

PHARMACOLOGY

<http://www.med.uvm.edu/pharmacology>

OVERVIEW

The objective of the Department of Pharmacology Master's Programs is to provide a broad knowledge base of pharmacological concepts, preparing students for careers in Pharmaceutical, biotechnology and related industries; or to increase their competitiveness to pursue additional graduate or professional degrees.

Research interests in the Department of Pharmacology are diverse, with special emphasis on cardiovascular and cerebrovascular pharmacology, physiology, neurovascular coupling, signal transduction, and medicinal chemistry/cancer chemotherapy.

The Department of Pharmacology offers thesis-based and non-thesis Master of Science degrees. The non-thesis M.S. degree involves taking 30 credits of required and elective Pharmacology or Pharmacology-approved courses and does not require a thesis or thesis defense. The thesis-based M.S. degree is a course and research-based program, with 15 credits in coursework and a maximum of 15 credits of research. Students may choose thesis advisors from within the Department of Pharmacology, or with approval from the Program Director, may choose faculty from outside of the Department. This gives students a wide range of options for selecting thesis advisors conducting pharmacology research. Students in the thesis-based track will write and defend a thesis.

Students can enter the thesis or non-thesis Pharmacology Master's programs by 1 of 2 mechanisms: 1st is the Traditional Master's Degree Program involving an approximately 2-year program of study. This program is available to all applicants. 2nd is the Accelerated Entry Master's Degree Program (AMP). This program is available exclusively to UVM undergraduate students with Senior standing and allows initiation of their Master's Degree studies prior to completion of their undergraduate degree and is designed to provide the opportunity to initiate their Master's Degree. Students entering the AMP can share up to 9 credits between their graduate and undergraduate degrees, thereby decreasing both the time and cost of completing the Master's Degree.

In addition to the Pharmacology M.S. and Accelerated Master's Program (AMP), the Pharmacology faculty participate in interdisciplinary doctoral programs in Neuroscience, and Cellular, Molecular, and Biomedical Sciences found elsewhere in this Catalogue.

DEGREES

Pharmacology AMP

Pharmacology M.S.

FACULTY

Carr, Frances Eileen; Professor, Department of Pharmacology; PHD, University of Illinois Chicago

Dostmann, Wolfgang R. G.; Professor, Department of Pharmacology; PHD, University of Bremen; MD, University of Munich

Erdos, Benedek; Associate Professor, Department of Pharmacology; MD, PHD, Semmelweis University, School of Medicine, Budapest, Hungary

Glass, Karen C.; Associate Professor, Department of Pharmacology; PHD, University of Vermont

Harraz, Osama F.; Assistant Professor, Department of Pharmacology; PHD, University of Calgary

Herrera, Gerald M.; Assistant Professor, Department of Pharmacology; PHD, University of Vermont

Howe, Alan K.; Professor, Department of Pharmacology; PHD, Northwestern University

Klug, Nicholas; Assistant Professor, Department of Pharmacology; PHD, University of California, Davis

Koide, Masayo; Research Assistant Professor, Department of Pharmacology; PHD, University of Shizuoka

Lounsbury, Karen M.; Professor, Department of Pharmacology; PHD, University of Pennsylvania

Nelson, Mark; Professor, Department of Pharmacology; PHD, Washington University in St Louis

Wellman, George C.; Professor, Department of Pharmacology; PHD, University of Vermont

Courses

PHRM 5400. Molecules & Medicine. 3 Credits.

This course conveys an understanding about drug design and the molecular mechanisms by which drugs act in the body. It highlights the importance of medicinal chemistry as it overlaps with the disciplines of Chemistry, Biochemistry, Microbiology, Cell Biology, and Pharmacology. Prerequisites: Organic Chemistry, Biology; permission.

PHRM 5720. Gr Toxicology. 3 Credits.

Provides an understanding of the chemical, biochemical and physiological factors that determine the pathological effects of chemicals in living systems. Credit not awarded for both PHRM 5720 and PHRM 3720. Prerequisite: Introductory Biology or Organic Chemistry.

PHRM 5900. Gr Adv Pharmacology Topics. 3 Credits.

Focuses on basic pharmacological principles, drug interactions with receptors, membranes, synapses, neurotransmitters, macromolecules, ion channels, the cytoskeleton, and membrane pumps. Recent studies of the molecular and cellular mechanisms of drug action are discussed, and state-of-the-art techniques for pharmacological analysis of various cellular target molecules are described. Credit not awarded for both PHRM 5900 and PHRM 3900. Prerequisite: Introductory Biology or Biochemistry or Instructor permission.

PHRM 6010. Applied Systems Pharmacology. 3 Credits.

A systems approach to basic and applied pharmacology, including pharmacokinetic and pharmacodynamic principles, drug receptors and mechanisms, and clinically relevant adverse effects. Develops skills in diagnostic reasoning and evidence-based medicine. Prerequisite: Graduate student or Instructor permission.

PHRM 6020. Pharmacological Techniques. 1-4 Credits.

Experiments conducted under supervision in the areas of drug metabolism, modes of drug action, physicochemical properties of drugs, bioassay, and toxicology. Thesis Master's students limited to three credits.

PHRM 6050. Milestones in Pharmacology. 2 Credits.

A critical readings class where students read and present landmark pharmacology papers and link them to modern experiments and clinical applications. Co-requisite: PHRM 3010 or Graduate student.

PHRM 6060. Medical Cell Biology. 3 Credits.

Explores the structure and function of eukaryotic cells in multicellular organisms with a special emphasis on the human model. Appropriate for graduate students who have a strong background in biology and chemistry and students with an interest in pursuing health-related fields. Prerequisite: Graduate student, AMP student, or Instructor permission.

PHRM 6080. Integrative Physiol. & Pharm.. 3 Credits.

Intended for students pursuing careers in basic scientific research or health-related fields, designed to combine general physiological principles with examples of disease-based pathophysiology and targeted pharmacological approaches. Case studies will emphasize the impact of these processes on human function. Pre/Co-requisites: Two semesters of Chemistry, two semesters of Physics, a background in Biology/Physiology or Health Sciences.

PHRM 6391. Master's Thesis Research. 1-18 Credits.

Research for the Master's Thesis.

PHRM 6730. Readings in Pharmacology. 2 Credits.

Intensive directed reading in one area of Pharmacology. Pharmacology students must choose a topic outside thesis research area. Term paper and seminar on selected topic required. Prerequisite: Instructor permission.

PHRM 6810. Seminar. 1 Credit.

Current developments in Pharmacology are presented for discussion by students. Prerequisite: Instructor permission.

PHRM 6900. Medical Master's Capstone. 1-2 Credits.

Students advance their fundamental knowledge in Biochemistry, Pharmacology, and Physiology by addressing therapeutic applications in a discussion format. Students will choose and research current clinical problems and will communicate new molecular strategies through formal presentations. Prerequisites: BIOC 6001, MPBP 6010; Medical Science Graduate student; or Instructor permission.

PHRM 6990. Special Topics. 1-18 Credits.

See schedule of courses for specific titles.

PHRM 6991. Internship. 1-18 Credits.

On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

PHRM 6993. Independent Study. 1-18 Credits.

A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

PHRM 6995. Graduate Independent Research. 1-18 Credits.

Graduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

PHRM 7491. Doctoral Dissertation Research. 1-18 Credits.

Research for the Doctoral Dissertation.

PHRM 7990. Special Topics. 1-18 Credits.

See Schedule of Courses for specific titles.