Doctor of Philosophy in Toxicology

Pharmacology and Toxicology both require an understanding of basic properties and actions of chemicals and the biological systems they affect. Toxicology is, more specifically, the study of adverse effects of chemicals on living systems, the extent of damage they produce, the relationship between dose and effect, routes of exposure, and potential treatments. Toxicologists not only identify toxins, but also contribute to risk assessment, safety evaluation, and establishment of legal regulations. Toxicologists perform many different duties including research in academic, nonprofit and industrial settings, and in consulting and public service.

The Doctor of Philosophy (Ph.D.) in Toxicology degree program prepares students for careers as independent scientists in academia, industry, or government through a broad-based curriculum and development of strong research design and communication skills. The Ph.D. didactic curriculum consists of a core of required discipline-based coursework, but is significantly individualized through advanced electives, seminars, extensive mentored research experiences, and consultation with the student’s selected advisory committee.

The application process is an online process. Application to this graduate program is facilitated through the Interdisciplinary Graduate Program in Biomedical Sciences (IGPBS). Detailed instructions on how to apply and the application deadlines are posted on the Interdisciplinary Graduate Program in Biomedical Sciences website http://www.kumc.edu/igpbs/how-to-apply.html.

Admission Requirements:

- Bachelor’s degree from a regionally accredited institution documented by submission of official transcript indicating the degree has been conferred before entering the program. Official transcripts from institutions attended post-baccalaureate are also required.

- A cumulative grade-point average (GPA) of at least 3.0 on a 4.0 scale for the bachelor’s degree.

- Applicants who are not native speakers of English, whether domestic or international, must demonstrate they meet the Minimum English Proficiency Requirement.

- A background check is required during the admission process; it may affect the student's eligibility to enter the program.

- An official copy of the Graduate Record Examination (GRE) score sent from Educational Testing Service (ETS) to University of Kansas Medical Center - ETS institutional code 6895.

- Three letters of recommendation.

- Prerequisite coursework:
  - One year of general chemistry
  - One year of organic chemistry or one semester of organic chemistry and one semester of biochemistry
  - One year of biological sciences
  - One semester of calculus
  - One semester of physics
  - Research experience (beyond labs associated with lecture courses) is strongly suggested.

Applicants will be assessed based on a combination of GPA, research experience, and GRE scores. Students not meeting the above requirements may be eligible for provisional admission. After an applicant has been admitted, a program may defer an applicant's admission for one year after which time the applicant must submit a new application.

Admission requirements are subject to change. In most cases, use the catalog of the year student entered the program. Other years’ catalogs

The program consists of coursework, research experience, and the successful completion of a doctoral dissertation. Dissertation research culminates in a final dissertation examination consisting of an oral presentation by the candidate and an examination by the faculty. Relevant prior graduate work is taken into consideration in setting up individual programs of study leading to the Ph.D.

Degree requirements:

- Degree requirements are normally completed within 6 years of admission to the program although a maximum of 8 years is allowed.

- Cumulative grade-point average (GPA) of at least 3.0 for all KU graduate coursework.

- Successful completion of the University’s Research Skills and Responsible Scholarship requirement prior to the semester the Oral Comprehensive Examination is scheduled.

- Successful completion of GS856 Introduction to Biomedical Research 1 and II (or equivalent) meets the Research Skills requirement.

- Successful completion of the Residence Requirement (http://catalog.ku.edu/graduate-studies/kumc/#programstext) requirement prior to the semester the Oral Comprehensive Examination is scheduled. The requirement is met by enrollment in full-time status a minimum of two semesters.

- Successful completion of the Final Oral Examination requirement.

- Enrollment in a minimum of one (1) credit hour of PTOX 999 Dissertation in Toxicology the semester the student will defend dissertation and graduate.

- Successful completion of the Final Oral Examination (http://catalog.ku.edu/graduate-studies/kumc/#programstext) requirement.

- Successful completion of the Post-Comprehensive Enrollment requirement.

- Successful completion of the Final Oral Examination (http://catalog.ku.edu/graduate-studies/kumc/#programstext) (dissertation defense.)

- Successful Dissertation Submission and Publication requirement (http://catalog.ku.edu/graduate-studies/kumc/#programstext) (according to Office of Graduate Studies policy.)

- Successful completion of the following Interdisciplinary Graduate Program in Biomedical Science (IGPBS) courses (or their equivalent):
GSMC 850  Proteins and Metabolism  2
GSMC 851  Molecular Genetics  2
GSMC 852  Introduction to Biomedical Research I  2
GSMC 853  Cellular Structure  2
GSMC 854  Cell Communication  2
GSMC 855  Introduction to Biomedical Research II  2
GSMC 856  Introduction to Research Ethics  1
GSMC 857  Biographics  1
GSMC 858  Introduction to Faculty Research  1
GSMC 859  Research Rotations  1-4

• Successful completion of the following Toxicology courses:
  PHCL 880  Essentials of Pharmacology  4
  PTOX 889  Research in Toxicology  1-10
  PTOX 898  Principles of Toxicology  1
  PTOX 917  Disposition of Xenobiotics  2
  PTOX 918  Toxicology  4
  PTOX 940  Techniques in Industrial Toxicology  2
  PTOX 990  Research for Dissertation in Toxicology  1-10
  PTOX 999  Dissertation in Toxicology  1-10

• Successful completion of a minimum of two elective courses that are at least two (2) credit hours each in consultation with the student's advisor and dissertation committee. Additional elective coursework may be taken as determined in consultation with the student's advisor.

Students enrolled in the MD-PhD Physician Scientist Training Program should review the Degree Requirements (http://catalog.ku.edu/medicine/combined-md-phd/#degreerequirementstext) section of this catalog for that program.

Degree requirements and course descriptions are subject to change. Any courses taken as an equivalent must be approved by the Graduate Director and the Office of Graduate Studies. In most cases, use the catalog of the year student entered the program.

Typical Plan of Study

Year 1

<table>
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<tr>
<th>Course</th>
<th>Hours Spring</th>
<th>Hours Summer</th>
<th>Hours</th>
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<td>2 GSMC 859</td>
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<td>GSMC 851</td>
<td>2 GSMC 854</td>
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GSMC 852 | 2 GSMC 855 | 2
GSMC 856 | 1 GSMC 859 | 1-4
GSMC 857 | 1
GSMC 858 | 1

Year 2

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Oral Comprehensive Exam scheduled as early as this semester if approved by committee to proceed.

Year 3

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Year 4

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Year 5

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<td>1-6 PTOX 999</td>
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Final Oral Exam (dissertation defense) scheduled semester approved by committee to defend and graduate.

Total Hours: 27-85