

PHARMACEUTICAL SCIENCES (PHARMACEUTICAL OUTCOMES AND POLICY)

Program Information

The College of Pharmacy offers the Master of Science in Pharmacy and Doctor of Philosophy degrees in Pharmaceutical Sciences with a concentration in Pharmaceutical Outcomes and Policy, and an additional concentration in Medication Therapy Management in the M.S.P. Minimum requirements for these degrees are provided in the *Graduate Degrees* section of this catalog.

Research in the department emphasizes the epidemiological, socio-behavioral, administrative, regulatory, and economic aspects of drug therapy and pharmaceutical services, including assessment of safety, effectiveness, efficiency and quality aspects of patient-oriented pharmaceutical services and medication use.

The department offers both a research-oriented residential M.S.P. and Ph.D. degree programs as well as an online M.S.P. program. For the research oriented degree programs, graduate studies include core curricula and four specializations in patient safety and program evaluation, pharmacoconomics, pharmacoepidemiology and social-behavioral research in medication use. Electives and required courses draw from the resources of the entire University. Graduates are prepared for leadership positions in academia, public service, pharmaceutical industry, and health service industry with a focus on the evaluation of drugs and related services.

The online non-thesis M.S.P. program is designed for working professionals, and focuses on pharmaceutical regulation and outcomes. Prior pharmacy experience/knowledge is not required and the program is available to persons located in the United States only. Coursework is delivered in both asynchronous and live, synchronous sessions. Students may choose among six specialty tracks including Pharmacy Regulation & Policy, Applied Pharmacoconomics, Drug Regulatory Affairs, Clinical Research Regulation in Pharmacy, Patient Safety & Medication Risk Management, and Institutional Pharmacy Leadership.

For more information, please visit our websites: <http://pop.pharmacy.ufl.edu/education/prospective-students> (<http://pop.pharmacy.ufl.edu/education/prospective-students/>) and <http://pop.pharmacy.ufl.edu>.

Degrees Offered

Degrees Offered With a Major in Pharmaceutical Sciences

- Doctor of Philosophy
 - concentration in Pharmaceutical Outcomes and Policy
 - *optional second concentration in Clinical and Translational Science*
- Master of Science in Pharmacy
 - concentration in Medication Therapy Management
 - concentration in Pharmaceutical Outcomes and Policy

Requirements for these degrees are given in the Graduate Degrees (<http://gradcatalog.ufl.edu/graduate/degrees/>) section of this catalog.

Courses

Medicinal Chemistry Courses

Code	Title	Credits
PHA 6354	Natural Medicinal Products	3
PHA 6356	Structure Determination of Complex Natural Products	3
PHA 6357	Herbal & Dietary Supplements	3
PHA 6417	Pharmaceutical Analysis II	3
PHA 6425	Drug Biotrans and Molecular Mechanisms of Toxicity	3
PHA 6432	Fundamentals of Pharmaceutical Chemistry	1
PHA 6435	Biosynthetic Logic of Medicinal Natural Products	3
PHA 6444	Pharmaceutical Chemistry I	3
PHA 6447	Drug Design	3
PHA 6471	Synthetic Medicinal Chemistry	3
PHA 6472	Organic Synthesis of Drug Molecules	3
PHA 6476	Advanced Combinatorial Chemistry in Drug Discovery	3
PHA 6534	Toxicology of Chemical Weapons	3
PHA 6535	Principles of Nucleotide Activity	2
PHA 6543	Pharmaceutical Chemistry II	3
PHA 6556	Introduction to Clinical Toxicology	3
PHA 6557	Clinical Toxicology I	3
PHA 6840	Medicinal Chemistry of Drugs of Abuse	3
PHA 6850	Principles of Forensic Science	3
PHA 6851	Forensic Analysis of DNA	3
PHA 6853	Biological Evidence and Serology	3
PHA 6854	Forensic Immunology	3
PHA 6855	Forensic Genetics	3
PHA 6856	Blood Spatter and Distribution	3
PHA 6905C	Research Procedures in Medicinal Chemistry	1-4
PHA 6934	Seminar in Medicinal Chemistry	1
PHA 6852	Mammalian Molecular Biology	3
VME 6602	General Toxicology	3
VME 6605	Toxic Substances	3
VME 6613	Forensic Toxicology I	3
VME 6614	Forensic Toxicology II	3
VME 6650	Principles of Mammalian Pharmacology	4
VME 6766	Laboratory Quality Assurance/Quality Control	3

Pharmacodynamics Courses

Code	Title	Credits
PHA 6472	Organic Synthesis of Drug Molecules	3
PHA 6476	Advanced Combinatorial Chemistry in Drug Discovery	3
PHA 6508	Systems Physiology and Pathophysiology I	3
PHA 6509	Systems Physiology and Pathophysiology II	3
PHA 6512L	Experiential Research Training in Pharmacodynamics	1-4
PHA 6521C	Research Techniques in Pharmacodynamics	1
PHA 7939	Journal Club in Pharmaceutical Sciences	1

Pharmacology Courses

Code	Title	Credits
GMS 6563	Molecular Pharmacology	1-3
GMS 6590	Seminar in Pharmacology	1

GMS 6592	Ion Channels Journal Club: Pharmacology, Biophysics, and Neuroscience of Excitable Membranes	1
GMS 6847	Translational Research and Therapeutics: Bench, Bedside, Community, & Policy	3
GMS 7593	Topics in Pharmacology and Toxicology	1-3

Pharmaceutical Outcomes and Policy Departmental Courses

Code	Title	Credits
PHA 5270	Health Care and Patient Safety	3
PHA 5271	Health Care Risk Management	3
PHA 6186	Pharm Outcomes/Policy Found 1	3
PHA 6187	Pharm Outcomes/Policy Found 2	3
PHA 6211	Managed Care Pharmacy Operations	3
PHA 6213	Advanced Case Studies in Managed Care Pharmacy	3
PHA 6227	Institutional Pharmacy Leadership I	3
PHA 6228	Institutional Pharmacy Leadership II	3
PHA 6246	Medication Safety & Technology	3
PHA 6250	Patient Responsibility in Health Care	3
PHA 6264	Pharmacoeconomics and Health Technology Assessment	3
PHA 6265	Introduction to Pharmaceutical Outcomes and Policy I	3
PHA 6266	Introduction to Pharmaceutical Outcomes and Policy II	2
PHA 6268	Pharmacoepidemiology and Patient Safety	3
PHA 6269	Pharmaceutical Products and Public Policy	3
PHA 6273	Structure, Process and Outcomes of Regulation I	2
PHA 6274	Federal Regulations of Drugs and Pharmacy	3
PHA 6275	Federal Regulations of Controlled Substances	3
PHA 6276	Pharmacy Benefit Design & Management	3
PHA 6277	Ethics in Drug Development Production and Use	3
PHA 6278	State Regulation of Drugs and Pharmacy	3
PHA 6279	Pharmaceutical Outcomes and Policy Seminar	1
PHA 6280	Medicare and Medicaid	3
PHA 6283	Commercial Applications of Pharmacoeconomics	3
PHA 6286	Pharmaceutical Microeconomics	3
PHA 6287	Pharmaceutical Health Economics	3
PHA 6288	Critical Review of Research Methods	3
PHA 6289	Regulating Clinical Research	3
PHA 6476	Advanced Combinatorial Chemistry in Drug Discovery	3
PHA 6717	Measurement in Pharmaceutical Outcomes and Policy Research	3
PHA 6791	Systematic Reviews and Meta-Analyses for Pharmaceutical Interventions	3
PHA 6793	Evidentiary Basis of Pharmaceutical Use	3
PHA 6795	Quantitative Methods in Evidence-Based Pharmacy	3
PHA 6796	Study Design in Pharmaceutical Outcomes & Policy Research	3
PHA 6797	Applied Pharmaceutical Research Communications	3

PHA 6798	The Use and Abuse of Statistics in Drug Regulation	3
PHA 6799	Medication Safety & Quality Program Evaluation	3
PHA 6805	Applied Data Interpretation and Reporting of Findings in Pharmacy	3
PHA 6806	Pharmacoeconomic Modeling	3
PHA 6891	Introduction to Pharmacoepidemiology	3
PHA 6892	Practices and Procedures of the IRB	3
PHA 6893	Research Ethics	3
PHA 6899	Advanced OB/GYN and Pediatric Pharmacoepidemiology	3
PHA 6910	Supervised Research	1-5
PHA 6935	Selected Topics in Pharmacy	1-4
PHA 6936	Advanced Topics in Pharmaceutical Sciences	1-2
PHA 6937	Topics in Pharmaceutical Administration	2
PHA 6938	Research Seminar	1
PHA 6940	Supervised Teaching	1-5
PHA 6971	Research for Master's Thesis	1-15
PHA 7807	Advanced Pharmacoepidemiology	3
PHA 7979	Advanced Research	1-12
PHA 7980	Research for Doctoral Dissertation	1-15

College of Pharmacy Courses

Code	Title	Credits
GMS 6951	Teaching Biomedical Science	2
GMS 6952	Curricular Models for Biomedical Science	3
GMS 6953	Art and Science of Mentoring	1
GMS 6954	Assessing Effectiveness of Biomedical Science Teaching and Curricula	3
PHA 6051	Principles of Community Engagement Research for Health Equity	2
PHA 6134	Foundations in Precision Medicine: Genomic Technologies	1
PHA 6135	Clinical Applications of Precision Medicine: Pharmacogenomics	2
PHA 6136	Clinical Applications of Precision Medicine: Oncology	3
PHA 6137	Clinical Pharmacogenomics Implementations	2
PHA 6427	Pharmacogenetics of Drug Metabolism	2
PHA 6449	Pharmacogenomic and Genomic Data Analysis	3
PHA 6476	Advanced Combinatorial Chemistry in Drug Discovery	3
PHA 6613	Clinical Applications Precision Medicine: Precision Health	3
PHA 6630	Medication Therapy Management: A Hematologic Focus	3
PHA 6631	Foundations of Medication Therapy Management I	3
PHA 6632	Foundations of Medication Therapy Management II	3
PHA 6633	Medication Therapy Management: A Cardiovascular Focus	3
PHA 6634	Medication Therapy Management: An Endocrine Focus	3
PHA 6635	Medication Therapy Management: A Renal Focus	3
PHA 6636	Medication Therapy Management: A Gastrointestinal Focus	3

PHA 6637	Medication Therapy Management: A Psychiatric Focus	3	Deliver a formal scholarly presentation of his or her original research results in oral and written formats at an internal academic review. These presentations will be clear in providing information at an appropriate level to the audience, complete in providing the necessary and relevant background from the literature, and will utilize appropriate audiovisual aids that are clearly constructed.	
PHA 6638	Medication Therapy Management: A Neurologic Focus	3		
PHA 6639	Medication Therapy Management: A Respiratory Focus	3		
PHA 6746	Patient Education and Communication in the Era of Precision Medicine	1		
PHA 6910	Supervised Research	1-5		
PHA 6935	Selected Topics in Pharmacy	1-4		
PHA 6936	Advanced Topics in Pharmaceutical Sciences	1-2		
PHA 6938	Research Seminar	1		
PHA 6940	Supervised Teaching	1-5		
PHA 6946	Practicum in the Pharmaceutical Sciences	2		
PHA 6950	Precision Medicine Conference	1	SLO 1 Knowledge Identify, interpret, and utilize core knowledge across the spectrum of Pharmaceutical Sciences.	
PHA 6971	Research for Master's Thesis	1-15		
PHA 7979	Advanced Research	1-12		
PHA 7980	Research for Doctoral Dissertation	1-15		
				SLO 2 Problem-Solving/Critical Thinking Analyze and apply material from foundation courses in the curriculum, interpret data, and synthesize a response to a complex problem or case.
				SLO 3 Professional Communication Deliver a presentation of a discipline-specific topic related to Pharmaceutical Sciences for internal academic review. These presentations will be clear in providing information at an appropriate level to the audience, complete in providing the necessary and relevant background from the literature, and will utilize appropriate audiovisual aids that are clearly constructed.

Pharmaceutical Sciences - Pharmaceutical Outcomes & Policy (MSP)

- SLO 1
Knowledge
Identify, interpret, and utilize core knowledge across the spectrum of Pharmaceutical Sciences.
- SLO 2
Problem-Solving/Critical Thinking
Analyze and apply material from foundation courses in the curriculum, interpret data, and synthesize a response to a complex problem or case.
- SLO 3
Professional Communication
Deliver a presentation of a discipline-specific topic related to Pharmaceutical Sciences for internal academic review. These presentations will be clear in providing information at an appropriate level to the audience, complete in providing the necessary and relevant background from the literature, and will utilize appropriate audiovisual aids that are clearly constructed.

Student Learning Outcomes

PHARMACEUTICAL SCIENCES (PH.D.)

SLO 1
Knowledge
Identify, interpret, and utilize core knowledge across the spectrum of Pharmaceutical Sciences as it relates to the student's research. At the most advanced level, this will include interpreting experimental data and designing experiments.

SLO 2
Problem Solving/Critical Thinking
Apply discipline- and research project-related knowledge to complete the student's dissertation research by formulating hypotheses, designing experiments, interpreting results, and forming conclusions from their experiments.

SLO 3
Skills
Discuss and defend the published literature of the Pharmaceutical Sciences field. The students will present analysis of the literature in a formal, structured class setting to clearly convey the background, methods, results, and significance of the literature to faculty and students.

SLO 4
Research Skills
Utilize the scientific method to formulate hypotheses based on their ability to use the literature, their own experimental observations, and those of others; design a technically sound and up-to-date experimental plan with appropriate controls; execute the experimental plan in a technically proficient manner; interpret the data; reformulate the hypotheses.

SLO 5
Professional Behavior
Exhibit behaviors and values that are consistent with ethical standards in research appropriate to safety, administrative, and regulatory rules. Professionalism, safety and adherence to regulations will be monitored by the student's mentor.

SLO6
Professional Presentations