Biomedical Science, PhD

Pharmacology

The Doctor of Philosophy in biomedical science with a pharmacology subprogram requires a minimum of 72 s.h. of graduate credit. Students must maintain a cumulative grade-point average of at least 3.00 to earn the degree.

Qualified students who are interested in earning the Doctor of Medicine along with the PhD may apply to the Medical Scientist Training Program in a combined MD/PhD program. Students have the opportunity to tailor their curriculum with courses that enhance their educational goals. They take a combination of graduate courses that include seminar courses.

The PhD in biomedical science with a pharmacology subprogram requires the following coursework.

Core Pharmacology Curriculum

Course #	Title	Hours
BMED:5207	Principles of Molecular and Cellular Biology	3
BMED:7270	Scholarly Integrity/ Responsible Conduct of Research I	0
BMED:7271	Scholarly Integrity/ Responsible Conduct of Research II	0
MPB:5153	Graduate Physiology	4
PCOL:5130	Fundamentals of Pharmacology	3
PCOL:5204	Basic Biostatistics and Experimental Design	1
PCOL:6203	Pharmacology for Graduate Students	5
PCOL:6210	Receptors and Cell Signaling	3
PCOL:6250	Advanced Problem Solving in Pharmacological Sciences	1

Typical Curriculum

First Year, Fall

Course #	Title	Hours
BMED:5207	Principles of Molecular and Cellular Biology	3
BMED:5208	Topics in Principles of Molecular and Cellular Biology	1
BMED:7777	Biomedical Science Seminar	1
BMED:7888	Biomedical Science Research	arr.
MPB:5153	Graduate Physiology	4
PCOL:5204	Basic Biostatistics and Experimental Design	1

First Year, Spring

Course #	Title	Hours
BMED:7777	Biomedical Science Seminar	1
BMED:7888	Biomedical Science Research	arr.
MMED:6260	Methods for Molecular and Translational Medicine	1
PATH:5270/ IGPI:5270/ MMED:5270	Pathogenesis of Major Human Diseases	3
PCOL:5130	Fundamentals of Pharmacology	3
PCOL:6250	Advanced Problem Solving in Pharmacological Sciences	1
PHAR:6504	Mastering Reproducible Science	1

Second Year, Fall

Course #	Title	Hours
BMED:7270	Scholarly Integrity/ Responsible Conduct of Research I	0
PCOL:6015	Topics in Pharmacology and Neuroscience	1
PCOL:6080	Pharmacology Seminar	1
PCOL:6090	Graduate Research in Pharmacology	arr.
PCOL:6203	Pharmacology for Graduate Students	5

Second Year, Spring

Course #	Title	Hours
BMED:7271	Scholarly Integrity/ Responsible Conduct of Research II	0
PCOL:6015	Topics in Pharmacology and Neuroscience	1
PCOL:6080	Pharmacology Seminar	1
PCOL:6090	Graduate Research in Pharmacology	arr.
PCOL:6210	Receptors and Cell Signaling	3

Additional Requirements

Laboratory Rotations

Newly admitted students complete three 12-week laboratory rotations by the end of the second semester.

Seminar and Journal Clubs

In subsequent semesters, students enroll in PCOL:6015 Topics in Pharmacology and Neuroscience and PCOL:6080 Pharmacology Seminar.

Comprehensive Examination

The comprehensive examination process normally begins during the fourth semester and is completed during the fifth semester in the program. The exam consists of writing and defending a research proposal in an area not directly related to work being conducted by the student or in the laboratory of the student's mentor(s). During the oral defense, the Comprehensive Exam Committee may pose questions related to the written proposal and also may ask questions to

determine whether the student has broad knowledge in the pharmacological sciences.

Publication

A first-authored manuscript derived from a student's thesis research must be accepted for publication before the PhD is granted.

Final Examination

The final oral examination is a defense of the thesis and is conducted by the Thesis Committee, typically immediately after a thesis seminar.

Combined Programs

PhD/MD

Students may work toward the Doctor of Medicine degree and a PhD in biomedical science (pharmacology subprogram) in a combined degree program offered by the Graduate College and the Carver College of Medicine. Applicants must be admitted to both programs before they may be admitted to the combined degree program. See the Medical Scientist Training Program (Carver College of Medicine) in the catalog.