ENVS 340
Topics in Pollution: Gulf Oil Spill

BIOL 378
Environmental Toxicology

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Office Hours: M and F 1:00 - 2:00 or by appointment

Welcome to the world of environmental consulting! Our task as a group this semester is to investigate the ecological impacts of the Gulf Oil Spill based on scientific research. Our report is due ~May 8. Our first goal is to determine the scope of the project, develop an administrative structure, and a plan of attack. I am the project manager of the consulting team, but it will be imperative that you figure out how to work most effectively as a team; I will support you and guide you along the way.

This course has a seminar/discussion format, as opposed to a lecture format. This means that you **must** read the assigned material prior to the class, and come to class prepared to discuss it. You should expect to be called on during every class to contribute to the discussion in a meaningful manner. Students will rotate taking the responsibility of leading the discussion and bringing in supplemental material. Thus, consistent class attendance is expected. If you miss class, you are still responsible for any assignments announced and for all material presented during class. It will be *very difficult* to get an A or B in the course without attending class consistently.

***Attendance Policy*:** Consistent class attendance is expected. If you miss class, you are still responsible for any assignments announced and for all material presented during class. Although there is no automatic point deduction for missing occasional classes, it will be *very difficult* to get an A or B in the course without attending class consistently. Ten percent of your grade will be based on attendance and participation during class and in lab.

Integrity (academic honesty): These are outlined clearly in the student handbook: "Academic honesty is a cornerstone of the mission of the College". Please familiarize yourself with the definition of plagiarism. Academic dishonesty can lead to a zero grade on that assignment, a failing grade in the course, academic code probation, suspension or expulsion from the College depending on the gravity of the violation and the decision of the judicial board.

Accommodation: In compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, reasonable accommodation will be provided to students with documented disabilities on a case by case basis. Students must register with the Office of Academic Support Services (607-274-1005, TDD 607-274-7319, acssd@ithaca.edu) and schedule an appointment with their instructors as soon as possible to discuss their needs.

This course will operate as a highly interactive and participatory class. Class periods will be devoted to:

- Discussing the primary literature
- Discussing our plan of attack, arranging logistics and lab work

Course goals/learning objectives: As part of this course, I expect you to demonstrate the following content and master the following skills:

- Content:
    1. Understand the nature of different compounds in relation to their toxicity
    2. Understand the role of abiotic factors in determining environmental fate and impact of contaminants
    3. Understand the types of effects that an occur at a variety of levels of biological organization ranging from the biochemical to the ecosystem level
    4. Understand the process and uncertainty in assessing environmental impact
    5. Understand various remediation techniques and their utility
    6. Understand risk assessment principles and practice
- Skills:
    1. Work effectively as a team in a real world setting
    2. Conduct toxicology experiments competently
    3. Master data manipulation in excel, basic statistics, and graphing
    4. Produce professional quality scientific reports
    5. Demonstrate competency in written, oral and technical communication, especially to a variety of audiences:
    6. the ability to connect theory and practice through experiential learning
- PLEASE list 2 other goals that you have in terms of skills or knowledge you hope the achieve in this course:
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Evaluation:

This course will operate as a highly interactive and participatory class. Class periods will be devoted to group discussions of the assigned reading. Each student, therefore, must come to class prepared to discuss the appropriate material. This emphasis is reflected in the grading. There will be no standard exams, and no final. Instead you will be tested on your ability to integrate information discussed in class in reaction papers, and in the design of your own environmental toxicology experiment. Your ability to produce high quality work will be assessed based on your lab performance and final group paper. As all assignments are announced well in advance of the due date, late assignments will be penalized 10% of the grade for each weekday past the due date.

Reaction papers	30%	3 papers - 10% each
Class participation	10%	Includes attendance and contribution
Laboratory performance:	20%	Performance, lab write-ups
Self-designed experiment:	20%	Design, performance and presentation
Final Group Paper/Product	20%	

Grading of written work:

A= exceptional work, extremely impressive, near flawless in terms of content and presentation
B= above the expectations of the assignment, but has room for improvement in terms of content and/or presentation
C= meeting the obligations of the assignment, lacking sufficient attention to content and presentation
D= does not meet obligations of assignment, and lacking sufficient attention to content and presentation
F = unacceptable level of effort for the assignment

Grade scale: A = 93-100, A- = 90-92, B+ = 87-89, B = 83-86, B- = 80-82, C+ = 77-79, C = 73-76, C- = 70-72, D+ = 67-69, D = 63-66, D- = 60-62, F < 60

There is no extra credit.

Note: A 4-credit course should occupy 9+ hours per week outside of class time. Please plan on this as you make your schedule.

ENVS 340/BIOL 378 SYLLABUS

Date	Class	Assignments/Reading	Laboratory
PART I: ENVIRONMENTAL TOXICOLOGY AND POLLUTION			
M Jan 24	Introduction to Course and ETOX Discussion: Questions We Need to Answer	Landis et al. 2010, Chapters 1 & 2	
W Jan 26	What Happened in the Gulf? 2 Min Conversations	Read a Popular Press Article and be prepared to carry out a 2 min conversation with a random person	How to Clean Up an Oil Spill
F Jan 28	Chemicals of Concern	DUE: A list of all contaminants we should be concerned about Walker at al., Chapter 1	
M Jan 31	Important Chemical Properties		
W Feb 2	Fate and Routes of Exposure, Modifying Abiotic Factors	Landis et al. 117-158 and 159-169	Biological Remediation Using Bacteria Group Work Time
F Feb 4	Toxicity Testing	DUE: REACTION PAPER #1 Landis et al; 71-116	
M Feb 7	QSARS	Landis et al 201-209	
W Feb 9	Biotransformation, Detoxification, Degradation	Landis et al, 281-299	Metabolic Effects: Brine Shrimp
F Feb 11	Modes of Action: Biochemical Effects	TBA	
M Feb 14	Modes of Action: Cellular Disruption	Landis et al 167-172	
W Feb 16	Modes of Action: Whole Organism	TBA	Neurological Effects: Earthworms
F Feb 18	Factors Affecting Toxicity	Landis et al 222-233	
M Feb 21	Field Toxicology: Biomarkers	Landis et al 321-330	
W Feb 23	Field Toxicology: Populations	Landis et al 332-334	Population Effects: Daphnia
F Feb 25	FieldToxicology: Assemblage and Community	Landis et al 330-221	

	Parameters		
M Feb 28	Field Toxicology: Community Effects	Landis et al 375-384	
W Mar 2	Field Toxicology: Ecosystem Effects/Ecological Structures	Landis et al 380-387	Keep it Alive Challenge
F Mar 4	Field Study Design Considerations	REACTION PAPER #2 DUE Landis et al 405-409	
M Mar 7	Ecological Risk Assessment Framework	Landis et al 415-426	
W Mar 9	Ecological Risk Assessment Techniques	PROPOSAL DUE FOR DESIGN YOUR OWN EXPERIMENT Landis et al 430-463	Keep it Alive Challenge
F Mar 11	Ecological Risk Assessment Techniques (cont)	Landis et al 430-463 (cont)	
M-F Mar 12-20	SPRING BREAK! (Optional Trip to Gulf)		
PART II: The Gulf Oil Spill: We will figure out this part of the course when we get there!			
M Mar 21			
W Mar 23			Design your own experiment
F Mar 25			
M Mar 28			
W Mar 30			Design your own experiment
F Apr 1	Go to NCUR		
M Apr 4			
W Apr 6		REACTION PAPER #3 DUE	Design your own experiment
F Apr 8			
M Apr 11	NO CLASS – SAG in Ecuador!		
WApr 13	NO CLASS – SAG in Ecuador!		Remediation Challenge
F Apr 15	NO CLASS – SAG in Ecuador!		
M Apr 18		DRAFT SECTIONS OF FINAL PAPER DUE	
W Apr 20			Presentations

F Apr 22			
M Apr 25			
W Apr 27			Presentations
F Apr 29			
M May 2			
W May 4		FINAL PAPER DUE	EcoChallenge Game
F May 6	PARTY!		