# CHEMICAL AND ENVIRONMENTAL TOXICOLOGY (TOX)

## Courses in chemical and environmental toxicology (TOX) are offered by the Faculty of Science

### TOX 5129 Adverse Outcome Pathways: A Framework to Support the Modernization of Chemical Risk Assessment (3 units)

This course will introduce the Adverse Outcome Pathway (AOP) framework and how it can be used to support the integration of modern test methods (e.g. in silico, in vitro, high throughput, etc..) into the chemical risk assessment process. Students will first learn about current practices and recent advances in both human health and ecological chemical risk assessment. Then students will receive an advanced introduction to the AOP framework, including the theory of AOPs, how they can be used in regulatory toxicology for facilitating the use of mechanistic data, test paradigm development, and risk assessment, and training on best practices for contributing to the AOP knowledge base. This will include in-class case studies on AOP development and a final assignment where student will be responsible for developing a novel AOP for a specific toxicity.

**Course Component:** Lecture

### TOX 8156 Principles of Toxicology (3 units)

The basic theorems of toxicology with examples of current research problems. The concepts of exposure, hazard and risk assessment will be defined and illustrated with experimental material from some of the more dynamic areas of modern research. This course is equivalent to BIOL 6402 at Carleton University.

**Course Component:** Lecture

### TOX 8158 Environmental Chemistry and Toxicology (3 units)

Overview of environmental chemistry and toxicology principles including chemical sources, fate, and effects in the environment. Examining organic reactions occurring in abiotic environments and biological systems, study aspects of toxicant disposition and biotransformation. Emphasis on contemporary problems in human health and the environment.

**Course Component:** Lecture

### TOX 9104 Ecotoxicology (3 units)

Selected topics and advances in ecotoxicology with emphasis on the biological effects of contaminants. The potential for biotic perturbance resulting from chronic and acute exposure of ecosystems to selected toxicants will be covered along with the methods pesticide, herbicide and pollutant residue analysis and the concept of bound residues. This course is equivalent to BIOL 6403 at Carleton University.

**Course Component:** Lecture

### TOX 9105 Seminar in Toxicology (3 units)

A one-session course in seminar format highlighting current topics in toxicology. The student will present a seminar and submit a report on the seminar topic. Student, faculty and invited seminar speakers.

**Course Component:** Seminar

### TOX 9106 Genetic Toxicology (3 units)

Topics in mutagenesis and DNA repair, including spontaneous and induced mutagenesis, genetic toxicology testing, the genetics and biochemistry of replication, DNA repair and recombination, and the role of mutagens in the development of genetic disease and cancer. This course is equivalent to BIOL 6406 at Carleton University.

**Course Component:** Lecture

### TOX 9107 Toxicology and Regulation (3 units)

This course will help students develop the understanding and skills to apply research results in toxicology to real-world needs for the management of risks posed by environmental contaminants as well as the development of regulation and policy involving such management.

**Course Component:** Lecture