

DOCTOR OF PHARMACY
and
DOCTOR OF PHILOSOPHY

JOINT DEGREE PROGRAM

COLLEGE OF PHARMACY

UNIVERSITY OF FLORIDA

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INTRODUCTION

The College of Pharmacy at the University of Florida offers a joint Doctor of Pharmacy (PharmD) and Doctor of Philosophy (PhD) degree program for qualified Doctor of Pharmacy students who are interested in accelerated graduate studies. The purpose of this program is to provide research training for pharmacy students who have decided to pursue a career in research, as well as to prepare clinically oriented pharmaceutical scientists. The duration of the program will vary from student to student, but it is likely that the PhD program duration would be shortened by up to one year, so that the combined degrees would be achieved in 7-8 years after start of the professional degree.

The benefits of participating in the joint PharmD/PhD degree program are several fold: First, the student can select 5000 and 6000 level graduate courses that will satisfy requirements for both programs, thus shortening the length of the overall program. Second, the student can develop his or her research interest and select a research advisor during their PharmD training, allowing a head start in selecting a PhD project after the completion of the PharmD degree. Third, by integrating research content into their PharmD training, the student can gain perspective that enhances both the clinical and research training.

The combination of a clinical and research doctorate degree is very powerful and allows a competitive advantage in the pharmaceutical sciences in academic, industry, regulatory and other settings. Graduates with clinical training benefit from a broader range of pharmaceutical knowledge and clinical experience. The net result is a scientist who is well-trained for a translational research career and who can identify research questions with great significance for public health.

CAREER OPPORTUNITIES

There is a strong demand for clinically trained individuals who also have formal research training in bench-to-bedside, or translational research. Graduates with the Doctor of Pharmacy and Doctor of Philosophy degrees are very competitive for research positions in:

- Academia
- Governmental agencies (e.g., National Institutes of Health, Food and Drug Administration, Centers for Disease Control and Prevention)
- Pharmaceutical industry
- Research institutes

The clinical emphasis of the Doctor of Pharmacy program and the in-depth scientific education obtained from a Doctor of Philosophy degree in a pharmaceutical science prepares the individual for research and teaching that can integrate clinical and basic pharmaceutical research. Graduates have the potential to fulfill a vital role in the pharmacy profession as clinical scientists.

DOCTOR OF PHARMACY PROGRAM

The College offers a four-year, entry-level program leading to the Doctor of Pharmacy degree. The innovative curriculum in the College is designed to provide the graduate with the scientific, professional, and cultural background required for the successful practice of pharmacy. The curriculum encompasses foundational coursework in the pharmaceutical sciences, including pathophysiology, pharmaceuticals, medicinal chemistry, pharmacology, physical assessment, professional communications, pharmacoepidemiology and –economics, and interdisciplinary courses focusing on patient care in various disease states. The curriculum emphasizes team-based learning along with continuous acquisition of professional practice skills and professional and personal development. Clerkship experience is required. These clerkships include a required core of general medicine, pediatrics, ambulatory care, and drug information services. The curriculum also provides opportunity for collaborative learning and developing life-long learning skills, and is an excellent foundation for advanced degrees leading to careers in research, teaching, and management.

Requirements for admission to the professional program are discussed in detail in the University of Florida Undergraduate Catalog and on the College of Pharmacy [website](#). Applicants must submit all official transcripts of college course work and an application form to the University of Florida Registrar. The College of Pharmacy will evaluate the transcripts for completion of pre-pharmacy courses, and calculate GPA's in science/math course work within the pre-pharmacy courses.

DOCTOR OF PHARMACY/DOCTOR OF PHILOSOPHY PROGRAM

Students will typically apply to the combined PharmD/PhD program early in the 2PD year. Students who intend to apply to the program will be expected to participate in research beginning in the summer after the 1PD year.

The key components of the program are:

- A summer program research program during the summers between the 1PD and 2PD and/or the 2PD and 3PD years.
- two semesters of research elective during the 2PD and/or 3PD years
- participation in a research seminar elective in the 2 or 3PD year
- participation in a research clerkship during the 4PD year
- Students have the opportunity to complete graduate courses that can be applied to the PhD program and pursue research in any of the concentrations in the College in the departments of Pharmaceutics, Medicinal Chemistry, Pharmacodynamics, and Pharmaceutical Outcomes and Policy or Pharmacotherapy and Translational Research.

INTENSIVE SUMMER RESEARCH EXPERIENCE

This program is designed specifically for students interested in an intensive research experience as a introduction to the PhD experience. These students should be interested in application to the joint PharmD/PhD program, rather than simply interested in the Research Track or in an opportunity for research experience. Each student will be expected to be actively engaged in an 8 week full-time research experience, which will include active participation in a research project, participation in a journal club and in the relevant lab meetings of their mentor's research group. All students will be expected to submit a short 1-2 page summary of their research finding by the end of the summer, and to present their data at a research forum. All student will also be expected to present their work in the poster session of the College of Pharmacy Research Showcase.

Typical Curriculum

Year	Semester		
	Fall	Spring	Summer
1	<i>Contact departments and faculty to investigate opportunities for research</i>		
	PharmD Courses	PharmD Courses	Research Program/IPPE
2	<i>Contact department of interest to plan elective coursework</i> <i>Submit preliminary application to department for PhD program by December in 2PD year</i>		
	PharmD Courses/research electives	PharmD Courses/research seminar	Research Program/ IPPE
3	<i>Further opportunity for application to Department in 3PD Year</i>		
	PharmD Courses/research electives	PharmD Courses/research seminar electives	PharmD Experiential
4	<i>Formal application to Graduate School for admission by December 1 of 4PD year</i>		
	PharmD Experiential ¹ & PhD research	PharmD Experiential ¹ & PhD research	PhD Courses
5	PhD Courses	PhD Courses	Research & PhD Courses
6	Research & PhD Courses	Dissertation Research & PhD Courses	Dissertation Research
7+	Dissertation Research	Dissertation Research	Dissertation Research

¹Transfer of PharmD courses to the PhD curriculum requires grades of B or better, and occurs with the approval of the concentration graduate coordinator.

Early contact is recommended in order to plan the course of study and to take full advantage of 5000- 6000 course offerings that can be applied towards the PhD, and to assure that the student has a realistic view of the time required to complete the PhD after matriculation in to the PhD program.

APPLICATION PROCESS

It is strongly recommended that students interested in the PharmD/PhD program begin the process of working with the Office of Graduate Programs of the college **and** the graduate coordinator of a selected graduate concentration in the College (see below) as early as possible, and within their first academic year. They can advise the students as to the specific course of study required for that concentration. It is expected that interested student will participate in the Intensive Summer Research Experience during the summers after their 1PD and 2PD years, in order to begin research experiences and training, develop specific research skills, and to identify a Ph.D. mentor.

Students interested in the PharmD/PhD joint degree program can apply anytime within their second professional year but are strongly encouraged to apply no later than the beginning of the third professional year in the PharmD program to the **College of Pharmacy department** in which they plan to complete their PhD degree. Formal application to the UNiversity of Florida Graduate School must be completed by the normal application deadline in December of the fourth professional year.

OVERVIEW OF THE APPLICATION PROCESS

During 1PD year	→	Begin conversations with potential mentors Apply for Intensive Summer Research Program
During 2PD year	→	Contact Department to plan course of study Apply to the College of Pharmacy
During 3PD year	→	Complete application to College of Pharmacy Establish plan for research clerkship in the 4PD year
During 4PD year	→	Apply directly to University Office of Graduate Admissions (after consultation with relevant Department graduate coordinator)

Application for Summer Research Program:

The student will be expected to complete an application for the summer program by February 1 of the 1PD (or 2PD year). Applicants will be expected to complete an Individual Development Plan, and to meet with a faculty mentor and prepare a summary of their research plan for the summer. Successful applicants will be admitted with a scholarship to the Summer Research Training Program.

Application for PharmD/PhD to the College

- Completion of at least three semesters of PharmD curriculum
- Competitive Graduate Record Examination ([GRE](#)) score
- College of Pharmacy GPA of at least 3.20

When applying during the second or third professional year, the following application material must be submitted directly to the **College of Pharmacy department** to which you are applying.

- [UF Graduate School application form](#)
- Copy of transcripts and GRE score.
- A statement of intent explaining why you would like to pursue a PhD degree. Your statement should include your research interests, names of potential faculty mentor(s), and whether the Summer Research Experience (if applicable) contributed to your decision to apply to the joint program.
- Three letters of recommendation from individuals who are familiar with the candidate and who can comment on their appropriateness for graduate studies.

Students approved for admission to the joint degree program by their chosen department will apply for admission to the UF Graduate School by [December 1](#) of the fourth professional year. For more information on admission to the Graduate School consult the University of Florida Graduate Catalog and the college graduate programs staff.

Students accepted into the PharmD/PhD program will be guaranteed a stipend (either a research or teaching assistantship) and tuition remission to help finance expenses for graduate studies. This stipend is granted once the student has completed the Doctor of Pharmacy degree and has begun further graduate studies in the College of Pharmacy.

COLLEGE OF PHARMACY CONCENTRATIONS FOR GRADUATE STUDY

Medicinal Chemistry

Graduate Coordinator: Dr. Chenglong Li

Medicinal chemistry is a unique blend of the physical and biological sciences. Medicinal Chemistry areas of research in drug design, marine natural products and toxicology are a unique blend of the physical and biological sciences. The scope of the field is sufficiently broad to give students with many different science backgrounds a rewarding and challenging program of study. Areas of active interest include drug discovery, organic synthesis of medicinal agents, natural products chemistry, prodrugs, topical drug delivery, peptide chemistry, molecular modeling, drug metabolism and molecular toxicology. The scope of the field is sufficiently broad to give students with many different science backgrounds a rewarding and challenging program of study. The applicant should have an undergraduate degree in pharmacy, chemistry, biology, or premedical sciences. A background in calculus, physics, general and organic chemistry is required. In addition to graduate medicinal chemistry courses in the College of Pharmacy, graduate courses in chemistry and biochemistry are required for the program. The Department participates in the interdisciplinary concentration in toxicology. For more information, see the Interdisciplinary Graduate Studies section of the graduate catalogue.

Pharmaceutics

Graduate Coordinator: Sihong Song, Ph.D. (shsong@cop.ufl.edu)

Research in Pharmaceutics encompasses basic, applied, and clinical investigations in (i) pharmacokinetics/ biopharmaceutics, (ii) pharmaceutical analysis, (iii) pharmaceutical biotechnology and drug delivery, (iv) herbal medicine. In addition to teaching, all faculty members are involved in collaborative research projects with clinical and other basic scientists within the Health Center or on campus. The domain extends from studies of the physiochemical properties of drugs and related molecules to investigations of the mechanisms of physiological processes affecting drug delivery and therapeutic effectiveness. These include absorption, distribution, metabolism and excretion. Pharmaceutics is an interdisciplinary field of research. In addition to the above mentioned fields, pharmaceutics is rapidly expanding into such areas as computer sciences, biotechnology, cell and molecular biology, and biomedical engineering. The variety of basic, applied and clinical research projects reflects the interdisciplinary character and orientation of pharmaceutics towards emerging new fields in the pharmaceutical sciences, in particular pharmacokinetics, and pharmacometrics. A foundation in physical chemistry, chemistry, mathematics, biology, as well as the life sciences, is necessary.

Clinical Pharmaceutical Sciences

Graduate Coordinator: Jatinder Lamba, Ph.D. (jlamba@cop.ufl.edu)

The goal of this program is to prepare motivated individuals to pursue independent research careers in academia, industry, or government. The current research focus of the program is on understanding genetic and non-genetic factors that contribute to variability in drug response and outcomes. Selected areas of research include cardiovascular diseases, oncology, asthma/pulmonary, infectious diseases, psychiatry, and clinical pharmacology/drug metabolism. Students in the program conduct hypothesis-driven clinical research that includes a strong laboratory component. Excellent research facilities are available including state-of-the art bioanalytical and pharmacogenomics laboratories, and an NIH-funded Clinical Translational Science Institute ([CTSI](#)) and Clinical Research Center ([UF CRC](#)) for clinical study conduction.

Pharmaceutical Outcomes and Policy

Graduate Coordinator: Richard Segal, Ph.D. (segal@cop.ufl.edu)

Research in Pharmaceutical Outcomes and Policy involves health outcomes research, which crosses disciplinary boundaries and focuses on evaluating the effectiveness, safety, humanistic outcomes and cost outcomes of drug therapy, medical technologies and pharmacy related health services. Specialty areas in the department are: Pharmacoepidemiology, Pharmacoeconomics, and Patient Safety and Program Evaluation. Pharmacoepidemiology focuses on the assessment of safety and effectiveness of medications after market approval. It typically studies drug effects in large populations using existing data sources such as administrative billing or electronic health record (EHR) data. A concentration in pharmacoeconomics equips a graduate to design studies that assess the economic burden of illness or compare cost and benefit of alternative treatment strategies. Research in patient safety and program evaluation examines medication errors and quality of care issues surrounding medication use. It also evaluates interventions and policy intended to enhance the safe and effective use of medications.

Department of Pharmacodynamics

Graduate Coordinator: Jason Frazier, Ph.D. (frazier@cop.ufl.edu)

Research in the Department of Pharmacodynamics broadly seeks to improve our understanding of physiology, pathophysiology, and pharmacology in neural and cardiovascular systems. We study specific systems, circuits, and/or mechanisms that are implicated in a wide variety of clinical conditions including drug dependence and withdrawal, dehydration, epilepsy, hypertension, obesity, Parkinson's disease, stress, and advanced age. Research employs a variety of anatomical, immunohistochemical, electrophysiological, behavioral, surgical, and genetic approaches and involve both in vivo and in vitro systems, to identify drug targets, drug action and test novel drug mechanisms. Graduate course work in the Department has core requirements centered on physiology, pharmacology, neuroscience, and statistics. In addition, our students routinely participate in elective courses hosted by programs throughout the Health Sciences Center.