

PHARMACOLOGY

<http://www.med.uvm.edu/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 21 credits in coursework and 9 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. A thesis is written and there is a defense.

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 and is designed to provide the opportunity to initiate their Master's degree while still an undergraduate student and use up to 9 credits of graduate coursework towards both their bachelor's and master's 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 (<http://catalogue.uvm.edu/graduate/pharmacology/pharmacologyamp/>)
- Pharmacology M.S. (<http://catalogue.uvm.edu/graduate/pharmacology/pharmacologymys/>)

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; Assistant Professor, Department of Pharmacology; MD, PHD, Semmelweis University, School of Medicine, Budapest, Hungary

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

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

Morielli, Anthony D.; Associate Professor, Department of Pharmacology; PHD, University of California Santa Cruz

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 200. Medical Cannabis. 3 Credits.

An introduction to the pharmacology underlying recreational and medicinal uses of Cannabis. Focuses on Cannabis taxonomy, chemistry of cannabinoids, physiological effects, and emerging therapeutic applications. Discusses historical, political and socio-economic influences on medical marijuana legislation. Prerequisite: BCOR 103, NSCI 110, NSCI 111 or PHRM 201, or Instructor permission.

PHRM 201. Introduction to Pharmacology. 3 Credits.

This course will focus on biochemical and physiological actions of prototype drugs used in the treatment and prevention of human diseases. Prerequisite: Introductory courses in Biology and Organic Chemistry.

PHRM 240. 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: Intro to Organic Chemistry, Intro to Biology; Permission.

PHRM 272. Toxicology. 3 Credits.

This course is intended to provide an understanding of the chemical, biochemical and physiological factors that determine the pathological effects of chemicals in living systems. Prerequisites: Organic chemistry, background in Biology, or Instructor permission.

PHRM 290. Topics Molecular&Cell Pharm. 3 Credits.

Focuses on basic principles, drug interactions with receptors, membranes, synapses, neurotransmitters, macromoles, cytoskeleton, ion channels and pumps, and mechanisms of drug resistance. Prerequisite: Introductory course in organic chemistry, background in physiology or health sciences.

PHRM 301. Medical Pharmacology. 6 Credits.

All topics for a conventional course in pharmacology for medical students or health science students. General pharmacokinetic and pharmacodynamic principles, treatment rationales and adverse effects.

PHRM 302. 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 masters students limited to three credits.

PHRM 305. 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-requisites: PHRM 201 or Graduate standing.

PHRM 308. 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, and a background in biology/physiology or health sciences.

PHRM 372. Special Topics. 1-3 Credits.

Topics of current interest and importance in pharmacology are considered in depth through presentations by staff, students, and visiting scientists. Prerequisite: Instructor Permission. Credit variable.

PHRM 373. 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 381. Seminar. 1 Credit.

Current developments in pharmacology are presented for discussion by students. Prerequisite: Instructor Permission.

PHRM 390. Medical Master's Capstone. 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: Graduate Student standing in Medical Science program; BIOC 301, MPBP 301, or Instructor permission.

PHRM 391. Master's Thesis Research. 1-12 Credits.**PHRM 392. 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 393. 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 394. Independent Graduate 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 396. Advanced Special Topics. 1-18 Credits.

See schedule of courses for specific titles.

PHRM 491. Doctoral Dissertation Research. 1-12 Credits.**PHRM 496. Advanced Special Topics. 1-18 Credits.**

See Schedule of Courses for specific titles.