



Mel and Enid Zuckerman College of Public Health
University of Arizona

SYLLABUS
Environmental and Occupational Health CPH 575
Fall 2008

Time: Thursday, 1:00- 3:50 pm

Location: Drachman Hall, Room A118

Instructor/Course Coordinator: Kelly A. Reynolds, MSPH, PhD
MEZCOPH/CEP

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Office Visits: By Appointment

Course Faculty

Paloma Beamer, PhD

Jeff Burgess, MD, MS, MPH

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Guest Lecturers

Mary Derby, RN MS, U of A

Wendell Ela, PhD, Environmental Engineering, U of A

Will Humble, MPH ADHS

Julia Rosen, CIH, Risk Management, U of A

Inspector John Valenzuela, Tucson Fire Department

Mark Witten, PhD, Pediatrics, U of A

Office Hours: By appointment. The best way to get in touch with us is via email.

Teaching Assistant: Dave Dawley, E-mail: dawley@email.arizona.edu

TA Office Hours: Tuesdays 1:00-3:00 pm or by appointment

Course Description: Course emphasizes health hazard sources, methods to identify & evaluate them and framework used to effect hazard control. Students will evaluate public health issues, understand research designs, identify and evaluate factors important to the development of monitoring programs.

Course Prerequisites: Recommended background reading in Epidemiology and Biostatistics

Course Learning Objectives: At the end of this course, students will be able to:

1. Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
2. Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents.
3. Specify current environmental risk assessment methods.
4. Describe genetic, physiologic and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards.
5. Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equity.
6. Explain the general mechanisms of toxicity in eliciting a toxic response to various environmental exposures.
7. Develop a testable model of environmental insult.
8. Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.

Course Notes: You are expected to take your own notes in class. Whenever possible, handouts are posted 1 week in advance on the course D2L website. Some instructors may distribute printed material in class at their discretion and students are responsible for collecting the material at that time. Have someone pick up a copy for you if you are not present in class.

Recommended Text/Readings: Frumkin, Howard (Ed). *Environmental Health: From Global to Local*. Josey-Bass, 2005.

Course Requirements: You are expected to respond to questions, submit homework and assignments on time, take exams on the specified dates, and successfully complete any unscheduled quizzes given during scheduled classes. You must have a University of Arizona e-mail address. Check your e-mail frequently.

The point allocation/grading scheme is as follows:

Task	Potential Points	% of Grade	Grades Awarded	Accumulated Point Range for Grade
3 Exams @ 100 points each	300	65%	A	≥381
10 Quizzes at 5 points each	50	25%	B	340 to <380
6 homework assignments @ 12.5 points each	75	20%	C	298 to 339
			E	<298
Total points	425	100%		

All late assignments will be penalized at a minimum rate of 10%. The rate will increase by 10% with each additional 24 hour period (.00001 to 24 h late = 10%, 25-48 h late = 20% etc).

Examinations: Students will be expected to demonstrate that they have met the course objectives through homework assignments and examinations. In class and final (not cumulative) exams will consist of multiple choice, short answer questions and short essay questions. Some exams may include self-evaluations or take-home questions due at the time of the exam. It is your responsibility to clear your calendar and take the exam at the scheduled time and place. Except for emergency situations (e.g., medical, supported by

appropriate documentation), make-up exams will not be given and zero credit will be awarded for the exam.

Class Attendance/Participation: You are expected to attend class and participate. All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Dean's designee) will be honored.

Course Schedule:

WEEK	TOPIC & Lecture Objectives	TEXT CHAPTER
Aug. 28	1. Syllabus, concepts, and paradigms (Reynolds; all EOH Faculty) 1. Meet faculty 2. Review course content and entry expectations 3. Understand introductory material	Intro, 1
Sept. 4	2. Toxicology (Burgess) 1. Understand toxicokinetics, dose-response relationships and toxicity terminology. 2. Give examples of organ specific toxicity with representative toxicants. 3. Identify sources of variation in individual susceptibility to toxicants. 4. Explain how current regulatory limits are developed 1. Receive instructions for homework #1 (due Sept. 11)	2, 6, 20
Sept. 11	3. Radiation (Anthony) 2. Describe radiation fundamentals 3. Identify sources and health effects of radiation exposures 4. Understand regulatory aspects of radiation and methods to control exposures 5. Receive instructions for homework #2 (due Sept. 18)	24
Sept. 18	4. Risk assessment (Burgess, Humble, Witten) 1. Describe how risk assessments are carried out. 2. Consider the role of environmental toxicants in disease clusters. 3. Describe risk communication principles	32, 34
Sept. 25	5. Occupational and environmental health (Burgess, Rosen) 1. Explain the history of occupational and environmental health and pertinent regulations. 2. Describe the worker's compensation system. 3. Explain the role of industrial hygiene in worker health and safety.	4, 23, 35
Oct. 2	6. EXAM 1:00-2:00 PM AND Disease vectors (Derby) 1. Provide examples of vector borne diseases. 2. Describe means of pest control. 3. Explain the spread and health impact of West Nile Virus.	20
Oct. 9	7. Air quality, transportation & urbanization (O'Rourke)	14, 16, 17, 22

1. On average, has the world's air quality improved or declined in the last two millennia? in the last thirty years?
2. Know and be able to discuss the 6 criteria pollutants of the Clean Air Act and be aware of other contaminants and their potential impact on health. How were guidelines for these pollutants derived?
3. Discuss how the criteria pollutants behave temporally and spatially in various locations and deduce the impact on health for those populations.
4. Discuss current methods of air pollution prevention and control.
5. Describe common contaminants found in indoor air, their sources and associated human symptoms.
- 6. Receive instructions for homework #3 (due Oct. 16)**

- Oct. 16 8. Energy, climate change, environmental (O'Rourke) **7, 8, 10, 11, 15**
ethics, and population pressure
1. Identify major energy sources and relate to various regions of the world
 2. Evaluate the impact of energy on air quality as a function of transportation needs
 3. Discuss the role of population pressure on energy needs and global climate change
 4. Discuss ethical responsibilities
 - 5. Receive instructions for homework #4 (due Oct. 23)**

- Oct. 23 on D2L 9. Water and sewage (Reynolds) **18, supplemental readings**
6. Be able to discuss water cycle, availability and quality.
 7. Given global climate change, discuss the likelihood of sufficient water in our region?
 8. Discuss strategies of maintaining water quality
 9. Describe methods of sewage treatment in municipal, suburban and rural environments.
 10. Discuss toilet to tap water delivery in terms of water quality
 - 11. Receive instructions for homework #5 (due Nov. 6)**

- Oct. 30 10. **EXAM** 1:00-2:00 PM
AND
Global Outbreaks/Emerging Infections (Reynolds) **19, 36**

- Nov. 6 11. Foodborne illness (Derby) **21**
1. Understand Bacterial Viral & Other Contaminants
- Soil, soil exposures and spatial analyses (Reynolds) **30, 31, 33**
1. Describe the physical-chemical characteristics of soil
 2. Understand the relationship between soil characteristics and contaminant transport/fate
 3. Discuss methods of analysis for basic soil properties
 4. Evaluate tools for assessing geographical information related to environmental/ecological health

Nov. 13 12. Pediatric Environmental Health (Beamer) 28, and supplemental reading on D2L

1. Specify differences between children and adults in activity, physiology and other factors that affect their exposure to environmental hazards
2. Be able to conduct an environmental history and home inventory
3. Identify, prevent and control environmental hazards with respect to children
4. Discuss how other factors including socioeconomic status and obesity may contribute to increased risk

Solid waste & Hazardous materials (Valenzuela) 19, 36

1. Differentiate between municipal solid waste, special waste and hazardous waste.
2. Describe health concerns associated with solid waste disposal.
3. Formulate a comprehensive plan preventing public exposure to hazardous waste.

Nov. 20 13. Preparedness and injury (Peate) 25, 26, 29

1. Specify approaches for assessing, preventing and controlling hazards that pose risks to human health and safety during a manmade or natural disaster.
2. Describe the direct and indirect human, ecological and safety effects of major environmental, biological, chemical, and radiological agents encountered in a disaster.
3. Describe federal and state programs, guidelines, incident command systems and authorities that respond to disasters.
4. Discuss various risk assessment and control approaches in relation to injuries
5. **Receive instructions for homework #6 (due Dec. 4th)**

Nov. 27 THANKSGIVING HOLIDAY

Dec. 4 14. War, developing nations, injury, and children (Peate) 12, 13, 28

5. Describe genetic, physiologic and psychosocial factors that affect susceptibility to adverse health outcomes following childhood exposure to environmental and other health hazards including armed conflict.
6. Describe international and federal regulatory programs, guidelines and authorities that control environmental and other health concerns in developing nations.
7. Specify approaches for assessing, preventing and controlling environmental and other health hazards that pose risks to human health and safety in the developing world, including children.

Course Review/Integrating Concepts (O'Rourke)

FINAL EXAM Monday, December 15, 2:00 p.m. - 4:00 p.m.

Communications: You are responsible for reading emails sent to your UA account from your professor and the announcements that are placed on the course web site. Information about readings, news events, your grades, assignments and other course related topics will be communicated to you with

these electronic methods. The official policy can be found at:

<http://www.registrar.arizona.edu/emailpolicy.htm>

Disability Accommodation: If you anticipate issues related to the format or requirements of this course, please meet with me. I would like us to discuss ways to ensure your full participation in the course. If you determine that formal, disability-related accommodations are necessary, it is very important that you be registered with Disability Resources (621-3268; drc.arizona.edu) and notify me of your eligibility for reasonable accommodations. We can then plan how best to coordinate your accommodations. The official policy can be found at:<http://catalog.arizona.edu/2008%2D09/policies/disability.htm>

Academic Integrity: All UA students are responsible for upholding the University of Arizona Code of Academic Integrity, available through the office of the Dean of Students and online: The official policy found at:<http://dos.web.arizona.edu/uapolicies/scc5308abcd.html> and <http://dos.web.arizona.edu/uapolicies/cai1.html>.

Classroom Behavior: (Statement of expected behavior and respectful exchange of ideas)
Students are expected to be familiar with the UA Policy on Disruptive Behavior in an Instructional Setting found at <http://web.arizona.edu/~policy/disruptive.pdf> and the Policy on Threatening Behavior by Students found at <http://web.arizona.edu/~policy/threatening.pdf>

Grievance Policy: Should a student feel he or she has been treated unfairly, there are a number of resources available. With few exceptions, students should first attempt to resolve difficulties informally by bringing those concerns directly to the person responsible for the action, or with the student's graduate advisor, Assistant Dean for Student and Alumni Affairs, department head, or the immediate supervisor of the person responsible for the action. If the problem cannot be resolved informally, the student may file a formal grievance using the [Graduate College Grievance Policy](http://grad.arizona.edu/catalog/policies/academic-policies/grievance-policy) found at <http://grad.arizona.edu/catalog/policies/academic-policies/grievance-policy>

Grade Appeal Policy: <http://catalog.arizona.edu/2008%2D09/policies/gradappeal.htm>

Syllabus Changes: Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate.

Please Note: URLs change frequently. You will need to test the URLs in the syllabus you produce each semester, to ensure the links are correct.