

## **TOX Toxicology**

### **TOX 508 RESEARCH METHODS IN TOXICOLOGY. (1-3)**

The course provides students with 'hands on' experience in research methods used to solve toxicological problems. Students will be under the direction of a GCT faculty member, who will supervise the student's efforts on a research project. The student will be trained not only in the 'hands on' techniques but also in how to independently design and interpret research experiments. Students will prepare a final report on their research project, which will be designed to provide instruction and training in preparing 'publication-style' research reports. This course is distinct from 'topical seminar' or 'library survey' courses, since such courses are not 'hands on' in experimental methods. May be repeated to a maximum of six credits. Laboratory, two-six hours per week.

Prereq: Status as upperclass undergraduate, post bac, or graduate student.

### **TOX 509 BIOCHEMICAL AND ENVIRONMENTAL TOXICOLOGY. (3)**

Presentation of basic and advanced concepts to provide an integrated description of toxicology, its scope, the unique application of principles that characterize it as a science, and its professional practice. Emphases will include the influence of federal regulations on the practice of toxicology.

Prereq: BCH 501 and PHA 522 or equivalents or consent of instructor.

### **TOX 560 ENVIRONMENTAL PHYSIOLOGY AND TOXICOLOGY. (4)**

Emphasis will be placed on the physiological and toxicological effects of chemicals on natural biota, including considerations at cellular, organismal, population, and community levels. This will include assimilation and metabolism of pollutants by animal species, with emphasis upon biochemical and physiological mechanisms involved in stress-induced responses and stress reduction. Additional areas of concern will include the transport, fate, and effects of chemical stressors on structure and function of biotic communities and will include introductions to ecotoxicology and environmental regulatory strategies. Lecture, three hours; recitation, two hours per week. Prereq: BIO 350 or PGY 502 or equivalent or consent of instructor. (Same as BIO 560.)

### **TOX 600 ETHICS IN SCIENTIFIC RESEARCH. (2)**

The course will commence with an overview of good laboratory practices and present them as the basis of good scientific research, along with an overview of quality assurance and appropriate practices in data analysis and data interpretation. The course will then move to the ethics of human and animal experimentation and discuss the concepts of data and intellectual property, their ownership and access to them. The problems of reviewing other workers' intellectual property such as grant applications, research papers and other intellectual property will be addressed. Prereq: Research experiences; consent of instructor. (Same as VS 600.)

### **TOX 649 ADVANCED MOLECULAR PHARMACOLOGY. (2)**

This course will provide in-depth coverage of the molecular pharmacology of growth factors, transcription factors, receptors, and ion channels. Emphasis will be placed on both the normal functions of these cell-signaling molecules and perturbations that result in several prevalent human diseases, including cancer, Alzheimer's, diabetes, osteoporosis, and inherited human illnesses. Students will be introduced to experimental approaches to diagnosing and treating these illnesses in

the light of our evolving knowledge of molecular pharmacology. Prereq: IBS 601-606 or consent of instructor. (Same as PHA/PHR 649.)

**TOX 670 CHEMICAL CARCINOGENESIS. (3)**

Lectures and discussion of the chemical and biochemical reactions of chemical carcinogens and their metabolites. Prereq: CHE 232; PHR 400; or BCH 501, 502. (Same as PHA 670.)

**TOX 680 MOLECULAR MECHANISMS IN TOXICOLOGY. (5)**

An intensive examination of the chemistry and action of substances which adversely affect living systems, and consideration of means of lessening their impact on man and the environment. Prereq: TOX 509 or consent of Director of Graduate Studies.

**TOX 690 PRACTICAL ANALYTICAL TOXICOLOGY. (3)**

An evaluation of techniques for the isolation, identification, and quantitation of drugs, pesticides and other toxicants in biological samples. Concepts and theory will be presented in the lecture portion, while the laboratory will be devoted to actual sample analysis by the students. Lecture, 1 hour; laboratory, six hours. Prereq: Consent of the instructor and graduate standing in toxicology. (Same as VS 690.)

**TOX 748 MASTER'S THESIS RESEARCH. (0)**

Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.

**TOX 749 DISSERTATION RESEARCH. (0)**

Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.

**TOX 767 DISSERTATION RESIDENCY CREDIT. (2)**

Residency credit for dissertation research after the qualifying examination. Students may register for this course in the semester of the qualifying examination. A minimum of two semesters are required as well as continuous enrollment (Fall and Spring) until the dissertation is completed and defended.

**TOX 768 RESIDENCE CREDIT  
FOR THE MASTER'S DEGREE. (1-6)**

May be repeated to a maximum of 12 hours.

**TOX 769 RESIDENCE CREDIT  
FOR THE DOCTOR'S DEGREE. (0-12)**

May be repeated indefinitely.

**TOX 770 TOXICOLOGY SEMINAR. (0-1)**

A specialized seminar focusing on current topics of toxicological significance. Registration each fall and spring semester required of all toxicology majors until residency requirements for the

degree have been completed. May be repeated to a maximum of three times during a semester and for a maximum number of two credits during entire graduate course work.

**TOX 780 SPECIAL PROBLEMS IN TOXICOLOGY. (2)**

Exposure to and actual research experience in an area of toxicology other than that encountered by students in their thesis and dissertation research. May be repeated to a maximum of six credits.

Prereq: Consent of graduate adviser.

**TOX 790 RESEARCH IN TOXICOLOGY. (1-12)**