Learning Outcomes

1. Students who graduate with a Ph.D. in Environmental Toxicology at UCR will have professional and specialized training to gain comprehensive and detailed knowledge in the scientific principles of toxicology with primary focuses upon the biology, chemistry, and mechanisms by which xenobiotics and natural toxins interact with the biosphere, including humans.

Methods of Assessment

A) Graduate advisor and admission committee examine the transcript of every incoming student to make sure they have satisfied the prerequisite of our program, which will prepare them well for the graduate courses required by the program.

Deficiency will be corrected within their first year in the program by taking the appropriate course work. The typical deficiencies we have seen in the past three years were Physical Chemistry from students with degrees in biological areas, and Molecular Biology and Statistics in students with Chemistry background. In general, students will take one quarter of the relevant upper division undergraduate courses within the first academic year.

B) Detailed knowledge and training are delivered and assessed in the forms of examination, presentation, term paper writing, etc. within the program coursework requirements.

Each student is required to complete three core courses (ENTX 200, 201, and 202) and two elective courses. Decision on which elective courses to take can be made by the PhD advisor and the guidance committee, in consideration of the intended research work the student will do for his/her PhD study. The graduate advisor will need to approve the selection.

C) At the end of their first year in our program, each student will take the preliminary examination to demonstrate their proficiency in understanding and integration of theoretical concepts of environmental toxicology.

The preliminary examination is a standardized written test offered prior to the beginning of Fall quarter. The students will be given a set of questions to work on that are related to environmental, organismal and sub-organismal aspects of toxicology. The questions are selected by the Preliminary Exam Committee. The exam is comprised of both an oral and written portion. In the written portion, the student will answer a few questions and a few days later, they will take the oral portion by being interviewed by the committee and answering their questions about the written answers.
2. Students who graduate with a Ph.D. in Environmental Toxicology at UCR will complete college teaching experience and communicate effectively in both scientific writing and oral presentation.

**Methods of Assessment**

A) Students serve as teaching assistants for undergraduate laboratory or lecture courses for at least two academic quarters during their Ph.D. studies. Our students teach courses in Life Sciences, Chemistry, and Environmental Sciences/Environmental Toxicology. Teaching evaluations are provided to students and to the program representative in the TA assignment committee, for consideration of whether the students are qualified TAs for life science courses. At the beginning of the academic year, every student will receive a reminder from the representative about serving their TA job seriously and performing well.

B) Each year, each student will present at the annual ETOX symposium for 10 (1st yr) or 20 (beyond 1st yr) minutes and summarize the research accomplishments made within the year. Three judges will evaluate the performance of each student and select the best ones for 4-5 awards given by the program. Students will also receive feedbacks from their research advisor and guidance committee members about their presentation for future improvement.

3. Students who graduate with a Ph.D. in Environmental Toxicology at UCR will have a dissertation research experience that leads to publications in scientific journals, presentations at scientific conferences, and a Ph.D. thesis, thereby contributing to their professional development and an expansion of knowledge in their field. Our graduates should be able to critically evaluate scholarly literature; integrate the information obtained from literature, identify novel and relevant research questions, and then develop effective research strategies.

**Methods of Assessment**

A) The guidance or dissertation committee makes annual assessments of students' progress including an evaluation of their research activities, their teaching, their professional presentations, publications and their dissertation.

   *The guidance / dissertation committee members are suggested by the Graduate Advisory Committee within the program and approved by the graduate advisor. The committee members are ETOX faculties who have expertise in the areas related to the student's PhD research work. The guidance committee will meet at the end of every academic year, i.e. in the summer, after the Annual Student Symposium, to discuss with the student about the progress of research work and the future plan. The student will prepare a report which contains information about research work progress, conference attending, and paper published. The committee will evaluate all reported activities to see whether the student has made satisfactory progress in the past year and make suggestions for improvement.*

B) Each student is required to pass the Qualifying Examination, an oral exam conducted by the qualifying committee, by the end of their 2nd year (for
international students to avoid paying non-resident tuition) and 3rd year (for domestic students).

The student will write a research proposal that describes primarily the background about the thesis research project, and describe the current research progress and future plan. During the oral examination, the student will present the proposal, and answer committee’s questions.

C) The dissertation committee members evaluate the quality of thesis in terms of research and scientific writing by reading the final dissertation and at an oral defense of the dissertation presentation.

4. Students who graduate with a Ph.D. in Environmental Toxicology at UCR will be well prepared for careers in academic, governmental or industrial positions.

Methods of Assessment

A) Students are encouraged to attend regional and national conferences and some would be supported by the travel grant provided by the program and UCR campus.

B) Information for the careers our graduates would enter after getting their PhD degrees and their feedbacks about how their trainings at UCR would be collected each year before the annual symposium and distributed to the students.

Each year, when preparing the brochure of the program’s Annual Symposium, we will reach out to our graduates and collect information about their current employment, as well as gather their comments on the program. The feedbacks are posted in a blog for program news accessible from our program website: http://etox-ucr.blogspot.com/. This is a good way to keep our current students connected with our previous graduates, and seek guidance and/or advice from their pioneers for solving problems seen in graduate studies, in job search at the time of graduation, etc.