

2013

Doctor of Philosophy in Pharmacy 2013

Nova Southeastern University

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Doctor of Philosophy in Pharmacy

COLLEGE OF PHARMACY • NOVA SOUTHEASTERN UNIVERSITY



ENTERING CLASS 2013



NSU MISSION STATEMENT

The mission of Nova Southeastern University, a private, not-for-profit institution, is to offer a diverse array of innovative academic programs that complement on-campus educational opportunities and resources with accessible, distance-learning programs to foster academic excellence, intellectual inquiry, leadership, research, and commitment to community through engagement of students and faculty members in a dynamic, lifelong learning environment.

Nova Southeastern University, synonymous with dynamic innovation and intellectual challenge, is the largest independent not-for-profit university in the Southeast, and with an enrollment of more than 29,000 students, is the **eighth largest** in the United States. Situated on a beautiful, 300-acre campus in Fort Lauderdale, Florida, the university is experiencing a sustained period of academic growth, fiscal strength, and commitment to the challenges of the 21st century.

In this environment of expansion and stability, the university is capitalizing on its strengths in such areas as academic innovation, comprehensive clinical training, and flexible educational delivery systems.



Founded in 1964 as Nova University, the institution merged with Southeastern University of the Health Sciences in 1994, creating Nova Southeastern University. To date, the institution has more than **143,000 alumni**. Fully accredited by the Commission on Colleges of the Southern Association of Colleges and Schools, the university awards associate's, bachelor's, master's, educational specialist, and doctoral degrees in a wide range of fields including the health professions, law, business, marine sciences, psychology, social sciences, computer and information sciences, and education.

The university's programs are administered through **16 academic centers** that offer courses at the main campus and at field-based locations throughout Florida; across the nation; and at selected international sites in Europe, Mexico, the Pacific Rim, Central and South America, and the Caribbean.

With a budget of more than \$220 million per year and an upward trend in enrollment, the university will continue to maintain a solid record of academic and fiscal strength and excellence in teaching and community service, while expanding its mission in research and scholarship. ■

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HEALTH PROFESSIONS DIVISION

As a student in the Health Professions Division of Nova Southeastern University, you can anticipate a remarkable experience. You will train, study, interact, and share faculty and resources (either campus-based or online) with students from various backgrounds and disciplines. This interdisciplinary approach distinguishes the Health Professions Division as unique and will better prepare you to master your discipline with a sensitivity and understanding of the entire health care system.

The Health Professions Division occupies a \$70 million complex, covering 21 acres of the university campus. The division includes eight buildings totaling more than 900,000 square feet of space for classrooms, laboratories, offices, the Health Professions Division Library, an outpatient health center, and a pharmaceutical care center. The adjacent 1,800-vehicle parking garage overlooks the Miami Dolphins Training Camp.

The Health Professions Division, with a student body of more than 5,800, is home to seven colleges.

COLLEGE OF OSTEOPATHIC MEDICINE

- Doctor of Osteopathic Medicine (D.O.)
- Master of Public Health (M.P.H.)
- Master of Science in Biomedical Informatics (M.S.B.I.)
- Master of Science in Disaster and Emergency Preparedness (M.S.)
- Graduate Certificate in Health Education
- Graduate Certificate in Public Health
- Graduate Certificate in Public Health Informatics
- Graduate Certificate in Medical Informatics

COLLEGE OF PHARMACY

- Doctor of Pharmacy (Pharm.D.)
- Doctor of Philosophy in Pharmacy (Ph.D.)

COLLEGE OF OPTOMETRY

- Doctor of Optometry (O.D.)
- Master of Science in Clinical Vision Research (M.S.)

COLLEGE OF HEALTH CARE SCIENCES

- Bachelor of Health Science (B.H.Sc.)
- Bachelor of Health Science (B.H.Sc.)—Cardiovascular Sonography
- Bachelor of Health Science (B.H.Sc.)—Vascular Sonography

COLLEGE OF HEALTH CARE SCIENCES (CONTINUED)

- Master of Health Science (M.H.Sc.)
- Master of Health Science (M.H.Sc.)—Anesthesiologist Assistant
- Master of Health Science (M.H.Sc.)—Cardiovascular Sonography
- Master of Health Science (M.H.Sc.)—Vascular Sonography
- Master of Health Science (M.H.Sc.)/Doctor of Health Science (D.H.Sc.)
- Doctor of Health Science (D.H.Sc.)
- Doctor of Philosophy in Health Science (Ph.D.)
- Master of Medical Science in Physician Assistant (M.M.S.)
- Master of Occupational Therapy (M.O.T.)
- Entry-Level Doctor of Occupational Therapy (O.T.D.)
- Doctor of Occupational Therapy (Dr.OT)
- Doctor of Philosophy in Occupational Therapy (Ph.D./OT)
- Entry-Level Doctor of Physical Therapy (D.P.T.)
- Hybrid Entry-Level Doctor of Physical Therapy (D.P.T.)
- Transition Doctor of Physical Therapy (D.P.T.)
- Doctor of Philosophy in Physical Therapy (Ph.D./PT)
- Doctor of Audiology (Au.D.)

COLLEGE OF MEDICAL SCIENCES

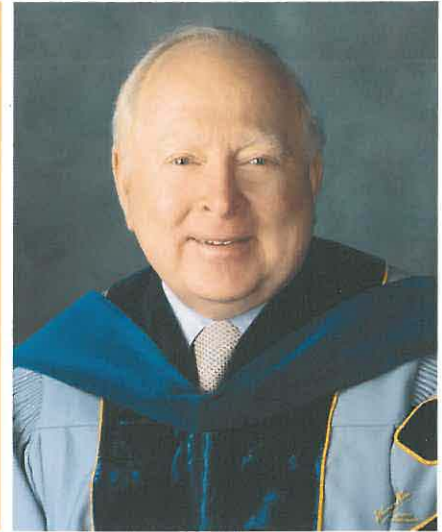
- Master of Biomedical Sciences (M.B.S.)
- Certificate in Anatomical Studies

COLLEGE OF DENTAL MEDICINE

- Doctor of Dental Medicine (D.M.D.)
- Master of Science in Dentistry (M.S.)
- Postgraduate Certificate in Advanced Education in General Dentistry
- Postgraduate Certificate in Endodontics
- Postgraduate Certificate in Operative Dentistry
- Postgraduate Certificate in Oral and Maxillofacial Surgery
- Postgraduate Certificate in Orthodontics
- Postgraduate Certificate in Pediatric Dentistry
- Postgraduate Certificate in Periodontics
- Postgraduate Certificate in Prosthodontics

COLLEGE OF NURSING

- Entry-Level Bachelor of Science in Nursing (B.S.N.)
- R.N. to B.S.N.
- R.N. to M.S.N.
- Master of Science in Nursing (M.S.N.)—Nursing Education
- Master of Science in Nursing (M.S.N.)—Health Systems Leadership
- Master of Science in Nursing (M.S.N.)—Advanced Practice Registered Nurse, FNP
- Doctor of Nursing Practice (D.N.P.)
- Doctor of Philosophy in Nursing (Ph.D.)



If you wish to be a leader in the health professions, Nova Southeastern University can help you reach your potential.

In less than two decades, NSU's Health Professions Division has developed into a multidisciplinary academic health center of international stature. Composed of the Colleges of Osteopathic Medicine, Pharmacy, Dental Medicine, Optometry, Health Care Sciences, Medical Sciences, and Nursing, the Health Professions Division has redoubled its commitment to academic excellence, innovation, and community service, while expanding its mission in research and scholarship. Working together, our distinguished faculty members prepare students for an exciting career on tomorrow's dynamic health care team.

Fred Lippman, R.Ph., Ed.D.

Health Professions Division Chancellor

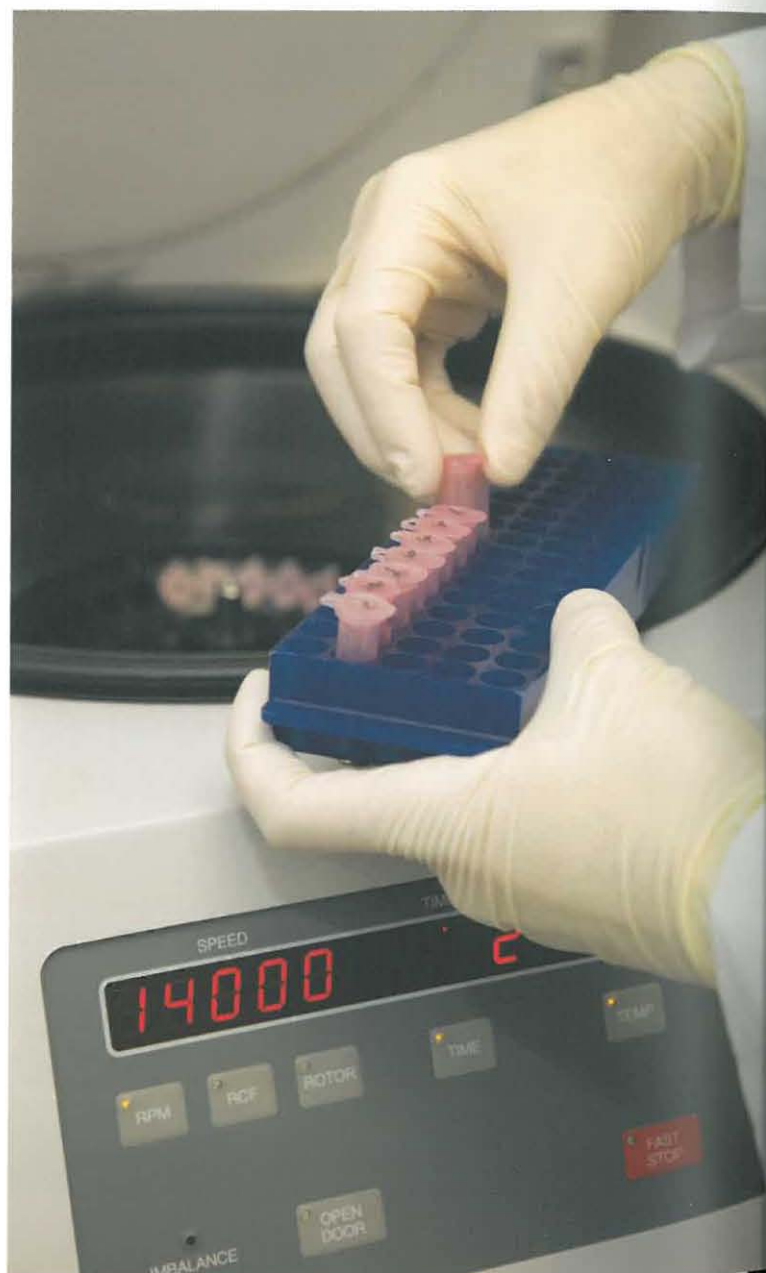
HISTORY OF THE COLLEGE OF PHARMACY

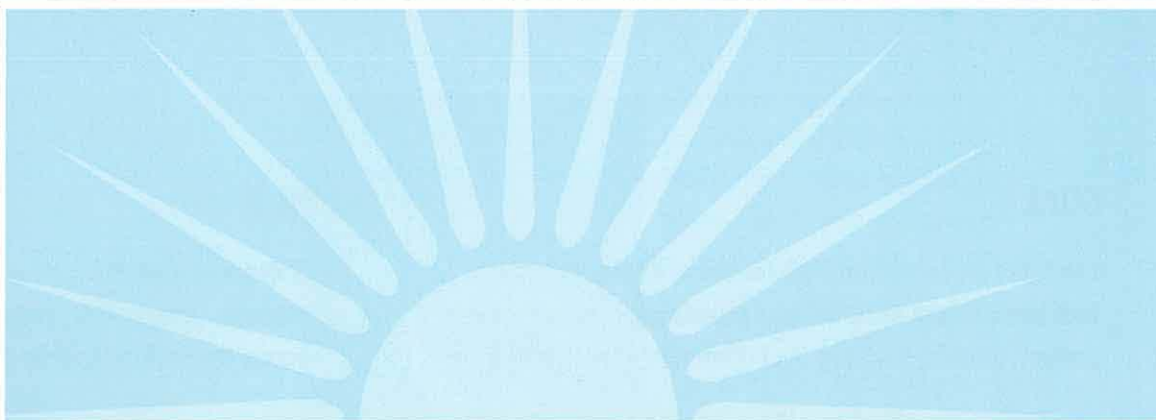
Nova Southeastern University's College of Pharmacy admitted its first class in 1987, becoming the first college of Pharmacy in South Florida. In fall 2000, the NSU College of Pharmacy (COP) opened a West Palm Beach Program at I-95 and PGA Boulevard. In fall 2001, it opened a full-time program on the campus of Pontifical Catholic University in Ponce, Puerto Rico. The only distinction between the Fort Lauderdale campus-based degree program and the distance site programs is geography. Each location has a team of site coordinators, as well as its own administration, faculty, and staff. Interactive video technology and videoconferencing are used to provide lectures between sites simultaneously. This technology provides for live interaction between faculty members and students regardless of location. Identical handouts, texts, and tests are used. Communication is available through telephone, fax, and email, just as with Fort Lauderdale-based students. 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.

In an effort to meet the growing demands of the pharmacy profession, the Nova Southeastern University College of Pharmacy outlined a curriculum for international pharmacy graduates that leads to the Doctor of Pharmacy (Pharm.D.) degree. In 2002, the college matriculated its first group of international pharmacy graduates into the Pharm.D. degree program on the Fort Lauderdale campus.

HISTORY OF THE PH.D. PROGRAM IN PHARMACY AT NSU

The Ph.D. program in pharmacy was approved by the NSU Board of Trustees in March 2008. The college launched its unique program of graduate study and research leading to the Doctor of Philosophy (Ph.D.) degree in fall 2010. Students are able to choose from one of three sequences: (1) Social and Administrative Pharmacy; (2) Molecular Medicine and Pharmacogenomics; and (3) Drug Development (Pharmaceutics).





As dean of the College of Pharmacy, I am pleased to welcome you to Nova Southeastern University (NSU) College of Pharmacy. Whether you are a prospective graduate student, parent, alumnus, or just a friend of the college, I hope this brochure serves as a useful source of information.

The world of pharmacy research is a challenging, ever-broadening arena. Whether centered on drug discovery, drug development, or patient-use matters, the issues to be studied are generally complex and always challenging. These factors continue to guide the design and implementation of the Doctor of Philosophy (Ph.D.) program here at the NSU College of Pharmacy.

Established in 1987, the College of Pharmacy has a rich tradition of excellence. With more than 2,900 alumni, an outstanding student body, an excellent faculty, active partnerships with pharmaceutical corporations and professional leaders, and a strong university environment, we are positioned to continue to be leaders in the education of pharmacists and pharmaceutical scientists throughout the 21st century.

Our Ph.D. program looks to ensure that every graduate student completes a course of study and research that is grounded in an appreciation and basic understanding of drugs and drug therapy problems and practices, then honed to an edge through the study and use of the research arts, principles, and methods that are the tools for addressing those problems and practices. We build on the strengths each student brings to the program to educate the Ph.D. who is ready to address the health-related issues of society.

With more than 73 faculty members, we provide a rich educational experience for both the professional degree (Pharm.D.) and full-time graduate students in the pharmaceutical sciences (Ph.D.). Our more than 35 supportive staff members provide the helpful environment that enables students and faculty members to excel in their academic endeavors. Our institutional partners in pharmacy research and practice provide internship opportunities for students to gain experience in the drug discovery and development process.

An interesting mix of both young and more seasoned faculty members presents an extraordinary combination of diversely specialized research backgrounds, enthusiasm, and dedication that is essential to a successful Ph.D. program. Excellent, and growing, research facilities and the financial support of grants from the college and NSU are available for conducting the work in that program. And it is all focused on making the NSU College of Pharmacy Doctor of Philosophy degree one of the preeminent awards in the country.

The College of Pharmacy is positioned to continue to provide leadership in pharmacy education and research in the 21st century. We look forward to great achievements in the days ahead.

Andrés Malavé, B.S.Ph., M.S., Ph.D.
Dean

COLLEGE OF PHARMACY STRATEGIC GOALS

GOAL 1

Establish an exceptional professional degree program that emphasizes drug therapy principles, concern for the patient, lifelong learning, and community involvement.

Our innovative Doctor of Pharmacy (Pharm.D.) degree program provides the next generation of pharmacy professionals with the knowledge and skills necessary to advance patient care with a strong understanding of the principles of drug therapy.

GOAL 2

Establish international partnerships recognized for their excellence in educational programs and for opportunities to participate in collaborative study, research, and scholarship.

The COP recognizes the importance of an international presence and of offering collaborative programs with a wide range of activities. International partnerships improve students' understanding of diversity in pharmacy practices and knowledge of cross-cultural health care among different ethnic populations. In addition to our successful, on-campus, international Doctor of Pharmacy program, collaborative learning opportunities will include programs of student/faculty exchange; intensive, short-term specialty institutes by international students and scholars in the United States; study abroad; training workshops; internships; and research collaboration.

GOAL 3

Establish a recognized, self-sustaining program of research, scholarship, and graduate studies that broadens the understanding of health-related issues.

Pioneering research, scholarship, and new discoveries are fundamental to becoming a college that is recognized as a premier institution. The COP's unique program of graduate study and research leading to the Doctor of Philosophy (Ph.D.) degree—composed of three areas of emphasis within pharmacy: drug discovery principles, the development and formulation of new drug products, and assessment of the sociobehavioral and economic impact on society and the health care system—will further broaden students' understanding of issues affecting health care.

GOAL 4

Establish a highly visible, successful, and self-sustaining program of continuing professional development for students, faculty members, and alumni.

The philosophy of lifelong learning is highly supported by the COP. The college offers a variety of activities that enhance professional skills and knowledge in areas that affect the practice of pharmacy. In addition to present offerings such as consulting, emergency preparedness, immunization delivery, contemporary issues, and physical assessment, we seek to continually develop and implement additional innovative programming for continual professional development.

MISSION STATEMENT

College of Pharmacy

The mission of the NSU College of Pharmacy is 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, and teamwork



Consistent with the mission statement and strategic plan for NSU, the College of Pharmacy places significant emphasis on cutting-edge research. The Ph.D. program in pharmacy is envisioned to be the vehicle that will foster the unbridled development of a viable and sustainable research program in both the biomedical sciences and the sociobehavioral and administrative pharmacy

sciences at NSU. It is anticipated that the Ph.D. program will serve as the catalyst in the creation of a "critical mass" of researchers, such that the college will be better poised to successfully compete for myriad research grants.

The College of Pharmacy at NSU will make a concerted effort to admit a diverse, suitably qualified, and actuated group of students. These students will be guided by a cadre of experienced faculty members who are eager and well-equipped to facilitate the transformation of Ph.D. students into scholars who exhibit an authentic zeal for the acquisition and dissemination of knowledge. Graduates of this program would have had the opportunity to be tutored by faculty members who are nationally and internationally recognized for their achievements in their respective disciplines.

According to an AACP Task Force on Faculty Workforce, the academy will need roughly 1,200 new faculty members during the next decade. The Task Force also intimated that the shortage of faculty members is occasioned by several factors, including the development of new pharmacy programs and faculty member retirements. Additionally, it is well documented that the pharmaceutical industry is experiencing a shortage of Ph.D. pharmacy graduates; therefore, this Ph.D. program is timely and unequivocally significant. It is anticipated that it will make a significant impact on the shortage of Ph.D. pharmacy graduates in both academia and industry.

A handwritten signature in black ink that reads "Hugh M. McLean". The signature is fluid and cursive, with a long horizontal line extending from the end.

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

PROGRAM DESCRIPTION

Nova Southeastern University (NSU) 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, and 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, pharmacy administration, pharmacoeconomics, 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 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 the faculty member expertise in the College of Pharmacy at NSU. 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.



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 (GTA) and graduate research assistants (GRA) will be limited to a maximum load 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

Year	Semester	Course	Credits
First	Fall	Bioethics: Principles of Life Science Research*	3
		Health Economics	3
		Biostatistics I*	3
		Population Health and Public Policy	3
		Graduate Seminar	1
		TOTAL	13
	Winter	Pharmaceutical Marketing	3
		Research Design*	3
		Biostatistics II*	3
		Pharmacy Management and Finance	3
		Graduate Seminar	1
		TOTAL	13
	Summer	Research or Internship	3
		TOTAL	3
Second	Fall	Theories of Health-Seeking Behavior	3
		Advanced Quantitative Methods	3
		Elective	3
		Graduate Research	2
		Graduate Seminar	1
		TOTAL	12
	Winter	Social Measurement and Techniques	3
		Scientific Writing*	1
		Pharmacoeconomics	3
		Elective	3
		Graduate Research	2
		Graduate Seminar	1
		TOTAL	13
	Summer	Graduate Research	2
		Research Funding and Proposal Development*	1
		TOTAL	3
Third	Fall	Elective	3
		Elective	3
		Graduate Research	2
		Graduate Seminar	1
		TOTAL	9
	Winter	Written Comprehensive and Oral Qualifying Exams	0
		Dissertation Research	8
		Graduate Seminar	1
		TOTAL	9
	Summer	Dissertation Research	8
		TOTAL	8
Fourth	Fall	Dissertation Research	8
		Graduate Seminar	1
		TOTAL	9
	Winter	Dissertation Research	8
		Graduate Seminar	1
		Dissertation Defense	0
		TOTAL	9

*HPD core course

The above curriculum was approved by the faculty, pending approval by the university provost.

This 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 SEQUENCE (PHARMACEUTICS)

PROGRAM DESCRIPTION

Nova Southeastern University (NSU) College of Pharmacy (COP) offers a program of graduate study and research in Drug Development, 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 sequence will be primarily under the tutelage of faculty members in the Department of Pharmaceutical Sciences, a group with expertise in pharmaceuticals-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 on the Drug Development (Pharmaceutics) core courses, written comprehensive and oral qualifying examinations, and research in a Drug Development area that is consistent with the faculty member expertise in the College of Pharmacy at NSU. 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.



CURRICULUM OUTLINE

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 (GTA) and graduate research assistants (GRA) will be limited to a maximum load 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

Year	Semester	Course	Credits
First	Fall	Bioethics: Principles of Life Science Research*	3
		Advanced Physical Pharmacy	3
		Biostatistics I*	3
		Graduate Research	2
		Graduate Seminar	1
		TOTAL	12
	Winter	Clinical Drug Development: Advanced Pharmacokinetics and Biopharmaceutics	3
		Graduate Research	2
		Research Design*	1
		Scientific Writing*	1
		Graduate Seminar	1
		TOTAL	8
	Summer	Research or Internship	3
		TOTAL	3
Second	Fall	Research Techniques and Instrumentation	3
		Product Development and Industrial Pharmacy	4
		Elective	3
		Graduate Research	2
		Graduate Seminar	1
		TOTAL	13
	Winter	Elective: Polymers	3
		Graduate Research	2
		Graduate Seminar	1
		TOTAL	6
	Summer	Graduate Research	2
		Research Funding and Proposal Development*	1
		Written Comprehensive and Oral Qualifying Exams	0
		TOTAL	3
Third	Fall	Advanced Topics in Pharmaceutical Sciences	1
		Dissertation Research	8
		Graduate Seminar	1
		TOTAL	10
	Winter	Advanced Topics in Pharmaceutical Sciences	1
		Written Comprehensive and Oral Qualifying Exams	0
		Dissertation Research	8
		Graduate Seminar	1
		TOTAL	10
	Summer	Dissertation Research	8
		TOTAL	8
Fourth	Fall	Advanced Topics in Pharmaceutical Sciences	1
		Dissertation Research	8
		Graduate Seminar	1
		TOTAL	10
	Winter	Dissertation Research	8
		Graduate Seminar	1
		Dissertation Defense	0
		TOTAL	9

*HPD core course

The above curriculum was approved by the faculty, pending approval by the university provost.

This 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 (NSU) 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 on the Molecular Medicine and Pharmacogenomics core courses, written comprehensive and oral qualifying examinations, and research in a Molecular Medicine and Pharmacogenomics area that is consistent with the faculty member expertise in the College of Pharmacy at NSU. 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.

CURRICULUM OUTLINE

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 (GTA) and graduate research assistants (GRA) will be limited to a maximum load 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

Year	Semester	Course	Credits
First	Fall	Bioethics: Principles of Life Science Research*	3
		Clinical Pharmacology or Elective**	4
		Biostatistics I*	3
		Graduate Research	2
		Graduate Seminar	1
		TOTAL	13
	Winter	Clinical Drug Development: Advanced Pharmacokinetics and Biopharmaceutics	3
		Molecular and Cellular Pharmacodynamics	3
		Graduate Research	2
		Experimental Statistics and Informatics	1
		Scientific Writing*	1
		Graduate Seminar	1
		TOTAL	11
	Summer	Research or Internship	3
		TOTAL	3
Second	Fall	Research Techniques and Instrumentation	3
		Advanced Pharmacogenomics and Molecular Medicine	3
		Graduate Research	2
		Graduate Seminar	1
		TOTAL	9
	Winter	Applied Pharmacology	3
		Elective	2
		Graduate Research	2
		Journal Club	1
		Research Design*	1
		Graduate Seminar	1
		TOTAL	10
	Summer	Research Funding and Proposal Development*	1
		Graduate Research	2
		Written Comprehensive and Oral Qualifying Exams	0
		TOTAL	3
Third	Fall	Dissertation Research	8
		Elective	2
		Graduate Seminar	1
		TOTAL	11
	Winter	Written Comprehensive and Oral Qualifying Exams	0
		Dissertation Research	8
		Graduate Seminar	1
		TOTAL	9
	Summer	Dissertation Research	8
		TOTAL	8
Fourth	Fall	Dissertation Research	8
		Graduate Seminar	1
		TOTAL	9
	Winter	Dissertation Research	8
		Graduate Seminar	1
		Dissertation Defense	0
		TOTAL	9

*HPD core courses

**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 above curriculum was approved by the faculty, pending approval by the university provost.

This 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.

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.

- All applicants must have an earned baccalaureate degree from an accredited institution of higher education.
- With few exceptions, all applicants' degrees should be in pharmacy or a related area, and the applicant should have earned a cumulative GPA equal to a 3.0 or better.
- 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.



Students are provisionally admitted to a degree-seeking program based on a review of unofficial transcripts or other specific program admission requirements. However, this admission includes a condition that final and official transcripts, documents, and requirements must be received within 90 calendar days from matriculation. If these final and official transcripts, documents, and/or requirements are not received by that time, the student will not be allowed to continue class attendance. Financial aid will not be disbursed to a provisional/conditional student until he or she has been fully admitted as a regular student (all admissions requirements have been approved by the college/program admissions office). Students who have an unpaid balance 30 days from the start of the term will be assessed a \$100 fee.

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.**

Candidates for admission must submit the documents outlined below.

APPLICATION

- Applicants may apply for admission electronically by using the 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 applications must be submitted (with the application fee and supporting documents) by March 1 to Nova Southeastern University, Enrollment Processing Service (EPS), College of Pharmacy, Office of Admissions, 3301 College Avenue, P.O. Box 299000, Fort Lauderdale, Florida 33329-9905.

TRANSCRIPTS

Official transcripts of all work attempted at all colleges and universities must be forwarded by the institutions attended to EPS. 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.

LETTERS OF EVALUATION

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

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.

FOREIGN COURSEWORK (IF APPLICABLE)

Undergraduate coursework taken at a foreign institution must be evaluated for U.S. institution equivalency. It is the applicant's responsibility to have the coursework evaluated. A complete course-by-course evaluation must be sent to the office of admissions. Applicants should contact one of the three services listed below for evaluation of their transcript.

World Education Services

(212) 966-6311

www.wes.org

Josef Silny & Associates

(305) 273-1616

www.jsilny.com

Educational Credential Evaluators, Inc.

(414) 289-3400

www.ece.org

PERSONAL INTERVIEW

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 the interview. Being granted an interview is not a guarantee of admission.

STUDENT HOUSING



Numerous apartments, condominiums, and other rental facilities are located near campus. Limited on-campus housing is also available. Information concerning on-and off-campus housing may be obtained by contacting

NOVA SOUTHEASTERN UNIVERSITY
Office of Residential Life and Housing
3301 College Avenue
Fort Lauderdale, Florida 33314-7796
(954) 262-7052

ACCREDITATIONS

Nova Southeastern University College of Pharmacy's Doctor of Pharmacy Program is accredited by the Accreditation Council for Pharmacy Education, 20 North Clark Street, Suite 2500, Chicago, IL 60602-5109, (312) 664-3575, 800-533-3606; FAX (312) 664-4652, Web site www.acpe-accredit.org. The College of Pharmacy is a member of the American Association of Colleges of Pharmacy.

Nova Southeastern University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia 30033-4097, Telephone number: 404-679-4501) to award associate's, bachelor's, master's, educational specialist, and doctoral degrees.

NONDISCRIMINATION

Consistent with all federal and state laws, rules, regulations, and /or local ordinances (e.g., Title VII, Title VI, Title III, Title II, Rehab Act, ADA, and Title IX), it is the policy of Nova Southeastern University not to engage in any discrimination or harassment against any individuals because of race, color, religion or creed, sex, pregnancy status, national or ethnic origin, nondisqualifying disability, age, ancestry, marital status, sexual orientation, unfavorable discharge from the military, veteran status, or political beliefs or affiliations, and to comply with all federal and state nondiscrimination, equal opportunity, and affirmative action laws, orders, and regulations.

This nondiscrimination policy applies to admissions; enrollment; scholarships; loan programs; athletics; employment; and access to, participation in, and treatment in all university centers, programs, and activities. NSU admits students of any race, color, religion or creed, sex, pregnancy status, national or ethnic origin, nondisqualifying disability, age, ancestry, marital status, sexual orientation, unfavorable discharge from the military, veteran status, or political beliefs or affiliations, to all the rights, privileges, programs, and activities generally accorded or made available to students at NSU, and does not discriminate in the administration of its educational policies, admission policies, scholarship and loan programs, and athletic and other school-administered programs.

- Admissions
- Financial Aid
- HPD Cafeteria

SECOND FLOOR

- College of Health Care Sciences
 - Audiology Department
 - Health Sciences Department
 - Occupational Therapy Department
 - Physical Therapy Department
 - Physician Assistant Department

THIRD FLOOR

- College of Medical Sciences
- College of Pharmacy

FOURTH FLOOR

- College of Osteopathic Medicine
- College of Optometry

FIFTH FLOOR

- HPD Administration
- Public Health Program
- College of Nursing
- Area Health Education Center

2 ASSEMBLY BUILDING

- Finkelstein Auditorium (125 seats)
- Jonas Auditorium (125 seats)
- Melnick Auditorium (125 seats)
- Resnick Auditorium (125 seats)
- Terry Auditorium (125 seats)
- Auditoria A, B, and C (125 seats each)
- Robert A. Steele Auditorium (500 seats)
- Hull Auditorium (250 seats)
- Seminar Rooms

3 LIBRARY/LABORATORY BUILDING

FIRST FLOOR

- Drug Information Center
- "Harvey" Cardiac Patient Simulation Room
- HPD Library
- Student Computer Laboratory
- Patient Simulation Center

- Physical Therapy Laboratory
- Student Lounge
- FOMA Osteopathic Manipulative Medicine Laboratory

THIRD FLOOR

- Basic Science Laboratories
- Gross Anatomy Laboratories
- Microscopy Laboratory
- Research Laboratories
- Moran Pharmacy Practice Laboratory
- Pharmacokinetics Laboratory
- Pharmaceuticals Laboratory

4 PHARMACY AND PHARMACEUTICAL CARE CENTER

5 SANFORD L. ZIFF HEALTH CARE CENTER

FIRST FLOOR

- Family Medicine
- Occupational Therapy
- Pediatrics
- Dermatology
- Physical Therapy
- Radiology

SECOND FLOOR

- Optometry Clinics
- Optometry Dispensary

THIRD FLOOR

- Business Offices
- Specialty Clinics
 - Cardiology
 - Internal Medicine
 - Osteopathic Manipulative Medicine
 - Pulmonary Medicine
- Emergency Medicine Training Center



6 DENTAL MEDICINE BUILDING

FIRST FLOOR

- Oral Medicine and Radiology Clinic
- Oral Surgery Clinic
- Student Dental Clinic
- Clinic Support Laboratory
- Predoctoral and Postgraduate Oral Surgery

SECOND FLOOR

- Faculty Practice
- Simulation Lab
- Postgraduate Endodontics
- Postgraduate Orthodontics
- Postgraduate Pediatric Dentistry
- Postgraduate Periodontics
- Postgraduate Prosthodontics

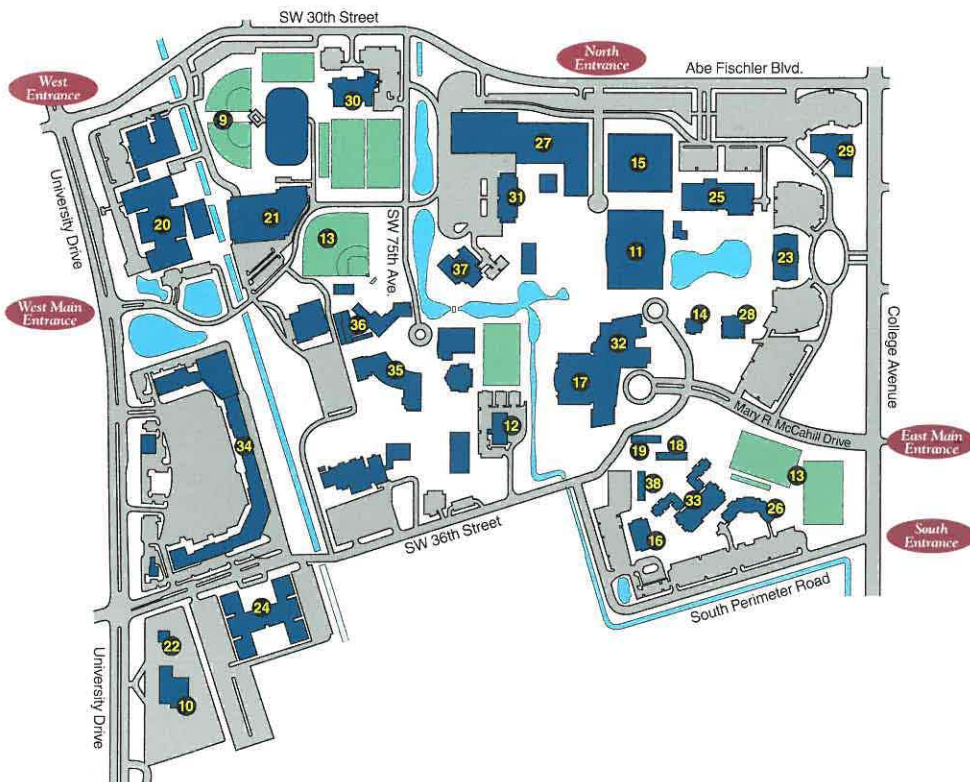
THIRD FLOOR

- Auditorium
- Seminar Rooms
- Central Sterilization Area
- Dispensing
- Faculty Offices
- Student Dental Supply Depot

7 PARKING GARAGE

8 HPD ASSEMBLY BUILDING

- Auditorium
- Computer Science Laboratory
- Seminar Rooms
- Physical Assessment Laboratory
- Compliance Office



A.D. Griffin Sports Complex with Lighted Softball Fields . . .	9
Administrative Services Center . . .	10
Alvin Sherman Library, Research, and Information Technology Center . . .	11
Athletics and Business Services Building . . .	12
Athletics Fields . . .	13
Athletics and Student Affairs Building . . .	14
Carl DeSantis Building . . .	15
Cultural Living Center . . .	16
Don Taft University Center . . .	17
Farquhar Residence Hall . . .	18
Founders Residence Hall . . .	19
Health Professions Division Complex . . .	20
Health Professions Division Parking Garage . . .	21
Hearing and Balance Clinic . . .	22
Horvitz Administration Building . . .	23
Jim & Jan Moran Family Center Village . . .	24
Leo Goodwin Sr. Hall . . .	25
Leo Goodwin Sr. Residence Hall . . .	26
Library and Main Student Parking Garage . . .	27
Mailman-Hollywood Building . . .	28
Maltz Psychology Building . . .	29
Miami Dolphins Training Facility . . .	30
Parker Building . . .	31
Rosenthal Student Center . . .	32
The Commons Residence Hall . . .	33
University Park Plaza . . .	34
University School Lower School . . .	35
University School Middle School (Dauer Building) . . .	36
University School Upper (Sonken Building) . . .	37
Vetel Residence Hall . . .	38



Health Professions Division
3200 South University Drive
Fort Lauderdale, Florida 33328-2018

Office of Admissions
(954) 262-1101 • 877-640-0218
www.nova.edu