

**Urban and Environmental Policy 201**  
**Environmental Health and Policy**  
**Tuesdays and Thursdays, 3:05-4:30am**

**Professor Bhavna Shamasunder**

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**Course Overview**

This course is designed to provide students with an understanding of the environmental factors impacting human and ecological health, including consequences of natural and human-made hazards. Environmental health is a rapidly growing and interdisciplinary field that involves both science and public policy. It is integrated into numerous aspects of our lives, both directly and indirectly. Topics to be covered include food safety, water access and equality, pesticides, air quality, the identification of environmental hazards, the assessment of various risks (including exposure to dangerous chemicals used in toys, food, workplaces, and other activities), and the social and biological causes of disease (epidemiology). Students will gain an understanding of environmental health analytical and scientific methods. We will also explore ways that communities and policy-makers seek to address environmental health challenges. A common thread running through the course will be an examination of how exposure to environmental and health risks vary among different population groups, in the Los Angeles area, in the United States, and around the world. We will also explore the role of science in environmental policy-making, the enforcement of regulations, and the efforts of community groups to influence public policy.

**Learning Objectives:**

By the end of this course, you should be able to:

- 1) Demonstrate knowledge in major areas of environmental health;
- 2) Understand basic scientific methods for assessing the impacts of environmental hazards on human health;
- 3) Understand and use scientific frameworks to interpret environmental health information and data;
- 4) Critically assess environmental health issues appearing in scholarly publications and the popular press;
- 5) Practice communicating scientific ideas and results in language that can be generally understood;
- 6) Work with classmates from other disciplines in order to realize the importance of multidisciplinary approaches for solving environmental health problems;
- 7) Applied scientific, social and political frameworks for understanding conflicts in the realms of science, public health, environmental policy-making and regulation.

## Online News

Please subscribe to Environmental Health News, a non-profit news organization that provides daily news stories on environmental health. You should read the headlines and pay additional attention to stories that connect with ongoing coursework; <http://www.environmentalhealthnews.org/>

## Textbook

Friis, Robert H.; Essentials of Environmental Health, Second Edition; 2012

The textbook is available for purchase at the Oxy bookstore, but you can also find it at online booksellers since it has been in print for a few years.

Please see the course Moodle for additional readings for each session. You are responsible for both textbook readings and those posted on moodle for each session.

## Course Requirements

Assignment	Contents	Grade Points	Week Assigned	Week Due
Participation	Class preparation, engagement in class.	10	--	--
Homework #1	Problem Set*	5	Week 2	Week 3
Homework #2	Problem Set	5	Week 4	Week 5
Midterm	Session topics through week 5	20	Week 6	In Class, February 28
Research Paper Topic	Paragraph description of final paper topic and 7-10 **	5	Week 5	Week 8
Homework #3	Problem Set	5	Week 9	Week 10
Homework #4	Problem Set	5	Week 12	Week 13
Final Paper	Student selected topic; must be approved by instructor; Details discussed in class	20	Week 8	Week 14, April 27 <sup>th</sup>
Final Exam	Comprehensive	25	--	--

\*All problem sets will be completed via moodle.

\*\* Please follow Chicago (author-date) citation format for all bibliographies

## Course Schedule

Readings from the textbook are noted. Additional readings are posted on the course moodle.

Week	Date	Topic	Readings
1	Tuesday, January 24 <sup>th</sup>	Course Overview, Review of Course Requirements	Frumkin, Howard; "Introduction to Environmental Health", Chapter 1; in <u>Environmental Health from Global to Local</u> ; Jossey-Bass; 2016
	Thursday, January 26 <sup>th</sup>	Situating Environmental Health: History, Definitions, and Context	Nash, Linda; "Purity and Danger: Historical Reflections on the Regulation of Environmental Pollutants"; <i>Environmental History</i> ; V.13, No. 4; October 2008; pp. 651-658  Friis, Robert; Chapter 1; Introduction: The Environment at Risk (Textbook)

2	Tuesday, January 31 <sup>st</sup>	Environmental Epidemiology	Friis, Robert, Chapter 2; Environmental Epidemiology (Textbook)
	Thursday, February 2 <sup>nd</sup>		<p>Frumkin, Howard; “An Interview Study to Improve Sanitation”; pp. 96-98</p> <p>Wing et al; “Integrating Epidemiology, Education, and Organizing for Environmental Justice: Community Health Effects of Industrial Hog Operations”; <i>American Journal of Public Health</i>; v98, n8; August 2008;  <a href="http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2007.110486">http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2007.110486</a></p> <p>Brown, Phil; “Popular Epidemiology: Community Response to Toxic-Waste Induced Disease in Woburn, Massachusetts”; <i>Science, Technology, &amp; Human Values</i>, Vol. 12, No. 3/4, Special Issue on the Technical and Ethical Aspects of Risk Communication. (Summer - Autumn, 1987), pp. 78-85.</p>
3	Tuesday, February 7 <sup>th</sup>	Environmental Toxicology - Describe the concept of dose-response - Understand the difference between <i>vulnerability</i> and <i>susceptibility</i> to environmental exposures - Calculate the average <i>daily dose</i> (intake) for a person exposed to contaminated media - Define variability and uncertainty and describe the impact of each on estimates of risk - Describe and give examples of how risk assessment is used to set regulatory standards for chemicals and biological hazards - Define the Precautionary Principle and its application in Environmental Health	<p>Friis, Robert; “Environmental Toxicology”; Chapter 3; (Textbook);</p> <p>Miller, Gary; Tox Box Bisphenol A, PAH’s, and Phthalates; pp. 126-127; 134-136, and 140-141.</p> <p>Johansen, Bruce; “The Inuit’s Struggle with Dioxins and Other Organic Pollutants”; <i>Project Muse</i>; v26, n3; Summer 2002; p. 479-490;  <a href="http://muse.jhu.edu/journals/american_indian_quarterly/v026/26.3johansen.pdf">http://muse.jhu.edu/journals/american_indian_quarterly/v026/26.3johansen.pdf</a></p> <p>Please look at <a href="http://www.endocrinedisruption.org/">http://www.endocrinedisruption.org/</a>; the website of The Endocrine Disruption Exchange</p>
4	Thursday, February 9 <sup>th</sup>		<p>Friis, Robert; “Environmental Policy and Regulation”; Chapter 4 (Textbook)</p> <p>Shettler, Barrett, and Raffensperger; “The Precautionary Principle: Protecting Public Health and the Environment”;  <a href="http://www.healthandenvironment.org/articles/doc/540">http://www.healthandenvironment.org/articles/doc/540</a></p> <p>Excerpt from O’Brien, Mary; <u>Making Better Environmental Decisions: An Alternative to Risk Assessment</u>; MIT Press; May 2000</p> <p>Vogel, Sarah; “from ‘the dose makes the poison’ to ‘the timing makes the poison’: Conceptualizing</p>
	Tuesday, February 14 <sup>th</sup>	Environmental Policy and Regulation	
	Thursday, February 16 <sup>th</sup>		

			Risk in the Synthetic Age"; <i>Environmental History</i> , v. 13; 2008
5	Tuesday, February 21 <sup>st</sup>	Infectious Disease (Zoonotic and Vector-Borne Diseases)	Friis, Robert; "Zoonotic and Vector-Borne Diseases"; Chapter 5 (Textbook)
	Thursday, February 23 <sup>rd</sup>		Feingold, Beth et al; "A Niche for Infectious Disease in Environmental Health: Rethinking the 'Toxicological Paradigm'"; <i>Environmental Health Perspectives</i> ; 118(8); August 2010  Birnbaum and Jung; "Evolution in Environmental Health: Incorporating the Infectious Disease Paradigm"; <i>Environmental Health Perspectives</i> ; 118(8); 2010  Peachman, Rachel; "When Measles Spreads from Disneyland, It's a Small World After All"; <i>Motherlode</i> ; January 21, 2015; <a href="http://parenting.blogs.nytimes.com/2015/01/21/when-measles-spreads-from-disneyland-its-a-small-world-after-all/?smid=fb-share&amp;r=1">http://parenting.blogs.nytimes.com/2015/01/21/when-measles-spreads-from-disneyland-its-a-small-world-after-all/?smid=fb-share&amp;r=1</a>
6	Tuesday, February 28 <sup>th</sup>	In-Class Midterm Exam	Midterm will cover content from weeks 1-5
	Thursday, March 2 <sup>nd</sup>	Intro to Toxic Metals	Friis, Robert; "Toxic Metals and Elements"; Chapter 6 (Textbook)
7	Tuesday, March 7 <sup>th</sup>	Spring Break, No Class	
	Thursday, March 9 <sup>th</sup>	Spring Break, No Class	
8	Tuesday, March 14 <sup>th</sup>	No Class	
	Thursday, March 16 <sup>th</sup>	Toxic Metals: Case Studies of Lead and Mercury	Tong et al. 2000. Environmental lead exposure: a public health problem of global dimensions <i>Bull. WHO</i> , V 78, No. 9, pp. 1068-1077. Available at: <a href="http://www.scielosp.org/pdf/bwho/v78n9/v78n9a03.pdf">http://www.scielosp.org/pdf/bwho/v78n9/v78n9a03.pdf</a>  Needleman, H.; "Childhood Lead Poisoning: The Promise and Abandonment of Primary Prevention"; <i>American Journal of Public Health</i> ; v88, n12; 1998; <a href="http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.88.12.1871">http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.88.12.1871</a>  Kristof, Nicholas; "This is Your Brain on Toxins"; <i>New York Times</i> ; October 16, 2016; <a href="http://www.nytimes.com/2013/10/17/opinion/kristof-this-is-your-brain-on-toxins.html">http://www.nytimes.com/2013/10/17/opinion/kristof-this-is-your-brain-on-toxins.html</a>  Read through the EPA link on the health effects of mercury; <a href="http://www.epa.gov/hg/effects.htm">http://www.epa.gov/hg/effects.htm</a>  Grossman, Elizabeth; "Lead Wars?: The politics of prevention and responsibility"; <i>The Pump Handle</i> ; May 22, 2013;

			<a href="http://scienceblogs.com/thepumphandle/2013/05/22/lead-wars-the-politics-of-prevention-and-responsibility/">http://scienceblogs.com/thepumphandle/2013/05/22/lead-wars-the-politics-of-prevention-and-responsibility/</a>
9	Tuesday, March 21 <sup>st</sup>	Environmental Justice and Vulnerable Populations / Pesticides and other organic chemicals	Morello-Frosch, Rachel and Pastor, Manuel; “Environmental Justice and Vulnerable Populations”; in Frumkin, Howard; <i>Environmental Health from Global to Local</i>
	Thursday, March 23 <sup>rd</sup>		<p>Please look at the California Environmental Justice Screening tool, version 3.0.  <a href="http://oehha.maps.arcgis.com/apps/webappviewer/index.html?id=4560cfbce7c745c299b2d0cbb07044f5">http://oehha.maps.arcgis.com/apps/webappviewer/index.html?id=4560cfbce7c745c299b2d0cbb07044f5</a></p> <p>Cushing, Lara; “Racial/Ethnic Disparities in Cumulative Environmental Health Impacts in California: Evidence from the Statewide Environmental Justice Screening Tool”; Feb 11, 2015;  <a href="http://ajph.aphapublications.org/doi/full/10.2105/AJPH.2015.302643">http://ajph.aphapublications.org/doi/full/10.2105/AJPH.2015.302643</a></p> <p>Friis, Robert; “Pesticides and Other Organic Chemicals”; Chapter 7 (Textbook)</p> <p>Robsen, Mark Gregory et al; pp. 494-495; DDT, An Example of Public Health Trade Offs; Ch. 18; in ed. Howard Frumkin <i>Environmental Health from Local to Global</i>;</p> <p>Pesticide Action Network North America; Pesticide Drift, Science and Policy;  <a href="http://www.panna.org/science/drift/science-policy">http://www.panna.org/science/drift/science-policy</a></p> <p>Lu et al; “Organic Diets Significantly Lower Children’s Dietary Exposure to Organophosphorus Pesticides; <i>Environmental Health Perspectives</i>; 114(2); 260-263</p> <p>Shamasunder, Bhavna; “Chlorpyrifos Contamination across the Food System: Shifting Science, Regulatory Challenges, and Implications for Public Health”; in <i>The Intersection of Food and Public Health: Examining Current Challenges and Solutions in Policy and Politics</i>; Spring 2017; CRC Press/Taylor &amp; Francis</p>
10	Tuesday, March 28 <sup>th</sup>	Water Quality	Friis, Robert; “Water Quality”; Chapter 9 (Textbook)
	Thursday, March 30 <sup>th</sup>		<p>Montgomery MA and Elimelech M. Water and Sanitation in Developing Countries: Including Health in the Equation. <i>Environ. Sci. Technol.</i>, 2007, 41(1), pp 17–24 Available at:  <a href="http://pubs.acs.org/doi/pdfplus/10.1021/es072435t">http://pubs.acs.org/doi/pdfplus/10.1021/es072435t</a></p> <p>Sledge, Daniel and Mohler, George; “Eliminating Malaria in the American South: An Analysis of the Decline of Malaria in 1930s Alabama”; <i>American Journal of Public Health</i>; v103, n8; August 2013;</p>

			<p><a href="http://aiph.aphapublications.org/doi/pdf/10.2105/AJPH.2012.301065">http://aiph.aphapublications.org/doi/pdf/10.2105/AJPH.2012.301065</a></p> <p>Ingraham, Christopher; “This is how toxic Flint’s water really is”; <i>Washington Post</i>; January 15, 2016; <a href="https://www.washingtonpost.com/news/wonk/wp/2016/01/15/this-is-how-toxic-flints-water-really-is/">https://www.washingtonpost.com/news/wonk/wp/2016/01/15/this-is-how-toxic-flints-water-really-is/</a></p> <p>See Drinking Water, Sanitation, &amp; Hygiene; <a href="http://www.unwater.org/statistics_san.html">http://www.unwater.org/statistics_san.html</a></p>
11	Tuesday, April 4 <sup>th</sup>	Air Quality/Air Pollution	<p>Friis, Robert; “Air Quality”; Chapter 10; 244-267; (Textbook)</p> <p>Bell, Michelle and Samet, Jonathan; “Air Pollution; pp. 321, 331-332</p> <p>Akinbami et al; “Trends in Asthma Prevalence, Health Care Use, and Mortality in the United States 2001-2010”; <i>NCHS Data Brief</i>; n94; May 2012; <a href="http://www.cdc.gov/nchs/data/databriefs/db94.pdf">http://www.cdc.gov/nchs/data/databriefs/db94.pdf</a></p> <p>Redd, Stephen; “Asthma in the United States: Burden and Current Theories”; <i>Environmental Health Perspectives</i>; v110, S4; August 2002; <a href="http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1241205/pdf/ehp110s-000557.pdf">http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1241205/pdf/ehp110s-000557.pdf</a></p> <p>Morello-Frosch, Rachel; Pastor, Manuel; and Sadd, Jim; “Environmental Justice and Southern California’s ‘Riskscape’: The Distribution of Air Toxics Exposures and Health Risks Among Diverse Communities”; <i>Urban Affairs Review</i>; v36, n4; March 2001; <a href="http://uar.sagepub.com/content/36/4/551.full.pdf+html">http://uar.sagepub.com/content/36/4/551.full.pdf+html</a></p> <p>Barboza, Tony; “Air Quality rules tightened after cancer risk found to be 3 times higher”; <i>Los Angeles Times</i>; June 5, 2015; <a href="http://www.latimes.com/local/california/la-me-0606-air-toxics-20150607-story.html">http://www.latimes.com/local/california/la-me-0606-air-toxics-20150607-story.html</a></p>
	Thursday, April 6 <sup>th</sup>		
12	Tuesday, April 11 <sup>th</sup>	Global Climate Change and Human Health	<p>Friis, Robert; Chapter 10 continued, pp. 267-277</p> <p>Patz, Jonathan and Frumkin, Robert; “Climate Change and Human Health”, Chapter 12 in ed. Howard Frumkin <u><a href="#">Environmental Health from Local to Global</a></u>; 2016</p> <p>English et al; “Environmental Health Indicators of Climate Change for the United States: Findings from the State Environmental Health Indicator Collaborative”; <i>Environmental Health Perspectives</i>; v117, n11; November 2009; <a href="http://ehp.niehs.nih.gov/0900708/?utm_source=rss&amp;utm_medium=rss&amp;utm_campaign=0900708">http://ehp.niehs.nih.gov/0900708/?utm_source=rss&amp;utm_medium=rss&amp;utm_campaign=0900708</a></p> <p>IPCC Report; Chapter 8; <i>Human Health</i>; <a href="https://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter8.pdf">https://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter8.pdf</a></p>

	Thursday, April 13 <sup>th</sup>	Energy Production and Human Health	Frumkin, Howard, "Energy and Human Health"; Chapter 14; in <u>Environmental Health from Local to Global</u> ; 2016  Shamasunder and Sadd; <i>Drilling Down: The Community Consequences of Expanded Oil Development in Los Angeles</i>
13	Tuesday, April 18 <sup>th</sup>	Food Systems and Environmental Health	Friis, Robert; "Food Safety"; Chapter 11 (Textbook)  Pollan, Michael; "Our Decrepit Food Factories"; <i>New York Times Magazine</i> ; December 16, 2007; <a href="http://michaelpollan.com/articles-archive/our-decrepit-food-factories/">http://michaelpollan.com/articles-archive/our-decrepit-food-factories/</a>  French, Hilary and Halweil, Brian; "Microbial Migrations"; <i>Orion Magazine</i> ; Summer 2001; <a href="http://www.orionmagazine.org/index.php/articles/article/88">http://www.orionmagazine.org/index.php/articles/article/88</a>  Stashwick, Sasha; "KFC Gets An 'F' on Antibiotics Again"; September 20, 2016; <a href="https://www.nrdc.org/experts/sasha-stashwick/kfc-gets-f-antibiotics-again">https://www.nrdc.org/experts/sasha-stashwick/kfc-gets-f-antibiotics-again</a>
	Thursday, April 20 <sup>th</sup>	The Built Environment and Health	Frumkin, Howard; "Buildings and Health", ch 20; in in <u>Environmental Health from Local to Global</u> ; 2016  Jackson, Richard; Dannenberg, Andrew; and Frumkin, Howard; "Health and the Built Environment: 10 Years Later"; <i>American Journal of Public Health</i> ; v103, n9; September 2013
14	Tuesday, April 25 <sup>th</sup>	Solid Waste Management	Friis, Robert; "Solid and Liquid Wastes"; Chapter 12; (Textbook)  Betts, Kellyn S.; "Hand-Me-Down-Hazard: Flame Retardants in Discarded Foam Products"; <i>Environmental Health Perspectives</i> ;v123, n3; March 2015; <a href="http://ehp.niehs.nih.gov/123-A56/">http://ehp.niehs.nih.gov/123-A56/</a>  Simmons, Ann; "The world's trash crisis, and why many Americans are oblivious"; <i>Los Angeles Times</i> ; April 22, 2016; <a href="http://www.latimes.com/world/global-development/la-fg-global-trash-20160422-20160421-snap-htmlstory.html">http://www.latimes.com/world/global-development/la-fg-global-trash-20160422-20160421-snap-htmlstory.html</a>
	Thursday, April 27 <sup>th</sup>	Final Research Papers Due In Class and tying up loose ends	
15	Tuesday, May 2 <sup>nd</sup>	Final Exam Review and Course Wrap-Up	

## **COURSE POLICIES**

### **Plagiarism Policy**

#### **Academic Integrity and Course Protocol:**

Plagiarism consists of any form of passing off, or attempting to pass off, the knowledge or work of others as your own. It is a form of cheating. Examples of plagiarism include: unattributed quotations from a book, magazine or article; copying from the notes or essays of others; the submission of work actually written or dictated by others; and unattributed use of other people's ideas. Remember, plagiarism includes information from books, newspapers, journals and the Internet. Plagiarism is grounds for failing the course and possible expulsion from the college. Students should consult Occidental's student handbook for information on academic misconduct policy at the college: <http://www.oxy.edu/student-handbook/academic-ethics/academic-misconduct>. Ethical research requires that you properly document the sources you use. Even when you do not quote directly from another work, if reading that source contributed to the ideas presented in your paper, you should give the authors proper credit. If you have questions about how to cite your sources appropriately, please visit the writing center. For this course, please use in text parenthetical citation formats with (author, date) and include a complete bibliography at the end of your paper.

### **Use of Tablets, Laptops**

If you are using a laptop to take notes, please sit in the front row. No phone use in the classroom. These are distracting to your neighbors as well as to yourself. If you need to text someone, go outside.

### **Classroom Community**

Through this course, we will aim to learn from each other, through discussion, as well as through lecture. I will post the slides from lecture following each class, so you can plan on taking strategic notes rather than writing down the entire content from the slides. Your ideas and questions are encouraged, a diversity of ideas is welcome, and respect for your colleague's ideas is imperative.

We expect our classroom to be a productive space for open, honest, and thoughtful discussion that recognizes and respects differences and acknowledges the broad range of knowledge we bring to the classroom and discussion. Please remember that our focus in this course is the issues, texts, course materials and presentations themselves, and not the personalities, identities, or opinions of other participants in the discussion.

### **Support Services**

The college provides a set of resources to students to support them in learning. The [Writing Center](#) provides writing assistance to students to develop ideas, draft, and revise papers.

Students with documented disabilities who are registered with Disability Services are required to present their accommodation letter to the instructor at the beginning of each semester or as soon as possible thereafter. Any student who experiences significant physical or mental impairments may contact Disability Services at (323) 259-2969 to learn about available services and support. More information is available at <http://www.oxy.edu/disability-services>

The Emmons Wellness Center also provides important support services and can help you address issues of stress, medical and mental health, and overall well-being. For more information, see their website at <http://www.oxy.edu/emmons-wellness-cent>