

**EHSC 4610**  
**Water Pollution and Human Health**  
**Fall 2009 Syllabus**

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

**Course Information**

Instructor: Dr. Marsha Black  
Office Location: 148 Environmental Health Science Bldg.  
Phone: 706-542-0998  
Email: [mblack@uga.edu](mailto:mblack@uga.edu)  
Office Hours: By appointment. Please email to schedule.

**Course Meeting Time and Location**

Building: Environmental Health Science Bldg. (1050)  
Room: 101  
Day: Tuesdays & Thursdays  
Time: 9:30-10:45 am

**Textbooks and Other Required Course Material**

- Any required reading materials will be emailed to each member of the class as a PDF file.
- An optional text resource, *Introduction to Water Pollution Biology* (1995) by Richard J. Schmitz (ISBN 0-88415-927-2) could not be ordered by the bookstore, but is available from Amazon.com and Half.com.

**Course Description**

Human health and environmental issues related to water pollution, focusing primarily on water contamination resulting from municipal, industrial, and agricultural practices. Risks of toxicity and disease to human and aquatic populations from actual incidences of water pollution will be explored in a case study presentation and through researching and writing a position paper on a current water quality issue.

Undergraduate prerequisite: EHSC 3060 or POI

Undergraduate prerequisite/co-requisite: CHEM 2211/CHEM 2211L.

**Course Learning Objectives**

1. Identify and characterize the sources, routes of exposure and effects of anthropogenic and natural sources of water pollution to aquatic biota and humans.
2. Characterize and discuss human health and environmental issues related to water use, water pollution and water management.
3. Analyze the overall ecological and human health impacts of water pollution through case studies of water pollution in industrialized and developing countries. Major emphasis will be on determining the source(s) and extent of damage to human health and the environment, remediation efforts, and the current status and impacts on local populations.

<b>Course Requirements for Grading Purposes</b>
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**A. Three *non-comprehensive* exams will be given:**

- Exam 1 (Sept. 22)
- Exam 2 (Oct. 27)
- Exam 3 (Dec. 15; 9:00-11:00 AM)

Each exam will focus on material from the lectures, but will also have a few questions from case studies, graduate student presentations, and any assigned readings. Exams will contain multiple choice, short answer and essay questions.

**B. Group Project 1: Case Study Presentation (50 points)**

1. Choose a topic for your case study -- either a pollution event (e.g., a major spill site) or chronically contaminated area (e.g., a location that has accumulated high concentrations of a contaminant over time). Using all members of your small group, research the situation completely from a variety of scientific sources, emphasizing the scenario causing the contamination, the eventual distribution and fate of the contaminant(s), the effects on resident biota and adjacent human populations, and the current status of the situation.

2. As a group prepare an oral presentation on the selected case study. (Use of PowerPoint is mandatory). Each group member must participate in the oral presentation. The presentation should last a minimum of 45 minutes and must include the following:

- a. *Overview* of the specific situation causing the pollution event.
- b. *Actual impacts* to the environment and health of adjacent populations, including human and animal populations.
- c. *Remediation* efforts used. Were they effective? Why or why not?
- d. *Current status* of the location involved, including information on the current health of human populations and the environment.
- e. *Provide a written abstract* for email distribution to the class prior to the presentation. The abstract will provide a summary of all elements (see above) of the case study to be presented.

Following each group presentation of a case study there will be a 10 minute discussion period. Student participation in these discussions is mandatory.

**C. Group Project 2: Water Quality Issues (75 points)**

**1) Position paper (50 points):** As a group prepare a 5-6 page position paper (typed in 12 point font, double-spaced, lines numbered) on a water quality issue from the list provided below. The paper should be formatted as a briefing paper appropriate for presentation to a town hall meeting and should include the following:

- Details of the issue, discussing fully the human and environmental costs and benefits of the following agents in the given context. Assume water resources are involved, either directly or indirectly.
- Explore and describe all sides of the issue; then take a stand and provide full documentation and rationale for your choice. Be sure to discuss any alternatives for your choice and why they are not viable or preferable. What are the consequences of your choice to humans and the environment and why is it the superior to any alternative(s). What are the consequences of alternatives, including no action?
- Use at least 6 *journal sources* that are referenced in the paper and cited in a Literature Cited section, using standard scientific journal format (e.g., CBE format). *No Internet sites other than citable US Government reports may be used as sources!!*

2) **Position presentation (25 points):** Each group will present their issue and position in a 20 minute presentation during the last 2 class periods. All group members must participate in the presentation.

3) **Position paper/presentation topics:**

- a) Fluoridation of public drinking water supplies in the US
- b) Use of DDT to eradicate mosquitoes in Africa
- c) Construction of a coal-fired power plant in Sandersville, GA
- d) Establishment of breeding populations of Burmese pythons in the Florida Everglades

***This paper is due on Nov. 17, and should be turned in to the instructor via email by 5 pm.***

**D. Group project peer grading:**

To help promote equal participation among group members for each group effort (case study presentation; water quality issues), each member will rate each member of their group, giving them a grade of 0-100%, which should be emailed to the instructor ([mblack@uga.edu](mailto:mblack@uga.edu)) immediately following the due date of the project. These ratings should reflect your assessment of each team member's effort and quality of work on the oral and written parts of the case study. All individual ratings will be kept confidential. Peer "grades" for each student will be averaged and used to adjust the group's overall points for an individual's % effort, as judged by his/her peers.

**E. Water Pollution in the News (Undergraduate students only) and class participation: (25 points)**

Select a news article about any water pollution topic. Give a 5 minute summary presentation in class (see designated dates on the proposed schedule). Hand in a copy of the article and the summary to the instructor after class. Each student must present one article during the semester. No article or topic may be repeated.

### Grading Policy

Points may be accumulated as follows:

1)	Exams (3 @ 100 points each) .....	300
2)	Case study (Team effort):	
	Oral Presentation	50
	Peer review of group members: Average % involvement	1-100%
	Total group project points = (Team sum) (Average % involvement) .....	50
3)	Water quality issues	
	Position paper	70
	Oral Presentation	25
	Total group project points = (Team sum) (Average % involvement) .....	100
4)	Water quality in the news/class participation .....	25
5)	Class attendance	
	(Note: Students with unexcused absences on required class days will lose 5 points per absence)	
TOTAL .....		475

Final letter grades will be based on a percentage of 475 points:

A = 90 - 100%; B = 80 - 89%; C = 70 - 79%; D = 60 - 69%; F < 60%

<b>Topical Outline</b>
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<b>Dates</b>	<b>Topic</b>
18 Aug.	Introduction; organization of the course
20 Aug.	Basic hydrology
25 Aug.	Water regulations; global water issues
27 Aug.	Overview of aquatic toxicology
1 Sept.	Aquatic toxicology; <a href="#">Water pollution in the news</a>
3 Sept.	Land use and water resources
8 Sept.	Sedimentation
10 Sept.	Dissolved oxygen; organic pollution; <a href="#">Water pollution in the news</a>
15 Sept.	Nutrients (N and P); eutrophication
<b>17 Sept</b>	<b>Case study 1: Sedimentation or Nutrient Pollution</b>
<b>22 Sept.</b>	<b>EXAM 1</b>
24 Sept.	Metals and metalloids I; <a href="#">Water pollution in the news</a>
29 Sept.	Metals and metalloids II
1 Oct.	Exotic species (Guest lecture)
<b>6 Oct.</b>	<b>Case Study 2: Metals/metalloids</b>
8 Oct.	Properties of organic pollutants
13 Oct.	Pesticides I
15 Oct.	Pesticides II/ <a href="#">Water pollution in the news</a>
<b>20 Oct.</b>	<b>Case Study 3: Pesticides</b>
22 Oct.	Nanomaterials
<b>27 Oct.</b>	<b>EXAM 2</b>
29 Oct.	Polychlorinated biphenyls (PCBs)
3 Nov.	PCBs/Other halogenated organics
5 Nov.	Polycyclic aromatic hydrocarbons (PAHs)
10 Nov.	PAHs II/ <a href="#">Water pollution in the news</a>
<b>12 Nov.</b>	<b>Case Study 4: Halogenated organics or PAHs</b>
17 Nov.	Water-borne pathogens I -- Dr. Erin Lipp
19 Nov.	Water-borne pathogens II -- Dr. Erin Lipp
24 Nov.	<i>NO CLASS – Thanksgiving break</i>
26 Nov.	<i>NO CLASS – Thanksgiving break</i>
<b>1 Dec.</b>	<b>Water Quality Issues 1 &amp; 2 - Presentations</b>
<b>3 Dec.</b>	<b>Water Quality Issues 3 &amp; 4 - Presentations</b>
	<i>Note: This is the last class. Dec 8 will operate on a Friday schedule.</i>
<b>15 Dec.</b>	<b>EXAM 3 (9:00-11:00 AM)</b>

**\*\*Please note that attendance is mandatory on all presentation days\*\***

**\*\*Late arrivals will be counted as absences\*\***

### Make-Up Policy

Students are expected to attend all required classes and to take exams on the scheduled dates. Makeup exams are given only under emergency circumstances. Please inform the instructor prior to the exam or required class of the emergency circumstance by email (preferred) or phone and provide a formal doctor's excuse or written notification of the family emergency at the next class meeting.

### Attendance Policy

Students are required to attend ALL case study and days with student presentations. Late arrivals will count as absences. Students will be docked 5 points per absence for required class days.

### 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.* This document is available at [http://www.uga.edu/ovpi/academic\\_honesty/academic\\_honesty.htm](http://www.uga.edu/ovpi/academic_honesty/academic_honesty.htm). Students are advised to pay particular attention to the policy on plagiarism, as this course has a significant writing component.

### 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 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.

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