

GCH 560-001
Environmental Health
3 credits
Spring 2009

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Meeting Times
Tuesdays, 7:20-10:00 PM

Meeting Room
Thomson Hall, Rm. 106

Office Hours
E-mail to arrange

Course Description

Examines principles and methods, risk factors, prevention and control, and policies related to the aspects of human health determined by biological, physical, and chemical factors in the environment at the local, regional, and global levels.

Course Objectives

- Explain the principles of environmental health related to key discipline in the field, including water quality, air quality, solid waste management, hazardous waste management, vector control, and food protection.
- Explain how human health is dependent upon environmental health.
- Identify specific environmental hazards that are risks to human health.
- Apply epidemiological methods to the assessment of environmental and occupational exposures.
- Explain environmental approaches to disease prevention and control.
- Examine local, regional, and global environmental health laws, policies, and regulations.
- Identify the human health effects of local and global environmental change.
- Explain how the health of the environment is impacted by human actions.
- Identify steps that can be taken to create and sustain an environment that promotes human health.
- Communicate environmental health problems and possible solutions based on scientific evidence.
- Critically review published literature in the field of environmental health.

Textbook

Required

Our Global Environment: A Health Perspective. 6th Edition. Anne Nadakavukaren. Waveland Press; 2005.

Optional

Environmental Health: From Global to Local. 1st Edition. Howard Frumkin. Jossey-Bass; 2005.

Living in the Environment: Principles, Connections, and Solutions 14th edition G. Tyler Miller Brooks Cole; 2004.

Course Structure

The course is divided into two units: Concepts, Approaches and Tools, and Environmental Health Topics. The first unit will address the biological, chemical and physical agents and sources found in water, air, and soil, approaches to measure risk, toxicology, sustainability, epidemiology, and legal and regulatory framework. The second unit will include lectures on indoor air pollution, water quality, soil characteristics, pest control, food safety, radiation and occupational health.

Course Format

The course is taught as a series of lectures, power point presentations, and required readings from the textbook as well as additional articles. Two exams will be administered and a group project will be assigned.

Article Review

The articles assigned will be published scientific journals, popular articles, legal documents and/or case studies related to the topics that will be covered in class. Students are expected to read the articles and prepare a written review of the articles one to two pages long and turn it in by the start of class on the due date. Detailed instructions will be provided with each assignment. Late assignments may receive comments and corrections, but no credit. Both your knowledge of the readings and your ability to discuss them in a logical, organized manner will be assessed.

In addition, during the second unit we will be discussing the *"2008 Report on the Environment: Highlights of National Trends"*, a short publication that describes national environmental and health trends on air, water, land, human exposure and health, and ecological condition critical to the United States Environmental Protection Agency's mission. The report is available at http://www.epa.gov/roehd/pdf/roe_hd_layout_508.pdf

Exams

Each test addresses the topics, lectures, and text chapters covered within the unit. The exams are 1 hour 30 minutes and consist of multiple choice questions and essay questions. A make-up for the exam will be allowed only with certified medical excuse or prior permission from the instructor.

Group Project

Students will take part in a group project that focuses on critical issues in environmental health not discussed in class. Students will form groups (4 to 5 students per group) and select a topic from the accepted areas. The groups will review the scientific literature and prepare a 15-20 page paper. Students will also make brief presentations (no more than 20 minutes) of their project. Detailed instructions for the projects will be presented in class after Exam 1 and 2. The topic areas are listed below:

- Emerging Contaminants (chemicals and pathogens)
- Bioterrorism
- Global warming
- Environmental Disasters
- Environmental Justice
- Children's Health

Student Evaluation

- Two examinations - 100 points each (200 points total)
- Article reviews - 10 points each (100 points total)
- Group Project - 100 points written report/100 points presentation (200 points total)
- Total Points = 500
- Grading follows University standards:
 - 100-90 = A
 - 89-80 = B
 - 79-70 = C
 - 69-60 = D
 - <59 = F

Student Responsibilities

Academic Honesty

George Mason University operates under an honor system, which is published in the University Catalog and deals specifically with cheating, attempted cheating, plagiarism, lying, and stealing. Please familiarize yourself with the honor code, especially the statement on plagiarism (<http://www.gmu.edu/facstaff/handbook/aD.html>). If you have questions about when the contribution of others to your work must be acknowledged and appropriate ways to cite those contributions, please talk with me.

Attendance

Students are expected to attend and be prepared to participate in all class sessions and article review discussion. Please notify the instructor if you are unable to attend class because attendance will be considered for those students that may be borderline at the time final grades are awarded.

Cell Phones, Pagers, Blackberries

Electronic communication devices MUST be turned off during class.

Students with Disabilities

If you are a student with a disability and you need additional academic accommodations, please contact the Disability Resource Center (DRC) on 703-993-2427. All academic accommodations must be arranged through the DRC.

Course Schedule

No.	Date	Topic	Reading Assignment	Chapter: <i>Book</i> Chapter #
I. Concepts, Approaches and Tools				
1	January 20	Class Cancelled: Inauguration Day		
1 & 2	January 27	Introduction Environmental Health Principles Agents and sources Toxicology	Chapter: <i>Miller</i> 1, 2, 3, 4, 5, Chapter: <i>Frumkin</i> 2; <i>Miller</i> 19 Article: Emerging Substances – Emerging Problems?	
3	February 3	Methods of Assessment Epidemiology	Chapter: <i>Nadakavukaren</i> 7; <i>Frumkin</i> 3, 4, 32, 34 Article: Environmental epidemiology and risk assessment	
4	February 10	Environmental Health Law, Policy and Regulations	Chapter: <i>Frumkin</i> 33, <i>Miller</i> 27 Article: Pollution prevention through performance-based initiatives and regulation in the US	
5	February 17	Population and Urbanization Sustainability	Chapter: <i>Nadakavukaren</i> 2, 3, 4, 5; <i>Frumkin</i> 16; <i>Miller</i> 10, 25, 26 Article: Designing urban spaces and buildings to improve sustainability and quality of life ...	
6	February 24	Global Environmental Health and Human Health	Chapter: <i>Frumkin</i> 10,11,12,13, 15 Article: Air pollution in the last 50 years – from local to global	
7	March 3	EXAM I Group Presentations Discussion		
8	March 10	Spring Break		
II. Environmental Health Topics				
9	March 17	Indoor and Outdoor Air Pollution	Chapter: <i>Nadakavukaren</i> 11,12; <i>Frumkin</i> 14, 22; <i>Miller</i> 6, 20, 21 Article: EPA's Report on the Environment: Air Chapter	
10	March 24	Water Quality and Management	Chapter: <i>Nadakavukaren</i> 14, 15; <i>Frumkin</i> 18; <i>Miller</i> 7, 15, 22 Article: EPA's Report on the Environment: Water Chapter	
11	March 31	Solid Waste and Hazardous Waste	Chapter: <i>Nadakavukaren</i> 16; <i>Frumkin</i> 19, <i>Miller</i> 24 Article: EPA's Report on the Environment: Land Chapter	
12	April 7	Vector and Pest Control Food Safety and Protection	Chapter: <i>Nadakavukaren</i> 8, 9; <i>Frumkin</i> 20, 21; <i>Miller</i> 23 Article: Why consumers behave as they do with respect to food and risk information	
13	April 14	No class		
13 & 14	April 21	Industrial Hygiene and Occupational Health Radiation	Chapter: <i>Frumkin</i> 23 Article: Women's occupational and environmental health Chapter: <i>Nadakavukaren</i> 10; <i>Frumkin</i> 24 Article: Dose limits below which the effect of radiation on health becomes undetectable ...	
15	April 28	EXAM II Group Presentations Discussion		
III. Group Presentations				
16	May 5	Group Presentations 1		
17	May 12	Group Presentations 2		