DEPARTMENT: ENVIRONMENTAL HEALTH / GLOBAL HEALTH

COURSE NUMBER: EH582 / GH582  SEMESTER: FA14

CREDIT HOURS: 2

COURSE TITLE: Global Climate Change: Health Impacts and Response

Thursdays, 4:00-5:50; GCR L35

INSTRUCTORS
Jeremy Hess (Office: 2038 Claudia Nance Rollins Bldg)
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TEACHING ASSISTANT: Marie Russell <marie.russell@emory.edu>
Office Hour: Thursdays 1-2PM in the EH dept. lounge/break room

BRIEF COURSE DESCRIPTION
This course will explore the public health effects of global climate change, epidemiologic and other methods for understanding and studying these effects, the public health adaptation response, and potential mitigation efforts and activities. Public health responses will be discussed with particular focus on global health issues. The course will emphasize a practical approach to vulnerability and risk assessment, and students will develop skills assessing the risks of particular climate-related health impacts.

LIST SCHOOL LEVEL, DEPARTMENT, AND/ OR PROGRAM COMPETENCIES
- Describe major environmental risks to human health ranging from the local to global scale.
- Assess the sources and movement of contaminants through the environment.
- Characterize major relevant exposure pathways and elaborate on how they are used to study the magnitude, frequency, and duration of environmental exposures.
- Apply the principles of epidemiology to assess health effects of environmental exposures.
- Assess the major forces that influence the health of populations around the world.
- Critique major global priorities and the reasons for their prioritization.
- Appraise the environmental, behavioral and social factors that contribute to the emergence, re-emergence, and persistence of infectious diseases.
- Interpret the geographic and demographic distributions, as well as morbidities and mortalities, of major infections in the US and globally.
- Explain major policy issues in Environmental Health including regulatory frameworks.
- Design environmental health programs, policies, interventions and/or research intended to...
LIST LEARNING OBJECTIVES ASSOCIATED WITH THE COMPETENCIES

- Understand climate change including major drivers, time course, uncertainties, impacts, and temporal and spatial distributions of associated risks.
- Describe epidemiological and other research methods to ascertain the relationships between climate and health, and to project the health effects of climate change.
- Understand the major anticipated health effects of climate change.
- Understand the health impacts of climate change specific to vulnerable populations in the developing world, considering the health burden and solutions from a development perspective.
- Articulate the importance of integrating climate mitigation/adaptation activities with existing global health initiatives.
- Develop strategies for communicating the health risks of climate change to global health funders, agencies, and populations in the field.
- Communicate the public health response to climate change from several perspectives.
- Understand important tools used for assessing vulnerability to climate change impacts and to facilitate public health involvement in adaptation and mitigation decisions.
- Develop skills in literature search and review, synthesis, public speaking and collaboration.
- Synthesize learning in an oral presentation reviewing either a particular exposure-outcome association in detail, or the range of exposure-outcomes for a particular locale.
- Understand policy options for climate change mitigation and adaptation at the global, national, institutional, and individual scales.

EVALUATION

The course grade will be determined by a combination of class participation, performance on weekly in-class exercises, short assignments, and a final oral presentation.

Grades will be assigned based on the following formula:

Class participation: 10%
In-class exercises: 40% (10 exercises at 4% each)
Short assignments: 20% (2 assignments at 10% each)
Final presentation: 30%

Class participation will be assessed by the instructors and will be based on the student's attendance, preparation for class, posting to the course blog, contributions to class discussion, in-class questions, and participation in group activities. If you will miss a class, you must notify the instructor in advance of your absence. Students that receive full credit will have participated regularly, meaningfully, and through multiple venues.

In-class exercises will assess students' engagement with course readings. Exercises will vary from short multiple-choice quizzes, to short-answer questions, to basic problem solving. Each exercise will be worth 4% of the final grade. In-class exercises are closed-book and closed-notes. If you will miss a class, you must notify the instructor in advance of your absence. At the next class attended after the missed session (or at a time agreed upon with the instructors), the student will present (~7-10 minutes) on a topic mutually agreed upon by the student and instructors, drawn from media, scientific or other sources.

Short assignments (due dates noted on the schedule) will explore class topics in greater depth in a variety of formats (e.g., 1-page position paper; preparation for participation in an in-class debate, etc.). The assignment will examine important ideas from the assigned readings and lecture, and will require critical examination of methods and findings, clear articulation of an argument or concept, and the application of key concepts (e.g., adaptation planning; health impact assessment; etc.) drawn from both readings and lectures. Assignments will be assessed based on the quality of the presentation, evidence of depth of research in preparation, and other criteria described in the assignment. Further details on assignments will be available on Blackboard. Late assignments will not be accepted under any circumstances.
**Final presentations** will be a team exercise. Teams of ~4 will develop a 30 minute presentation on a climate-related health effect not covered in class, as that impact will likely be experienced in a particular place or population.

Final presentations are required to include a quantitative overview of the health burden, a review of the evidence for the effect(s), factors affecting population vulnerability to the impact(s), and appropriate adaptation and/or mitigation strategies. Students must meet with an instructor to discuss their presentation topic and approach prior to the presentation. Presentation time limits will be enforced, and students should practice presentations beforehand to resolve timing, A/V and clarity issues. The presentation will comprise 30% of the course grade. More details about the specific requirements of the final presentation and examples can be found on Blackboard.

**Extra credit** will be available for presenting extra material (from media, scientific or other sources) to the class and leading class discussion. This extra credit will be used to bump borderline grades to the next level (for example, from an A- to an A), and will be assigned at the instructors' discretion.

**TOPICS COVERED**
This course explores the public health effects of global climate change, epidemiologic and other methods for understanding and studying these effects, the public health adaptation response, policy options for mitigating and adapting to climate change, and health impacts of mitigation efforts and activities. Major topics include:

- An overview of climate change, including causes and projections.
- Epidemiological methods required to study climate-health associations.
- The burden of disease stemming from climate change, with a particular emphasis on impacts in the developing world, global and local equity issues, and the interaction between climate change mitigation/adaptation activities and existing global health initiatives.
- Exposures most confidently associated with climate change, including direct exposures such as temperature (increases in average temperature as well as extreme heat events), changes in the hydrologic cycle (drought and extreme precipitation), and sea-level rise; and indirect exposures such as changes in vector-borne and zoonotic disease distributions, water quantity and quality, air quality and aeroallergen exposure, impacts on land arability and nutritional content of food, population displacement, and others.
- Health effects of these exposures, including heat-related morbidity and mortality; water- and food-borne disease; vectorborne and zoonotic disease; malnutrition; health impacts of mass population movements such as waterborne disease outbreaks, violence, and exacerbation of chronic disease; injury morbidity and mortality; respiratory and cardiovascular disease; and mental health.
- Policy options for both mitigating future climate change and preparing for and responding to current and projected climate impacts.

The public health response will be discussed, with particular focus on global health issues. The course will emphasize a practical approach to vulnerability and risk assessment, and students will develop skills assessing the risks of particular climate-related health impacts.

**READINGS / ANNOUNCEMENTS / BLOG**
Important announcements, required readings and an interactive blog are available on the course Blackboard website. Students are strongly encouraged to put their own posts on the blog and to post substantive responses to others’ posts.

**OFFICE HOURS**
Instructor office hours are by appointment - send an email to schedule a time to meet. TA office hours are Thursday 1-2PM and other days/times by appointment. Contact Marie at marie.russell@emory.edu to confirm an appointment time and location.
ACADEMIC HONOR CODE
All material submitted by a student in fulfillment of his or her academic course of study must be the original work of the student. Written assignments submitted in fulfillment of the requirements for this course will be analyzed using plagiarism detection software, and instances of academic dishonesty will be dealt with according to RSPH policy, which can be reviewed at: http://www.sph.emory.edu/studentservice/enrollment_conductcode.php
At minimum, students found to have plagiarized others’ work will fail the relevant assignment, though more significant action including failure of the course may result. Repeat infraction will result in automatic course failure. Any questions regarding the appropriate use of references and others’ material should be directed to the instructors well in advance of the assignment due date. Students who are concerned with their language skills and would like assistance with their writing should make use of Emory’s writing center to ensure that they are following appropriate style and citation guidelines.

CLASS SCHEDULE – FALL 2014

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<thead>
<tr>
<th>Date</th>
<th>Session topic</th>
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<tbody>
<tr>
<td>28-Aug</td>
<td>Ways of thinking about the problem: What is climate change?</td>
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<tr>
<td>4-Sep</td>
<td>Global climate change and health: frameworks for understanding health impacts</td>
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<tr>
<td>11-Sep</td>
<td>Extreme weather: building human resilience</td>
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<tr>
<td>18-Sep</td>
<td>Predicting the extremes: early warning systems for flooding in South Asia and beyond</td>
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<td>§25-Sep</td>
<td>Heat extremes: the public health implications of a warmer world</td>
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<td>2-Oct</td>
<td>Water-borne disease in a changing climate</td>
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<td>9-Oct</td>
<td>Air pollution and global climate change</td>
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<td>16-Oct</td>
<td>Vector-borne disease: spatial spread in a future climate</td>
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<td>23-Oct</td>
<td>Linking institutional choices to climate mitigation</td>
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<td>§30-Oct</td>
<td>The basis for climate regulation and litigation: the role of the courts</td>
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<td>6-Nov</td>
<td>Global and national climate policy</td>
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<td>13-Nov</td>
<td>Student presentations</td>
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<td>20-Nov</td>
<td>Student presentations</td>
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<tr>
<td>4-Dec</td>
<td>Student presentations, wrap-up and evaluation</td>
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§short assignment due