



EMORY

**ROLLINS
SCHOOL OF
PUBLIC
HEALTH**

DEPARTMENT: Environmental Health

COURSE NUMBER: 500

SECTION NUMBER: 2

CREDIT HOURS: 2

SEMESTER: Fall, 2018

COURSE TITLE: Perspectives in Environmental Health

COURSE HOURS AND LOCATION: Online.

For in-person sessions: Mondays, 10:00a-11:50a, CNR Auditorium

INSTRUCTOR NAME: W. Michael Caudle, Ph.D.

INSTRUCTOR CONTACT INFORMATION

EMAIL: william.m.caudle@emory.edu

PHONE: 404-712-8432

SCHOOL ADDRESS OR MAILBOX LOCATION: Claudia Nance Rollins Building,
Room 2033

OFFICE HOURS: By appointment

Teaching Assistant(s):

Aimee Vester

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COURSE DESCRIPTION

EH 500 is a survey course designed to introduce public health students to basic concepts of environmental sciences, to the methods used to study the interface of health and the environment, to the health impacts of various environmental processes and exposures, and to the public health approach to controlling or eliminating environmental health risks. To address these concepts, basic environmental health principles (exposure assessment, environmental toxicology, environmental epidemiology, risk assessment), as well as specific environmental health issues including water and air pollution, hazardous chemical/waste exposures, climate change, and environmental drivers of disease ecology, will be covered.

MPH /MSPH/PHD FOUNDATIONAL PUBLIC HEALTH KNOWLEDGE LEARNING OBJECTIVES:

- Explain effects of environmental factors on a population's health
- Explain biological and genetic factors that affect a population's health
- Explain an ecological perspective on the connections among human health, animal health and ecosystem health (e.g., One Health)

MPH/MSPH FOUNDATIONAL COMPETENCIES:

- Select communication strategies for different audiences and sectors
- Evaluate policies for their impact on public health and health equity
- Apply systems thinking tools to a public health issue

COURSE LEARNING OBJECTIVES:

- Name the principal environmental exposures that threaten human health
- Describe the sources of these exposures and their pathway to humans
- Discuss how upstream processes (urbanization, housing, transportation, energy use, industrial and work organization, migration, globalization) create environmental risks for health
- Explain what kinds of evidence are used to assess the health consequences of these exposures, including toxicology, epidemiology, and risk assessment
- Summarize the known and suspected health consequences of these exposures
- Cite the major preventive approaches used by environmental public health practitioners
- List the major legal and policy approaches used in the United States to control environmental health hazards
- Recognize how to assess the seriousness of an environmental health problem through information gathered from appropriate sources
- Define the major features of environmental health hazards related to disease ecology

EVALUATION

Evaluation will be based on your scores on an in-class midterm exam, group discussions of the readings (see below), a case study, and the final exam. These exercises are designed to assess your understanding of lecture material and to allow you to engage in a more meaningful way with the course topics.

Mid-term Exam: 35 points

Final Exam: 35 points

Article Discussion Group (ADG): 0-6 points each (4 ADGs total)

Case Study Assignment (10 pts)

Grading:	≥ 95 points	A	85 – 94 points	A-
	78 – 84 points	B+	75 – 77 points	B
	70 – 74 points	B-	50 – 69 points	C
	< 50 points	F		

Exams: The **midterm exam**, worth **35 points**, will be given **in class** on **November 5th** and you will have the entire class time to take it, if needed. If for some very extenuating reason you cannot take the exam that day, a make-up exam must be arranged with Dr. Caudle and be taken **prior** to the scheduled exam date. The **final exam**, worth **35 points**, will be given once on **December 17th during the exam period**; there will be no make-up exam. Learning will be evaluated through a mix of multiple choice and short answer questions. Students will need to be present in the CNR Auditorium for the midterm exam (November 5; 10:00a-11:50a) and final exam (December 17; 10:00a-11:50a). **Exams will NOT be administered remotely.**

Foundational Competencies and Knowledge Addressed:

- Select communication strategies for different audiences and sectors
- Evaluate policies for their impact on public health and health equity
- Apply systems thinking tools to a public health issue
- Explain effects of environmental factors on a population's health
- Explain biological and genetic factors that affect a population's health
- Explain an ecological perspective on the connections among human health, animal health and ecosystem health (e.g., One Health)

Article Discussion Groups (ADGs): There will be 4 **ADG assignments** throughout the semester, as specified in the course schedule below. Each student will be placed in a five-person ADG at the beginning of the semester (ADG rosters are posted in the groups section of Canvas). Your responsibility as part of this group will be to read and discuss assigned articles on the weekly topic and collectively submit a relevant question on the reading to the Canvas site. A link to each paper can be found in the Assignment tab on the EH 500 home page. Members of each ADG should work together to read, understand, and work towards formulating a coherent and engaging question for discussion. There is not a concrete formula for developing a suitable discussion question. However, each ADG question should demonstrate a deep understanding of the study and should seek to require the audience to leverage the information presented in the study to evolve their approach or thinking about the issue. In this sense, questions that address explicit knowledge that can easily be found in the paper or in another source are not considered robust. Once a question has been developed it can be submitted through the Submit Assignment tab.

At a minimum, your group's question should demonstrate that you have read and understood the paper. For this, your group will receive 2.5 points. Questions that raise particularly insightful points and are selected to be discussed will earn 3.5 points. If your group does not submit a question or submits a question after the deadline, the entire group will receive 0 points for that ADG assignment. These questions are integral to the discussion portion of the course. Therefore, participation in the question discussion will be part of the ADG assignment grade. Consistent group participation will earn your ADG 2.5 points. A lack of or inconsistent participation will receive 1 point. If your ADG does not participate in the discussion, you will receive 0 points.

Foundational Competencies and Knowledge Addressed:

- Select communication strategies for different audiences and sectors
- Explain effects of environmental factors on a population's health
- Explain biological and genetic factors that affect a population's health

ADG Case Study: In addition to article discussion, your ADG will complete a case study that focuses on environmental health policy and a current environmental health challenge. Case-based learning (CBL) is an established approach used across disciplines where students apply their knowledge, promoting higher levels of learning through interaction with a real-life scenario and peer collaboration. Each ADG will work through the case study materials provided on Canvas and will produce a 2-page policy brief that will guide your advocacy recommendations. This assignment is worth 10 pts and a rubric to guide the development of your case study is available on Canvas.

Foundational Competencies and Knowledge Addressed:

- Evaluate policies for their impact on public health and health equity

COURSE STRUCTURE

As part of the distance learning cohort for EH 500, you are part of an exciting opportunity to expand the Rollins School of Public Health's presence in the digital academic space, with the hope of elaborating this presence in the near future. While this course is administered primarily online, the information and assignments will correspond to those for the students who are participating in the classic in-person instructional format. In brief, all lecture material will be provided to you through the Canvas site in a video format that you will be able to view on your schedule. All other materials, including readings, will also be available on the Canvas site and easily accessible. Finally, all assignment submissions can be performed using the Canvas site.

A problem for large classes like EH 500 is the lack of interaction between students and speakers, and among students. The Article Discussion Groups (ADGs) are one way we try to stimulate discussion, deepen your understanding of the topics, and give you a chance to get to know and learn from your fellow students in other RSPH departments. Although the majority of this class is administered online, we are asking students to

participate in discussion sessions, aimed at facilitating student interaction and engagement with the material. Students will be randomly assigned to ADGs (5 students per ADG), which can be found on the Canvas site. Once on the EH 500 home page, click on the People tab and then on the Groups tab. A list of all ADGs (1-10) will populate the page. To find your group, type your name into the Search feature. As part of these ADGs, students are required to attend 2 in-person discussion sessions and 2 remote discussion sessions, related to the respective ADG assignments.

ADG Discussion Meetings:

September 17: In-Person discussion session (CNR Auditorium; 5:00-5:50 pm)

October 15: Remote discussion session (Via Zoom; 5:00-5:50 pm)

***NOTE: speakers and microphone are REQUIRED for this session (headset is recommended)**

November 19: In-Person discussion session (CNR Auditorium; 5:00-5:50 pm)

December 3: Remote discussion session (Via Zoom; 5:00-5:50 pm)

***NOTE: speakers and microphone are REQUIRED for this session (headset is recommended)**

Due to the Inter-personal Team Training (ITT) program scheduled for September 17, the ADG and discussion schedule for the Distance Cohort has been modified to maintain the previously agreed upon discussion meeting times and to adhere to the course topic schedule. It will be important for students in the Distance Cohort to understand the dynamics of this schedule and to get in touch with me or the teaching assistant if they have any questions related to the schedule. The schedule for each of these ADG assignments is as follows:

ADG #1 *Materials are located in Module 2

September 15: ADG questions submitted to Canvas by 11:59p

September 17: ADG discussion session

ADG #2 *Materials are located in Module 4

October 13: ADG questions submitted to Canvas by 11:59p

October 15: ADG discussion session

ADG #3 *Materials are located in Module 7

November 17: ADG questions submitted to Canvas by 11:59p

November 19: ADG discussion session

ADG #4 *Materials area located in Module 9

November 30: ADG questions submitted to Canvas by 11:59p

December 3: ADG discussion session

COURSE POLICIES

As the instructor of this course I endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me and the Office for Equity and Inclusion, 404-727-9877.

Assignment Submission: All assignments should be submitted through the Canvas Site. Since all assignments will be completed as your ADG, only one person from each ADG needs to submit the completed assignment to Canvas. Late assignments or failure to submit an assignment will result in the entire ADG receiving 0 points for that portion of the assignment.

Attendance: As part of the distance cohort, you will have two in-person discussion sessions (9/17 and 11/19) and two virtual discussion sessions (10/15 and 12/3). Attendance at these discussion sessions is mandatory. Failure to attend these meetings will result in 0 points for that assignment. **Additionally, all students are expected to attend the first in-person class on September 10th. Failure to attend this class will result in a loss of 10 points from your overall grade (i.e. the highest grade you can attain in the class is a 90).**

Participation: Engagement with the discussion questions and other students in your ADG and the course is critical to enhancing the learning experience in this class. Sharing your thoughts and ideas is highly encouraged and necessary to work through this material. Minimal participation in the discussion sessions will result in a grade reduction for that assignment.

Technology: This course is based on distance learning and the use of technology is highly encouraged. Please feel free to use computers/tablets/other electronic devices for any and all aspects of this class. However, please note that some tablets/ipads/phones do not connect well for the virtual discussion sessions. We encourage you to use a desktop or laptop for these sessions. A microphone and speaker are REQUIRED for the virtual discussion sections.

Textbook (Optional): *Environmental Health: From Global to Local. 3rd Edition.* Howard Frumkin, Editor. Jossey-Bass. San Francisco. Although optional, I strongly recommend obtaining a copy of this text. Using this text throughout the semester will enrich your understanding and appreciation of the class content. In addition, for those considering going into a field within Public Health, a solid environmental health reference text should be part of any complete professional library.

Supplemental Readings: I will also post articles or research papers related to each topic covered in the course. Although not required reading, this material will serve to enhance your learning of the topics and generate discussion in the class.

RSPH POLICIES

Accessibility and Accommodations

Accessibility Services works with students who have disabilities to provide reasonable accommodations. In order to receive consideration for reasonable accommodations, you must contact the Office of Accessibility Services (OAS). It is the responsibility of the student to register with OAS. Please note that accommodations are not retroactive and that disability accommodations are not provided until an accommodation letter has been processed.

Students who registered with OAS and have a letter outlining their academic accommodations are strongly encouraged to coordinate a meeting time with me to discuss a protocol to implement the accommodations as needed throughout the semester. This meeting should occur as early in the semester as possible.

Contact Accessibility Services for more information at (404) 727-9877 or accessibility@emory.edu. Additional information is available at the OAS website at <http://equityandinclusion.emory.edu/access/students/index.html>

Honor Code

You are bound by Emory University's Student Honor and Conduct Code. RSPH requires that all material submitted by a student fulfilling his or her academic course of study must be the original work of the student. Violations of academic honor include any action by a student indicating dishonesty or a lack of integrity in academic ethics. *Academic dishonesty refers to cheating, plagiarizing, assisting other students without authorization, lying, tampering, or stealing in performing any academic work, and will not be tolerated under any circumstances.*

The RSPH Honor Code states: "Plagiarism is the act of presenting as one's own work the expression, words, or ideas of another person whether published or unpublished (including the work of another student). A writer's work should be regarded as his/her own property."

(http://www.sph.emory.edu/cms/current_students/enrollment_services/honor_code.html)

Module	Date	Speaker(s)	Topic(s)	Reading *Indicates readings for ADGs	Assignment
1	9/10-16	W. Michael Caudle, PhD Environmental Health	Environmental Health Overview	<ol style="list-style-type: none"> 1. Frumkin et al., Chapter 1 and Chapter 2 2. Berkes H. Advanced Black Lung Cases Surge In Appalachia. December 15, 2016 3. Black Lung, Incurable and Fatal, Stalks Coal Miners Anew. New York Times. December 24, 2016. 4. Make America Wait Again: Trump Tries to Delay Regulations out of Existence. McQuaid, J. July 24, 2017 <p>ADG Materials Available in Module 2</p>	ADG #1 questions due by 9/15
2	9/17-30	W. Michael Caudle, PhD Environmental Health	Environmental Toxicology (ADG #1)	<ol style="list-style-type: none"> 1. *Frumkin et al., Chapter 6 and Chapter 7 2. *Silver et al., (2017) Prenatal naled and chlorpyrifos exposure is associated with deficits in infant motor function in a cohort of Chinese infants 	ADG #1 Discussion Session: CNR Auditorium; 5:00p 9/17
3	10/1-14 (Fall Break)	W. Michael Caudle, PhD Environmental Health	Exposure Science	<ol style="list-style-type: none"> 1. Frumkin et al., Chapter 8 2. Watkins et al., (2015) Urinary 3-phenoxybenzoic acid (3-PBA) levels among pregnant women in Mexico City: Distribution and relationships with child neurodevelopment <p>ADG Materials Available in Module 4</p>	ADG #2 Questions due 10/13
4	10/15-21	W. Michael Caudle, PhD Environmental Health	Environmental Risk Assessment & Risk Communication (ADG #2)	<ol style="list-style-type: none"> 1. *Frumkin et al., Chapter 27 and Chapter 28 2. *Covello and Sandman (2001) Risk communication: evolution and revolution 	ADG #2 Virtual Discussion Session via Zoom; 4:45pm 10/15

Module	Date	Speaker(s)	Topic(s)	Reading *Indicates readings for ADGs	Assignment
5	10/22-28	W. Michael Caudle, PhD Environmental Health	Environmental Epidemiology	1. Frumkin et al., Chapter 4 2. DuPont and The Chemistry of Deception: https://theintercept.com/2015/08/11/dupont-chemistry-deception/	None
6	10/29-11/4	W. Michael Caudle, PhD Environmental Health	Environmental Health Policy	1. Frumkin <i>et al.</i> , Chapter 10 and Chapter 11 2. A Strong Case Against a Pesticide Does Not Faze E.P.A. Under Trump. New York Times. May 15, 2017 3. The Plant Next Door. The Intercept. March 24, 2017	None
	11/5	MIDTERM EXAM; CNR Auditorium (10:00a-11:50a)			
7	11/12-18	W. Michael Caudle, PhD Environmental Health	Persistent Organic Pollutants (POPs) and Heavy Metals (ADG #3)	1. *Kim et al., (2011) Fate and complex pathogenic effects of dioxins and polychlorinated biphenyls in obese subjects before and after drastic weight loss 2. Valeri et al., (2017) The joint effect of prenatal exposure to metal mixtures on neurodevelopmental outcomes at 20-40 months of age: Evidence from rural Bangladesh	Case Study Assignment Due: 11/14 at 11:59p ADG #3 questions due 11/17
8	11/19-25	Matthew Freeman, PhD and Karen Levy, PhD Environmental Health	Environmental Health in the Developing World	1. Frumkin et al., Chapter 16 2. Progress on Drinking Water, Sanitation and Hygiene. WHO/UNICEF	ADG #3 Discussion Session: CNR Auditorium; 5:00p 11/19
9	11/26-12/2	Jeremy Sarnat, ScD Environmental Health	Indoor/Outdoor Air Pollution (ADG #4)	1. *Frumkin et al., Chapter 13 2. *Lelieveld et al., (2015) The contribution of outdoor air pollution sources to premature mortality on a global scale	ADG #4 questions due 11/30

Module	Date	Speaker(s)	Topic(s)	Reading *Indicates readings for ADGs	Assignment
10	12/3-9	W. Michael Caudle, PhD Environmental Health	Pesticides	1. Frumkin et al., Chapter 18 2. David et al., (2005) The Anopheles gambiae detoxification chip: A highly specific microarray to study metabolic-based insecticide resistance in malaria vectors	ADG #4 Virtual Discussion Session: 4:45pm 12/3 via Zoom
11	12/10-16	Noah Scovronick, PhD Environmental Health	Global Climate Change	1. Frumkin et al., Chapter 12 2. Global Warming's Terrifying New Math. Rolling Stone.	None
	12/17	FINAL EXAM; CNR Auditorium (10:00am-12:00p)			