (16-0-1)

PHRC 4680—Introduction to Professionalism and Leadership II

Through active participation, students will achieve a basic understanding of leadership, meeting procedures, presentations of policy issues on the role of the pharmacist, and caring for patients in all patient care settings (community, acute, assisted, and long-term care health

systems). Part II of this course is designed to present an introduction for the student pharmacist to ethical and legal issues and patient communication. Students will learn from a combination of lectures, skills assessments, and self direction; interacting directly with pharmacists, consumers, and association involvement; and the resources, tools, and technologies discussed. The student will learn to be a team member, improving his or her listening, observation skills, and involvement to enhance professional demeanor. The course will be driven by discussion, presentation, and analysis of ethical and social topics of pharmacy and will include a group poster presentation of therapeutic controversy. (16-0-1)

PHRC 5000—Physical Assessment

This course is intended to teach patient assessment in ambulatory and inpatient settings. Clinical interview and physical examination techniques will be explained and demonstrated, with a video lecture series assessed via an electronic course management system. During the active learning portion of the course, students will demonstrate these techniques. Charting, interpretation of findings, and evaluation of common clinical entities, especially as related to medications, will be integrated into these activities. (15-48-2)

PHRC 5150—Nonprescription Therapies

This course discusses the use of nonprescription therapies including drug and nondrug treatments. Patient education information, potential drug interactions, and recommended treatments will also be discussed. (48-0-3)

PHRC 5230—Pharmacodynamics III

The third course in the pharmacodynamics sequence of classes, this course applies the principles of biochemistry, physiology, and pathophysiology to help students understand drug actions at the receptor, cellular, and system levels under normal physiological and pathological conditions. It covers agents used to treat metabolic disorders, such as diabetes, and drugs influencing the endocrine system. This course also introduces CNS pharmacology as it pertains to the pharmacological treatment of psychological disorders. **Prerequisites:** PHRC 4210, 4410, and 4420 (64-0-4)

PHRC 5240—Pharmacodynamics IV

The fourth course in the pharmacodynamics sequence of classes, this course applies the principles of biochemistry, physiology, and pathophysiology to help students understand drug actions at the receptor, cellular, and system levels under normal physiological and pathological conditions. This course initially focuses on drugs acting either peripherally or centrally to treat pain and inflammation. The remainder of the course covers anti-infective agents including the antibacterials, antifungals, and antiviral drugs. **Prerequisites:** PHRC 4210, 4410, and 4420 (64-0-4)

PHRC 5300—Social and Behavioral Pharmacy

Sociological, psychological, and behavioral aspects of pharmacy practice are discussed to help students understand patients' perspectives of health and illness, as well as their implications for pharmacists' roles. Variability in patients' individual needs, relationships with health care providers, and medication use behavior are explored.

Prerequisite: PHRC 4300 (32-0-2)

PHRC 5330—Communication in Patient Care

This course focuses on communication models, effective patient interaction, and the role of communication in modern pharmacy practice. Specific communication strategies to help foster therapeutic relationships with patients in various settings are presented. Issues related to conflict resolution, active listening, distortion and bias, and cultural competency are explored. **Prerequisites:** PHRC 4300 and 5300 (32-0-2)

PHRC 5350—Research Design and Statistics

Different aspects of research methodology and design are covered in this course. Students are expected to survey statistical applications to understand and evaluate clinical, biomedical, and health care services research. (48-0-3)

PHRC 5380—Pharmacy Law

This course provides a framework for students to gain knowledge of the interplay between pharmacy and the law. It provides practical guidance to act lawfully, professionally, and ethically. The material covers federal and state statutes, rules and regulations, and case law with emphasis on understanding the laws affecting the practice of community and institutional pharmacy. **Corequisite:** PHRC 4300 (32-0-2)

PHRC 5410—Pharmacotherapy I

The pharmacotherapy curricular components are divided into four courses. Pharmacotherapy I is the prerequisite for the remainder of the pharmacotherapy sequence. Pharmacotherapy I combines rational pharmacotherapy with clinical pharmacokinetics. Courses are divided into disease-state modules and focus on the therapeutic decision-making process. Concepts include pharmacotherapy management based on the assessment of physical findings, laboratory values, adverse drug effects, drug interactions, and patient education. Application of previous course materials, including pharmacodynamics and pharmacokinetics, is required. The concepts and techniques of biopharmaceutics and pharmacokinetics are also applied to the practical design of individualized drug dosage regimens, taking into consideration factors such as hepatic and renal impairment, effects of other diseases, and drug interactions. Disease categories presented in this course may serve as the foundation for the remainder of the pharmacotherapy course sequence. **Prerequisites:** PHRC 4200, 4210, 4220, 4250, 4410, and 4420 (48-0-3)

PHRC 5420—Pharmacotherapy II

This is the second of four courses in pharmacotherapy. Pharmacotherapy II combines rational pharmacotherapy with clinical pharmacokinetics. Courses are divided into disease-state modules and focus on the therapeutic decision-making process. Concepts include pharmacotherapy management based on the assessment of physical findings, laboratory values, adverse drug effects, drug interactions, and patient education. The concepts and techniques of biopharmaceutics and pharmacokinetics are also applied to the practical design of individualized drug dosage regimens, taking into consideration factors such as hepatic and renal impairment, effects of other diseases, and drug interactions. Application of previous course materials, including pharmacodynamics and pharmacokinetics is required. Disease categories presented in this course may build upon the previous pharmacotherapy course. **Prerequisites:** PHRC 4550, 4350, and 5410 **Corequisite:** PHRC 5570 (80-0-5)

PHRC 5570—Biomedical Literature Evaluation

This course provides a framework to guide the student through the thought processes necessary to evaluate and synthesize primary literature using an evidence-based approach. Through didactic and application-based learning, students become proficient in literature evaluation techniques to assess therapeutic value and applicability in patient care. **Prerequisites:** PHRC 4550 and 5350 (32-0-2)

PHRC 5580—IPPE: Community I

Students are exposed to the role and responsibilities of the professionally oriented community pharmacist and the importance of effective communication among pharmacist, patients, and other health care providers. On-site experience provides basic knowledge of the drug distribution process in a community pharmacy. Legal, ethical, and practice issues in pharmacy are discussed during classroom activities. **Corequisite:** PHRC 5380 (8-60-1.5)

PHRC 5680—IPPE: Community II

This course is a continuation of PHRC 5580. Students are exposed to the role and responsibilities of the professionally oriented community pharmacist and the importance of effective communication among pharmacist, patients, and other health care providers. On-site experience provides basic knowledge of the drug distribution process in a community pharmacy. Legal, ethical, and practice issues in pharmacy are discussed during classroom activities. **Corequisite:** PHRC 5380 (8-60-1.5)

PHRC 5710—Patient Care Management Theory I

This is the first course in the patient care management laboratory series. In this first laboratory, activities will include demonstrations and ability to use and teach health monitoring and other devices for patients. It uses

real-life, integrated patient cases that allow students to draw upon knowledge acquired from all other courses in the curriculum. Cases encompass therapeutic, communication, and social behavioral issues. This course also emphasizes decision-making processes that allow pharmacy students to integrate their knowledge and their skills in an interactive learning environment. Components of Medication Therapy Management will also be implemented in this laboratory. **Corequisites:** PHRC 5330 and PHRL 5710 (16-0-1)

PHRL 5710—Patient Care Management Laboratory I

This is the first laboratory in the patient care management sequence of laboratories. Students must be registered for Patient Care Management Theory I. In this first laboratory, activities will include demonstrations and ability to use and teach about health monitoring and other devices for patients. This laboratory covers the following specific topics: communication skills and Medication Therapy Management, women's and men's sexual health, metabolic monitoring tools, durable medical equipment and wound care, and health screening devices. Students will also be involved in evidence-based complementary and alternative medicine and patient safety projects. The laboratory uses real-life, integrated patient cases that allow students to draw upon knowledge acquired from all other courses in the curriculum. Cases encompass therapeutic, communication, and social behavioral issues. This course also emphasizes decision-making processes that allow pharmacy students to integrate their knowledge and skills in an interactive learning environment. Components of Medication Therapy Management will also be implemented in this laboratory. **Corequisite:** PHRC 5710 (0-28-0)

PHRC 6250—Pharmacodynamics V

The fifth course in the pharmacodynamics sequence of classes, this course applies the principles of biochemistry, physiology, and pathophysiology to understand drug actions at the receptor, cellular, and system levels under normal physiological and pathological conditions. It covers antineoplastic agents and immunomodulators. The remainder of the course introduces students to the principles of toxicology and poison management. **Prerequisites:** PHRC 4210, 4410, and 4420 (48-0-3)

PHRC 6260—Clinical Pharmacology

This course provides the student with the background necessary for the clinical sciences and helps students acquire a body of knowledge about the drugs that will provide the foundation by which pharmacists practice pharmaceutical care. (64-0-4)

PHRC 6350—Pharmacy Management

An overview of management theories, human resources, and financial management applied to pharmacy operations is provided in this course. Elements of supervision, management, and leadership are discussed in an effort to help students develop the skills needed to operate a pharmacy effectively. **Prerequisite:** PHRC 4300 (48-0-3)

PHRC 6370—Pharmacoeconomics and Outcomes Research

This course focuses on theories and methodologies of pharmacoeconomics and outcomes research. Applications to clinical practice, the pharmaceutical industry, and formulary decision making are explored. **Prerequisite:** PHRC 5350 (32-0-2)

PHRC 6380—Public Health and Pharmacy Practice

This course covers public health foundations, concepts, and tools as they apply to pharmacy practice. Social determinants of health, health disparities, and cultural competencies, as well as their impact on population health, are emphasized. Skills related to epidemiology, pharmacoepidemiology, surveillance, and risk assessment are discussed. The course also explores models of pharmacy-run public health programs. **Prerequisites:** PHRC 4300 and 5300 (32-0-2)

PHRC 6430—Pharmacotherapy III

This is the third of four courses in pharmacotherapy. Pharmacotherapy III combines rational pharmacotherapy with clinical pharmacokinetics. Courses are divided into disease-state modules and focus on the therapeutic decision-making process. Concepts include pharmacotherapy management based on the assessment of physical findings, laboratory values, adverse drug effects, drug interactions, and patient education. The concepts and techniques of biopharmaceutics and pharmacokinetics are also applied to the practical design of individualized drug dosage regimens, taking into consideration factors such as hepatic and renal impairment, effects of other diseases, and drug interactions. Application of previous course materials, including pharmacodynamics and pharmacokinetics, is required. Disease categories presented in this course may build upon previous pharmacotherapy courses. **Prerequisite:** PHRC 5410 (96-0-6)

PHRC 6440—Pharmacotherapy IV

This is the fourth of four courses in pharmacotherapy. Pharmacotherapy IV combines rational pharmacotherapy with clinical pharmacokinetics. Courses are divided into disease-state modules and focus on the therapeutic decision-making process. Concepts include pharmacotherapy management based on the assessment of physical findings, laboratory values, adverse drug effects, drug interactions, and patient education. The concepts and techniques of

biopharmaceutics and pharmacokinetics are also applied to the practical design of individualized drug dosage regimens, taking into consideration factors such as hepatic and renal impairment, effects of other diseases, and drug interactions. Application of previous course materials, including pharmacodynamics and pharmacokinetics, is required. Disease categories presented in this course may build upon previous pharmacotherapy courses. **Prerequisites:** PHRC 5410 and 5700 (96-0-6)

PHRC 6540—Pharmacy Practice Seminar

The College of Pharmacy Seminar course is the culmination of the student's medical information evaluation skills pathway. This seminar includes research of a given topic, a scientific paper describing research outcomes, a professional poster, and platform presentations. Presentations will be made to peers and health care professionals, providing valuable experience in presentation ability and in medical information resource utilization. **Prerequisites:** PHRC 4550, 5350, and 5570 (16-0-1)

PHRC 6580—IPPE: Health System

Students are exposed to various aspects of institutional pharmacy practice including drug storage, drug security, and policies and procedures. On-site experience provides basic knowledge of the drug distribution process in a hospital setting. Activities will include prescription preparation, using a unit dose system, use of references, and inventory management. **Prerequisite:** PHRC 5420 (0-120-2)

PHRC 6680—IPPE: Pharmacy Service

Introduction to the application of skills, concepts, and knowledge acquired in the didactic component of the curriculum in institutional pharmacy settings. This course promotes the development of pharmacy practice skills and furthers the development of communication skills. On-site experience enables students to prepare for advanced practice experiences. **Prerequisite:** PHRC 5420 (0-120-2)

PHRC 6720—Patient Care Management Theory II

The second in the patient care management sequence of classes, this course covers the following specific disease states: genitourinary conditions, arthritis, diseases affecting special populations such as pediatric and geriatric patients, asthma and COPD, endocrine disorders, and mental health. Pain management is also addressed. The course uses real-life, integrated patient cases that allow students to draw upon knowledge acquired from all other courses in the curriculum. Cases encompass therapeutic, communication, and social behavioral issues. This course also emphasizes decision-making processes that allow pharmacy students to integrate their knowledge and their skills in an interactive learning environment. Components of Medication Therapy Management will also be implemented in this class. **Corequisite:** PHRL 6720 (16-0-1)

PHRL 6720—Patient Care Management Laboratory II

This is the second laboratory in the patient care management sequence of laboratories. Student must be simultaneously registered for Patient Care Management Theory II. This laboratory covers the following specific disease states: genitourinary conditions, arthritis, diseases affecting special populations such as pediatric and geriatric patients, asthma and COPD, endocrine disorders, and mental health. Pain management is also addressed. The laboratory uses real-life, integrated patient cases that allow students to draw upon knowledge acquired from all other courses in the curriculum. Cases encompass therapeutic, communication, and social behavioral issues. This laboratory also emphasizes decision-making processes that allow pharmacy students to integrate their knowledge and their skills in an interactive learning environment. Components of Medication Therapy Management will also be implemented in this laboratory. **Corequisite:** PHRC 6720 (0-28-0)

PHRC 6730—Patient Care Management Theory III

The third in the patient care management sequence of classes, this course covers the following specific disease states: cardiovascular diseases, ophthalmologic conditions, gastroenterological conditions, infectious diseases, and cancer. The course uses real-life, integrated patient cases that allow students to draw upon knowledge acquired from all other courses in the curriculum. Cases encompass therapeutic, communication, and social behavioral issues. This course also emphasizes decision-making processes that allow pharmacy students to integrate their knowledge and skills in an interactive learning environment. Components of Medication Therapy Management will also be implemented in this class. **Corequisite:** PHRL 6730 (16-0-1)

PHRL 6730—Patient Care Management Laboratory III

This third laboratory in the patient care management sequence is a continuation of Patient Care Management II laboratory. It covers the following specific disease states: cardiovascular diseases, ophthalmologic conditions, gastroenterological conditions, infectious diseases, and cancer. The laboratory uses real-life, integrated patient cases that allow students to draw upon knowledge acquired from all other courses in the curriculum. Cases encompass therapeutic, communication, and social behavioral issues. This laboratory also emphasizes decision-making processes that allow pharmacy students to integrate their knowledge and their skills in an interactive learning environment. Components of Medication Therapy Management will also be implemented in this laboratory. **Corequisite:** PHRC 6730 (0-28-0)

PHRC 7610/7620/7630/7640/7650/7660—Required Advanced Pharmacy Practice Experiences

Each required advanced pharmacy practice experience consists of a four-week, full-time (40 hours per week), off-campus experience in a supervised pharmacy practice environment. In these settings, students apply didactic instruction, develop competencies, and enhance their knowledge of patient care management. The required experiences include internal medicine, ambulatory care, community patient care, and acute patient care. **Prerequisite:** Successful completion of all didactic coursework (0-160-4)

PHRC 7610—APPE: Internal Medicine

In this advanced practice experience, students will refine skills in therapeutics, pharmacokinetics, drug information retrieval and evaluation, verbal and written communication, patient monitoring, and case presentations. Students will apply knowledge, develop competency in pharmacy practice, and enhance knowledge of therapeutic management of common diseases such as hypertension, congestive heart failure, diabetes, and renal failure. **Prerequisite:** Successful completion of all didactic coursework (0-160-4)

PHRC 7620—APPE: Ambulatory Care

In this advanced practice experience, students will participate in matters pertaining to drug therapy as members of a health care team in an ambulatory care setting. This will be done through extensive patient monitoring and obtaining medical and drug information directly from patients during interviews. Students will apply and synthesize didactic information to the activities of a pharmacist as they develop their professional maturity and judgment skills. **Prerequisite:** Successful completion of all didactic coursework (0-160-4)

PHRC 7630—APPE: Community Patient Care I

In this advanced practice experience, students will develop and apply didactic knowledge in outpatient settings. Students will select one specialty from multiple offerings to complete this requirement. Students will be exposed to the role of a clinically oriented pharmacist in a community setting. The course focuses on technical skills in the distribution of prescriptions and the practice of medication therapy management. **Prerequisite:** Successful completion of all didactic coursework (0-160-4)

PHRC 7640—APPE: Community Patient Care II

In this advanced practice experience, students will develop and apply didactic knowledge in outpatient settings. Students will select one specialty from multiple offerings to complete this requirement. Students will be exposed to the role of a clinically oriented pharmacist in a community setting. The course focuses on technical skills in the distribution of prescriptions and the practice of medication therapy management. **Prerequisite:** Successful completion of all didactic coursework (0-160-4)

PHRC 7650—APPE: Acute Patient Care I

In this advanced practice experience, students will develop skills and apply didactic knowledge in hospital settings. Students select one specialty from multiple offerings to complete this requirement. Students will be exposed to the role and responsibilities of a professionally oriented pharmacist. Students participate as active members of a health care team. **Prerequisite:** Successful completion of all didactic coursework (0-160-4)

PHRC 7660—APPE: Acute Patient Care II

In this advanced practice experience, students will develop skills and apply didactic knowledge in hospital settings. Students select one specialty from multiple offerings to complete this requirement. Students will be exposed to the role and responsibilities of a professionally oriented pharmacist. Students participate as active members of a health care team. **Prerequisite:** Successful completion of all didactic coursework (0-160-4)

PHRC 7801—Professional Development Capstone I

The primary goal for the professional development capstone course series is to assess and strengthen student knowledge and skills developed during the four-year pharmacy curriculum. In Capstone I, students review and assess their knowledge and skills in pharmacy calculations through problem sets and patient-based case studies. **Prerequisite:** P4 standing (16-0-0)

PHRC 7802—Professional Development Capstone II

Students demonstrate the application of medication therapy management knowledge as applied to selected disease states. The course focuses on demonstration of clinical application of pharmacotherapeutic knowledge associated with disease states commonly seen in adult internal medicine patients. **Prerequisite:** P4 standing (16-0-0)

PHRC 7803—Professional Development Capstone III

Students review and assess their knowledge of over-the-counter medication therapies, federal and state pharmacy law, pharmacokinetics, and disease management through the use of patient-based case studies and legal cases. **Prerequisite:** P4 standing (16-0-0)

Elective Courses

PHRE 5101—Pharmaceutical Technology

This course is designed to provide a deeper understanding of pharmaceutical industry emphasizing formulation and process development of oral solid dosage forms. (32-0-2)

PHRE 5105—Consultant Pharmacy Practice

This course is intended to provide an overview of geriatric consulting statutes that regulate the activity of the consultant pharmacist, the HCFA survey guidelines, the types of facilities required to have a consultant pharmacist, and monitoring of patient's medication. **Prerequisites:** PHRC 4300, 5410, and 5420 (48-0-3)

PHRE 5107—Current Topics in Pharmaceutical Sciences

This course covers special topics selected by faculty members and visiting scientists. The goal of each topic is to provide the student with an understanding of, and an appreciation for, current problems and procedures underlying the pharmaceutical sciences discipline. **Prerequisite:** Topic dependent, please see course coordinator for details. ([16–32]-0-[1–2])

PHRE 5111—Applied Pharmaceutical Kinetics

This course provides comprehensive coverage of current applications of chemical pharmacokinetic theory in drug research, product development, quality control, and manufacturing activities of the pharmaceutical industry in the United States. (32-0-2)

PHRE 5113—Current Topics in Pharmaceutical Sciences

This course covers special topics selected by faculty members and visiting scientists. The goal of each topic is to provide the student with an understanding of, and an appreciation for, current problems and procedures underlying the pharmaceutical sciences discipline. **Prerequisite:** Topic dependent, please see course coordinator for details. ([16–32]-0-[1–2])

PHRE 5115—Advances in Drug Delivery

The course discusses the science and technology of novel drug formulations and delivery systems. It emphasizes the development of controlled release formulations and delivery systems for various routes of administration. (32-0-2)

PHRE 5117—Cardiovascular Risk Factors

This course is designed to provide the student with the background knowledge necessary for the clinical sciences, information related to cardiovascular risk factors, and the foundation from which pharmacists practice pharmaceutical care. The course reviews all major classes of cardiovascular risk factors and discusses evidence-based therapy. The rationale of prevention, lifestyle modifications, and current therapies for the treatment

of common and silent cardiovascular risk factors are also addressed. Attention is given to specific clinical studies regarding new strategies to prevent and treat risk factors associated with cardiovascular disease. (32-0-2)

PHRE 5119—Current Advances in Pharmaceutical Sciences

The focus of this course is on an array of pharmaceutical science topics recently highlighted by the media. Working in groups, students will prepare and give oral presentations and written reports on groundbreaking changes in the discovery, development, manufacturing, and dispensing of pharmaceuticals that will directly affect the practice of pharmacy. Topics selected by the instructor will be those that have recently appeared in scientific journals and may also have received attention from the news media. Active participation in class discussion is expected. (32-0-2)

PHRE 5203—Consumer Health Informatics and Web 2.0 in Health Care

This course provides an introduction to, and overview of, the consumer health informatics and Web 2.0 applications used in health care. It explores the development of consumers as ePatients and health information seekers, using tools such as patient-controlled electronic health records as well as the fluid nature of Web 2.0 in medicine. **Prerequisite:** PHRC 4550 (32-0-2)

PHRE 5221—Introduction to Molecular Medicine

This course discusses gene defects and diseases that originate at the molecular level, basic principles of gene expression, recombinant DNA-derived pharmaceuticals, and modern diagnostic and therapeutic approaches that are currently used to fight genetically determined diseases. (32-0-2)

PHRE 5223—Drugs of Abuse

The primary purpose of this elective course is to provide pharmacy students with an understanding of the pharmacology of drugs of abuse. Specifically, the types of substances abused, the patterns of abuse, the methods/routes of drugs of abuse, the pertinent toxicokinetics of these substances, the pharmacologic/toxicologic mechanism(s), the clinical manifestations of intoxication and/or withdrawal, the treatment of drug intoxication/withdrawal, and the societal impact of drug abuse will be discussed. **Prerequisites:** PHRC 5410 and 5420 (32-0-2)

PHRE 5225—Principles of Neuropharmacology

This course covers the principles of membrane support and bioelectricity, synaptic transmission, and recent molecular biological approaches and techniques that have revolutionized the understanding of membrane channels. **Prerequisites:** PHRC 5410 and 5420 (32-0-2)

PHRE 5227—Pharmacoethics

This course is designed to introduce students to bioethical issues encountered in health care, with emphasis on ethical problems related to pharmacy. Students explore issues arising from advances in biotechnology, resource allocation, research using human subjects, informed consent, the function of ethics committees, and the right to privacy as they affect the legal rights and responsibilities of patients, health care providers, and policy makers. (32-0-2)

PHRE 5241—Advances in Central Nervous System Pharmacology

This course reviews recent developments in the understanding of selected CNS neurotransmitter/neuropeptide receptor systems with particular emphasis on their relevance to the actions of psychopharmacological agents. It focuses on the neuroanatomy, neurophysiology, and pathophysiology of specific neurotransmitter/neuropeptide systems and examines the interaction of these systems in the expression of CNS effects. **Prerequisites:** PHRC 4210, 4220, and 5230 (32-0-2)

PHRE 5311—Pharmaceutical Marketing

An overview of drug and pharmaceutical care development and distribution systems is provided in this course. It gives students knowledge of the practice of marketing, develops market research skills, and shows how to formulate marketing plans and strategies as they apply to the profession of pharmacy and the pharmaceutical industry. **Prerequisite:** PHRC 4300. (32-0-2)

PHRE 5335—Drug-Induced Disease

The course will describe and discuss the most serious negative and undesired effects of drugs, as well as their impact on public health. The course emphasizes the role of pharmacists in the recognition of early signs and symptoms of life-threatening adverse drug events and in the prevention of such events. Medical terminology; understanding and discussion of case reports; and evidence-based management of the most common, severe, adverse drug reactions are important aspects of the course. When appropriate, the role of pharmacogenomics in determining drug-induced disease will be discussed. The course is designed to acquaint students with the FDA actions and policies implemented to protect human health and with the FDA medical products reporting program and policies for product recalls and withdrawals. (16-0-1)

PHRE 5385—Pharmacy Law Seminar

This seminar of pharmacy law topics is designed to promote the application of law to practice and enhance critical thinking, communication, writing, and social perspective. It will cover timely and controversial issues including controlled substances, duty to warn, the FDA, and the pharmaceutical industry. **Prerequisites:** PHRC 4300 and 5380 (32-0-2)

PHRE 5387—Pharmacy Case Law

This course teaches students pharmacy case law. Students will learn the source of case law, its authority, limitations to the law, and its impact on practice. Students are required to present in-depth reviews of pharmacy law cases. Cases are presented as live lectures to the class. **Prerequisites:** PHRC 4300 and 5380 (32-0-2)

PHRE 5389—Pharmacy Law of Puerto Rico

This course teaches the laws and regulations governing pharmacy in Puerto Rico, including the material manufacturing, distribution, and dispensing of medications in the commonwealth. (32-0-2)

PHRE 5391—The Nuclear Pharmacy Experience

This course covers and explains what a nuclear pharmacy is and the responsibilities, activities, and knowledge required in order to function as a nuclear pharmacist. The course places emphasis on radiopharmaceuticals (radioactive medication), their mechanisms of action, dose ranges, methods of compounding, and ultimate role in the diagnosis and treatment of diseases. (32-0-2)

PHRE 5401—Current Topics in Sociobehavioral and Administrative Pharmacy

Specialized topics dealing with current issues, procedures, and policies related to sociobehavioral pharmacy are covered in this course. ([16-48]-0-[1-3])

PHRE 5511—Survey of Complementary Therapies

In this course, students will be provided with information about complementary therapies, which are frequently seen or could be recommended for various disease states. Nutritional supplements, herbal remedies, homeopathic remedies, and others will be studied in this course. The proper dosing, side effects, and drug and disease state interactions will also be considered in recommending these therapies. (32-0-2)

PHRE 5563—Rounds with Pharmacy Residents

The course will expand the student's knowledge base on selected topics covered in therapeutics and pathophysiology I and II, as well as other related hospital topics. This will be achieved by working through patient and hospital management problems and developing individual pharmacotherapeutic plans while taking into consideration therapeutic, economic, and operational aspects. **Prerequisite:** PHA 5610 (32-0-2)

PHRE 5613—Pediatric Pharmacotherapy

This course introduces the student to pharmacotherapy of common pediatric diseases. The course will expand on topics addressed in therapeutics/pathophysiology II and present more complex pharmacotherapy issues relating to pediatrics. **Prerequisites:** PHRC 4300, 5300, and 6430 (32-0-2)

PHRE 5615—Women’s Health

This course focuses on the role of the pharmacist in providing optimal preventive health care and drug therapy to women of all ages. It encompasses a variety of topics, including contraception, infertility, pregnancy, eating disorders, and menopausal and postmenopausal health.

Prerequisites: PHRC 4300 and 5300 (32-0-2)

PHRE 5617—Landmark Clinical Trials and Their Impact on Practice

The course will cover pivotal clinical trials that have influenced the way medications are used in clinical practice. Emphasis is placed on literature evaluation and interpretation. Students will have the opportunity to communicate this information through open discussion and formal presentations. **Prerequisites:** PHRC 5410 and 5420 **Corequisite:** PHRC 6430 (32-0-2)

PHRE 5623—Hispanic Health

This course examines the health status and the cultural, social, economic, and environmental factors affecting the health and delivery of health care services to Hispanics in the United States. Resources available to improve the health status of Hispanics are addressed. (32-0-2)

PHRE 5627—Adult Acute Care Medicine

Adult Acute Care Medicine will expand the student’s knowledge base on selected topics covered in therapeutics and pathophysiology I, as well as other related topics. The course will improve the student’s understanding of acute care medicine in the adult population, while focusing on frequent complications of common disease states and the unique way they are managed in the acute care setting. In addition, it will include a review of common procedures and devices used in the inpatient setting. **Prerequisites:** PHRC 5410 and 5420 (32-0-2)

PHRE 5629—Primary Literature Evaluation of Ambulatory Care Medicine

This course offers students the opportunity to strengthen their clinical skills by allowing them to synthesize, analyze, and incorporate current medical literature into their baseline knowledge about pharmacotherapy. Students will be expected to present two or more times during the semester, either individually or as part of a group. Students will peer evaluate and complete weekly, 20-minute quizzes composed of essay-type questions. **Prerequisites:** PHRC 5410, 5420, and 6430 (32-0-2)

PHRE 5633—Introduction to Health Promotion and Education

This course explores why and how pharmacists get involved with health promotion and education programs. It identifies the steps involved in the development of these programs, as well as resources needed. Applicability to vulnerable populations is emphasized. Students are expected to develop a health promotion and education program. **Prerequisite:** PHRC 4300 (32-0-2)

PHRE 5635—Applied Medicinal Chemistry

The course describes the principles of structure activity relationships for several pharmacological classes of drugs. Students evaluate several case scenarios and select the most appropriate therapeutic option, relying heavily on the chemical structures of available drug products. (32-0-2)

PHRE 5637—History of Pharmacy

This course reveals the proud heritage of the profession of pharmacy and its service to humanity. Significant drug discoveries will be examined and individuals who contributed to the evolution of pharmacy will be discussed. Minerals, selected drugs, and plants of historical value will be described. Evolution of pharmacy associations, education, pharmaceutical research, and manufacturing will be presented. (32-0-2)

PHRE 5639—Clinical Neuropsychopharmacology

This course will incorporate lecture, classroom discussion, student presentations, and clinical monitoring of a patient with a neurological or a psychiatric disorder. The course is designed to introduce students to advanced concepts in the pharmaceutical care of the mentally ill patient. **Prerequisites:** PHRC 5410 and 5420 (32-0-2)

PHRE 5641—Applied Secondary Database Analysis

This course will give students the opportunity to apply the skills learned in the research design and biostatistics course by completing a retrospective research project using a federal secondary database. By the end of the course, students will have written a basic research protocol, completed a mock Institutional Review Board application, become familiarized with the basic structure and methodology of the United States National Health and Nutrition Examination Survey (NHANES) database, prepared a dataset, conducted descriptive and basic statistical analyses, written an abstract, and presented a scientific poster to a small audience. **Pre-requisite:** PHRC 5350 (32-0-2)

PHRE 5991—Research in Pharmacy Practice

Students, under the direction of one or more pharmacy practice faculty members, will perform individual research projects. Projects may involve direct patient care or translational research (e.g., pharmacokinetics, pharmacogenomics). Semester credits must be negotiated with the adviser and approved by the department chair prior to the start of any work. Students will be involved in both the planning and execution of the research project. (0-[48-144]-[1-3])

PHRE 5993—Literature Research in Pharmaceutical Sciences

This course provides students with an opportunity to work under the direct supervision of one or more faculty members. Students will be assigned directed readings, evaluations, and analysis of scientific literature in the fields of pharmacology, pharmaceuticals, biopharmaceuticals, pharmacokinetics, drug delivery systems, pharmaceutical technology, biotechnology, toxicology and others. Students will be mentored and trained on how to retrieve scientific information, build a hypothesis, write papers, and write reviews. With the professor, students are involved in planning and executing an approved research project using basic techniques of scientific research. The student will be awarded 3 or 4 semester credits on the basis of 48 laboratory hours per credit. (0-[144-192]-[3-4])

PHRE 5995—Research in Sociobehavioral and Administrative Pharmacy I

This course consists of individual work conducted by students under the direction/supervision of one or more faculty members. The research may include planning, analysis, and execution of a project. **Prerequisite:** PHRC 4300 (0-[48-144]-[1-3])

PHRE 5997—Research in Sociobehavioral and Administrative Pharmacy II

This course is a continuation of PHRE 5995 (Research in Sociobehavioral and Administrative Pharmacy I). **Prerequisite:** PHRC 4300, 5350, and 5995 (0-[48-192]-[1-4])

PHRE 5999—Research in the Pharmaceutical Sciences

In this course, students work under the direction/supervision of one or more faculty members in a research laboratory. Students are involved in planning and executing an approved research project using basic techniques of scientific research. Students will be awarded 3 or 4 semester credits on the basis of 48 laboratory hours per credit. (0-[144-192]-[3-4])

PHRE 6301—Statistical Methods in Pharmacy

This course focuses on inferential statistics for students interested in conducting quantitative research in pharmacy. It is designed to enable students to gather data and apply experimental design models toward improving the efficiency of pharmaceutical and health care services. **Prerequisite:** PHRC 5350. (48-0-3)

PHRE 6441—Health Care Entrepreneurship

This course prepares students to compete as entrepreneurs in the health care sector. It teaches students to evaluate business opportunities, form management teams, raise capital, and manage new ventures. **Prerequisites:** PHRC 4300 and 6350 (32-0-2)

PHRE 6703—Residency Interviewing Preparatory Seminar (RIPS)

This course is a *Pass/Fail* elective course offered to fourth-year pharmacy students who are applying to a residency program. The course will focus on improving a student's interviewing and presentation skills. The course will also help students in developing their curricula vitae, personal statements, and letters of intent. Due to the interactive nature of the course, it will not be broadcasted to other sites. **Prerequisite:** P4 standing (16-0-1)

PHRE 6997—Travel Study Program

Special topics relevant to the profession of pharmacy will be covered. The goal of each travel study program is to provide the student with an overview, understanding, and appreciation for pharmaceutical and medical practices practiced outside the United States.

PHRE 7695—Advanced Pharmacy Practice Experience: Selective IV

This is an optional Advanced Pharmacy Practice Experience for students who have completed all nine required APPEs. This option provides additional depth or breadth of practice knowledge and skills. It is an additional APPE option only and will not count as a required APPE or elective course. **Prerequisite:** Successful completion of all didactic coursework and college approval (0-160-4)

Doctor of Philosophy (Ph.D.) in Pharmacy

Admissions Requirements

Students will be recruited for the Ph.D. program from the NSU College of Pharmacy and other U.S. schools/colleges of pharmacy. Graduates with degrees in pharmacy-related fields (such as chemistry, biology, biochemistry, anatomy, or physiology); graduates with degrees in fields related to social, economic, behavioral, and administrative pharmacy; and graduates from international institutions (especially those with pharmacy degrees from India, China, Europe, Canada, Latin America, and the Caribbean) will also be recruited for the program. Successful applicants, whether foreign or domestic, will be required to comply with the guidelines outlined below.

1. All applicants must have an earned baccalaureate degree from an accredited institution of higher education.
2. With few exceptions, all applicants' degrees should be in pharmacy or a related area.
3. All applicants should have earned a GPA equal to 3.0 or better.
4. All applicants must include GRE results, proof of proficiency in English, a formal application form, three letters of reference, transcripts received directly from the degree-granting institution, and a brief written essay on their goals in their applications.

Application Procedures

Applicants may apply for matriculation into the fall semester. The Office of Admissions processes applications on a rolling admissions basis; therefore, it is in the best interest of the applicant to apply as early as possible. Priority will be given to applicants who complete the application form and submit all required supporting documents and a nonrefundable fee of \$50 to Nova Southeastern University by February 1. Final application deadline is March 1.

Applicants may apply for admission electronically by using an interactive Web-based application at <http://pharmacy.nova.edu/admissions>. Applicants may also have an application mailed to them. Please contact the Office of Admissions. In order to be processed, all supporting documents must be submitted no later than March 1 to

Nova Southeastern University
Enrollment Processing Services
College of Pharmacy, Office of Admissions
3301 College Avenue, P.O. Box 299000
Fort Lauderdale, Florida 33329-9905

Interview Process

Upon receipt of the completed application and required credentials, the Committee on Admissions will select those applicants to be interviewed. The chosen candidates will be interviewed on the Nova Southeastern University main campus. The Office of Admissions will notify those who are selected for an interview of the date and time of such an interview. Being granted an interview is not a guarantee of admission.

Transcripts

Official transcripts of all work attempted at all colleges and universities must be forwarded directly to the EPS by the institutions attended. It is the responsibility of the applicant to ensure that arrangements are made for these transcripts to be sent. A final transcript covering all of the applicant's work must be forwarded to EPS prior to matriculation.

Foreign Coursework

Coursework taken at a foreign institution must be evaluated for U.S. institution equivalence by an approved National Association of Credential Evaluation Services (NACES) organization, such as one of the services listed below.

- World Education Services
Bowling Green Station
P.O. Box 5087
New York, New York 10274-5087
(212) 966-6311
www.wes.org
- Josef Silny & Associates
7101 SW 102nd Avenue
Miami, Florida 33173
(305) 273-1616
(305) 273-1338 fax
www.jsilny.com
- Educational Credential Evaluators, Inc.
P.O. Box 514070
Milwaukee, Wisconsin 53203-3470
(414) 289-3400
www.ece.org

It is the applicant's responsibility to have this coursework evaluated. An official course-by-course evaluation with a cumulative grade point average must be sent directly from the evaluation service to Nova Southeastern University, Enrollment Processing Services, College of Pharmacy Admissions, 3301 College Avenue, P.O. Box 299000, Fort Lauderdale, Florida 33329-9905.

Test Scores

All applicants are required to submit official Graduate Record Examination (GRE) scores. The NSU code is 5522. GRE scores must be less than five years old prior to the candidate's matriculation.

Letters of Evaluation

Three individual letters of evaluation from professors or supervisors in the applicant's major field of study are required.

Tuition and Fees

Tuition for 2013-2014 (subject to change by the board of trustees without notice) is \$25,875 for all students. A Health Professions Division general access fee of \$145 is required each year. An NSU student services fee of \$900 is also required annually.

Social and Administrative Pharmacy Sequence

Program Description

Nova Southeastern University College of Pharmacy (COP) offers a program of graduate study and research in Social and Administrative Pharmacy, leading to the Doctor of Philosophy (Ph.D.) degree. This sequence focuses on coursework and research skills that address the dynamic and complex nature of the use and distribution of pharmaceutical products and the provision of pharmacy services. Students who select this sequence may specialize in areas such as sociobehavioral and cultural pharmacy, pharmacy economics and outcomes, or pharmaceutical management and marketing. Students will be primarily under the tutelage of faculty members in the Department of Sociobehavioral and Administrative Pharmacy, a group with expertise in development and implementation of sustainable pharmacy services, pharmacoconomics, pharmacy administration, outcomes research, health disparities and vulnerable populations, cultural competency, and related areas.

The Health Professions Division (HPD) at NSU requires all graduate students who are enrolled in health-related Ph.D. programs, including pharmacy, to take a series

of core courses in their first and second years. After completing the first year of study, students will focus primarily on the Social and Administrative Pharmacy core courses, elective courses, written comprehensive and oral qualifying examinations, and research in a Social and Administrative Pharmacy area that is consistent with faculty member expertise in the College of Pharmacy. Because of its exclusive emphasis on pharmacy topics, the program **does not** duplicate degrees or courses offered by other NSU centers. In addition, the Ph.D. program is consistent with the criteria for accreditation set by the Commission on Colleges of the Southern Association of Colleges and Schools.

Course of Study

Students are required to take a minimum of 60 credits, at least 36 of which must be in didactic coursework. A grade of B or better is expected in the didactic work. No less than 54 of the credits will be taken at NSU. Coursework aimed at correcting an academic deficiency in a student's background will not count toward program requirements. Graduate teaching assistants and graduate research assistants will be limited to a maximum of 13 and a minimum of 6 credits per semester during the fall and spring semesters. Other students will be limited to a maximum of 15 and a minimum of 9 credits per semester.

At the completion of this course of study and research, students will be able to

- demonstrate the knowledge base expected at the Ph.D. level in a pharmacy specialty
- design and conduct independent research that adds to the understanding of their pharmacy specialty
- prepare and defend rational and structured proposals seeking support for research efforts
- prepare and present lucid reports on their own research, as well as the research of others

Curriculum Outline

First Year—Fall Semester			Credits
HPH	7210	Bioethics: Principles of Life Science Research*	3
PHRP	7001	Health Economics	3
HPH	7300	Biostatistics I*	3
PHRP	7021	Population Health and Public Policy	3
PHRP	7002	Graduate Seminar	1
Total			13

First Year—Winter Semester			Credits
PHRP	7023	Pharmaceutical Marketing	3
HPH	7400	Research Design*	3
HPH	7310	Biostatistics II*	3
PHRP	7025	Pharmacy Management and Finance	3
PHRP	7008	Graduate Seminar	1
Total			13

First Year—Summer Semester			Credits
PHRP	7011	Graduate Research	3
OR			
PHRP	7013	Internship	3
Total			3

Second Year—Fall Semester			Credits
PHRP	7211	Theories of Health-Seeking Behavior	3
PHRP	7205	Advanced Quantitative Methods	3
PHRP	7207	Elective	3
PHRP	7201	Graduate Research	2
PHRP	7200	Graduate Seminar	1
Total			12

Second Year—Winter Semester			Credits
PHRP	7209	Pharmacoeconomics	3
PHRP	7203	Social Measurement and Techniques	3
HPH	7610	Scientific Writing*	1
PHRP	7213	Elective	3
PHRP	7225	Graduate Research	2
PHRP	7210	Graduate Seminar	1
Total			13

Second Year—Summer Semester			Credits
PHRP	7227	Graduate Research	2
HPH	7620	Research Funding and Proposal Development*	1
Total			3

Third Year—Fall Semester			Credits
PHRP	7305	Elective	3
PHRP	7307	Elective	3
PHRP	7303	Graduate Research	2
PHRP	7300	Graduate Seminar	1
Total			9

Third Year—Winter Semester			Credits
PHRP	7325	Dissertation Research	8
PHRP	7310	Graduate Seminar	1
PHRP	7241	Written Comprehensive and Oral Qualifying Exams	0
Total			9

Third Year—Summer Semester			Credits
PHRP	7327	Dissertation Research	8
Total			8

Fourth Year—Fall Semester			Credits
PHRP	7421	Dissertation Research	8
PHRP	7400	Graduate Seminar	1
Total			9

Fourth Year—Winter Semester			Credits
PHRP	7425	Dissertation Research	8
PHRP	7410	Graduate Seminar	1
PHRP	7800	Dissertation Defense	0
Total			9

*HPD core course

The curriculum was approved by the faculty, pending approval by the university provost. The curriculum may be revised to better meet the demands of the profession. These courses are representative of the overall requirements of the program at the time of publication and are subject to change.

Drug Development (Pharmaceutics) Sequence

Program Description

Nova Southeastern University College of Pharmacy (COP) offers a program of graduate study and research in Drug Development (Pharmaceutics), leading to the Doctor of Philosophy (Ph.D.) degree. This sequence emphasizes the coursework, laboratory, and literature-search skills that are integral to the theory and practice associated with the incorporation of drug entities into the forms and formulations that best deliver the drugs to the site of the intended medical action. Students who pursue this track will be primarily under the tutelage of faculty members in the Department of Pharmaceutical Sciences, a group with expertise in pharmaceutics-related disciplines. Particular areas of expertise include a variety of drug formulations and novel drug delivery systems.

The Health Professions Division (HPD) at NSU requires all graduate students who are enrolled in health-related Ph.D. programs, including pharmacy, to take a series of core courses in their first and second years. After completing the first year of study, students will focus primarily on the Drug Development (Pharmaceutics) core courses, elective courses, written comprehensive and oral qualifying examinations, and research in a Drug Development area that is consistent with faculty member expertise in the College of Pharmacy. Because of its exclusive emphasis on pharmacy topics, the program **does not** duplicate degrees or courses offered by other NSU centers. In addition, the Ph.D. program is consistent with the criteria for accreditation set by the Southern Association of Colleges and Schools Commission on Colleges.

Course of Study

Students are required to take a minimum of 60 credits, at least 36 of which must be in didactic coursework. A grade of *B* or better is expected in the didactic work. No less than 54 of the credits will be taken at NSU. Coursework aimed at correcting an academic deficiency in a student's background will not count toward program requirements. Graduate teaching assistants and graduate research assistants will be limited to a maximum of 13 and a minimum of 6 credits per semester during the fall and spring semesters. Other students will be limited to a maximum of 15 and a minimum of 9 credits per semester.

At the completion of this course of study and research, students will be able to

- demonstrate the knowledge base expected at the Ph.D. level in a pharmacy specialty
- design and conduct independent research that adds to the understanding of their pharmacy specialty
- prepare and defend rational and structured proposals seeking support for research funding
- prepare and present lucid reports on their own research, as well as the research of others

Curriculum Outline

First Year—Fall Semester			Credits
HPH	7210	Bioethics: Principles of Life Science Research*	3
PHRP	7004	Advanced Physical Pharmacy	3
HPH	7300	Biostatistics I*	3
PHRP	7000	Graduate Research	2
PHRP	7002	Graduate Seminar	1
Total			12

First Year—Winter Semester			Credits
PHRP	7012	Advanced Pharmacokinetics and Biopharmaceutics	3
PHRP	7010	Graduate Research	2
HPH	7400	Research Design*	1
HPH	7610	Scientific Writing*	1
PHRP	7008	Graduate Seminar	1
Total			8

First Year—Summer Semester			Credits
PHRP	7011	Graduate Research	3
OR PHRP	7013	Internship	3
Total			3

Second Year—Fall Semester			Credits
PHRP	7204	Research Techniques and Instrumentation	3
PHRP	7228	Product Development and Industrial Pharmacy	4
PHRP	7208	Elective	3
PHRP	7202	Graduate Research	2
PHRP	7200	Graduate Seminar	1
Total			13

Second Year—Winter Semester			Credits
PHRP	7216	Elective: Polymers	3
PHRP	7218	Graduate Research	2
PHRP	7210	Graduate Seminar	1
Total			6

Second Year—Summer Semester			Credits
HPH	7620	Research Funding and Proposal Development*	1
PHRP	7230	Graduate Research	2
PHRP	7240	Written Comprehensive and Oral Qualifying Exams	0
Total			3

Third Year—Fall Semester			Credits
PHRP	7304	Advanced Topics in Pharmaceutical Sciences	1
PHRP	7324	Dissertation Research	8
PHRP	7300	Graduate Seminar	1
Total			10

Third Year—Winter Semester			Credits
PHRP	7306	Advanced Topics in Pharmaceutical Sciences	1
PHRP	7240	Written Comprehensive and Oral Qualifying Exams	0
PHRP	7326	Dissertation Research	8
PHRP	7310	Graduate Seminar	1
Total			10

Third Year—Summer Semester			Credits
PHRP	7328	Dissertation Research	8
Total			8

Fourth Year—Fall Semester			Credits
PHRP	7402	Advanced Topics in Pharmaceutical Sciences	1
PHRP	7420	Dissertation Research	8
PHRP	7400	Graduate Seminar	1
Total			10

Fourth Year—Winter Semester			Credits
PHRP	7424	Dissertation Research	8
PHRP	7410	Graduate Seminar	1
PHRP	7800	Dissertation Defense	0
Total			9

*HPD core course

The curriculum was approved by the faculty, pending approval by the university provost. The curriculum may be revised to better meet the demands of the profession. These courses are representative of the overall requirements of the program at the time of publication and are subject to change.

Molecular Medicine and Pharmacogenomics Sequence

Program Description

Nova Southeastern University College of Pharmacy (COP) offers a program of graduate study and research in Molecular Medicine and Pharmacogenomics, leading to the Doctor of Philosophy (Ph.D.) degree. This sequence emphasizes the coursework, laboratory, and literature-search skills that are integral to elucidation of the mechanism of action of drugs and the extent and character of drug actions. Students who pursue this sequence will be primarily under the tutelage of faculty members in the Department of Pharmaceutical Sciences, a group with expertise in pharmacology, medicinal chemistry, toxicology, cell biology, and biochemistry. Particular areas of expertise include neuropharmacology, neurophysiology, cardiovascular pharmacology, molecular pharmacology, anti-inflammatory steroids, and cancer pharmacology.

The Health Professions Division (HPD) at NSU requires all graduate students who are enrolled in health-related Ph.D. programs, including pharmacy, to take a series of core courses in their first and second years. After completing the first year of study, students will focus primarily on the Molecular Medicine and Pharmacogenomics core courses, elective courses, written comprehensive and oral qualifying examinations, and research in a Molecular Medicine and Pharmacogenomics area that is consistent with faculty member expertise in the College of Pharmacy. Because of its exclusive emphasis on pharmacy topics, the program **does not** duplicate degrees or courses offered by other NSU centers. In addition, the Ph.D. program is consistent with the criteria for accreditation set by the Southern Association of Colleges and Schools Commission on Colleges.

Course of Study

Students are required to take a minimum of 60 credits, at least 36 of which must be in didactic coursework. A grade of *B* or better is expected in the didactic work. No less than 54 of the credits will be taken at NSU. Coursework aimed at correcting an academic deficiency in a student's background will not count toward program requirements. Graduate teaching assistants and graduate research assistants will be limited to a maximum of 13 and a minimum of 6 credits per semester during the fall and spring semesters. Other students will be limited to a maximum of 15 and a minimum of 9 credits per semester.

At the completion of this course of study and research, students will be able to

- demonstrate the knowledge base expected at the Ph.D. level in a pharmacy specialty
- design and conduct independent research that adds to the understanding of their pharmacy specialty
- prepare and defend rational and structured proposals seeking support for research efforts
- prepare and present lucid reports on their own research, as well as the research of others

Curriculum Outline

First Year—Fall Semester			Credits
HPH	7210	Bioethics: Principles of Life Science Research*	3
PHRP	7006	Clinical Pharmacology or Elective**	4
HPH	7300	Biostatistics I*	3
PHRP	7000	Graduate Research	2
PHRP	7002	Graduate Seminar	1
Total			13

First Year—Winter Semester			Credits
PHRP	7012	Advanced Pharmacokinetics and Biopharmaceutics	3
PHRP	7014	Molecular and Cellular Pharmacodynamics	3
PHRP	7010	Graduate Research	2
PHRP	7020	Experimental Statistics and Informatics	1
HPH	7610	Scientific Writing*	1
PHRP	7008	Graduate Seminar	1
Total			11

First Year—Summer Semester			Credits
PHRP	7030	Graduate Research	3
OR			
PHRP	7016	Internship	3
Total			3

Second Year—Fall Semester			Credits
PHRP	7204	Research Techniques and Instrumentation	3
PHRP	7220	Advanced Pharmacogenomics and Molecular Medicine	3
PHRP	7202	Graduate Research	2
PHRP	7200	Graduate Seminar	1
Total			9

Second Year—Winter Semester			Credits
PHRP	7222	Applied Pharmacology	3
PHRP	7224	Elective	2
PHRP	7218	Graduate Research	2
PHRP	7226	Journal Club	1
HPH	7400	Research Design*	1
PHRP	7210	Graduate Seminar	1
Total			10

Second Year—Summer Semester			Credits
HPH	7620	Research Funding and Proposal Development*	1
PHRP	7230	Graduate Research	2
PHRP	7240	Written Comprehensive and Oral Qualifying Exams	0
Total			3

Third Year—Fall Semester			Credits
PHRP	7324	Dissertation Research	8
PHRP	7302	Elective	2
PHRP	7210	Graduate Seminar	1
Total			11

Third Year—Winter Semester			Credits
PHRP	7240	Written Comprehensive and Oral Qualifying Exams	0
PHRP	7326	Dissertation Research	8
PHRP	7310	Graduate Seminar	1
Total			9

Third Year—Summer Semester			Credits
PHRP	7328	Dissertation Research	8
Total			8

Fourth Year—Fall Semester			Credits
PHRP	7420	Dissertation Research	8
PHRP	7400	Graduate Seminar	1
Total			9

Fourth Year—Winter Semester			Credits
PHRP	7424	Dissertation Research	8
PHRP	7410	Graduate Seminar	1
PHRP	7800	Dissertation Defense	0
Total			9

*HPD core course

**Pharmacy graduates may take Clinical Pharmacology or an elective. Evaluation for graduate students will be more rigorous than for students in the professional program who also take this course.

The curriculum was approved by the faculty, pending approval by the university provost. The curriculum may be revised to better meet the demands of the profession. These courses are representative of the overall requirements of the program at the time of publication and are subject to change.

Ph.D. Program Course Descriptions

HPD Core Courses

HPH 7210—Bioethics: Principles of Life Science Research

This course provides a structured approach for identifying, analyzing, and resolving ethical issues in medicine and the life sciences. Students analyze and discuss traditional philosophical theories regarding the nature of moral good. They will apply these theories to critical issues and selected case studies involving experiments with human subjects, organ transplantation, in vitro fertilization, the use of animals in research, the collection and publication of research data, conflicts of interest, and other topics of current concern. Students will explore the personal values, professional standards, and institutional guidelines that define the roles and responsibilities of the health care practitioner and researcher.

HPH 7300—Biostatistics I

This course is the first of a two-course sequence focusing on inferential statistics for students interested in conducting quantitative research in the health sciences. It enables students to gather data and apply experimental design models toward solving practical problems and improving the efficiency of formulating and providing health care services.

HPH 7310—Biostatistics II

This course is the second of a two-course sequence focusing on inferential statistics for students interested in conducting quantitative research in the health sciences. It enables students to gather data and apply experimental design models toward solving practical problems and improving the efficiency of formulating and providing health care services.

HPH 7400—Research Design

This course prepares students to evaluate pharmaceutical procedures and practices from a scientific viewpoint. Students will learn to identify issues requiring additional investigation, and to design research that efficiently and effectively addresses those issues. By the end of the course, the student will prepare a first draft of a research proposal.

HPH 7620—Research Funding and Proposal Development

This course provides an overview of the process of conceptualizing, developing, writing, and submitting research grant applications to solicit extramural support for research efforts. It will describe the process through which federal grant applications are evaluated and scored and through which funding decisions are made.

HPH 7610—Scientific Writing

This course exposes students to, and provides practice in, various types of writing skills necessary for scientists and researchers, including research logs, internal reports, technical reports, abstracts, presentations and journal manuscripts, dissertation formats, and grant applications. Students are exposed to various search databases, style manuals, and publication outlets.

Ph.D. Program Required Courses

PHRP 7004—Advanced Physical Pharmacy

This course presents application of underlying physical principles to formulate and develop various pharmaceutical products. The course describes physical principles in both solid and non-solid states. Students will learn how basic physical principles are applied in development of current and novel pharmaceutical solids, semi-solids, and homogeneous and heterogeneous systems. Moreover, the course describes the importance, properties, and application of different polymer systems, new drug carriers, and rheology modifiers in developing current and novel dosage forms. Drug stability and solubility and approaches to enhance the solubility of poorly soluble drugs will also be discussed.

PHRP 7205—Advanced Quantitative Methods

This course is a survey of advanced statistics and operations research methods applied to decision making in social and administrative pharmacy.

PHRP 7222—Applied Pharmacology

This course builds on the Pharmacodynamics Principles and Cardiovascular Pharmacology course, as well as the Molecular and Cellular Pharmacology course. Students will use pharmacology principles to study the effects of therapeutic agents on the central nervous system, the endocrine system, the gastrointestinal system, blood, and blood-forming organs. The course will address the rationale for the use of therapeutic agents; their effects on cells, tissues, organ systems, and patients; the mechanisms underlying these effects; the therapeutic value of specific drug effects; the limitation of the use of the agents; and the adverse effects of drugs.

PHRP 7005—Clinical Drug Development (Marketing)

In-depth coverage of the process of conducting clinical trials from Phase I through Phase IV, and the FDA requirements for IND and NDA status, primarily from a marketing perspective, will be discussed.

PHRP 7012—Clinical Drug Development: Advanced Pharmacokinetics and Biopharmaceutics

This course deals with the principles that explain the processes of absorption, distribution, and elimination of drugs. The advances in pharmacokinetic modeling, compartmental analysis, model-independent methods, single and multiple dosing, protein binding, metabolite kinetics, interspecies scaling to translate animal data to humans, effect of disease states, and data analysis using relevant software will be discussed, applying the principles of biopharmaceutics and pharmacokinetics to the design of controlled release and targeted drug delivery systems. Emphasis is on bioequivalence and bioavailability of traditional pharmaceutical dosage forms and novel drug delivery systems, including the assessment of biosimilars.

PHRP 7006—Clinical Pharmacology: Pharmacodynamics Principles and Cardiovascular Pharmacology

This course will apply the principles of organic chemistry, biochemistry, physiology, and pathophysiology to understand drug actions at the receptor, cellular, and systems levels under physiological and pathological conditions. Special emphasis will be placed on students' understanding of determinants of drug absorption, distribution, physiological receptors, drug-receptor interaction, drug metabolism, and elimination. This course will also focus on the drugs that act on the autonomic nervous system, cardiovascular system, and blood components as well. The rationale for the use of these therapeutic agents; their effects on cells, tissues, organ systems, and patients; the mechanisms underlying these effects; the therapeutic value of specific drug effects; and the adverse effects of the drugs will be addressed as well.

PHRP 7325—Dissertation Research

This course deals with independent, full-time research on an approved dissertation problem mentored by a major adviser. The research effort will continue until the problem is solved or resolved to the satisfaction of the mentor and the student's dissertation committee. Certification for graduation requires an oral defense of the written dissertation resulting from this course.

PHRP 7002—Graduate Seminar

This is a weekly lecture series required of all graduate students throughout their course of study and research. Speakers will include faculty members and guests, as well as students presenting aspects of their own research.

PHRP 7000—Graduate Research

This is a course designed to provide students with an introduction to research and is required every semester until they become degree candidates. Students will work one-on-one with faculty members to become familiar with the research interests, literature, and laboratory techniques of their mentors.

PHRP 7003—Graduate Research in Population Health and Public Policy

This course introduces students to: (1) the fundamental concepts and frameworks used for the study of population health and public policy; (2) the financing and managing of health systems at the local and international levels; and (3) the formulation and analysis of public health policies. The course will emphasize the intersection of public health and the determinant of drug use and pharmacy-related policies. Students will have the opportunity to analyze and critically evaluate existing health policies, public health actions, and reforms. Students are expected to contribute and participate in the discussion of current research, case studies, and policies. Student learning will be assessed through oral exams, written assignments, presentations, and an analytical paper. This course provides skills for the conceptualization of research projects addressing current public health issues related to pharmacy.

PHRP 7001—Health Economics

This course will focus on the application of economic analysis as it relates to provision of health care and emerging health care trends in the United States and throughout the world. The course also focuses on understanding how health care markets differ from other markets, specifically on the economics of the health care sector and its major players, e.g., the government, insurers, providers, and patients. Economic concepts and tools will be used to analyze the health care system, and to examine implications and issues in health policy.

PHRP 7214—Industrial Pharmacy (Pharmaceutical Technology)

This course provides the student with the principles of pharmaceutical processing such as filtration, milling, mixing, drying, and compression of pharmaceutical solids. It also deals with the production and quality control of tablets, capsules, liquid dosage forms, semisolid dosage forms, and sterile products. Coverage includes the science of packaging materials, production management, quality assurance, and regulations in the pharmaceutical industry, including validation, Good Manufacturing Practice, and FDA guidelines for stability of pharmaceutical dosage forms.

PHRP 7014—Molecular and Cellular Pharmacodynamics

This course is a study of the considerations in operating and regulating cellular processes by manipulating receptors for therapeutic advantage through coupled signaling pathways. Recent developments in this technique as it applies to the treatment of disease will be presented.

PHRP 7206—Pharmaceutical Formulation and Product Development

This course provides the student with the essential information about the various stages of the new drug approval process and drug development, including

preformulation, comparison studies, suitability of pharmaceutical excipients, and formulation. It emphasizes the utilization of pharmaceutical principles and variables, such as physicochemical and pharmacokinetic properties of drugs, for the design and formulation of conventional pharmaceutical dosage forms such as powders, tablets, capsules, creams, ointments, suppositories, solutions, suspensions, emulsions, sterile products, and biological products that meet the requirements of therapeutic efficacy, stability, and safety.

PHRP 7209—Pharmacoeconomics

This course addresses advanced concepts and definitions involved in the field of pharmacoeconomics. It emphasizes the principles and methodologies of pharmacoeconomic analysis and the strengths and weaknesses of specific methods.

PHRP 7204—Research Techniques and Instrumentation

This course is a survey of the research techniques and instrumentation used in the pharmaceutical sciences. Applications in academic, industrial, hospital, and community settings will be demonstrated in case studies.

PHRP 7220—Advanced Pharmacogenomics and Molecular Medicine

This course offers a presentation of gene defects and diseases that originate at the molecular level, basic principles of gene expression, recombinant DNA-derived pharmaceuticals, and modern diagnostic and therapeutic approaches that are currently used to fight genetically determined diseases. **Prerequisite:** Molecular and Cellular Pharmacodynamics

PHRP 7203—Social Measurement and Techniques

This course is a survey of measurement theory, the types of measuring devices available, and their limitations, as well as the reliability and validity of measuring instruments. The course includes practice in applying these concepts to evaluation and research processes in pharmacy.

PHRP 7211—Theories of Health-Seeking Behavior

This course underscores sociological aspects of pharmacy practice. Topics include psychosocial aspects of patients' illness behaviors, health care utilization, and consumer behaviors that influence the practitioner-patient relationship. The development of the profession from a historical perspective is addressed, along with attitude modification and changes occurring as a product of legal and organizational forces in society.

The following new courses are being developed to be offered beginning fall 2012.

PHRP 7023—Pharmaceutical Marketing

This course is intended to provide the graduate student with an in-depth understanding of the global development

and marketing of pharmaceuticals with an emphasis on the U.S. system.

PHRP 7025—Pharmacy Management and Finance

This course provides an overview of management theories, human resources, and financial management applied to pharmacy operations. Elements of supervision, management, and leadership are discussed in an effort to help students develop the skills needed to operate a pharmacy effectively.

PHRP 7013—Internship

This is a course designed to provide students with an introduction to research in industry or an institutional setting. Students will work one-on-one with their supervisor to become familiar with cutting-edge research and problem-solving in industry and institutions. Ultimately, the underlying purpose of this experience is to expose students to the research and environment that exist in industry and various institutions.

PHRP 7228—Product Development and Industrial Pharmacy

This course provides the student with the essential information about the various stages of the new drug approval process and drug development, including preformulation, comparison studies, suitability of pharmaceutical excipients, and formulation. Additionally, this course provides the student with the principles of pharmaceutical processing such as filtration, milling, mixing, drying, and compression of pharmaceutical solids. It also deals with the production and quality control of tablets, capsules, liquid dosage forms, semisolid dosage forms, and sterile products. Coverage includes the science of packaging materials, production management, quality assurance, and regulations in the pharmaceutical industry, including validation, good manufacturing practice, and FDA guidelines for stability of pharmaceutical dosage forms.

PHRP 7304—Advanced Topics in Pharmaceutical Sciences

This course offers a survey of cutting-edge techniques and discoveries that are germane to the pharmaceutical sciences, particularly in the area of pharmaceuticals.

PHRP 7020—Experimental Statistics and Informatics

This course provides an overview of the principles of experimental statistics and informatics that are relevant to the experimental design of studies, as well as interpretation and processing of the information garnered from these studies, in the biomedical sciences, but particularly in the area of molecular medicine and pharmacogenomics.

PHRP 7226—Journal Club

This course offers a survey of cutting-edge techniques and discoveries that are germane to the biomedical sciences, particularly in the area of molecular medicine and pharmacogenomics.

PHRP 7021—Population Health and Public Policy

This course introduces students to (1) the fundamental concepts and frameworks used for the study of population health and public policy, (2) the financing and managing of health systems at the local and international levels, and (3) the formulation and analysis of public health policies. The course will emphasize the intersection of public health and the determinant of drug use and pharmacy-related policies. Students will have the opportunity to analyze and critically evaluate existing health policies, public health actions, and reforms. Students are expected to contribute and participate in the discussion of current research, case studies, and policies. Student learning will be assessed through oral exams, written assignments, presentations, and an analytical paper. This course provides skills for the conceptualization of research projects addressing current public health issues related to pharmacy.

Ph.D. Program Elective Courses

PHRP 7232—Advanced CNS Pharmacology

Emphasis is on the biochemistry, neuroanatomy, neurochemistry, neurophysiology, and pathophysiology relevant to various CNS maladies. Discussion of recent findings is detailed in the research literature. Pharmacological interventions (including current treatment options) and potential new therapies are discussed in light of recent laboratory findings.

PHRP 7231—Advanced Complementary and Alternative Medicines

This course offers scientific and rigorous coverage of the complementary and alternative medicine (CAM) approach to improvement of human health. The history and applications of herbology in the treatment of a wide range of health issues are stressed.

PHRP 7234—Advanced Medicinal Chemistry

This course offers a review of major drug classes and the chemical basis for their mechanism of action, as well as extensive case illustrations of how drugs were discovered, developed, and synthesized and the issues arising from scale-up from basic research through pilot plant quantities to the manufacture of the finished product for market.

PHRP 7233—Advanced Pharmaceutical Care

This course builds upon basic pharmaceutical care skills. The practice and implementation of pharmaceutical care will be analyzed in the context of the health care system, the pharmacy profession, and pharmacy practice. Advanced concepts of quality patient care in relation to the structure and financing of health care are addressed.

PHRP 7236—Advanced Pharmacokinetics

This course will explain the model development techniques that can be utilized for complex pharmacodynamic systems. Advanced data analysis techniques and modern pharmacokinetic theory will be discussed.

PHRP 7312—Advanced Tablet and Capsule Technology

This course offers a survey of practices and technologies that are shaping today's pharmaceutical tablet and capsule industry.

PHRP 7308—Applied Medicinal Chemistry

This course discusses the principles of structure activity relationships for several pharmacological classes and case scenarios that require students to select the most appropriate therapeutic option based solely on chemical structures.

PHRP 7235—Cardiovascular Risk Factors

This course reviews the major classes of cardiovascular risk factors as they relate to evidence-based therapy. Clinical studies will be discussed regarding new strategies to prevent and treat risk factors associated with cardiovascular disease. The course is designed to familiarize the student with the knowledge and skills needed to understand the actions of numerous drug classes. A segment of the course covers evidence-based therapy to treat and prevent all major cardiovascular risk factors through drug therapies and lifestyle modifications.

PHRP 7237—Landmark Clinical Trials

This course is designed to develop an understanding of how pharmaceutical sciences impact health professions and how they influence which and how medications are used in clinical practice.

PHRP 7315—Legal and Ethical Regulation of Pharmaceuticals

This course provides a broad overview of legal regulations and ethical aspects of the research continuum from concept to the pharmacy shelves and prescriber offices; as such, this course spans this continuum and provides a picture of the interrelationships between drug discovery, drug development, and determinants of drug use. Laws, regulations, and ethics relevant to pharmaceuticals are approached from an industry, rather than a profession, perspective.

PHRP 7314—Pharmacokinetic Modeling

This course presents the theoretical development, models, and equations used in pharmacokinetics. It evaluates relevant literature and approaches to design and recovery of essential drug disposition parameters. Presentations employ graphical and computer methods of applying pharmacokinetics to analysis of experimental and clinical data.

PHRP 7317—Pharmacy and the Health Care System

This course offers an overview of the foundations and structure of the United States Health Care System, with comparisons to other countries' health care systems and the historical context thereof. Principles of economic theory, health policy, and social and behavioral determinants of health will be discussed in relation to the functioning of health care systems.

PHRP 7216—Polymers in Pharmaceutical and Biomedical Systems

This course is designed to provide a background in basic polymer chemistry, physicochemical testing, and recent advances in controlled release technology as they apply to smart polymers for applications in pharmaceuticals, biomaterials, tissue engineering, and biotechnology. It will also discuss the limitations of advanced drug delivery over traditional methods.

Student Organizations

Student Government Association (SGA)

Student Government Association (SGA) is the official voice of all students. The organization is open to all students and welcomes proposals and participation from the entire student body. Its responsibilities include collecting and expressing student opinion, dispensing funds for student activities, acting as liaison for the student body, promoting pharmacy, supporting club and class activities, and working to improve the quality of life for students at the College of Pharmacy.

Other Organizations

Many student organizations addressing various professional and practice-related interests are also open for student membership including:

- Academy of Managed Care Pharmacy (AMCP)
- Alpha Zeta Omega (AZO)
- American Pharmacists Association—Academy of Student Pharmacists (APhA-ASP)
- American Society of Consultant Pharmacists (ASCP)
- Christian Pharmacists Fellowship International (CPFII)
- College of Psychiatric and Neurologic Pharmacists (CPNP)
- Florida Society of Health-System Pharmacists (FSHP)
- International Pharmaceutical Students Federation (IPSF)
- Kappa Psi (KΨ)
- National Community Pharmacists Association (NCPA)
- Phi Delta Chi (PDC)
- Phi Lambda Sigma (PLS)
- Rho Chi
- Society of Jewish Student Pharmacists (SJSP)
- Student College of Clinical Pharmacy (SCCP)
- Student National Pharmaceutical Association (SNPhA)

College of Pharmacy Faculty

Biochemistry

Chairman and Professor: **R. E. Block** | Professors: **E. E. Groseclose, K. V. Venkatachalam** | Assistant Professor: **W. G. Campbell**

Microbiology

Chairman and Professor: **H. Hada** | Professors: **D. Burris, H. E. Laubach** Associate Professor: **K. Davis** | Assistant Professor: **B. Mayi**

Physiology

Chairman and Professor: **W. Schreier** | Professors: **H. Mayrovitz, S. Taraskevich** | Assistant Professor: **L. Lyons**

Pharmaceutical Sciences

Chair and Associate Professor: **M. Clark** | Professors: **L. Cubeddu, W. D. Hardigan, A. Malavé, R. Speth** | Associate Professors: **A.M. Castejon, J. Latimer, H. McLean, H. Omidian, A. Rathinavelu** | Assistant Professors: **R. Ansari, Y. Kwon, A. Lymperopoulos, E. Nieves, M. Rawas-Qalaji, S. Rizvi, E. Santini** | Clinical Assistant Professors: **R. Finkel, D. Gazze** | Academic Facilitators/Instructors: **J. Marin, R. Rodriguez-Milan, F. Sircar-Ramsewak, M. Smith, J. Varela** | Visiting Associate Professor: **S. Grant** | Research Associate/Lecturer: **V. Yugandhar**

Sociobehavioral and Administrative Pharmacy

Chair and Professor: **M.J. Carvajal** | Professors: **B. Bleidt, L. Lai** | Associate Professors: **C. Harrington, N. Khanfar, S. Rabionet, J. Sanchez** | Assistant Professors: **G. Alvarez, G. Armayor, I. Popovici, A. Perez Rivera, B. Soto-Torres**

Pharmacy Practice

Chair and Associate Professor: **M. Seamon** | Associate Professors: **S. Benavides, J. Caballero, K. Clauson, L. Deziel, J. Rey, D. Singh-Franco, A. Zapantis** | Assistant Professors: **L. Arce-Malavé, K. Ayala, A. Fass, E. Frenzel-Shepherd, A. S. Garcia, T. Gauthier, J. Gershman, M. Gillette, B. Ortiz, M. Shawaqfeh, E. Sherman, J. Steinberg, E. Tellez-Corrales, N. Unger, W. Wolowich** | Clinical Professor: **A. Silvagni** | Clinical Assistant Professors: **M. Acosta, E. Byrne, F. Colón Pratts, M. Metzner, J. Riskin**

Experiential Sites

The following institutions are affiliated with the College of Pharmacy for experiential education.

- Aastrom Biosciences, Inc
Ann Arbor, Michigan
- Academy of Managed Care
Alexandria, Virginia
- Advocate Lutheran General Hospital
Parkridge, Illinois
- A.G. Holley State Hospital
Lantana, Florida

- All-Med Infusion Services
Miami Lakes, Florida
- American Lung Association
Fort Lauderdale, Florida
- American Pharmaceutical Services
Longwood, Florida
- American Pharmacists Association
Washington, D.C.
- Angel E. Romero Sanchez, Maryland, FACCWS
Ponce, Puerto Rico
- Apotex Corporation
Weston, Florida
- APS Healthcare
San Juan, Puerto Rico
- Arecibo, PR VA
Arecibo, Puerto Rico
- Arnold Palmer Hospital for Women and Children
Orlando, Florida
- Arthur's Original Pharmacy
Tamarac, Florida
- ASCP
Alexandria, Virginia
- Aventura Hospital and Medical Center
Aventura, Florida
- AXIUM Health Care de Puerto Rico
Guaynabo, Puerto Rico
- Baptist Hospital
Miami, Florida
- Bascom Palmer Eye Institute
Miami, Florida
- Baxter's Pharmacy and Discount, Inc.
Miami, Florida
- Bay Medical Center
Panama City, Florida
- Bay Pines VAMC
Bay Pines, Florida
- Bayamon Medical Plaza
Bayamon, Puerto Rico
- Bethesda Memorial Hospital
Boynton Beach, Florida
- Boca Pharmacy & Home Health Center
Boca Raton, Florida
- Boca Raton Regional Hospital
Boca Raton, Florida
- Broward County Health Department
Fort Lauderdale, Florida
- Broward County Public Schools
Youth Mentoring Programs
Fort Lauderdale, Florida
- Broward County VA Outpatient Clinic
Sunrise, Florida
- Broward General Medical Center
Fort Lauderdale, Florida
- Buford Road Pharmacy
Richmond, Virginia
- Cape Coral Hospital
Cape Coral, Florida
- Cardinal Health
Fort Myers, Florida
- Carrell Discount Pharmacy
Fort Myers, Florida
- Center for Consumer Health Informatics Research
Fort Lauderdale, Florida
- Center for Consumer Health Informatics Research—
Palm Beach
Palm Beach Gardens, Florida
- Center Pharmacy
Cape Coral, Florida
- Centers for Disease Control
Atlanta, Georgia
- Central Admixture Pharmacy Services, Inc. (CAPS)
Miramar, Florida
- Central Florida Family Health Center—Alfaya
Orlando, Florida
- Central Florida Family Health Center
Sanford, Florida
- Central Florida Family Health Center East
Orlando, Florida
- Central Florida Family Health Center—
South Side Clinic
Orlando, Florida
- Central Florida Family Health Center—Underhill
Orlando, Florida
- Central Florida Family Health Center—Hoffner
Orlando, Florida
- Centro Ararat
Ponce, Puerto Rico
- Centro de Cuidado Diurno y
Desarrollo Pediátrico San Miguel
Ponce, Puerto Rico

- Centro de Cuidado y Desarrollo Pediátrico
Santa María Virgen
Ponce, Puerto Rico
- Centro de Envejeciente Cruz Espada
Ponce, Puerto Rico
- Charlotte Regional Medical Center
Punta Gorda, Florida
- Children’s Diagnostic & Treatment Center
Fort Lauderdale, Florida
- Children’s Medical Services
Fort Lauderdale, Florida
- Circles of Care
Melbourne, Florida
- Cleveland Clinic Hospital
Fort Lauderdale, Florida
- Cleveland Clinic Outpatient Pharmacy
Weston, Florida
- Clinical Pharmacology Services
Tampa, Florida
- CMC Home Infusion and Equipment
Charlotte, North Carolina
- Columbia Hospital
West Palm Beach, Florida
- Commcare Pharmacy
Fort Lauderdale, Florida
- Compounding Docs, Inc.
Boca Raton, Florida
- Consultant Pharmacy Services, Inc.
St. Petersburg, Florida
- Cooperative Feeding Program
Fort Lauderdale, Florida
- Coral Gables Hospital
Coral Gables, Florida
- Coral Springs Medical Center
Coral Springs, Florida
- Covenant Hospice, Inc.
Pensacola, Florida
- Coventry Healthcare
Sunrise, Florida
- CuraScript Pharmacy
Orlando, Florida
- CVS
Florida
- Delray Medical Center
Delray Beach, Florida
- Dent Neurologic Institute
Amherst, New York
- Diplomat Specialty Pharmacy
Fort Lauderdale, Florida
- Doctors Hospital
Coral Gables, Florida
- Dr. Robert L. Yeager Health Center—Rockland County
Pomona, New York
- Drug Place, Inc.
Pompano Beach, Florida
- Eli Lilly and Company
San Juan, Puerto Rico
- Eli Lilly and Company Corporate Office
Indianapolis, Indiana
- Everglades Area Health Education Center (EAHEC)
West Palm Beach, Florida
- Family Health Center East
Orlando, Florida
- Family Health Center of Southwest Florida
Fort Myers, Florida
- Family Medical and Dental Center
Palatka, Florida
- Farmacia El Apotecario
Ponce, Puerto Rico
- Farmacia El Tuque
Ponce, Puerto Rico
- Farmacia La Aurora
Yauco, Puerto Rico
- Farmacia La Concepcion
Yauco, Puerto Rico
- Farmacia Lorraine
Ponce, Puerto Rico
- Farmacia Profesional
Adjuntas, Puerto Rico
- Farmacia San Pedro
Lajas, Puerto Rico
- FastMed Health Mart Pharmacy
Sunrise, Florida
- Fawcett Memorial Hospital
Port Charlotte, Florida
- Florida Atlantic University
Boca Raton, Florida
- Florida Hospital—Celebration Health
Celebration, Florida

- Florida Hospital—East Campus
Orlando, Florida
- Florida Hospital—Kissimmee
Kissimmee, Florida
- Florida Hospital—South Campus
Orlando, Florida
- Florida Hospital—Waterman
Tavares, Florida
- Florida Hospital Outpatient Clinic
Orlando, Florida
- Florida I.V. Services
Davie, Florida
- Florida Medical Center
Fort Lauderdale, Florida
- Florida Pharmacy Association
Tallahassee, Florida
- Florida Poison Information Center—Miami
Miami, Florida
- Florida Poison Information Center—Tampa
Tampa, Florida
- Floyd Medical Center
Rome, Georgia
- Food and Drug Administration—CDER—Office of
Information Management
Rockville, Maryland
- Food and Drug Administration—Division of
Communications Management
Rockville, Maryland
- Food and Drug Administration—
Office of Generic Drugs
Rockville, Maryland
- Food and Drug Administration—
Office of Special Health Issues
Rockville, Maryland
- Fort Lauderdale Health Center
Fort Lauderdale, Florida
- Fort Myers VA Outpatient Clinic
Fort Myers, Florida
- Fort Thompson Health Center
Fort Thompson, South Dakota
- FSHP
Tallahassee, Florida
- Gainesville VAMC
Gainesville, Florida
- Gardens Drugs
Palm Beach Gardens, Florida
- GE Healthcare
Wood Dale, Illinois
- Good Samaritan Medical Center
West Palm Beach, Florida
- Guines Pharmacy
Miami, Florida
- Gulf Coast Medical
Fort Myers, Florida
- Gurabo Community Health Center
Gurabo, Puerto Rico
- Health Care District of Palm Beach County
West Palm Beach, Florida
- Health First Infusion
Riviera, Florida
- Health Park Medical Center
Fort Myers, Florida
- Health Plan Pharmacy
Cape Coral, Florida
- Health South Rehabilitation Hospital
Miami, Florida
- Health South/Sunrise Rehabilitation Center
Sunrise, Florida
- Heartland Pharmacy
Sebring, Florida
- Helios Pain and Psychiatry Center
Tampa, Florida
- Hialeah Hospital
Hialeah, Florida
- HighPoint Health System
Gallatin, Tennessee
- HIMA
Caguas, Puerto Rico
- H. Lee Moffitt Cancer Center
Tampa, Florida
- Holmes Regional Outpatient Services
Melbourne, Florida
- Holy Cross Hospital
Fort Lauderdale, Florida
- Homestead Hospital
Homestead, Florida
- Hospice of the Comforter
Altamonte Springs, Florida
- Hospital Damas
Ponce, Puerto Rico

- Hospital Hermanos Melendez
Bayamon, Puerto Rico
- Hospital Interamericano de Medicina Avanzada
Caguas, Puerto Rico
- Hospital La Concepcion
San German, Puerto Rico
- Hospital Menonita
Caguas, Puerto Rico
- Hospital Menonita Aibonito
Aibonito, Puerto Rico
- Hospital Metropolitano
Arecibo, Puerto Rico
- Hospital Metropolitano
Yauco, Puerto Rico
- Hospital Oncologico
San Juan, Puerto Rico
- Hospital San Cristobal
Ponce, Puerto Rico
- Hospital San Francisco
Rio Piedras, Puerto Rico
- Hospital San Lucas
Guayama, Puerto Rico
- Hospital San Lucas II
Ponce, Puerto Rico
- Hughes Health Center
Pompano Beach, Florida
- Humana Inc.
Miramar, Florida
- Humana Health Plan
Ponce, Puerto Rico
- Imperial Point Medical Center
Fort Lauderdale, Florida
- Indian Health Service—Acomita
San Fidel, New Mexico
- Indian Health Service
Cherokee, North Carolina
- Indian River Memorial Hospital
Vero Beach, Florida
- InFuPharma
Hollywood, Florida
- JFK Medical Center
Atlantis, Florida
- Jackson Memorial Hospital
Miami, Florida
- Jackson Memorial Hospital North
North Miami Beach, Florida
- Jackson Memorial
Long Term Care Center
Miami, Florida
- Jackson South Community Hospital
Miami, Florida
- James Haley VAMC Tampa
Tampa, Florida
- Jupiter Medical Center
Jupiter, Florida
- Kendall Regional Medical Center
Miami, Florida
- Kindred Hospital—Central Florida
Tampa, Florida
- Kindred Hospital—Coral Gables
Coral Gables, Florida
- Kindred Hospital—Fort Lauderdale
Fort Lauderdale, Florida
- Kindred Hospital—Hollywood
Hollywood, Florida
- King's Daughter Medical Center
Ashland, Kentucky
- Kings Drugstore
Okeechobee, Florida
- Kmart Pharmacy
Puerto Rico
- KOS Pharmaceutical
Weston, Florida
- Kusler's Pharmacy
Snohomish, Washington
- Lakeland Regional Medical Center
Lakeland, Florida
- Lakeland VA Community-Based Outpatient Clinic
Lakeland, Florida
- Las Villas Pharmacy
Hiialeah, Florida
- Lawnwood Pavilion
Fort Pierce, Florida
- Lawnwood Regional Medical Center
Fort Pierce, Florida
- Lee Memorial Hospital
Fort Myers, Florida
- Leesburg Regional Medical Center
Leesburg, Florida

- Leon Medical Centers Health Plans
Miami, Florida
- Lower Brule Health Center
Pharmacy—Indian Health Service
Lower Brule, South Dakota
- Mallinckrodt/Tyco Healthcare
Fort Lauderdale, Florida
- Manatee Memorial Hospital
Bradenton, Florida
- Manati Medical Center
Manati, Puerto Rico
- Marco Drugs & Compounding
Miami, Florida
- Martin Memorial Medical Center
Stuart, Florida
- Matrix Pharmacy
Tampa, Florida
- Mayaguez VA
Mayaguez, Puerto Rico
- Mease Dunedin Hospital
Dunedin, Florida
- MedChoice
Cooper City, Florida
- Medic Pharmacy and Surgical
Fort Lauderdale, Florida
- Medicap Pharmacies, Inc.
Palm Springs, Florida
- Medicine Shoppe—Tampa
Tampa, Florida
- Medicine Shoppe Pharmacy—Winter Garden
Winter Garden, Florida
- Memorial Hallandale Pharmacy
Hallandale, Florida
- Memorial Healthcare System
Miramar, Florida
- Memorial Hospital
Miramar, Florida
- Memorial Hospital of South Bend, INC.
South Bend, Indiana
- Memorial Hospital of Tampa
Tampa, Florida
- Memorial Hospital Pembroke
Pembroke Pines, Florida
- Memorial Hospital West
Pembroke Pines, Florida
- Memorial Regional Hospital
Hollywood, Florida
- Memorial Regional Hospital South
Hollywood, Florida
- Mercy Hospital
Miami, Florida
- MGC Pharmacy
Hiialeah, Florida
- MMM Healthcare, INC.
San Juan, Puerto Rico
- Miami Beach Community Health Center
Miami Beach, Florida
- Miami Children's Hospital
Miami, Florida
- Miami VA Oakland Park Outpatient Clinic
Fort Lauderdale, Florida
- Miami VAMC
Miami, Florida
- Mikimbin Pharmacy
Miami, Florida
- Milton Medical Drug Co.
Miami Beach, Florida
- Moose Professional Pharmacy
Concord, North Carolina
- Morales Pharmacy
Miami, Florida
- Morton Plant Hospital
Clearwater, Florida
- Mount Sinai Medical Center
Miami Beach, Florida
- NACDS
Alexandria, Virginia
- Naples Community Hospital
Naples, Florida
- Natural Standard Research Collaboration
Somerville, Massachusetts
- Naval Hospital
Pensacola, Florida
- Navarro's
Florida
- Newberry County Memorial Hospital
Newberry, South Carolina
- North Broward Medical Center
Pompano Beach, Florida

- North Florida Regional Medical Center
Gainesville, Florida
- North Florida South Georgia Veterans Health System
Gainesville, Florida
- North Shore Medical Center
Miami, Florida
- Northwest Medical Center
Margate, Florida
- NSU Clinic Pharmacy
Fort Lauderdale, Florida
- NSU—College of Pharmacy
Fort Lauderdale, Florida
- NSU—Ponce, Puerto Rico
Ponce, Puerto Rico
- NSU—West Palm Beach
Palm Beach Gardens, Florida
- Nutri-Force Nutrition
Miami Lakes, Florida
- NYU Langone Clinical Cancer Center
New York, New York
- O'Connell Pharmacy
Sun Prairie, Wisconsin
- Omnicare of South Florida
Fort Lauderdale, Florida
- Optima Infusion Pharmacy
Dorado, Puerto Rico
- Option Care—Miami
Miramar, Florida
- Orange County Medical Clinic
Orlando, Florida
- Orange Park Medical Center
Orange Park, Florida
- Orlando Regional Medical Center
Orlando, Florida
- Orlando Regional South Lake Hospital
Clermont, Florida
- Orlando VA Outpatient Clinic
Orlando, Florida
- Palm Beach Gardens Medical Center
Palm Beach Gardens, Florida
- Palm Coast Pharmacy
Palm Coast, Florida
- Palmetto General Hospital—Pharmacy
Hialeah, Florida
- Palm Springs General Hospital
Hialeah, Florida
- Park Shore Pharmacy
Hallandale Beach, Florida
- Park Shore Pharmacy
Miami Shores, Florida
- Partner Rx
Davie, Florida
- Pasteur Pharmacy
Hialeah, Florida
- Patient Care Pharmacy
Port Charlotte, Florida
- Petmed Express, Inc.
Pompano Beach, Florida
- Pfizer
Coral Springs, Florida
- Pharmacy Insurance
Corporation of America
San Juan, Puerto Rico
- PharMerica
Pompano Beach, Florida
- PharmPix Corp
Guaynabo, Puerto Rico
- PICC Line Plus
Boynton Beach, Florida
- Pill Box Pharmacy & Surgical
Pembroke Pines, Florida
- Pill Box Pharmacy—Weston
Weston, Florida
- Pine Island Drugs, Inc.
Davie, Florida
- Plantation General Hospital
Plantation, Florida
- Post Haste Pharmacy
Hollywood, Florida
- Preferred Care Partners
Miami, Florida
- Premier Compounding
Palm Beach Gardens, Florida
- PrescribeITRx
Miami, Florida
- Procure Pharmacy
Miramar, Florida
- ProX Pharmacy Consultants
Sunrise, Florida

- Public Health Services
Rockville, Maryland
- Publix
Florida
- Puerto Rico Children's Hospital
Bayaman, Puerto Rico
- Raulerson Hospital
Okeechobee, Florida
- Riverview Regional Medical Center
Carthage, Tennessee
- Romano's Pharmacy
Coral Springs, Florida
- Royal Palm Compounding Pharmacy
Wellington, Florida
- RXperts Pharmacy Services, INC.
Hollywood, Florida
- Ryder Memorial Hospital
Humacao, Puerto Rico
- Sacred Hearth Health System, INC.
Miramar Beach, Florida
- Saint Joseph's Hospital
Tampa, Florida
- Salud en el Hogar y Hospicio San Lucas
Ponce, Puerto Rico
- San Jorge Children's Hospital
Santurce, Puerto Rico
- San Juan VA Medical Center
Bayamon, Puerto Rico
- San Luis Pharmacy
San Lorenzo, Puerto Rico
- Sand Lake Hospital
Orlando, Florida
- Sarasota Memorial Hospital
Sarasota, Florida
- Sarasota VA Primary Care Clinic
Sarasota, Florida
- Seventh Avenue Family Health Center
Fort Lauderdale, Florida
- Simfarose Pharmacy
Pembroke Pines, Florida
- Singer Mental Health
Rockford, Illinois
- Skip's Pharmacy
Boca Raton, Florida
- SkyeMed Pharmacy
Pompano Beach, Florida
- South Broward Community Health Services—
Hallandale
Hallandale, Florida
- South Broward Community Health Service—
Hollywood
Hollywood, Florida
- South Broward Community Health Services
at Miramar
Miramar, Florida
- South Florida State Hospital
Pembroke Pines, Florida
- South Lake Hospital
Clermont, Florida
- South Miami Hospital
South Miami, Florida
- South Miami Pharmacy
Miami, Florida
- Special Care Pharmacy Services
San Juan, Puerto Rico
- Specialty Care Center
Fort Lauderdale, Florida
- St. Joseph's Hospital
Tampa, Florida
- St. Lucie Medical Center
Port St. Lucie, Florida
- St. Luke's Hospital
Jacksonville, Florida
- St. Luke's Memorial Hospital I
Ponce, Puerto Rico
- St. Luke's Roosevelt Hospital
New York, New York
- St. Mary's Medical Center
West Palm Beach, Florida
- St. Vincent's Medical Center
Jacksonville, Florida
- Stuart S. Shipe D.O.M., P.A.
Port St. Lucie, Florida
- Sumner Homecare & Hospice
Gallatin, Tennessee
- Sumner Regional Medical Center
Gallatin, Tennessee
- Super Farmacia Juana Diaz
Juana Diaz, Puerto Rico

- Super Farmacia La Rampla
Yabucoa, Puerto Rico
- SW Florida Regional Medical Center
Fort Myers, Florida
- Sylvester Comprehensive Cancer Center
Miami, Florida
- Tampa General Healthcare
Tampa, Florida
- Target
Florida
- Tequesta Drugs
Tequesta, Florida
- Town Center Pharmacy
Exton, Pennsylvania
- Town Total Health
Melville, New York
- Treasure Coast Hospice
Stuart, Florida
- Tripler Army Medical Center
Honolulu, Hawaii
- Trousdale Medical Center
Hartsville, Tennessee
- Ulti-Med Pharmacy Services
Miami, Florida
- United States Naval Hospital—Jacksonville
Jacksonville, Florida
- United States Public Health Services
Rockville, Maryland
- Universal Arts Pharmacy
Hialeah, Florida
- University Community Hospital
Tampa, Florida
- University Hospital & Medical Center
Tamarac, Florida
- University of Miami
Miami, Florida
- University of New Mexico Hospital
Albuquerque, New Mexico
- University of Pittsburgh
Pittsburgh, Pennsylvania
- USCG Air Station Miami Clinic
Opa-Locka, Florida
- VA Caribbean Healthcare System
San Juan, Puerto Rico
- VA Central Office Pharmacy
Benefits Management SHG
Washington, D.C.
- VH Pharmacy
Miami, Florida
- Walgreens
Florida
- Walgreens
Puerto Rico
- Wal-Mart
Florida
- Wal-Mart
Puerto Rico
- Wellington Regional Medical Center
West Palm Beach, Florida
- West Boca Medical Center
Boca Raton, Florida
- West Kendall Baptist Hospital
Miami, Florida
- West Palm Beach Veterans Affairs Medical Center
West Palm Beach, Florida
- West Palm Hospital
West Palm Beach, Florida
- Westside Regional Medical Center
Plantation, Florida
- Winn-Dixie
Florida
- Winships Prescription Center
North Palm Beach, Florida
- Winter Haven Hospital, INC.
Winter Haven, Florida
- Wuesthoff Health System, INC.
Rockledge, Florida
- Xcenda, L.L.C.
Palm Harbor, Florida
- Yamato Pharmacy
Boca Raton, Florida