

The College of William and Mary
Department of Kinesiology and Health Sciences
KINE 325 – Environmental Issues in Public Health

FALL 2021

Class Location: Room 20 Boswell Hall (AKA Morton Hall)

<u>Instructor:</u>	Jenny Crain, MS, MPH, CPH
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<u>Office Hours:</u>	MWF 2-3PM Via Zoom (other times by appointment)
<u>Class Meets:</u>	MWF 1:00 – 1:50PM (MW @Boswell 20, Fridays Via Zoom)

Catalog Description: This course explores how the environment impacts human health. It introduces the methods used to study environmental health, surveys the nature and control of environmental hazards, and touches on some hot topics and current controversies in the field.

Required Books:

Environmental Health From Global to Local edited by Howard Frumkin
ISBN 978-1-118-98476-5
<https://ebookcentral.proquest.com/lib/cwm/detail.action?docID=4405576>

Additional required readings will be provided on Blackboard (Bb) either as pdf files or as links to online content.

Important Dates: Add/Drop deadline: F, September 10th
Withdraw deadline: M, November 1st
Final Exam date: 2-5pm M, December 13th
Mid-Term 1 Date: W, September 29th
Mid-Term 2 Date: W, November 3rd

*No class: M 10/18 (Fall Break), W 11/24 & F 11/26 (Thanksgiving Break)

Course objectives: Upon completing this course, students should be able to:

- Define environmental Health.
- Describe how toxicants interact with biological systems, and the mechanisms by which they exert adverse health effects.
- Identify and define the steps in risk-assessment and risk-management processes.

- Describe the steps in the regulatory process and identify current legislation and regulation regarding environmental issues.
- Understand historical cases of effects of environmental degradation and its effects on human life and current controversies in environmental public health.
- Understand health effects of specific cases of environmental disasters
- Identify stakeholders and leaders in environmental health

TENTATIVE & SUBJECT TO CHANGE, especially after 1st midterm, 2nd guest speaker, etc.

Class Number / Date	Topic	Reading
1 W, Sep 1	Course Overview, Introduction to Env PH	<ol style="list-style-type: none"> 1. Chapter 1 Intro. To Environmental Health from Global to Local edited by Howard Frumkin 2. Environmental Public Health: The Practitioner's Guide Pages 3 to 8 (Blackboard=Bb)
2 F, Sep 3 (Virtual)	The interconnectivity of life on earth, One Health Concept	<ol style="list-style-type: none"> 1. Perry GH 2014 Parasites and Human Evolution, Evolutionary Anthropology (Bb) 2. Preface One Health: The Human-Animal Environment Interfaces in Emerging Infectious Disease (Bb)
3 M, Sep 6	Tragedy of the Commons, Scarcity Vs. Sustainability of Environmental Resources	<ol style="list-style-type: none"> 1. Ophuls W 1977 Ecology and The Politics of Scarcity Pages 145 to 149 (Bb) 2. Hardin 1998 Science extensions of the tragedy of the commons (Bb) 3. https://www.smithsonianmag.com/science-nature/the-political-history-of-cap-and-trade-34711212/ 4. https://www.edf.org/climate/how-cap-and-trade-works 5. Chapter 3 Sustainability & Health from Global to Local Frumkin
4 W, Sep 8	Ecology & Epidemiology	<ol style="list-style-type: none"> 1. Lucas & McMichael 2005 Association or causation: Evaluating links between environment and disease. (Bb) 2. Chapter 2 Ecology & Chapter 4 Environmental/Occupational Epidemiology from Global to Local Frumkin

5 F, Sep 10 (Virtual)	Toxicology/Dose-Response, Toxic Effect on Developmental Life Cycle	<ol style="list-style-type: none"> 1. Chapter 6 Toxicology from Global to Local Frumkin 2. Chapter 2 The role of Toxicokinetic and Toxicodynamics in Developmental and Translational Toxicology In Translational Toxicology edited by CL Hughes & MD Waters. (Bb) 3. http://www.toxmsdt.com/0-toxtutor-home.html
6 M, Sep 13	Environmental Effects on Genes	<ol style="list-style-type: none"> 1. Chapter 7 Environmental Health from Global to Local Frumkin
7 W, Sep 15	Epigenetics and Toxins, ATSDR	<ol style="list-style-type: none"> 1. Lewis L 2017 Genetic and epigenetic determinants of inter-individual variability in responses to toxicants. (Bb) 2. https://www.atsdr.cdc.gov
8 F, Sep 17 (Virtual)	Food	<ol style="list-style-type: none"> 1. Chapter 19 Food Systems, the Environment, & Public Health from Global to Local Frumkin 2. https://wwwnc.cdc.gov/eid/article/21/1/14-0447_article 3. https://www.cdc.gov/ecoli/2012/O157H7-11-12/index.html 4. https://www.cdc.gov/foodsafety/outbreaks/investigating-outbreaks/index.html
9 M, Sep 20	Facilitated Group Discussion of 'Food Inc.' Documentary	<p>First film review due</p> <p>On reserve at Swem Library until 9/22/21!</p> <p>https://wm.primo.exlibrisgroup.com/permalink/01COWM_INST/g9pr7p/alma991016265009703196</p>
10 W, Sep 22	Water	<ol style="list-style-type: none"> 1. Chapter 16 Water & Health from Global to Local Frumkin 2. https://www.epa.gov/environmental-topics/water-topics 3. https://www.cdc.gov/healthywater/drinking/index.html 4. https://www.cdc.gov/ncezid/dfwed/waterborne/ 5. https://www.cdc.gov/healthywater/swimming/

11 F, Sep 24 (Virtual)	Flint Water Crisis, Extrapolating Causation in Environmental Studies	<ol style="list-style-type: none"> 1. http://www.npr.org/2017/06/14/532902398/michigan-health-chief-charged-with-involuntary-manslaughter-for-flint-water-crisis 2. https://www.nrdc.org/stories/flint-water-crisis-everything-you-need-know#sec-timeline 3. https://time.com/magazine/us/4188304/february-1st-2016-vol-187-no-3-u-s/ 4. https://time.com/4191864/flint-water-crisis-lead-contaminated-michigan/ 5. Kolmes S 2018 The Flint Water Crisis-Need for Long-Term Commitment to Healthcare (Bb)
12 M, Sep 27	The Built Environment, Equity, Aerosols, & Legionnaire's Disease	<ol style="list-style-type: none"> 1. Chapter 1 The Built Environment and Public Health by Russel Lopez (Bb) 2. https://wwwnc.cdc.gov/eid/article/27/6/21-0465_article 3. https://www.cdc.gov/legionella/index.html 4. Legionnaire's Disease Outbreak Bronx NY (Bb)
13 W, Sep 29	Air Pollution	<ol style="list-style-type: none"> 1. https://search.proquest.com/docview/1765534661/fulltextPDF/ED666C6E8A684806PQ/1?accountid=15053 2. https://academic.oup.com/bmb/article/68/1/209/421251
14 F, Oct 1 (Virtual)	Indoor Air Pollution	Guest Speaker: Dr. Rachel O'Brien, environmental aerosols
15 M, Oct 4	The Built Environment and Disease, Sick Building Syndrome	<ol style="list-style-type: none"> 1. https://search.proquest.com/docview/1504823683/fulltextPDF/656836462D7B4EB9PQ/1?accountid=15053 2. https://www.epa.gov/sites/default/files/2014-08/documents/sick_building_factsheet.pdf
16 W, Oct 6	Environmental Health Prevention & Health Policy Regulation (CDC, EPA, FDA, USDA-FSIS, OSHA)	<ol style="list-style-type: none"> 1. Chapter 26 EH: from Theory to Practice in Policy from Global to Local Frumkin 2. https://www.newyorker.com/magazine/2015/02/02/bug-system 3. https://www.cdc.gov/amd/what-we-do/emerging-threats.html 4. https://www.epa.gov, www.fda.gov, www.fsis.usda.gov, www.osha.gov
17 F, Oct 8	Exam 1, Midterm	(Tentatively plan for this Friday's class to be held in-person @ Boswell Hall 20, for a paper exam, but may shift to online/virtual midterm.)

18 M, Oct 11	Microorganisms: The Plague, Cholera, Malaria, etc.	<ol style="list-style-type: none"> 1. Camus A 1947 The Plague Page 7 to 40 (Bb) 2. https://apps.who.int/iris/bitstream/handle/10665/259556/Ex-PlagueMadagascar04122017.pdf?sequence=1&isAllowed=y 3. Zimmerman BE & DJ 2003 Killer Germs Malaria - Page 162-171 (Bb)
19 W, Oct 13	Green Spaces and Health	<ol style="list-style-type: none"> 1. Chapter 25 Nature Contact from Global to Local Frumkin 2. https://www.ahajournals.org/doi/epub/10.1161/JAHA.118.009117 3. Brauback 2018 Effects of Urban Green Space on Environmental Health, Equity and Resilience (Bb)
20 F, Oct 15 (Virtual)	Injuries	<ol style="list-style-type: none"> 1. Chapter 23 Injury from Global to Local Frumkin 2. https://www.researchgate.net/publication/7593790_Predictors_of_Stress_Fracture_Susceptibility_in_Young_Female_Recruits
21 W, Oct 20	Occupational Health: NIOSH, OSHA, Noise, Loneliness	<ol style="list-style-type: none"> 1. MMWR 2016 Hearing Loss Among Noise Exposed Workers 2003-2012 (Bb) 2. https://www.cdc.gov/niosh/index.htm 3. https://www.sciencedirect.com/science/article/pii/S1878029615005952 4. Miller 2011 Why Loneliness is Hazardous to Your Health (Bb)
22 F, Oct 22 (Virtual)	Radiation: 3 Mile Island, Chernobyl, Fukushima	<ol style="list-style-type: none"> 1. Chapter 22 in Environmental Health from Global to Local Frumkin 2. https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/3mile-isle.html 3. https://world-nuclear.org/information-library/safety-and-security/safety-of-plants/chernobyl-accident.aspx 4. https://www.iaea.org/newscenter/pressreleases/iaea-expert-team-completes-fifth-review-of-japans-plans-to-decommission-fukushima-daiichi
23 M, Oct 25	Examples of Environmental Disasters: Minimata Disease (Japan), Bhopal (India)	<ol style="list-style-type: none"> 1. Hachiya 2006 History, Present Minamata (Bb) 2. https://www.reuters.com/article/us-japan-minamata-victims/more-than-60-years-on-japans-mercury-poison-victims-fight-to-be-heard-idUSKCN1BV326

		3. https://www.theatlantic.com/photo/2014/12/bhopal-the-worlds-worst-industrial-disaster-30-years-later/100864/ 4. Broughton 2005 Bhopal Disaster (Bb)
24 W, Oct 27	Pest Control and Pesticides, DDT	1. Chapter 18 Environmental Health from Global to Local Frumkin 2. https://www.epa.gov/ingredients-used-pesticide-products/ddt-brief-history-and-status 3. https://www.cdc.gov/biomonitoring/about.html
25 F, Oct 29 (Virtual)	Risk Assessment and Management, Investigating <i>Legionella</i>	1. Chapter 27 Environmental Health from Global to Local Frumkin 2. https://www.epa.gov/risk/risk-management 3. https://www.cdc.gov/legionella/health-depts/environmental-inv-resources.html
26 M, Nov 1	Environmental Justice	1. Chapter 11 Environmental Health from Global to Local Frumkin
27 W, Nov 3	Facilitated Group Discussion of the film 'Erin Brockovich'	Second film review due https://youtu.be/ELzu636Xf6Y https://www.brockovich.com/the-movie/
28 F, Nov 5 (Virtual)	Climate Change	1. Chapter 12 Environmental Health from Global to Local Frumkin 2. https://www.cdc.gov/parasites/naegleria/pat_hogen.html 3. Stahl 2020 Env Factors Affecting Growth of <i>Naegleria fowleri</i> (Bb)
29 M, Nov 8	Examples of Environmental Degradation: Easter Island	1. Chapter 2 In Collapse by Jared Diamond
30 W, Nov 10	Historical consequences of not adapting: Norse Greenland	1. Chapter 7 in Collapse by Jared Diamond
31 F, Nov 12 (Virtual)	Environmental Effects on Health, thermophiles	Guest Speaker: Melissa Jamerson, PhD, PAM & <i>Naegleria fowleri</i>
32 M, Nov 15	Health Behavior and the Environment	1. Chapter 1 In Health Behavior by Glanz, Rimer and Viswanath

33 W, Nov 17	Community Health, Group Effect on Health	1. Chapter 2 in The Process of Community Health Education and Promotion by Doyle, Ward and Early.
34 F, Nov 19	Exam 2, Midterm	(Tentatively we will plan for this Friday's class to be held in-person @ Boswell Hall 20, for a paper exam.)
35 M, Nov 22 (Virtual)	Community Organizing and Health	<ol style="list-style-type: none"> 1. Pastor et al 2018 Health Affairs https://www.healthaffairs.org/doi/10.1377/hlthaff.2017.1285 2. Ganz M 2002: What is Organizing, Social Policy Fall 2002_ http://marshallganz.usmblogs.com/files/2012/08/What-is-Organizing.pdf
36 M, Nov 29	Personalities in Environmental Movt (Dudley Dudley, Gov Brown of CA, Rachel Carson, Wangari Maathai, Al Gore)	<ol style="list-style-type: none"> 1. https://www.washingtonpost.com/archive/local/1979/09/14/dudley-dudley/1d717c1c-0210-4aff-8958-cb98294db197/?utm_term=.3e89441c9525 2. http://www.professionalroofing.net/WebExclusives/Story/leader-of-the-environmental-movement/141
37 W, Dec 1	Leadership in Environmental Health	Excerpts of Wangari Maathai video (80mins) (Choose an environmentalist and write about how their leadership impacts health.)
38 F, Dec 3 (Virtual)?	Personalities in Environmental movement	1. Chapter 9 in Innovation in Environmental Leadership: Critical Perspectives Edited by Benjamin Redekop et al.
39 M, Dec 6	Discovery Channel's 'Mosquito'	Environmental Leader Essay due The film emphasizes the environmental changes that are causing transmission rates of vectorborne disease to increase. https://youtu.be/ZbBhUlgrM-o
40 W, Dec 8	Facilitated Group Discussion of 'Mosquito'	Role mosquitos play in the geographic distribution of parasitic diseases such as Zika, dengue, chikungunya, and West Nile viruses and malarial parasite. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5547814/pdf/17-1064.pdf

41 F, Dec 10 (Virtual)?	Review	<i>Come prepared with review questions!</i>
42 M, Dec 13 th	Final Exam , cumulative	(Tentatively we will plan for this to be in-person @ Boswell Hall 20, for a paper exam.)

Overview of the Content to be Covered During the Semester

Instructional Methods:

The course meets three times a week for 50 minutes. Pending W&M COVID-19 policy changes, which are of course 'subject-to-change,' Mondays & Wednesday classes will be held in-person, and on Fridays – class will be held via synchronous, on-line/virtual instruction (though still compulsory to the course). The way we use this time will vary, and will include lectures, discussions, films, and in-class exercises. Students are expected to come to class prepared to participate in discussion and group activities.

Assignment and Exam Schedule:

There will be two mid-terms. The first will cover course material from the beginning of the course to the mid-term and the second will cover course material from the first mid-term to the second. The final examination will be cumulative. Exams are mixed format, and may include true/false, multiple choice, and short answer. There will be two film reviews; the first about the documentary 'Food Inc.' (94mins) will be due on September 20th, and the second on the film 'Erin Brockovich' (172mins) will be due on November 3rd. Students will also be assessed on a writing a 1000 word profile essay about an Environmentalist, which is due on December 6th.

Grading:

Assignment:	% of Grade:
Mid-Term 1	15%
Mid-Term 2	15%
Final Exam	30%
Film reviews (2)	20%
Attendance	10%
Profile of An Environmentalist	10%
Total	100%

The grading system will be set in Blackboard and Blackboard does not average up so all percentages until the next grade up get the lower grade level. For example, a 93.9 will be read by Blackboard as A- and only 94 and up will be an A.

<u>Grading scale*:</u>	94-100	A
	90-93	A-
	87-89	B+
	83-86	B

80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
Below 60	F

*Grades may be curved or points added to the distribution as needed. Any adjustments will be in students' favor.

Notes:

Students will be expected to understand and abide by campus policies related to **academic integrity** and **appropriate citation of sources** in all work completed. Plagiarism is a serious offense, deliberate or not, and will be referred for further disciplinary action. If you need further guidance regarding citation, see the instructor.

There are times when **extraordinary circumstances occur** (e.g., serious illness, death in the family, etc.). In such circumstances, and/or if you need additional time to satisfactorily complete any course requirement, please consult with the instructor within a reasonable amount of time. *Nota bene:* Extensions are not guaranteed and will be granted at the discretion of the instructor. No extra credit projects will be assigned.

Every effort will be made to respond to student **emails** in a timely fashion (within 48 hours).

Electronics Policy:

- 1) Using laptops or tablets to take notes is permitted. (However, research suggests you learn better when you take notes with pen and paper.) If you are also going to use your laptop or tablet to check email, do Facebook, shop, do work from other classes, read the news, or otherwise dissociate, sit in back. (Because really, that's just distracting and obnoxious, let's be honest.)
- 2) Please do not have your phones out. If you cannot survive the class period without checking your phone, sit in back. (Then read the research showing that compulsive phone-checking simulates the feeling of being in love and do some soul-searching.)
- 3) Consider making the decision to be mindfully present during our time together.
- 4) Please be respectful of our human, in-person & online interactions. Social media is a forum for you to share your business, but let's keep our classroom & online 'relationship' less 'public' so we can establish a trusting place for the exchange of ideas and thoughts.