

Syllabus

Risk Assessment and Human Health
Masters in Environmental Studies elective
Upper division undergraduate
Syllabus
Winter 2008

General Information

This elective class is offered within the context of liberal arts education at Evergreen and the interdisciplinary focus of the Masters in Environmental Studies program. As Evergreen students, you are learning to understand large-scale questions and their relationship to society; become "big picture" thinkers skilled at framing the larger issues that may drive thinking in public and private organizations; work in collaborative processes that enable you to span and build upon differences in theory and application; become strong critical thinkers and active listeners; learn to reason with objective quantitative tools; understand your own abilities as leaders, and communicate your ideas clearly, in both written and oral form. Therefore, you need to be equipped with the necessary knowledge that will help you approach the big picture informed and skilled.

This elective class is designed to offer you the basic foundation of the science and regulatory context used to determine risk and the tools that are often employed in estimating risk. We will explore the biological properties and toxicity of chemical substances and the driving forces behind their production and use in our global society. We will pose questions such as: What kind and how much health risk are humans facing? How do we evaluate risk? Who is at higher risk? How are scientists and regulators planning to protect people from the highest risks? How has our appreciation and response to health risk evolved? How can it be reduced?

During the course of the quarter, we will survey the principles of toxicology, properties of molecular structures in relation to their biological effects, the biochemical and physiological principles that are important in bioavailability, exposure assessment, and overall risk characterization, regulatory response and challenges.

Faculty information

Maria Bastaki
LAB I, 3008
X5264
Mail: LAB I
bastakim@evergreen.edu

Meeting location and time:

Mondays 6pm - 10pm
Sem II – A2107

Course material will include textbook, notes, peer-review articles, and research on websites of governmental agencies, professional societies and on public databases.

Textbooks

Main text reading:

Risk Assessment for Environmental Health
by The Association of Schools of Public Health (ASPH) (Author), Mark G. Robson (Editor),
William A. Toscano (Editor)
Publisher: Jossey-Bass

ISBN-10: 0787983195
ISBN-13: 978-0787983192

Other text - Highly recommended for those who are interested in future studies in Toxicology:

Casarett & Doull's Toxicology
by Klaassen Curtis D. and Watkins John B.
Publisher: McGraw-Hill Professional
ISBN: 0071347216

Additional materials for the class will be posted on the program's website
<http://www2.evergreen.edu/riskassessment/> and will be accessible to registered students.

Learning objectives

What is meant by risk in the context of environmental health?
What is acceptable risk and how is risk perceived?
Biological systems and functions
Principles of toxicology as they pertain to environmental chemicals
Toxicity testing methodologies
How exposure accounts for health risk and how is exposure assessed?
How is risk measured and assessed qualitatively and quantitatively?
What are the regulatory agencies and relevant regulations?

Assessment

You are responsible for your own intellectual development. Assessment of the above learning objectives and your comprehension will be based on your preparedness, participation and written responses to various assignments (quizzes, homework, final exam and final project).
Graduate credit will be earned based on a short research project on a topic chosen among a set of options. See project description for more information.

Class Structure and Assignments

Lecture: In lecture faculty will provide the framework for learning the material by introducing central concepts and ideas. Students are responsible for reading the assigned material before it is covered in lecture and bringing the textbook to lecture is also recommended. Attendance in all class activities is expected, as is appropriate classroom conduct.
See www.evergreen.edu/policies/governance.htm for Evergreen's Social Contract and Student Conduct Code.

Seminar: Seminar will be based on case studies and will be student-centered and student-led. Interpersonal dynamics have as much to do with a successful seminar as do preparedness and intellectual engagement in conversation. The class covenant will outline general hopes and expectations for seminar discussions.

Workshop: Workshop is designed to be a hands-on learning activity and will focus on specific skill areas that emphasize topics presented in lecture. All students are expected to participate and work on tasks designed by faculty.

Final exam: This will be a significant component of the program and will demonstrate

student learning and intellectual engagement in the class topics.

Class Portfolio: A final portfolio (usually a 3-ring binder) displaying student work in an organized and prideful manner is a requirement for credit. The final portfolio will be due on Monday of the tenth week and will be a significant resource for the faculty in crafting the language of student final evaluations. The portfolio should contain, in this order:

- A draft self-evaluation
- Workshops, assignments, and other homework
- Final exam
- Final project

Covenant

The class covenant will be posted on the web site mentioned above. Students who elect to register in the program agree to abide by conditions of this syllabus and of the covenant.

Access Services

If any student has a health condition or disability that may require accommodations in order to effectively participate in this class, please contact Access Services (x6348 or www.evergreen.edu/access/home.htm). Information about a disability or health condition will be regarded as confidential.

Inclement Weather

In the event of bad weather or emergencies students should check with television or radio stations for announcements of campus closures. Students can also call the main campus line 867-6000 to get the latest news regarding a campus closure or delay. Since many students in the program travel from relatively distant locations, faculty may decide to cancel program meeting even if campus is open. If we do this we will send an all-program email prior to 3:00 pm. Please check your evergreen email account for class-related communication.

Credit Equivalencies

2 Toxicology
2 Risk Assessment

Tentative topics outline

Week 1 – Jan. 7th

Overview and Introduction - Defining risk

Objectives of Risk Assessment

Reading: Main text Chapters 1-3; Toxicology Chapter 4

Week 2 – Jan. 14th

Basics of Toxicology

Dose-response

ADME

Reading: Main text Chapter 4; Toxicology Chapters 1-2

Seminar – TBD

Week 3 – Jan. 21st MLK Campus Holiday

No class

Week 4 – Jan. 28th

Toxicokinetics and PBPK

Reading: Main text Chapter 5; Toxicology Chapters 5 – 7

Seminar – TBD

Week 5 – Feb. 4th

Non-carcinogens

Toxicity and Risk calculations

Reading: Main text Chapter 6; Toxicology Chapter 3

Seminar – Case Study: Chapter 20

Week 6 – Feb. 11th

Carcinogens Risk calculations

Models of carcinogenesis

Radiation Risk Assessment

Reading: Main text Chapters 6 and 10; Toxicology Chapters 8, 25

Seminar – TBD

Week 7 – Feb. 18th Presidents Day Campus Holiday

No class

Week 8 – Feb. 25th

Toxicity testing

Molecular tools

Biomonitoring and Biomarkers

Reading: Main text Chapters 7 and 13;

Seminar – Case Study: Chapter 18

Week 9 – Mar. 3rd

Regulatory issues

Comparative Risk Assessment

Children's Risk Assessment

Reading: Main text Chapters 8, 12, and 14

Seminar – TBD

Week 10 – Mar. 10th

Risk communication

Precautionary principle

Reading: Main text Chapters 15 and 16

Seminar – TBD