PHARMACEUTICAL SCIENCES (PHD) - BIOMOLECULAR SCIENCES

The Ph.D. in Pharmaceutical Sciences - Biomolecular Sciences can be completed with an emphasis in environmental toxicology, medicinal chemistry, pharmacology, and pharmacognosy.

Emphasis - Environmental Toxicology

The PhD in pharmaceutical sciences with emphasis in environmental toxicology prepares a graduate to perform independent research and solve problems related to environmental health issues. Graduates are likely to find careers in academics, industry or government service.

Course Requirements

The requirements for the Ph.D. with emphasis in environmental toxicology consist of a minimum of 15 core course hours:

- Graduate Student Survival Strategies (BMSC 6010) (2 hours);
- Principles of Pharmacology and Toxicology I (PHCL 6751) (4 hours);
- Environmental Toxicology (PHCL 5970) (2 hours);
- Biometry (BISC 5504) (4 hours);
- Advanced Topics in Toxicology (BMSC 7999A) (2 hours);
- Research Ethics (GRAD 6000) (1 credit);
- 5000/6000/7000-level electives (5000-level courses require adviser approval) (12 hours);
- Original Research Proposal (BMSC 6050) (1 hour).

Seminar Requirement

Students are required to register for BMSC 6430 (Z-grade) every semester, with the exception of those semesters in which the student presents a seminar and instead registers for BMSC 6410 (graded). No more than 8 seminar hours can be used toward the 54 minimum total credit hours

A minimum of 18 hours of dissertation research must also be taken to meet degree requirements.

Other Academic Requirements

Original Research Proposal

A student must prepare, submit, and successfully (orally) defend an original research proposal (ORP). Procedures for this requirement will be provided by the department. Students will register for BMSC 6050 (Original Research Proposal BioMolecular Sciences) in the semester they anticipate defending their ORP.

Dissertation

A student must prepare and orally defend a dissertation based on original, independent research in partial fulfillment of their Ph.D. degree.

Emphasis - Medicinal Chemistry

A Ph.D. in pharmaceutical sciences with emphasis in medicinal chemistry prepares a graduate to perform basic and applied interdisciplinary research in drug discovery and development using the tools of computational chemistry, synthetic chemistry, and biological evaluation. Current faculty research programs are focused in cancer, infectious disease, cardiometabolic disorders and neuroscience/drugs of abuse.

Course Requirements

The course requirements for the Ph.D. with emphasis in medicinal chemistry consist of:

- Graduate Student Survival Strategies (BMSC 6010) (2 hours);
- Advanced Medicinal Chemistry I (MEDC 5511) (3 hours);
- Organic Chemistry of Drug Synthesis (MEDC 5570) (3 hours);
- Problems in Medicinal Chemistry (MEDC 5910/5920) (1 hour);
- MEDC/PHCG/BMSC courses 6000/7000 level (12 hours);
- Elective courses 5000/6000/7000 level (6 hours);
- Original Research Proposal (BMSC 6050) (1 hour).

Seminar Requirement

Students are required to register for BMSC 6430 (Z-grade) every semester, with the exception of those semesters in which the student presents a seminar and instead registers for BMSC 6410 (graded). No more than 8 seminar hours can be used toward the 54 minimum total credit hours.

A minimum of 18 hours of dissertation research must also be taken to meet degree requirements.

Other Academic Requirements

Original Research Proposal

A student must prepare, submit, and successfully (orally) defend an original research proposal (ORP). Procedures for this requirement will be provided by the department. Students will register for BMSC 6050 (Original Research Proposal BioMolecular Sciences) in the semester they anticipate defending their ORP.

MALTO Presentation

All graduate students in the Ph.D. program will be required to present their original research in the form of a podium presentation at one of the annual MALTO Medicinal Chemistry Meetings-in- Miniature.

Dissertation

A student must prepare and orally defend a dissertation based on original, independent research in partial fulfillment of their Ph.D. degree.

Emphasis - Pharmacognosy

A Ph.D. in pharmaceutical sciences with emphasis in pharmacognosy prepares a graduate to do basic research in the study of bioactive natural substances found in terrestrial and marine organisms. In such research, a pharmacognosist works in the interdisciplinary worlds of chemical structure and function relative to biological structure and function. The field is devoted to the discovery and development of new agents in the treatment of diseases, and the program prepares students for academic or research positions in universities, and industrial or government institutions.

Course Requirements

Requirements for the Ph.D. with an emphasis in pharmacognosy include:

- Graduate Student Survival Strategies (BMSC 6010) (2 hours);
- Biosynthesis (PHCG 6270) (3 hours);
- Advanced Biochemistry (PHCG 6999A, or equivalent) (3 hours);
- 5000/6000/7000-level (5000-level courses require adviser approval) elective courses (19 hours);
- Original Research Proposal (BMSC 6050) (1 hour).

Seminar Requirement
Students are required to register for BMSC 6430 (Z-grade) every semester, with the exception of those semesters in which the student presents a seminar and instead registers for BMSC 6410 (graded). No more than 8 seminar hours can be used toward the 54 minimum total credit hours

Other Academic Requirements

Oral/Cumulative Exam
A student must design, write, submit, and successfully defend an Original Research Proposal (ORP). Procedures for this requirement will be provided by the department. Students will register for BMSC 6050 (Original Research Proposal - BioMolecular Sciences) in the semester they anticipate defending their ORP.

Dissertation
A student must prepare and orally defend a dissertation based on original, independent research in partial fulfillment of their Ph.D. degree.

Emphasis - Pharmacology

A Ph.D. in pharmaceutical sciences with emphasis in pharmacology is designed to prepare graduate students to apply understanding of basic pharmacology so as to strengthen their academic foundation and skills that lead to professional careers as pharmacologists. Graduates are likely to find careers positions within academic, industry or government service.

Course Requirements
The requirements for the Ph.D. in pharmaceutical sciences with an emphasis in pharmacology consist of:

- Graduate Student Survival Strategies (BMSC 6010) (2 hours);
- Principles of Pharmacology and Toxicology I (PHCL 6751) (4 hours);
- Principles of Pharmacology and Toxicology II (Phcl 6752) (4 hours);
- Biometry (BISC 5504) (4 hours);
- PHCL/BMSC/BISC/CHEM/ENGR or other courses at 5000/6000/7000-level electives (5000-level courses require adviser approval) (12 hours);
- Original Research Proposal (BMSC 6050) (1 hour);
- Research Ethics (GRAD 6000) (1 hour).

Seminar Requirement
Students are required to register for BMSC 6430 (Z-grade) every semester, with the exception of those semesters in which the student presents a seminar and instead registers for BMSC 6410 (graded). No more than 8 seminar hours can be used toward the 54 minimum total credit hours

A minimum of 18 hours of dissertation research must also be taken to meet degree requirements.

Other Academic Requirements

Original Research Proposal
A student must prepare, submit, and successfully (orally) defend an original research proposal (ORP). Procedures for this requirement will be provided by the department. Students will register for BMSC 6050 (Original Research Proposal BioMolecular Sciences) in the semester they anticipate defending their ORP.

Dissertation
A student must prepare and orally defend a dissertation based on original, independent research in partial fulfillment of their Ph.D. degree.