DEPARTMENT: Environmental Health

COURSE NUMBER: EH 501  SECTION NUMBER: 1

CREDIT HOURS: 1  SEMESTER: Fall 2018

COURSE TITLE: Introduction to Environmental Health

INSTRUCTOR NAME: Stefanie Ebelt Sarnat, ScD

INSTRUCTOR CONTACT INFORMATION
EMAIL: sebelt@emory.edu
PHONE: 404-712-9636
SCHOOL ADDRESS OR MAILBOX LOCATION: CNR 2035 (office)
OFFICE HOURS: by appointment

COURSE DESCRIPTION

Required foundation course for first year students in all master's programs administered by Department of Environmental Health, with four aims: 1) to introduce students to major topics in environmental health, including mechanisms of toxicity, pesticides and other chemicals, children’s health, WASH (water, sanitation, and hygiene), infectious disease, air pollution, climate change, and planetary health; 2) to describe tools used to understand these environmental health topics, such as exposure science, epidemiology, toxicology, biomarkers/omics, risk assessment, implementation science, and policy; 3) to provide students with an introduction to the Environmental Health department faculty, their perspectives and research interests on these major environmental health topics, as well as an overview of environmental health courses; and 4) to provide first year students a forum to gather as a cohort before progressing through their respective masters programs. As indicated below, the course touches on many school-wide and departmental competencies, and is intended as an initial introduction to these topics for students before they embark on further in-depth coursework.
MPH/MSPH FOUNDATIONAL COMPETENCIES:

- Describe major environmental risks to human health ranging from the local to global scale
- Characterize the magnitude, frequency and duration of environmental exposures
- Assess the sources and movement of contaminants through the environment (EH, GEH)
- Apply the principles of toxicology to assess health effects of environmental exposures (EH, GEH)
- Describe the role of toxicology in evaluating health effects of environmental exposures (EH-EPI)
- Apply the principles of epidemiology to assess health effects of environmental exposures (EH, GEH)
- Interpret results of epidemiologic studies of an environmental health question (EH-EPI)
- Explain major policy issues in environmental health including regulatory frameworks (EH, EH-EPI)
- Appraise the environmental, behavioral, and social factors that contribute to the emergence, re-emergence, and persistence of infectious diseases (GEH)
- Assess the major forces that influence the health of populations around the world (GEH)

EVALUATION

This course is graded on a satisfactory/unsatisfactory (S/U) basis and evaluated based on class attendance and weekly reading assignments.

To receive an S grade, students will:

a) Deliver >85% class attendance (i.e., attend 7 out of 8 classes at a minimum; if you will miss a class, you must notify the instructor in advance of your absence);

b) Each week, conduct the assigned pre-class reading(s). Readings for each class will be posted on the course Canvas site by the previous Wednesday; and,

c) Each week, submit at least 2 questions that you have from the reading(s). Include in your submission brief thoughts that form the basis for your questions, such as what you found convincing or unconvincing in the reading. Questions are due by 11:59 pm on the Monday prior to class each week. Questions are to be submitted via the Discussions portal on the course Canvas site. Selected questions will be discussed during class with the faculty presenters.

COURSE STRUCTURE

The overarching goal of this course is for students to develop comprehension of major topics in environmental health and tools used to address environmental health questions, as laid out in the program competencies listed above.
To address this goal, the course is structured around weekly presentations by groups of EH faculty. Each week’s presentation and discussion will provide an overview of a specific EH topic area, tools used to address the topic area, and ongoing research in the area. Reading assignments and submission of questions will prepare students for the upcoming class each week.

COURSE POLICIES

As noted above, attendance and completion of assignments is required to receive a passing (‘S’) grade. To promote an engaging and productive learning environment, students are encouraged to fully participate in class discussion and to restrict use of technology (cell phone, laptop) to activities relevant to the class.

Canvas will be used to post important announcements, required readings, and slides.

Instructor office hours are by appointment. Please schedule a meeting via e-mail (sebelt@emory.edu).

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.

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)

COURSE CALENDAR

Class meets on Wednesdays, 10:00-11:50 am in CNR 1000

Note: Topics and dates may change as the semester progresses. All updates will be posted on Canvas.

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<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Instructor, 1° Affiliation</th>
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<td>1</td>
<td>August 29, 2018</td>
<td>Course Introduction</td>
<td>Stefanie Sarnat, EH</td>
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<td>2</td>
<td>September 5, 2018</td>
<td>Mechanisms of Toxicity</td>
<td>Mike Caudle, EH Qiang Zhang, EH</td>
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<td>3</td>
<td>September 12, 2018</td>
<td>WASH, Infectious Disease</td>
<td>Tom Clasen, EH Matthew Freeman, EH Karen Levy, EH</td>
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<td>4</td>
<td>September 19, 2018</td>
<td>Children’s Health</td>
<td>Todd Everson, EH Carmen Marsit, EH Melissa Smarr, EH</td>
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<td>5</td>
<td>September 26, 2018</td>
<td>Pesticides and Other Chemicals</td>
<td>Dana Barr, EH Vaughn Barry, EH Barry Ryan, EH Kyle Steenland, EH</td>
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<td>October 3, 2018</td>
<td>Air Pollution</td>
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<td>Climate Change</td>
<td>Yang Liu, EH Daniel Rochberg, EH Stefanie Sarnat, EH Noah Scovronick, EH</td>
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<td>October 17, 2018</td>
<td>Planetary Health</td>
<td>Matthew Gribble, EH Eri Saikawa, ENVS</td>
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COURSE OUTLINE

1. August 29, 2018: Course Introduction (Stefanie Sarnat)
   - Course introduction, course goals and overview of syllabus
   - Overview of public health, and environmental health within public health
   - Major topics in environmental health (i.e., course outline)
   - Tools and approaches used to understand EH topics
   - Available EH courses by topic area

   Optional reading to follow-up from this class:

2. September 5, 2018: Mechanisms of Toxicity (Mike Caudle, Qiang Zhang)
   - In vivo and in vitro techniques to evaluate neurotoxicity and neurological disease
   - Study designs for addressing selected toxicological questions
   - Introduction to computational toxicology

   Prepare for this class by reading:
   b) Zhang et al., Bridging the data gap from in vitro toxicity testing to chemical safety assessment through computational modeling. *Frontiers in Public Health*, accepted.

   Submit two questions on the readings by 11:59 pm on September 3

3. September 12, 2018: WASH, Infectious Disease (Tom Clasen, Matthew Freeman, Karen Levy)
   - Water-related global burden of disease
   - Pathogen transmission pathways
   - WASH and diarrheal disease study design and intervention implementation considerations
   - Systematic review approaches

   Prepare for this class by reading:
   a) Eisenberg et al., Toward a systems approach to enteric pathogen transmission: from individual independence to community interdependence. *Annual Reviews of Public Health* 33:5.1–5.19, 2012.

   Submit two questions on the readings by 11:59 pm on September 10
4. **September 19, 2018: Children’s Health (Todd Everson, Carmen Marsit, Melissa Smarr)**
   - Why children are uniquely vulnerable to environmental exposures
   - Leading environmental health risks for children
   - Effects of hazardous exposures on children’s health
   - Epidemiological issues in children’s health studies
   - Use of molecular epidemiology in environmental health

   **Prepare for this class by reading sections of interest in:**

   **Submit two questions on the reading by 11:59 pm on September 17**

5. **September 26, 2018: Pesticides and Other Chemicals (Dana Barr, Vaughn Barry, Barry Ryan, Kyle Steenland)**
   - Pesticides as critical public health tools
   - Current state of pesticide exposure worldwide: from research to policy
   - Perfluoro-octanoic acid and the DuPont case study

   **Prepare for this class by reading:**
   a) Clune et al., Have regulatory efforts to reduce organophosphorus insecticide exposures been effective? *Environmental Health Perspectives* 120:521-525, 2012.

   **Submit two questions on the readings by 11:59 pm on September 24**

   - Air pollution basics: definitions, measures, health concerns, regulations
   - Estimating health effects from air pollution – study designs, exposure contrasts, confounding
   - Research highlights
   - Case study discussion of the Harvard 6 Cities Study

   **Prepare for this class by reading:**

   **Submit two questions on the reading by 11:59 pm on October 1**
7. October 10, 2018: Climate Change (Yang Liu, Daniel Rochberg, Stefanie Sarnat, Noah Scovronick)
   - Climate change basics
   - Current-day work on climate and health issues
   - Future climate scenarios, modeling future events and future health impacts
   - Climate change policy

Prepare for this class by reading:
   a) Climate Extremes and Global Health, New Ways to Make Progress: 
   b) WHO fact sheet on climate and health: 
      http://www.who.int/mediacentre/factsheets/fs266/en/ (optional)
   c) IPCC AR5 synthesis report, summary for policymakers: 

Submit two questions on the reading(s) by 11:59 pm on October 8

8. October 17, 2018: Planetary Health (Matthew Gribble, Eri Saikawa)
   - Planetary health concepts, interactions between different ‘spheres’

Prepare for this class by reading:

Submit two questions on the reading by 11:59 on October 15