PHARMACEUTICAL SCIENCES
(PHM SCI)

PHM SCI 310 — DRUGS AND THEIR ACTIONS
2 credits.

Introduces students to the biological effects of drugs on human health. Emphasis on how drugs, especially those used in diseases of major human health significance, act in the body. Drugs that are abused also will be covered. This course is not intended for medical, nursing, pharmacy, and physician assistant students.

Requisites: Not open to students declared in the Nursing, Physician Assistant, or Doctor of Pharmacy programs

Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2017

PHM SCI 401 — SURVEY OF PHARMACOLOGY
3 credits.

Pharmacological and toxicological actions and therapeutic use of important drugs. Not open to School of Pharmacy students

Requisites: PHYSIOL 335 and (BIOCHEM 201, 501 or BMOLCHEM 314).

Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Fall 2017

PHM SCI 420 — INTRODUCTION TO DRUG ACTION AND DRUG DELIVERY
1
4 credits.

Applications of physical principles and modern methods of analysis to pharmaceutical systems.

Requisites: Declared in Doctor of Pharmacy program
Repeatable for Credit: No
Last Taught: Fall 2017

PHM SCI 421 — INTRODUCTION TO BIOPHARMACEUTICS AND PHARMACOKINETICS
3 credits.

To integrate and utilize the knowledge obtained from chemistry, biochemistry, physiology, pathophysiology, and anatomy in order to develop an understanding of the fundamental principles governing biopharmaceutics, drug pharmacokinetics and drug pharmacodynamics.

Requisites: PHM SCI 420 and PHYSIOL 335
Repeatable for Credit: No
Last Taught: Spring 2017

PHM SCI 430 — BIOLOGICAL INTERACTIONS WITH MATERIALS
3 credits.

Addresses the range of materials currently being utilized for various biomedical applications, the biological systems governing biomaterial applications, analytical techniques pertinent to biomaterial evaluation, and selected major medical applications in which biomaterials play an important role.

Requisites: (BIOLOGY/ZOLOGY/BIOLOGY 101 and 102, BIOLOGY/BOTANY/ZOLOGY/BIOLOGY/BOTANY 151, ZOOLOGY 153, or BIOCORE 383) and (CHEMISTRY 341 or 343)
Repeatable for Credit: No
Last Taught: Spring 2017

PHM SCI 432 — PHARMACEUTICAL BIOCHEMISTRY
4 credits.

Chemistry of metabolic processes and products of living matter with emphasis on pharmaceutical and medicinal aspects as well as recombinant DNA technology. Laboratory experience with the chemistry of metabolic processes, products of living matter and recombinant DNA.

Requisites: Declared in Doctor of Pharmacy program
Repeatable for Credit: No
Last Taught: Fall 2017

PHM SCI 490 — SELECTED TOPICS IN PHARMACEUTICAL SCIENCES
1-4 credits.

Specialized subject matter of current interest to undergraduate and professional students.

Requisites: Consent of instructor
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

PHM SCI 491 — SELECTED TOPICS IN PHARMACEUTICAL SCIENCES
1-4 credits.

Specialized subject matter of current interest to graduate students.

Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2016

PHM SCI 493 — SELECTED TOPICS IN PHARMACEUTICAL SCIENCES
1-4 credits.

Specialized subject matter of current interest to graduate students.

Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017
PHM SCI/PHMCOL-M 521 — PHARMACOLOGY I
3 credits.
Pharmacological actions of important drugs, including drugs that affect the peripheral nervous system, the central nervous system, and the gastrointestinal tract.
Requisites: Junior standing and Pharmacology and Toxicology undergraduate program or declared in the Doctor of Pharmacy program with second year standing
Repeatable for Credit: No
Last Taught: Fall 2017

PHM SCI/PHMCOL-M 522 — PHARMACOLOGY II
3-4 credits.
Pharmacological actions of important drugs, including hematopoietic, thrombolytic, antihyperlipidemic, immunopharmacologic, anticancer, anti-inflammatory, diuretic, antihypertensive, antiinflammatory, and anti-arrhythmic agents, and agents used to treat congestive heart failure.
Requisites: PHMCOL-M/PHM SCI/PHMCOL-M 521
Repeatable for Credit: No
Last Taught: Spring 2017

PHM SCI 531 — MEDICINAL CHEMISTRY I
2 credits.
Chemistry of medicinal products, including cholinergic, adrenergic, dopaminergic and serotonergic agents, antidepressants, sedative/hypnotics, antianxiety drugs, opioid drugs acting at histamine receptors, and inhibitors of mediator release.
Requisites: PHM SCI 432
Repeatable for Credit: No
Last Taught: Spring 2017

PHM SCI 532 — MEDICINAL CHEMISTRY II
2 credits.
Chemistry of medicinal products, including antihyperlipidemics, glucocorticoids, estrogens, progestins, nonsteroidal anti-inflammatories, antitumor agents, and enzyme inhibitors.
Requisites: PHM SCI 531
Repeatable for Credit: No
Last Taught: Spring 2017

PHM SCI 540 — DRUG DELIVERY SYSTEMS
4 credits.
The application of physical, chemical and biological principles to the study of drug delivery using a variety of solid, solution and disperse systems as dosage forms. Rationale for therapeutic use, formulation and manufacture, and evaluation of stability and bioavailability.
Requisites: PHM SCI 421 and concurrent enrollment in PHM SCI 542
Repeatable for Credit: No
Last Taught: Fall 2017

PHM SCI 541 — PHARMACEUTICAL CALCULATIONS, DISPENSING AND COMPOUNDING
3 credits.
Introductory laboratory course in compounding and dispensing of pharmaceutical dosage forms, including sterile products. Includes practice in interpretation of prescription orders, pharmaceutical calculations, compounding procedures, physical manipulation of drugs and dosage form components, and product packaging and labeling.
Requisites: PHM SCI 420
Repeatable for Credit: No
Last Taught: Spring 2017

PHM SCI 542 — DRUG DELIVERY SYSTEMS LABORATORY II
3 credits.
Advanced extemporaneous prescription compounding and preparation of sterile products, with emphasis on physico-chemical stability and compatibility of drugs and dosage forms. Also addresses principles of appraisal, comparison, and selection of appropriate commercial brand name and generic products.
Requisites: PHM SCI 541 and concurrent registration in PHM SCI 540
Repeatable for Credit: No
Last Taught: Fall 2017

PHM SCI 558 — LABORATORY TECHNIQUES IN PHARMACOLOGY AND TOXICOLOGY
2 credits.
Basic laboratory techniques employed in pharmacological and toxicological research.
Requisites: Declared in the Pharmacology and Toxicology undergraduate program
Repeatable for Credit: No
Last Taught: Fall 2017

PHM SCI 623 — PHARMACOLOGY III
3 credits.
Pharmacological actions and underlying basic and clinical science of antimicrobial and antiviral drugs. Pharmacology of hormones and other drugs affecting the endocrine system.
Requisites: PHMCOL-M/PHM SCI/PHMCOL-M 522
Repeatable for Credit: No
Last Taught: Fall 2017

PHM SCI/M&ENVTOX/MEDICINE/ONCOLOGY/PATH/PHMCOL-M/POP HLTH 625 — TOXICOLOGY I
3 credits.
Basic principles of toxicology and biochemical mechanisms of toxicity in mammalian species and man. Correlation between morphological and functional changes caused by toxicants in different organs of the body.
Requisites: BIOCHEM 501, PHYSIOL 335, PATH 404 and PHM SCI 401
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2017
PHM SCI/M&ENVTOX/MEDICINE/PATH/PHMCOL-M/POP HLTH 626 — TOXICOLOGY II
3 credits.
Survey of the basic methods and fundamental biochemical mechanisms of toxicity. Toxicity in mammalian organ systems, techniques for evaluating toxicity, as well as mechanisms of species specificity, and environmental interactions (with toxicant examples) are presented.
Requisites: MENVTOX/MEDICINE/ONCOLOGY/PATH/PHMCOL-M/PHM SCI/POP HLTH/M&ENVTOX/MEDICINE/ONCOLOGY/PATH/PHM SCI/PHMCOL-M 625
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2017

PHM SCI 679 — PHARMACOLOGY AND TOXICOLOGY SEMINAR
1 credit.
Senior student presentations of independent research or of published papers on a specific topic approved by the course coordinator. Faculty-led seminars on selected topics regarding responsible conduct of research. The course also provides a venue for career talks by Pharmacology and Toxicology alumni and guests working in a variety of professional settings - research, industry (pharmaceutical; biotech; contract research; consumer products; etc.), a variety of healthcare professions, and law.
Requisites: Declared in the Pharmacology and Toxicology undergraduate program
Repeatable for Credit: Yes, for 2 number of completions
Last Taught: Spring 2017

PHM SCI 691 — SENIOR THESIS
2 credits.
Individual study for seniors completing theses as arranged with a faculty member.
Requisites: Consent of instructor
Repeatable for Credit: No
Last Taught: Fall 2010

PHM SCI 692 — SENIOR THESIS
2 credits.
Individual study for seniors completing theses as arranged with a faculty member.
Requisites: Consent of instructor
Repeatable for Credit: No
Last Taught: Spring 2011

PHM SCI 699 — ADVANCED INDEPENDENT STUDY
3 credits.
Directed study projects as arranged with a faculty member.
Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

PHM SCI 760 — GRADUATE STUDENT SEMINAR IN DRUG DELIVERY
1 credit.
Students present original laboratory research or review literature in the setting of their fellow graduate student colleagues and the drug delivery faculty.
Requisites: Declared in Pharmaceutical Sciences graduate program
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2009

PHM SCI/CHEM 766 — MOLECULAR RECOGNITION
2-3 credits.
Requisites: CHEM 561
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2017

PHM SCI 768 — PHARMACOKINETICS
3 credits.
Quantitative aspects of drug absorption, distribution, metabolism, and excretion. Philosophy and applications of pharmacokinetic modeling and its use in clinical practice.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2017

PHM SCI 773 — MOLECULAR SOLIDS
2 credits.
Describes the structures, properties, formation, and transformation of molecular solids, with emphasis on pharmaceutical solids. In each area, relevant theory, experiments, and case studies are presented.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2016

PHM SCI 775 — POLYMERIC DRUG DELIVERY
2 credits.
Introduction to polymers used in drug delivery, specifically polymers used in the spatial and temporal control of drugs. Discussion of basic reactions for the synthesis of polymers, biodegradable polymers, water-soluble polymer-drug conjugates, polymer assembly and nanoscale devices, and stimuli-sensitive polymers.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2015
PHM SCI 780 — PRINCIPLES OF PHARMACEUTICAL SCIENCES
3 credits.
Introductory-level graduate course providing overview of the drug
development process, involving drug discovery, drug action, and
drug delivery. Exposes students to cutting-edge research and the
chemistry, biology, physical chemistry, and engineering that underpin
pharmaceutical sciences research.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework
requirement
Repeatable for Credit: No
Last Taught: Fall 2017

PHM SCI 786 — NATURAL PRODUCT SYNTHESIS, BIOSYNTHESIS AND
DRUG DISCOVERY
3 credits.
Synthesis and biosynthesis of natural products in drug discovery. Topics
include: natural products in drug discovery; biosynthetic pathways
and synthetic strategies for major natural product classes; and basic
bioorganic chemistry and enzyme mechanisms in biosynthesis.
Requisites: CHEM 345 and BIOCHEM 508
Course Designation: Grad 50% - Counts toward 50% graduate coursework
requirement
Repeatable for Credit: No
Last Taught: Spring 2017

PHM SCI/B ME 801 — SEMINAR ON DEVELOPMENT OF MEDICAL
DEVICES AND DRUGS
1 credit.
An overview of three major sectors of medical product and technology
development including pharmaceuticals, medical devices and
combination products. Regulatory framework, disclosure and patenting,
technical design and development strategy, academia-specific
development challenges will be among the major lecture topics.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework
requirement
Repeatable for Credit: No

PHM SCI 890 — HIGHLIGHTS AT THE CHEMISTRY-BIOLOGY INTERFACE I
1 credit.
Principles of key discoveries at the chemistry-biology interface. This
course is required of all Chemistry-Biology Interface trainees.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework
requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

PHM SCI 891 — HIGHLIGHTS AT THE CHEMISTRY-BIOLOGY INTERFACE II
1 credit.
Principles of key discoveries at the chemistry-biology interface. This
course is required of all Chemistry-Biology Interface trainees.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework
requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2017

PHM SCI 931 — PHARMACEUTICAL SCIENCES SEMINAR
1 credit.
Weekly series that provides exposure to a diverse array of research
topics. Students enroll in one of three sections, corresponding to their
research core (Drug Action, Drug Discovery, or Drug Delivery). Students
in their 2nd year and beyond present their research progress or review
literature. The course includes talks from nationally and internationally
recognized scientists from academia and industry.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework
requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

PHM SCI 932 — PHARMACEUTICAL SCIENCES SEMINAR
1 credit.
Weekly series that provides exposure to a diverse array of research
topics. Students enroll in one of three sections, corresponding to their
research core (Drug Action, Drug Discovery, or Drug Delivery). Students
in their 2nd year and beyond present their research progress or review
literature. The course includes talks from nationally and internationally
recognized scientists from academia and industry.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework
requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2017

PHM SCI 990 — RESEARCH
1-12 credits.
Independent research and writing for graduate and students under the
supervision of a faculty member.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework
requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

PHM SCI 999 — ADVANCED INDEPENDENT STUDY
1-12 credits.
Directed study projects for graduate students as arranged with a faculty
member.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework
requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017