

**Department of Environmental Health Science
College of Public Health
University of Georgia**

**EHSC 7510
Fundamentals of Chemical and Microbial Risk Assessment
Spring, 2008**

Course Information

Instructor: Mary Alice Smith, Ph.D.
Office Location: 201B Environmental Health Science Building
Phone: (706) 542-1599
Email: masmith@uga.edu
Office Hours: Tuesday and Thursday from 3:30-5:00 or by appointment
Course credit: 3 hrs

Course Meeting Time and Location

Building: Environmental Health Science Building
Room: Room 207
Day: Tuesday/Thursday
Time: 2:00-3:15 pm

Textbooks and Other Required Course Material

Required Text: There is no text, but required readings include material available on the web including "Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual (Part A) 1989, and other information listed below.

Webpage Information

Dr. Smith's Powerpoint Presentation – Web CT
Exposure Factors Handbook - www.epa.gov/ncea/pdfs/efh/front.pdf
Risk Assessment Guidance - <http://www.epa.gov/oswer/riskassessment/ragsa/>
Ecological Risk Assessment - <http://www.epa.gov/superfund/programs/nrd/era.htm>
Integrated Risk Information System (IRIS) – <http://cfpub.epa.gov/ncea/iris/index.cfm>
FDA/USDA/CDC Listeria monocytogenes risk assessment - <http://www.foodsafety.gov/~dms/lmr2-toc.html>
WHO/FAO Listeria monocytogenes risk assessment - http://www.who.int/foodsafety/publications/micro/mra_listeria/en/index.html
WHO/FAO Guidelines for Hazard Characterization - <http://www.who.int/foodsafety/publications/micro/en/pathogen.pdf>

Guest Speakers: Guest speakers will be invited to talk on their area of expertise as available.

Course Description

Prerequisite: Basic biology or permission of department

Course examines fundamental elements of risk assessment, chemicals and microorganism assessments, and assessment use by federal agencies. Risk assessments conducted and used by

international groups will be compared and evaluated. Includes a combination of lecture, case studies, critical discussions of primary literature, and a group risk assessment project.

Course Learning Objectives

This course is intended for graduate students at any level with an interest in chemical and/or microbial risk assessment. By the end of the course, the students will be able to:

- Describe the basic four elements (hazard identification, exposure assessment, hazard characterization, and risk characterization) of risk assessment
- Describe how each element in the risk assessment is analyzed and compiled for use in risk assessment
- Discuss the significance, reliability and interpretation of risk assessments
- Critically evaluate published chemical and microbial risk assessments
- Participate in group projects to conduct risk assessments of chemicals or microbial pathogens.
- Understand the importance of effective risk communication

Course Requirements for Grading Purposes

Grades will be based on the Projects that are due throughout the quarter, class presentations and participation, and the risk assessment project.

Project 1: Hazard Identification 10%

Project 2: Exposure Assessment 10%

Project 3: Toxicity Assessment 10%

Project 4: Risk Characterization 10%

Project 5: Human Health Risk Assessment 40%

In Class presentations and participation: 20%

Topical Outline

All academic work must meet the standards contained in "A Culture of Honesty." Students are responsible for informing themselves about those standards before performing any academic work.

General Principles of Risk Analysis Course Schedule

DATE	TOPIC	ASSIGNMENT
Jan 8	Overview of Fundamentals of Risk Assessment class	
Jan 10	Introduction to Risk Assessment http://reports.eea.europa.eu/GH-07-97-595-EN-C2/en/chapter5h.html	Env Risk Assessment: See internet link. RAGS, Chapt 1, 2, 3
Jan 15	Use of risk assessments in Federal Government, Regulations and Risk Assessment; Role of Risk Assessment Overview of mra: http://www.cdc.gov/ncidod/EID/vol3no4/lammer.htm	Powerpoint slides Lammerding and Paoli, 1997
Jan 17	Computer resources in Risk Assessment; IRIS, Exposure Factors Handbook, microbial risk assessments	Journal Articles Group assignments
Jan 22	Hazard Assessment; Chemicals of Potential Concern	RAGS, Chapt 4-5

DATE	TOPIC	ASSIGNMENT
Jan 24	Exposure Assessment	RAGS, Chapt 6
Jan 29	Exposure Assessment; Probabilistic Modeling	RAGS, Chapt 6
Jan 31	Student Presentations - Journal Articles in Risk Assessment	Journal Articles
Feb 5	Toxicity Assessment: Noncarcinogens, Reference Doses, Benchmark Doses	Journal Articles RAGS, Chapt 7
Feb 7	Dose Response Models; Benchmark Doses	RAGS, Chapt 7
Feb 12	Toxicity Assessment: Carcinogens	Journal Articles
Feb 14	Toxicity Assessment – Carcinogens	RAGS, Chapt 7
Feb 19	Use of epidemiology data in risk assessment	Journal article
Feb 21	Global Thresholds project – ILSI case study	Journal Articles RAGS, Chapt 7
Feb 26	Risk Characterization	Journal Articles
Feb 28	Student presentations of journal articles	RAGS Chapt 8, Handouts
Mar 4	Video – Are we scaring ourselves to death?	
Mar 6	Microbial Risk Assessments Similarities and differences to chemical risk assessment	http://rsi.ilsu.org/file/mrabook.pdf
Mar 10-14	Spring Break	
Mar 16-20	Society of Toxicology Meeting	
Mar 18	Work on Risk Assessment projects (in groups)	
Mar 20	Work on Risk Assessment projects (in groups)	
Mar 25	Microbial Risk Assessments Case Study: <i>Listeria monocytogenes</i>	http://www.foodsafety.gov/~dms/lmr2-toc.html
Mar 27	Student Presentations-Journal Articles in Risk Assessment	Journal Articles
Apr 1	Microbial Hazard Characterization: WHO/FAO Guidelines for Hazard Characterization - http://www.who.int/foodsafety/publications/micro/en/pathogen.pdf	Read WHO report
Apr 3	Risk Communication (Case study) RAGS, Supplement to Part A –Community Involvement in Superfund - Case Studies	RAGS, Supplement to Part A
Apr 8	Ecological Risk Assessment	Guidelines for ERA, EPA website
Apr 10	Risk Communication video Risk Communication- How to do it? Or, how not to do it?	Journal Articles RAGS, Supplement to Part A – Community involvement
Apr 15	Environmental Justice	EPA Environmental Justice Website
Apr 17	Analyzing and evaluating risk assessments	Journal Articles
Apr 22	Risk Management	RAGS

DATE	TOPIC	ASSIGNMENT
Apr 24	Student Presentations of Risk Assessment projects Risk Assessment Project Due	Last day of class

Grading Policy

Grades: Grades may be scaled, depending on the class average and will be assigned according to the following: 90 and above = A; 80-89 = B; 70-79 = C, 60-69 = D and below 60 = F. Minus and plus grades may be assigned according to the UGA +/- grading policy.

Make-Up Policy

Attendance is expected at all classroom sessions. In the event of illness, etc., you are responsible for obtaining information missed. If you miss some of the group project, you will be expected to complete your section of the group project and work with your group in completing the assignment.

Attendance Policy

Attendance is expected of all students at all classroom sessions. In the event of your absence, you are held responsible for all material covered or assigned during class.

University Honor Code and Academic Honesty Policy

All academic work must meet the standards contained in "A Culture of Honesty." All students are responsible to inform themselves about those standards before performing any academic work. UGA Student Honor Code: "I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others." A Culture of Honesty, the University's policy and procedures for handling cases of suspected dishonesty, can be found at www.uga.edu/ovpi.

Students with Disabilities

Students with disabilities who require reasonable accommodations in order to participate in course activities or meet course requirements should contact the instructor or designate during regular office hours or by appointment.

General Disclaimers

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.