DEPARTMENT: Environmental Health

COURSE NUMBER: 500      SECTION NUMBER: 1

CREDIT HOURS: 2      SEMESTER: Fall 2019

COURSE TITLE: Perspectives in Environmental Health

CLASS HOURS AND LOCATION: Mondays, 10:00a-11:50a, CNR Auditorium

INSTRUCTOR NAME: W. Michael Caudle, PhD

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 Assistants:
Ian Hennessee (ian.patrick.hennessee@emory.edu)
Students with last names A-I

Sydney Hubbard (sydney.corinne.hubbard@emory.edu)
Students with last names J-R

Millie Tung (millie.tung@emory.edu)
Students with last names S-Z

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 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:

- Explain the interaction of diverse ecosystems and how their disruption can affect disease ecology
- Discuss emerging environmental health concerns and approaches to address them
- Describe how exposure to specific environmental chemicals alter the function of select organ systems, leading to pathological health outcomes
- Explain how qualitative and quantitative evidence is used to assess the health consequences of environmental exposures
- Identify relevant community stakeholders and write a communication strategy to address potential environmental health concerns
- List the major legal and policy approaches used in the United States to control environmental health hazards
- Describe environmental justice and how environmental health policy can positively and negatively affect vulnerable populations
- Discuss the causes, mitigation and adaptation strategies, and the economic concerns related to climate change and environmental risks for health
COURSE STRUCTURE

EH 500 is divided into 12 modules:

- Module 1: Introductions, Course Overview, and History of Environmental Health
- Module 2: Environmental Toxicology
- Module 3: Environmental Exposure Assessment
- Module 4: Environmental Epidemiology
- Module 5: Environmental Risk Assessment and Risk Communication
- Module 6: U.S. Environmental Health Policy
- Module 7: Environmental Justice and Health Disparities
- Module 8: Pesticides
- Module 9: Heavy Metals and Persistent Organic Pollutants (POPs)
- Module 10: Climate Change
- Module 11: Air Pollution
- Module 12: Infectious Disease

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.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Individual/Group</th>
<th>Percent</th>
<th>Due Date*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm exam</td>
<td>Individual</td>
<td>35</td>
<td>November 4</td>
</tr>
<tr>
<td>Article Discussion Group (ADG)</td>
<td>Group</td>
<td>10</td>
<td>October 27</td>
</tr>
<tr>
<td>Case Study</td>
<td></td>
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<tr>
<td>Participation:</td>
<td>Individual/Group</td>
<td>20</td>
<td>September 20</td>
</tr>
<tr>
<td>1. Article Discussion Group (ADG)</td>
<td></td>
<td></td>
<td>October 4</td>
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<tr>
<td>Assignments</td>
<td></td>
<td></td>
<td>November 8</td>
</tr>
<tr>
<td>a. Exposure Science</td>
<td></td>
<td></td>
<td>November 29</td>
</tr>
<tr>
<td>b. Risk Assessment/Risk communication</td>
<td></td>
<td></td>
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<tr>
<td>c. Pesticides</td>
<td></td>
<td></td>
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<tr>
<td>d. Air Pollution</td>
<td></td>
<td></td>
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<tr>
<td>Final Exam</td>
<td>Individual</td>
<td>35</td>
<td>December 16</td>
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<tr>
<td>Total</td>
<td></td>
<td>100</td>
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*All assignments are due at 11:59pm unless otherwise noted.
Grading:

<table>
<thead>
<tr>
<th>Points Range</th>
<th>Grade</th>
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<th>Grade</th>
</tr>
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<tbody>
<tr>
<td>≥ 95</td>
<td>A</td>
<td>85 – 94</td>
<td>A-</td>
</tr>
<tr>
<td>78 – 84</td>
<td>B+</td>
<td>75 – 77</td>
<td>B</td>
</tr>
<tr>
<td>70 – 74</td>
<td>B-</td>
<td>50 – 69</td>
<td>C</td>
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<tr>
<td>&lt; 50</td>
<td>F</td>
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Exams: The midterm exam, worth **35 points**, will be given in class on **November 4th** 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 16th 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 4; 10:00a-11:50a) and final exam (December 16; 10:00a-11:50a).

**Article Discussion Groups (ADGs):** 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.

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 on 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. Groups can choose to submit their question as a File Upload or a Text Entry.

At a minimum, your group’s question should demonstrate that you have read and understood the paper. For this, your group will receive 5 points. Questions that raise particularly insightful points and are selected to be discussed in class will earn 6 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. Additionally, if your group’s question is chosen to be discussed during class and no one from your group is there to respond, your group will receive 0 points for the assignment.
ADG #1
September 20: Submit ADG discussion question (Exposure Science) to Canvas by 11:59p
September 23: In-class ADG #1 discussion

ADG #2
October 4: Submit ADG discussion question (Environmental Risk Assessment/Communication) to Canvas by 11:59p
October 7: In-class ADG #2 discussion

ADG #3
November 8: Submit ADG discussion question (Pesticides) to Canvas by 11:59p
November 11: In-class ADG #3 discussion

ADG #4
November 29: Submit ADG #4 discussion question (Air Pollution) to Canvas by 11:59p
December 2: In-class ADG #4 discussion

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.

<table>
<thead>
<tr>
<th>MPH/MSPH Foundational Competency</th>
<th>Representative Assignment</th>
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<tbody>
<tr>
<td>Explain effects of environmental factors on a population’s health</td>
<td>1. Mid-term and Final Exam</td>
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<tr>
<td></td>
<td>2. Article Discussion Group Assignments</td>
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<tr>
<td>Explain biological and genetic factors that affect a population’s health</td>
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<td>Apply systems thinking tools to a public health issue</td>
<td>1. Article Discussion Group Assignment</td>
</tr>
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</table>
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.

Teaching Assistants and Course Communication: In a class this size, teaching assistants are integral to the seamless function of each part of the course, especially communication. In order to facilitate communication and ensure that questions and concerns are answered in a timely and effective fashion, I am asking that ALL questions, comments, and concerns about the course and topics be initially directed to the TAs. As noted above, students have been divided based on the letter of their last name. Please direct your questions to the TAs that correspond to your last name. Additionally, please allow 48 hrs for a response.

Course Canvas Site: Course material, such as Powerpoint presentations, ADG and supplemental readings, will be posted under Modules.

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 assignment.

Technology: As the course material is primarily administered through Canvas, it is imperative to have access to some form of technology, which can be used during class. Feel free to bring laptops, tablets, cell phones, whatever you need to facilitate your interaction with the material and learning.

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.

Video: One film has been chosen to illustrate an important course concept. This film must be obtained from a source such as Netflix or Amazon.com and is available for rent or purchase.
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)
<table>
<thead>
<tr>
<th>Module</th>
<th>Date</th>
<th>Speaker(s)</th>
<th>Topic(s)</th>
<th>Reading</th>
<th>Assignment</th>
</tr>
</thead>
</table>
| 1      | 9/9     | W. Michael Caudle, PhD            | Environmental Health Overview           | 1. Frumkin et al., Chapter 1 and Chapter 2  
4. Make America Wait Again: Trump Tries to Delay Regulations out of Existence. McQuaid, J. July 24, 2017 | None       |
| 2      | 9/16    | W. Michael Caudle, PhD            | Environmental Toxicology                | 1. Frumkin et al., Chapter 6 and Chapter 7  
| 3      | 9/23    | W. Michael Caudle, PhD            | Exposure Science                        | 1. Frumkin et al., Chapter 8  
| 4      | 9/30    | W. Michael Caudle, PhD            | Environmental Epidemiology              | 1. Frumkin et al., Chapter 4  
| 5      | 10/7    | W. Michael Caudle, PhD            | Environmental Risk Assessment and Risk Communication | 1. Frumkin et al., Chapter 27 and Chapter 28  
| 6      | 10/14   | FALL BREAK (No Class)             |                                         |                                                                                                |            |
| 7      | 10/21   | W. Michael Caudle, PhD            | Environmental Health Policy             | 1. Frumkin et al., Chapter 10 and Chapter 11  
3. The Plant Next Door. The Intercept. March 24, 2017 | None       |
<table>
<thead>
<tr>
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<th>Speaker(s)</th>
<th>Topic(s)</th>
<th>Reading</th>
<th>Assignment</th>
</tr>
</thead>
</table>
| 8      | 10/28 | Melissa Smarr, PhD                | Environmental Justice and Health Disparities       | 1. Frumkin et al., Chapter 10 and Chapter 11  
2. Cordner et al., (2012) Reflexive research ethics for environmental health and justice: Academics and movement-building                                                                                       | EH Policy Case Study Due                  |
| 9      | 11/4  | MIDTERM EXAM; CNR Auditorium (10:00a-11:50a) |                                                     |                                                                                                                                                                                                        |                                             |
| 10     | 11/11 | W. Michael Caudle, PhD            | Pesticide Exposure and Health Outcomes             | 1. Frumkin et al., Chapter 18  
| 11     | 11/18 | W. Michael Caudle, PhD            | Exposure to Persistent Organic Pollutants (POPs) and Heavy Metals and Health | 1. Kim et al., (2011) Fate and complex pathogenic effects of dioxins and polychlorinated biphenyls in obese subjects before and after drastic weight loss  
| 12     | 11/25 | Noah Scovronick, PhD              | Global Climate Change                              | 1. Frumkin et al., Chapter 12  
| 13     | 12/2  | Jeremy Sarnat, ScD                | Indoor/Outdoor Air Pollution                       | 1. Frumkin et al., Chapter 13  
| 14     | 12/9  | TBA                               | Infectious Disease and Human Health                | TBA                                                                                                                                                                                                  | None                                       |
| 15     | 12/16 | FINAL EXAM; CNR Auditorum (10:00-11:50a) |                                                     |                                                                                                                                                                                                        |                                             |