Molecular and Environmental Toxicology 632, 633, 634
Ecotoxicology: Toxicant Effects on Ecosystems
Fall 2013

No. | Module Name                                      | Coordinator   | Contact Information                                |
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632 | Ecotoxicology: the chemical players             | Dr. Que Lan  | Entomology (263-7924) qlan@entomology.wisc.edu    |
     | September 4 – October 6                          |              |                                                    |
633 | Ecotoxicology: impacts on individuals           | Dr. William  | Forest & Wildlife Ecology (263-9319) wkarasov@wisc.edu |
     | October 7 – November 10                         | Karasov      |                                                    |
634 | Ecotoxicology: impacts on populations, communities, and ecosystems | Dr. Que Lan  | Entomology (263-7924) qlan@entomology.wisc.edu    |
     | November 11 – December 13                       |              |                                                    |

Note: all students are required to be knowledgeable of the fundamental conceptual information (general mechanisms, processes, and theory) presented in each of the preceding modules, whether or not they are taken for credit.

Teaching Assistants: Justin Clements jclements2@wisc.edu, Cherry Tsai <ytsai8@wisc.edu>

Time and Place:
12:05-12:55, Monday, Wednesday and Friday
Room 104 Russell Labs

Background:
Ecotoxicology is a multidisciplinary science that deals with the study of natural and synthetic toxicants, and the hazards they pose for biological systems. Ecotoxicology is unique within the field of toxicology for two reasons. First, it addresses the effects of toxicants on not only individual organisms, but also on populations, communities and ecosystems. Second, rather than emphasizing human health-related concerns, it emphasizes how toxicants affect the functioning of biological systems, including natural (e.g., lake, forest) and managed (e.g., food crop) systems. Natural and synthetic toxicants are increasingly recognized for their impact on the fundamental mechanisms and interactions of biological systems - their occurrence is ubiquitous, and their influence is pervasive.

Objectives:
The overall objective of this modular course is for students to understand the means by which natural and synthetic toxicants mediate interactions between and among organisms and their environment. Specific objectives are that students will understand:
2. Mechanisms of organisms that defend against natural and synthetic toxicants, and the consequences of these for species-selective action of toxicants.

4. Impacts of toxicants on population dynamics, community organization, and ecosystem structure and function.

5. Effects of toxicants on the population genetics and evolution of biological systems.

6. The relevance and importance of ecotoxicology for socio-economic concerns.

7. Present active research by UW faculty on the actions of toxicants in natural and model ecosystems.

Lectures, Discussions, Examinations:

In addition to lectures, each module contains at least one discussion period. These will be used to review and integrate preceding lectures and reading materials, and to provide overall synthesis; they are not review sessions for examinations. A list of discussion questions will be handed out prior to the meeting to be used as a framework for these discussions. Attendance and participation in discussions will be considered at the time of assignment of final grades.

Each module has one or more examinations (dates provided in module schedule). Exams will contain short-answer and essay questions, and may include an additional take-home synthesis question(s). Work turned in for take-home examinations must be solely your own. You must not discuss examination material with other students or examine their materials.

Module #2 (633) includes an assignment in which students in small groups organize a classroom presentation.

Course Web Page:

Course materials will be available via Learn@UW (http://LearnUW.wisc.edu). The lecture sequence, lecture handouts, assigned readings, problem sets and related information will be available at this site. Be sure to bring a printed set of the relevant lecture handout(s) to every class! Handouts available via the web will not be provided in class.

Readings:

The required text for the course is: Newman, M.C. (2010) Fundamentals of Ecotoxicology, CRC Press, 3rd edition. Additional reading assignments (book chapters, primary literature) will be made by participating faculty throughout the semester. Reading assignments will be listed on lecture outlines or on the course lecture schedule on Learn@UW.