Pharmacology

Chair
- Curt D. Sigmund

Faculty: https://medicine.uiowa.edu/pharmacology/people
Website: https://medicine.uiowa.edu/pharmacology/

The Department of Pharmacology provides professional training for health science students and participates with other departments in educational and research activities such as the Medical Scientist Training Program, the Physician Scientist Training Pathway, the Molecular Medicine Program, the Neuroscience Program, the Holden Comprehensive Cancer Center, the Abboud Cardiovascular Research Center, and the UI Fraternal Order of Eagles Diabetes Research Center.

The department was a pioneer in offering pharmacology to undergraduate students with little or no science background. Currently, undergraduates can enroll in PCOL:2120 Drugs: Their Nature, Action, and Use. This course emphasizes the mechanisms of drug action and give students a background for rational decisions concerning use of drugs.

Department of Pharmacology graduate study includes both didactic and research experience. Students interested in doctoral studies in pharmacology should apply under the umbrella program in Biomedical Science (pharmacology subprogram). Qualified students may pursue the combined M.D./Ph.D. in the University’s Medical Scientist Training Program.

Pre- and postdoctoral students pursue research training in all areas of pharmacology in the department in preparation for career opportunities in academia, government, and industry.

Programs

Graduate Programs of Study

Majors
- Master of Science in Pharmacology
- Doctor of Philosophy in Pharmacology

Students interested in doctoral studies in pharmacology should apply under the umbrella program in Biomedical Science (pharmacology subprogram). Direct applications to the M.S. and Ph.D. in pharmacology are not currently being considered.

Courses

Pharmacology Courses

PCOL:2120 Drugs: Their Nature, Action, and Use 2 s.h.
Principles of drug action, toxicity, sedatives, stimulants, hallucinogens, narcotics, over-the-counter agents, antibiotics, and oral contraceptives. Offered spring semesters. Requirements: closed to students enrolled in the Pharm.D. program.

PCOL:4130 Drug Mechanisms and Actions 3 s.h.
Introduction to principles of pharmacology, pharmacologic actions of drugs. Offered spring semesters. Requirements: undergraduate biochemistry and physiology courses.

PCOL:4199 Undergraduate Research in Pharmacology arr.
Experimental research under faculty supervision in department laboratories. Offered fall and spring semesters.

PCOL:5135 Principles of Pharmacology 1 s.h.
Basic pharmacological principles underlying drug absorption, drug distribution throughout the body, drug metabolism, and drug elimination; how these processes determine drug dosing and the means by which dosing parameters are characterized; drug receptor interactions and their quantitation. Offered spring semesters.

PCOL:5136 Pharmacogenetics and Pharmacogenomics 1 s.h.
Impact of genetic variation on the actions and metabolism of drugs; database search techniques to identify variants. Offered spring semesters. Prerequisites: PCOL:5135.
Recommendations: undergraduate or graduate biochemistry and/or genetics.

PCOL:5137 Neurotransmitters 1 s.h.
Mechanisms of neurotransmission focusing on mechanisms of synthesis, regulation of release, mechanisms of action, means of degradation, and CNS pathways for major neurotransmitters; disease states involving various neurotransmitter systems. Offered spring semesters.

PCOL:5204 Basic Biostatistics and Experimental Design 1 s.h.
Overview of theory of experimental design and data analysis in biological sciences; types of analyses available for common types of data generated in biomedical sciences; review of statistical methods used in published studies; cursory coverage of mathematical computations involved in various analytical tests. Offered fall semesters.

PCOL:6015 Topics in Neuropharmacology 1 s.h.
Recent advances in neuropharmacology, developmental neurobiology, neuroendocrinology, and related neurosciences. Offered fall semesters.

PCOL:6020 Topics in Pharmacogenomics 1 s.h.
Recent advances in pharmacogenomics, pharmacogenetics, and related genetic fields. Offered fall semesters.

PCOL:6025 Topics in Cell Signaling and Cancer 1 s.h.
Recent advances in cell signaling mechanisms, mechanisms of cancer, cancer biology, and related sciences. Offered spring semesters.

PCOL:6030 Topics in Cardiovascular Pharmacology 1 s.h.
Recent advances in cardiovascular pharmacology, metabolic pharmacology, and related sciences. Offered spring semesters.

PCOL:6080 Pharmacology Seminar 1 s.h.

PCOL:6090 Graduate Research in Pharmacology arr.

PCOL:6099 Special Topics in Pharmacology arr.

PCOL:6203 Pharmacology for Graduate Students 6 s.h.
Principles of pharmacology, pharmacologic actions of drugs, correlation with therapeutic uses. Offered fall semesters. Prerequisites: BIOC:5243 and MPB:5153.

PCOL:6204 Pharmacology for Health Sciences: Nurse Anesthetist 5 s.h.
Principles of pharmacology; pharmacologic actions of drugs, correlation with therapeutic uses. Offered fall semesters. Prerequisites: ACB:6000 or NURS:6000. Requirements: enrollment in Anesthesia Nursing Program.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCOL:6207</td>
<td>Ion Channel Pharmacology</td>
<td>1</td>
<td>Heuristic, semiquantitative approach to concepts in ion channel physiology and pharmacology; up-to-date physical principles, classification, and structure/function relationships for major voltage-gated ion channels that facilitate application of abstract concepts to physiological, pharmacological, and general biological problems. Offered spring semesters.</td>
</tr>
<tr>
<td>PCOL:6208</td>
<td>G Proteins and G Protein-Coupled Receptors</td>
<td>1</td>
<td>Structure and function of small molecular weight and G proteins; heteromeric G proteins and G protein-coupled receptors. Offered spring semesters of even years. Prerequisites: BIOC:5243. Recommendations: MMED:6225.</td>
</tr>
<tr>
<td>PCOL:6209</td>
<td>Steroid Receptor Signaling</td>
<td>1</td>
<td>Structure-function relationship and genomic and nongenomic actions of the steroid hormone receptor family; basis for actions of novel new ligands on these receptors. Offered spring semesters of even years. Same as MPB:6209, NSCI:6209.</td>
</tr>
<tr>
<td>PCOL:6250</td>
<td>Advanced Problem Solving in Pharmacological Sciences</td>
<td>1</td>
<td>Discussion of methodologies, strategies, and approaches commonly used to solve pharmacological sciences problems; use of interpersonal problem-solving skills to develop experimental study plans for solving contemporary scientific problems in pharmacology. Offered fall and spring semesters.</td>
</tr>
<tr>
<td>PCOL:8180</td>
<td>Pharmacology for Pharmacy Students I</td>
<td>1</td>
<td>Principles of pharmacology, drug and toxic mechanisms; systemic and organ-specific pharmacologic and toxic responses. Offered fall semesters. Requirements: second-year Pharm.D. enrollment or graduate standing.</td>
</tr>
<tr>
<td>PCOL:8181</td>
<td>Pharmacology for Pharmacy Students II</td>
<td>2</td>
<td>Continuation of PCOL:8180. Offered spring semesters. Prerequisites: PCOL:8180. Requirements: second-year Pharm.D. enrollment or graduate standing.</td>
</tr>
<tr>
<td>PCOL:8182</td>
<td>Pharmacology for Pharmacy Students III</td>
<td>1</td>
<td>Continuation of PCOL:8181. Offered fall semesters. Prerequisites: PCOL:8180 and PCOL:8181. Requirements: third-year Pharm.D. enrollment or graduate standing.</td>
</tr>
<tr>
<td>PCOL:8240</td>
<td>Basic Pharmacology for Dental Students</td>
<td>3</td>
<td>Principles of pharmacology, pharmacologic actions of drugs, correlation with therapeutic uses. Offered spring semesters. Prerequisites: BIOC:8101 and MPB:8115. Requirements: D.D.S. enrollment.</td>
</tr>
</tbody>
</table>