

UNIVERSITY OF WISCONSIN-MADISON  
**POP HLTH / ENVIR ST 560: HEALTH IMPACT ASSESSMENT OF GLOBAL ENVIRONMENTAL CHANGE**  
**FALL 2018, 3 CREDITS**

**BASIC INFORMATION**

Tuesday / Thursday, 9:30-10:45am - Grainger 1185

**Instructor:** Professor Jonathan Patz, MD, MPH

Offices: 258 Enzyme Institute Building, 1710 University Ave.

1050 Medical Sciences Center (1<sup>st</sup> floor), 1300 University Ave. (across from W.I.D.)

Office hours: Tues. and Thurs. 11:00am – 12pm and by appointment

Email: [patz@wisc.edu](mailto:patz@wisc.edu) [Please put “**PHS 560 CLASS**” in subject line of each email or I may miss it ☺]

Phone: 608-263-2188

**Graduate Teaching Assistant:** Kim Kassander

Office Hours: By appointment

Email: [kassander@wisc.edu](mailto:kassander@wisc.edu)

**COURSE OBJECTIVES & OVERVIEW**

The course will provide students with tools to identify and address real-world global environmental and urban health issues. In addition to reading and discussing subject content to assist in understanding of the issues, students will learn skills to optimize the likelihood of affecting policy change through: 1) the Health Impact Assessment framework; 2) an introduction to environmental health modeling and spatial analysis; and 3) science communication skills.

This class meets for two 75-minute class periods each week over the fall semester and carries the expectation that students will work on course learning activities (reading, writing, listening to podcasts, watching videos, studying, etc) for about 3 hours out of classroom for every class period. The syllabus includes more information about meeting times and expectations for student work.

**LEARNING OUTCOMES**

By the end of the course, students should be able to:

1. Recognize unique elements of environmental public health and environmental epidemiology.
2. Know the steps both for Risk Assessment and for Health Impact Assessment and understand when to apply one approach versus the other; recognize their strengths and weaknesses.
3. Recognize the linkages between physical and ecological conditions with human health and well-being, as well as exposure pathways through which impacts occur.
4. Gain facility in some tools available to study environmental and urban design influences on health, e.g., spatial influences on health, and health impact assessment
5. Through and interdisciplinary Policy Brief and Podcast, recognize the value of problem-solving by applying perspectives from across disciplines and/or sectors.
6. Develop effective risk and/or science communication strategies related to environmental health.

Graduate Students Only:

1. Be able to summarize and critique peer-reviewed scientific articles in succinct and organized format for gap identification and research planning.
2. Clearly articulate scientific findings in layman’s terms by writing an op-ed.

## **CLASSROOM POLICIES**

To better facilitate learning, laptops, cellular phones, tablets, and e-readers are **NOT** allowed during class. You should take notes by hand. On occasion, students will be asked to bring laptops for specific in-class activities. At all other times, please only have a notebook and a pen at your desk. This decision is based on evidence demonstrating that most students who use laptops report more multitasking and distraction. For more information on the science, see: Fried, 2008, [In-class Laptop Use and Its Effect on Student Learning](#) or "[Laptops Are Great. But Not During a Lecture or a Meeting](#)" by Susan Dynarski (2017). Please let us know, however, if you have special needs that require use of a laptop in class.

Cultivating a classroom of respect and inclusion is essential. We ask all students to recognize that we must learn together how best to nurture greater inclusion; our initiatives reflect an understanding that we are always learning.

## **REQUIRED STUDENT RESOURCES**

**Textbook:** [Climate Change and Public Health](#). Eds. Levy and Patz. 2015, Oxford University Press.

### **Canvas Material (Articles, Podcasts, Videos, Etc.):**

Along with textbook readings, most class sessions include additional **required** and optional material to be read, listened to, or viewed prior to each class. You can find these posted by class session on Canvas under each 'Module.' Web links, podcasts, lecture videos, lecture slides, and other resources will also be posted. Access to Canvas is necessary for the class. Additionally, most assignments will be submitted online using Canvas and updates to this syllabus and additional information throughout the course will also be posted online.

### *Optional Related Texts:*

[Environmental Health: From Global to Local \(Third Edition, 2016\)](#)

Howard Frumkin (ed). 2016, John Wiley & Sons.

## **COURSE SCHEDULE/ CALENDAR**

Please see attached sheet for a tentative course schedule. Dates are subject to change.

## **EVALUATION PROCEDURES AND GRADING CRITERIA**

Students will be graded on a variety of individual and group work, including active participation in class discussions. Graduate students will also be required to write an Op-Ed related to course content in addition to the other assignments. Descriptions of these assignments are outlined in more detail below.

**Grading Scale:** 93-100% = A      77-81% = BC      <60% = F  
88-92% = AB      71-76% = C  
82-87% = B      60-70% = D

## **ATTENDANCE STATEMENT**

Course attendance is **required**. If you miss more than three classes, your final course grade could be lowered at the instructor's discretion. In the event of unavoidable conflicts, **please communicate ahead of time** if possible.

**Grade Breakdown** (see detailed description on next page)

<b>INDIVIDUAL IS GRADED ON:</b>	<b>POINTS</b>	
Message Box	5	
Quizzes (5 pts each)	25	Note: There will be 6 online quizzes, and the lowest grade will be dropped.
Policy Brief	25	
In-class Activities	20	5 pts. for each activity (some group involvement for Model UN & Topic Debates)
Model United Nations Exercise (5 pts)		
Urban Design Exercise (5 pts)		
Food/Agriculture Exercise (5 pts)		
Section Topic Debate (5 pts)		

**GROUP IS GRADED ON:**

Health Impact Assessment	10	Will conduct an HIA on the UW plan.
Podcast	15	Group activity combining Policy Briefs.
<b>TOTAL</b>	<b>100</b>	

**GRADUATE STUDENTS ONLY  
(INDIVIDUAL)**

Op-Ed	10
Reference Table	10
<b>TOTAL</b>	<b>20</b>

**ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES**

We wish to fully include persons with disabilities in this course. Please let Dr. Patz know if you have a McBurney Visa listing any accommodations, and we will do our best to meet those needs.

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA.

## **ACADEMIC INTEGRITY**

Our course is an academic community that is bound together by the traditions and practice of scholarship. Honest intellectual work – on examinations and assignments – is essential to the success of our own community of scholars. Using classmates' responses to answer exam questions or disguising words written by others as your own assignments undermines the trust and respect on which our course depends and will not be tolerated. Academic dishonesty could result in course failure.

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to: [studentconduct.wiscweb.wisc.edu/academic-integrity/](http://studentconduct.wiscweb.wisc.edu/academic-integrity/).

## **DIVERSITY AND INCLUSION**

Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals. The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.

## **Assignment Descriptions**

### **1. Class Attendance and Participation (not directly graded)**

Active participation, preparation, and class attendance are required for all students. While not graded specifically, class participation is essential for your success. Note that several class sessions include graded activities (see below). **Some questions on online quizzes will relate specifically to in-class discussion and lecture.**

### **2. Online Quizzes x5 (25 points) – Periodically Throughout the Semester**

Students must complete online quizzes by 11:59 pm on the due date (see course schedule). Quizzes will include 10 questions related to course readings, videos, podcasts, and lectures. A total of 6 quizzes will be given throughout the semester. The lowest grade will be dropped. Each quiz is therefore worth 5 points.

### **3. In-Class Activities (20 points) - 10/2/2018 and Periodically Throughout the Semester**

There will be four primary in-class activities.

a) **Model United Nations (5 pts)** activity (scheduled for 10/2/18). In groups, students will represent the interests of an assigned country in a model United Nations activity. Each group will be provided background materials and format guidelines for the activity.

b) **Section Topic Debate (5 pts)** near the end of each class section (e.g., urban health, climate change/energy, food systems, and One Health/ecology). The class will be divided so that *each student is responsible for preparing for only one debate*. In groups, students will research and argue for or against a question pertinent to each of the four topic areas that will be provided ahead of time. Detailed instructions will be provided in class. Students must be prepared to argue both sides of the debate.

c) **Built urban environment in-class activity (5 pts) - due 10/18/2018.** Dr. Chris McCahill is designing an exercise to orient you to urban designing to promote health.

d) **Food systems in-class activity (5 pts) (TBD).** Dr. Valerie Stull is designing an exercise around sustainable food systems.

#### **4. Health Impact Assessment of UW-Madison Master Plan (10 points) – due 10/25/2018**

Examine the UW-Madison Master Plan and conduct an HIA on the plan, following the basic steps you'll learn about how to do an HIA. The class will be divided in five groups to focus on one of the following areas: 1) Healthy Buildings; 2) Transportation; 3) Food and food waster; 4) Energy; and 5) Green Space.

#### **5. Policy Brief (25 points) – due 11/29/2018**

Each student will write a formal Policy Brief (10-15 pages double-spaced, 12-point font) including at least 10 references. A policy brief (or policy memo) is a professionally written document that provides analysis and/or recommendations directed to a predetermined audience regarding a specific situation or topic. The goal of this assignment is to write an academically rigorous, persuasive paper about a specific “real-world” issue related to global environmental change and human health, prepared for a particular audience (or client). We will discuss how to identify the audience in class.

Over the course of the semester, each student will individually research a topic of interest and write a comprehensive Policy Brief. Policy Brief topics will be selected in class from a provided list of options. Students may propose additional topics if they have a particular interest in a topic not already covered. Each Policy Brief topic will be covered by several students, forming a group. The policy briefs will be written individually, so you must determine distinct issues within your group's topic for each person to write about. Your groups and broad topics will be assigned during the third week of class. At the end of the course, your group will combine the findings of your policy briefs to generate an educational Podcast.

#### **6. Message Box (5 points) for “Elevator” interviews (ungraded) – due 12/11/2018**

Students will be interviewed individually by the instructor and asked to respond to various questions focusing on the subject of the Policy Brief. From an in-class lecture, students will learn about constructing a “Message Box” to organize the most important points to convey to the press and policy makers, and they will then make an individual message box in preparation for this interview.

#### **7. Group Podcast (15 points) – Presentations During Final Exam Period (12/11/18)**

In groups, students will create and record an 8-10 minute podcast outlining the key findings from their individual Policy Briefs. The purpose of this assignment is to push student groups to think critically about overlaps between policy, global environmental change, and human health using a multi-disciplined perspective. Students are encouraged to integrate elements of epidemiology, risk assessment, and health impact assessment in their podcasts. Group podcasts will be graded out of 15 points on: Content and Relevance, Professional Quality and Clarity, Organization, Creativity, and Peer Review. All students in a group must speak on the podcast. Podcasts should be submitted online as an mp3 file. You may use your phone to record if necessary, but higher quality audio recording equipment is available on campus. (See the [UW Madison Information Technology Website](#), UW Info Labs [Equipment Checkout Systems](#), and [Equipment Elsewhere](#) for more information.) Sample podcasts from last year's class will be available, and a detailed rubric will be provided.

## **Assignments for Graduate Students Only**

### **I. Reference Table (Graduate Students Only) (10 points) - due 11/15/18**

Each graduate student will be required to build a reference table including a minimum of 10 papers that will be useful in the research of their final Policy Brief. This reference table should include the following: paper title, author, the study population, methods used, and a brief synopsis of the findings and their relevance to environmental health. An example reference table will be provided.

### **2. Op-Ed (Graduate Students Only) (10 points) – due Final Exam Period (12/14/18)**

Each graduate student will be required to produce a polished 1-2 page op-ed (750-word max) based on his/her final Policy Brief topic. The op-ed should be directed toward a specific newspaper or online news source. Scoring for this project will be based on: Professional Quality and Clarity, Content and Relevance, and Creativity.

## PHS 560 - Health Impact Assessment of Global Environmental Change

Fall 2018 [Tues. & Thurs. 9:30-10:45 AM] - Grainger Room 1185

Jonathan Patz, MD, MPH

Class Session	Date	Topic	Readings & Videos [Complete Before Class]	Assignment Due / In Class	Lecturer
<b>Section I: Welcome to the Anthropocene -- Course Context &amp; Background</b>					
1	6-Sep	Climate Change Science, Planetary Boundaries & Defining the Anthropocene	1) Textbook Chapters 1 & 2 2) *Podcast: Frontiers: Anthropocene (BBC Radio) 3) Rockstrom et al., 2009. A safe operating space for humanity. 4) <i>Optional</i> - Steffen et al., 2018. PNAS Trajectories in Anthropocene		Patz
2	11-Sep	Health Impacts of Climate Change (Part I)	1) Textbook Chapters 7 & 8 2) Watts et al., 2017 The Lancet Countdown. Read Section I: <i>Climate change impacts, exposures, and vulnerability</i> 3) *Podcast: Climate Change and Health (Part I) (Harvard School of Public Health) 4) <i>Optional</i> - Patz et al., 2014. When It Rains, It Pours: Future Climate Extremes and Health.		Patz
3	13-Sep	Air Pollution, Climate Change, & Public Health	1) Textbook Chapter 5		David Abel
4	18-Sep	Heatwaves, Air Quality and Occupational Health (Climate Change Part II)	1) Textbook Chapter 4A & 4B; 2) *View Online Lectures: Risk Assessment, 2 Parts	<b>Quiz #1</b>	Patz

Section II: Methods and Frameworks					
5	20-Sep	Introduction to Environmental Epidemiology	1) Textbook Chapter 3; 2) Sections 1, 3, 4, & 5 of <i>Principles of Epidemiology in Public Health Practice</i> , 3rd Edition. An Introduction to Applied Epidemiology and Biostatistics (CDC online text); 3) *Podcast: John Snow, Father of Epidemiology (Science Friday)		Patz
6	25-Sep	The Health Impact Assessment (HIA) Framework	1) Quigly et al., 2006 <i>Health Impact Assessment International Best Practice Principles</i>		Patz
7	27-Sep	Health in All Policies	1) TBD		Patz
8	2-Oct	Model United Nations Activity	1) Model UN Planning Packet (MUST read in advance)	In-class Activity <b>Quiz #2</b>	Kim Kassander
9	4-Oct	Persuasive Communication Principles & Training	1) Textbook Chapter 12 2) Dunwoody, 2007. The Challenges of Trying to Make a Difference using Media Messages. 3) *Video: TEDx "Communicating Science Through Star Trek," Chris Reddy; 4) *Optional Video: "Can we change people's mind on climate?" Prof. Katherine Hayhoe.	In-Class Exercise (Game: Tangos)	Patz
Section III: The Built Environment					
10	9-Oct	Food Sovereignty	1) TBD		Monica White
11	11-Oct	Health in the Built Urban Environment	1) Textbook Chapter 14		Patz

12	16-Oct	Urban Design and Health (Part I)	1) TBD	<b>Quiz #3</b>	Chris McCahill
13	18-Oct	Urban Design and Health (Part II)	1) TBD	Urban Exercise Due	Chris McCahill
14	23-Oct	Urban Health Debate		In-class Activity	Patz
<b>Section IV: Energy</b>					
15	25-Oct	Health Co-Benefits from Mitigating Climate Change	1) Watts et al., 2017 The Lancet Countdown. Read Section 3: Mitigation actions and health co-benefits; 2) Patz et al., 2014. Climate Change: Challenges and Opportunities for Global Health; 3) * <a href="#">Video</a> : "Climate Change is Affecting Our Health. Is There a Cure?" Prof. Jonathan Patz	<b>HIA Due</b>	Patz
16	30-Oct	Energy Policy and Health	1) Textbook Chapters 13A & 13B; 2) * <a href="#">Podcast</a> : 100% Renewable Energy - Can we do it? (Science Vs.)	<b>Quiz #4</b>	David Abel
17	1-Nov	Energy Debate		In-class Activity	
<b>Section V: Global Food Systems</b>					
18	6-Nov	Climate Change, Agriculture, & Food Security	1) Myers et al., 2017, Climate Change and Global Food Systems: Potential Impacts on Food Security and Undernutrition; 2) Wheeler and von Braun, 2013. Climate Change Impactson Global Food Security; 3) Textbook chapter 13D (Agriculture Policy)		Valerie Stull

19	8-Nov	Rethinking Food Production - the New Big Ideas	1) *Podcast: "Soil as ShamWow: How Farmers (and Gardeners) Can Benefit from Healthy Soil" 2) <i>Optional</i> - Forster and Radulovich, 2015. Seaweed and Food Security.		Valerie Stull
20	13-Nov	Food Systems Debate --Food Fight!		<b>Quiz #5</b>	Patz
21	15-Nov	Let Them Eat Bugs! Entomophagy, the Environment, & Human Health	1) van Huis, 2013. Potential of Insects as Food and Feed in Assuring Food Security; 2) <i>Optional</i> - Stull et al., 2018. Impact of edible Insect Consumption on Gut Microbiota in Healthy Adults, a Double-blind, Randomized Crossover Trial	In-class Activity <b>Reference Table Due</b>	Valerie Stull
<b>Section VI: One Health and Ecosystems</b>					
22	20-Nov	One Health	1) Horton and Lo, 2015. Planetary health: a new science for exceptional action; 2) Zinsstag, 2013. Convergence of Ecohealth and One Health; 3) Foley, 2017. Living by the lessons of the planet; 4) Gebreyes et al., 2014. The Global One Health Paradigm: Challenges and Opportunities for Tackling Infectious Diseases at Human, Animal and Environment Interface in Low-Resource Settings.		Chris Olsen
23	22-Nov	NO CLASS			

24	27-Nov	Land-use, Environment, and Vectorborne Disease	1) Textbook Chapter 6; 2) Patz et al., 2004. Unhealthy Landscapes: Policy Recommendations on Land Use Change and Infectious Disease Emergence.		Patz
25	29-Nov	Tick-borne Disease	1) Ostfeld et al., 2006. Climate, Deer, Rodents, and Acorns as Determinants of Variation in Lyme-Disease Risk. 2) Levi et al., 2012. Deer, predators, and the emergence of Lyme disease. 3) Ostfeld and Keesing, 2013. Straw men don't get Lyme disease: response to Wood and Lafferty.	<b>Policy Brief Due</b>	Susan Paskewitz
26	4-Dec	Disease Transmission	1) Gardner et al., 2012. Weather Variability Affects Abundance of Larvae Culex in Storm Water Catch Basin in Suburban Chicago. 2) Shand et al., 2016. Predicting West Nile Virus Infection Risk From the Synergistic Effects of Rainfall and Temperature.	<b>Quiz #6</b>	Tony Goldberg
27	6-Dec	One Health Debate		In-class Activity	Patz
<b>Section VII: Knowledge Sharing &amp; Big Ideas (Finals Week)</b>					
28	11-Dec	Message Boxes and Where then should we go? [Course Wrap-Up and Key Messages]	1) *Podcast: Climate Change and Health (Part I) - Empathy and the Environment (Harvard School of Public Health)	<b>Podcast Due Message Box Due;</b> In-class Activity <i>Message Box Interviews</i>	Patz
29	13-Dec	Final Class Period Location and Time TBD	Podcast Presentations and Peer Review		Patz
-	<b>14-Dec</b>	Final Week of Class		<b>OP-ed Due</b>	