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**SYLLABUS**

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**Global Environmental Change and Public Health: GH/EH 220 (3 credits)****Lectures Mondays/Wednesdays – 9:30 – 10:50 am****Sieg Hall Rm 225**

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**Instructors:**

Kristie Ebi, Ph.D., MPH

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**Office Hours:**

By appointment at the Center for Health and the Global Environment (CHanGE)

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**Teaching assistant:**

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**Office Hours:**

Thursdays 11:30 am-1:00pm, Raitt Hall Room 229, Office B

or by appointment

**Course description**

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The world has entered a new era: the Anthropocene. Humans are the primary drivers of global environmental changes that are changing the planet on the scale of geological forces. Global environmental changes include climate change, ozone depletion, biodiversity loss, nitrogen fertilization, and ocean acidification. Students will be introduced to the range of global environmental changes and their consequences for human health and well-being, with a focus on climate change and its consequences.

Climate variability and change are affecting morbidity and mortality from extreme weather and climate events, and from changes in air quality arising from changing concentrations of ozone, particulate matter, or aeroallergens. Altering weather patterns and sea level rise also may facilitate changes in the geographic range, seasonality, and incidence of selected infectious diseases in some regions, such as malaria moving into highland areas in parts of sub-Saharan Africa. Changes in water availability and agricultural productivity could affect undernutrition, particularly in parts of Asia and Africa. These changes largely affect low- and middle-income countries and vulnerable populations.

Students will gain foundational knowledge in the health effects of global environmental changes, particularly climate change, benefits of policies and technologies to reduce greenhouse gas emissions and adaptation needs and strategies.

**Overall learning objectives**

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*Students will be able to:*

- Identify the major global environmental changes and the upstream drivers behind these changes
- Identify the health risks of climate variability and change, including the sources of vulnerability and exposure to those risks
- Identify highly vulnerable populations domestically and globally

- Identify key interventions to promote climate-resilient health systems
- Enumerate key issues in implementing, monitoring, evaluating, learning from, and continuously updating, adaptation policies and programs
- Identify the health co-benefits of mitigation policies to reduce greenhouse gas emissions

### **Expectations of students**

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Students are expected to attend lecture twice per week. Students are also expected to take the midterm exam, the final exam, and write one paper on a relevant topic chosen between the student and the instructors. (see *Grades* below)

### **Grades**

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- 30% midterm exam
- 40% final exam
- 30% paper

We will use the UW's grading guidelines, available at <http://depts.washington.edu/grading/practices/guidelines.html>.

Grades for each assignment will be posted on Canvas

### **Requirements**

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**Assigned textbook and readings.** Readings will be assigned every week to be completed before class. The readings will be from the assigned textbook or other sources. Alternative media sources such as videos will be included to allow for a comprehensive overview of the body of information.

#### **Textbook:**

Global Climate Change and Human Health: From Science to Practice  
George Luber (Editor), Jay Lemery (Editor)  
ISBN: 978-1-118-50557-1  
November 2015, Jossey-Bass

#### **Exams:**

The midterm exam will take place during the 6<sup>th</sup> week of classes covering course materials until that point. It will be an in-class exam consisting of multiple choice and short answer questions.

The final exam will take place in class during finals week and will be cumulative with a focus on the new materials after the midterm. The exam will consist of multiple choice and short answer questions.

**Paper.** Students will write a paper on some aspect of the health risks of global environmental change, reviewing a particular health risk, or describing adaptation or mitigation options to reduce that risk, in the context of a specific country or city. The paper will be at least 10 double-spaced pages and contain a minimum of 10 references that are peer-reviewed, scholarly articles found in scientific journals. A one-paragraph summary of the topic for the individual project will be due one week after the mid-term exam. The paper will be due at the start of class 19.

**Extra Credit.** Students may receive extra credit for attending any event throughout the quarter relevant to the course materials and submitting a short essay about the event. Submit the essay to the TA.

**UW Disability Statement**

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Access and Accommodations: Your experience in this class is important to us, and it is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law. If you experience barriers based on a disability or temporary health condition, please seek a meeting with DRS to discuss and address them. If you have already established accommodations with DRS, please communicate your approved accommodations to your instructor at your earliest convenience so we can discuss your needs in this course.

Disability Resources for Students (DRS) offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, your instructor(s) and DRS. If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (this can include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 206-543-8924 or [uwdrs@uw.edu](mailto:uwdrs@uw.edu) or [disability.uw.edu](http://disability.uw.edu)

**Academic Integrity Statement**

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Students at the University of Washington (UW) are expected to maintain the highest standards of academic conduct, professional honesty, and personal integrity.

The UW School of Public Health (SPH) is committed to upholding standards of academic integrity consistent with the academic and professional communities of which it is a part. Plagiarism, cheating, and other misconduct are serious violations of the University of Washington Student Conduct Code (WAC 478-120). We expect you to know and follow the university's policies on cheating and plagiarism, and the SPH Academic Integrity Policy. Any suspected cases of academic misconduct will be handled according to University of Washington regulations. For more information, see the University of Washington Community Standards and Student Conduct website.

**Anti-Racism Commitment**

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Instructors are committed to creating a fully inclusive climate in this class. We strive to overcome systemic racism by creating an environment that reflects community and mutual caring, while we ally with others in combating all forms of social oppression. We will look for opportunities to improve our performance as we seek to break down institutional racism. This can include course readings, class interactions, faculty performance, and/or the institutional environment. We encourage students to talk to either faculty member, or the TA, and/or submit your comments in the end-of-course evaluation form.

*Class Schedule*

<b>Class</b>	<b>Topic</b>	<b>Instructor</b>	<b>Assigned Readings</b>
<b>WEEK 1</b> Class 1 WED 1/3	Global environmental change: an introduction	Ebi	
<b>WEEK 2</b> Class 2 MON 1/8	Climate change: where we are and where we are going	Bond	Luber/Lemery Text Chapter 1: Primer on Climate Science
<b>WEEK 2</b> Class 3 WED 1/10	Stratospheric ozone depletion and public health	Panopto lecture	<a href="http://www.noaanews.noaa.gov/stories2011/20110216_ozone.html">http://www.noaanews.noaa.gov/stories2011/20110216_ozone.html</a>  <a href="http://www.ucsusa.org/global_warming/science_and_impacts/science/ozone-hole-and-gw-faq.html#.VsV2NfirIU0">http://www.ucsusa.org/global_warming/science_and_impacts/science/ozone-hole-and-gw-faq.html#.VsV2NfirIU0</a>  <a href="https://www.youtube.com/watch?v=lBu3vltczRw">https://www.youtube.com/watch?v=lBu3vltczRw</a>
<b>WEEK 3</b> Class 4 MON 1/15	No class (Martin Luther King Day)		
<b>WEEK 3</b> Class 5 WED 1/17	Nitrogen cycle and health impacts	Ebi	<a href="http://www.eoearth.org/view/article/154864/">http://www.eoearth.org/view/article/154864/</a>  <a href="http://www.esa.org/esa/solutions-for-a-nitrogen-soaked-world/">http://www.esa.org/esa/solutions-for-a-nitrogen-soaked-world/</a>  <a href="http://scied.ucar.edu/longcontent/changing-nitrogen-cycle">http://scied.ucar.edu/longcontent/changing-nitrogen-cycle</a>
<b>WEEK 4</b> Class 6 MON 1/22	Health risks of biodiversity loss	Hess	<a href="https://www.youtube.com/watch?v=Xra87liAopM">https://www.youtube.com/watch?v=Xra87liAopM</a>  <a href="https://www.cbd.int/doc/bioday/2007/ibd-2007-booklet-01-en.pdf">https://www.cbd.int/doc/bioday/2007/ibd-2007-booklet-01-en.pdf</a>  <a href="http://news.nationalgeographic.com/2015/04/150430-extinction-climate-warming-animals-species-conservation-wildlife/">http://news.nationalgeographic.com/2015/04/150430-extinction-climate-warming-animals-species-conservation-wildlife/</a>

<b>WEEK 4</b> Class 7 WED 1/24	Assessing and communicating health risks	Sellers	Luber/Lemery Text Chapter 16: Protecting Environmental Justice Communities from the Detrimental Impacts of Climate Change
<b>WEEK 5</b> Class 8 MON 1/29	Political context for climate science, process for international assessments, and progress toward mitigation goals	Hess	Luber/Lemery Text Chapter 19: Mitigation: International Institutions and Global Governance Luber/Lemery Text Chapter 17: International Perspective on Climate Change Adaptation
<b>WEEK 5</b> Class 9 WED 1/31	Health exposures: weather, climate variability, climate change, and climate change epidemiology	Morin	McMichael AJ. 2001. Global environmental change as “risk factor”: can epidemiology cope? <i>AJPH</i> 91:1172-1175 Xun et al. 2010. Climate change epidemiology: methodological challenges. <i>Int J Public Health</i> 55:85-96.
<b>WEEK 6</b> Class 10 MON 2/5	<b>Midterm Exam</b>		
<b>WEEK 6</b> Class 11 WED 2/7	Framework for understanding and managing health risks; assessing current and future vulnerability and risks	Ebi	Luber/Lemery Text Chapter 13: Climate Change Health Impact Projections: Looking into the Future  <b>Paper Topic Summary DUE</b>
<b>WEEK 7</b> Class 12 MON 2/12	Thermal extremes and their health impacts	Ebi	Luber/Lemery Text Chapter 3: Extreme and Changing Meteorological Conditions on the Human Health Condition
<b>WEEK 7</b> Class 13 WED 2/14	Extreme weather and climate events and their health impacts	Ebi	Annual Disaster Statistical Review (CRED)
<b>WEEK 8</b> Class 14 MON 2/19	No class (President’s Day)		
<b>WEEK 8</b> Class 15 WED 2/21	Infectious diseases	Cangelosi	Luber/Lemery Text Chapter 8: Climate and Its Impacts on Vector-Borne and Zoonotic Diseases

<b>WEEK 9</b> Class 16 MON 2/26	Air quality, including aeroallergens, and health	Ebi	Luber/Lemery Text Chapter 5: Ozone, Oppressive Air Masses, and Degraded Air Quality
<b>WEEK 9</b> Class 17 WED 2/28	Food security	Ebi	Luber/Lemery Text Chapter 9: Addressing the Challenges of Climate Change to Food Security, Safety, and Nutrition
<b>WEEK 10</b> Class 18 MON 3/5	Mitigation and health co-benefits	Hess or Ebi	Luber/Lemery Text Chapter 18: Health Cobenefits of Climate Mitigation Strategies
<b>WEEK 10</b> Class 19 WED 3/7	Climate resilient health systems	Boyer	Luber/Lemery Text Chapter 12: Climate and Health Vulnerability Assessments: A Practical Approach.  <b>Final Paper Due at 9:30 am</b>
<b>FINALS WEEK</b> 3/14	<b>Final Exam 8:30-10:20 AM</b>		Location TBA