

ENVIRONMENTAL TOXICOLOGY, DOCTOR OF PHILOSOPHY

The admission criteria for applicants to the Doctor of Philosophy Degree Program in Environmental Toxicology are summarized below.

1. Applicants for the Ph.D. degree program in Environmental Toxicology must meet the requirements for admission to the Graduate School. To be considered, the applicant must have earned the master's degree in an appropriate field of the natural sciences or in an equivalent discipline acceptable to the admissions committee. Exceptional applicants without a master's degree may be granted a probationary admission but will be required to complete a total of eighteen (18) credit hours of coursework at the master's level in biology, chemistry, and/or the Environmental Toxicology Program as approved by the department.
2. Applicants who have earned the master's degree must have a cumulative 3.3 grade point average on a 4.0 scale in their graduate work.
3. Applicants must demonstrate acceptable proficiency in the use of the English language based upon performance on a standardized English Proficiency Test.
4. International applicants, in addition to the above requirements, must present a TOEFL score of at least 550 or appropriate evidence of proficiency in the English language.
5. The formal application must include the following:
 - a. A completed application form and a non-refundable application fee.
 - b. At least three (3) recommendations from persons qualified to give an evaluation of the applicant's past scholastic performance, research and scientific abilities, and personal motivation.
 - c. An official transcript of credits earned at all colleges and/or universities attended by the applicant.
 - d. International applicants must provide TOEFL scores.

Degree Requirements

The overall requirements for the Doctor of Philosophy Degree in Environmental Toxicology are summarized as follows:

1. Satisfactory performance on qualifying examinations.
2. Completion of a total of sixty (60) semester credit hours above the master's degree. A minimum of twelve (12) credit hours must be completed in core courses and a minimum of twelve (12) credit hours of electives must be completed. Thirty six (36) credit hours are required for research and dissertation.
3. Of the total 60 credit hours, not more than nine (9) (not including the dissertation) can be transferred into the program from another university. Such transferred credits must have been earned in a doctoral program and must be of grade "B" (3.00) or better.
4. Satisfactory performance on the comprehensive examination.
5. Completion of residency requirement.
6. Completion of the research for an acceptable dissertation.
7. Satisfactory performance on an oral examination covering the dissertation.

Qualifying Examination

After the student has completed the core coursework requirements and, if necessary, other background courses in biology, chemistry, and mathematics, he/she must pass the qualifying examination. These examinations will consist of subject matter contained in the core coursework. A student will be allowed two attempts to pass the qualifying examination and may petition to take them a third time. Students completing the Master of Science degree in Environmental Toxicology at TSU will be exempt from this requirement.

Residency Requirement

The residency requirement may be met by one of the following:

Enrollment in a minimum full-time course load in two consecutive semesters or a minimum full-time course load taken in a regular semester immediately preceding or following full-time enrollment in each of the summer terms.

Admission to Candidacy

As a condition for admission to doctoral candidacy, the student must complete all course work, except for the dissertation research, satisfy residency, pass the qualifying examination and successfully defend his/her research proposal.

Comprehensive Examination

A comprehensive examination is required of all doctoral students. It is recommended that the comprehensive examination be taken in the same semester of the student's dissertation defense. However, it can be taken after the all course work in the degree plan has been satisfied, the qualifying examinations have been passed and the dissertation proposal has been approved and accepted by the graduate school. The comprehensive examination will be composed of test items from the student's specialization area and questions from the basic core and related courses in environmental toxicology. The student will be allowed two attempts to pass the comprehensive examination and may petition the department to take it a third time.

Dissertation

The Ph.D. degree is primarily a research degree. The student is expected to demonstrate the ability to design a research project, implement it, contribute new knowledge to the field of study, and write an acceptable dissertation. The dissertation topic should be approved by the adviser and the dissertation committee.

The format of the dissertation, described in a booklet from the Office of the Graduate School, must be followed. The dissertation must be defended before the committee in an oral examination. Certification of successful completion of the oral examination requires the signature of all members of the dissertation committee. A student who fails the final oral examination on the dissertation may petition the Dean of the Graduate School through the department for a second attempt to pass the examination. All changes in the dissertation suggested by the committee after the Oral Examination must be made before the dissertation can receive the final approval of the Graduate School. In addition to the dissertation, the student is required to condense the dissertation or a portion of it into a paper suitable for publication in a refereed journal. This paper must accompany the dissertation when it is presented to the members of the committee. In addition, an abstract

not exceeding 350 words must be prepared for submission to University Microfilms Incorporated.

Curriculum Summary

The objective of the Environmental Toxicology program is to provide training which will enable students to apply the principles and methods of the physical and biological sciences to the study of toxicants as a basis for solving problems associated with the presence of toxicants in the environment. Although the emphasis in the master's program will be on course work, the Ph.D. degree curriculum is designed to produce graduates who are highly skilled in designing and implementing research studies, analyzing data, and applying results that may be used in the formulation of policies and plans for a healthier environment.

Students in both the M.S. and Ph.D. degree programs will study the properties, fate, biological effects, detection and regulation of natural and/or man-made toxicants present in the environment. Toxicants may include air, water and soil pollutants, such as pesticides, industrial chemicals, and poisons produced by microbes, plants, and animals. The program for Ph.D. degree students will have a strong emphasis on research.

Research Topics

Students may pursue research problems in the following areas:

- air
- water
- soil pollution
- genetic toxicology
- chemistry and fate of pesticides
- pathogenesis of toxicants
- risk assessment
- natural toxicants

Time Limit for the Doctor of Philosophy Degree

After being admitted to a program leading to the Doctor of Philosophy degree, a student will be allowed seven (7) calendar years in which to complete all of the requirements for the degree, including transferred credit and prior credit at Texas Southern University. Continuation in the doctoral degree program beyond the seven-year limit must be approved by the student's doctoral degree advisory committee and the dean of the Graduate School.

The maximum time allowed to complete the doctoral program, including an approved extension is nine (9) calendar years. This time limit does not include work done as part of the requirements for a master's degree or that needed to complete any course work deficiencies as noted by a probationary admission.

Core Courses (12 SCH)

Code	Title	Hours
ES 701	Principles of Toxicology	3
ES 702	Environmental Toxicology I	3
ES 703	Environmental Science	3
ES 704	Aquatic Resources & Pollution	3
ES 705	Environmental Policy & MGMT	3
ES 707	Ground Water Contamination	3

ES 902	Environmental Toxicology II	3
ES 906	Environmental Geology	3
ES 908	Sample Analysis	3
ES 910	Reproductive Toxicology	3
ES 913	Adv Simulation Modeling	3
ES 929	Toxicology III	3
ES 931	Ethics	3

Electives (12 Sch)

Code	Title	Hours
ES 711	Air Pollution	3
ES 718	Special Topics Environ Tox	3
ES 720	GIS for Environmental Sciences	3
ES 730	Introduction to Remote Sensing Image Processing	3
ES 909	Sample Analysis Laboratory	3
ES 912	Neurotoxicology	3
ES 914	Modeling Laboratory	3
ES 915	Adv Physical Chemistry	3
ES 916	Chemistry of Natural Products	3
ES 919	Special Topics	3
ES 920	Special Topics	3
ES 921	Sem in Envir Toxicology	2
ES 922	Sem in Envir Toxicology	2
ES 923	Sem in Envir Toxicology	2
ES 927	Biomedical Statistics	3
ES 930	Biochemistry	3
ES 933	Mutagenesis Carcinogenesis	3
ES 934	Molecular Basis of Gene Action	3
ES 935	Stat Aspects of Risk Assessment	3
ES 936	Occ & Environ Epidemiology	3

Dissertation (36 SCH)

Code	Title	Hours
ES 925	Research & Dissertation	3-12