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| Instructor          | William (Bill) Daniell, MD MPH<br>Associate Professor; Environmental<br>and Occupational Health Sciences<br>Meetings by appointment                                      | Office: Health Sciences, F-561E<br>Email: bdaniell@uw.edu<br>Phone: 206-685-3160 |
| Teaching Assistants | Miriam Calkins, MS (miriac@uw.edu) and Erika Keim, MS (ekeim@uw.edu)<br>Doctoral students; Environmental and Occupational Health Sciences<br>Meetings by appointment     |  |
| Class sessions      | WF 10:35-11:50 am. Class begins promptly at 10:35. This allows an extra 5 minutes to accommodate students coming from a preceding class in the Health Sciences Building. |  |
| Class location      | FSH 102 (Fishery Sciences)   |  |
| Web site            | UW Canvas: <a href="https://canvas.uw.edu/courses/1022509">https://canvas.uw.edu/courses/1022509</a>   |  |

### Course description

This course provides a graduate level overview of the multidisciplinary field of environmental and occupational health. The course covers a broad spectrum of environmental hazards and contexts, their interactions with human health and well-being, and their relevance to the effective assurance and promotion of public health. Workplace, community, home, regional and global problems are considered, with frequent use of case examples in the United States and developing countries. The course stresses examining environmental health concerns in the context of social, economic, and other determinants of health.

This course satisfies the MPH core requirement in environmental health sciences. This course should be useful for public health and health care professionals, environmental scientists and engineers, public administrators, or any student who wants a broad overview of relationships between the environment and human health.

**Pre-requisites:** None; the course is limited to graduate students.

### Learning objectives

**Integrative competencies:** At the end of this course, the student should be able to: \*

- 1. Foundations:** Describe and discuss foundational concepts and strategies of environmental and occupational health sciences; and draw generalizable conclusions about how they apply in different situations.
- 2. Global Health:** Contrast environmental health problems between higher-income and lower-income populations; and discuss impacts of global social, economic and environmental trends on environmental public health.
- 3. Contexts and Systems:** Apply foundational concepts and strategies to environmental health problems; characterize broader environmental and social contexts; and assess cumulative influences on health, well-being and equity.
- 4. Policy:** Develop evidence-based and sustainable strategies to improve health, well-being and equity related to an environmental (or occupational) public health problem.
- 5. Communication:** Communicate information in plain language to a target audience about environmental health risks, influential factors, and prevention strategies.
- 6. Professionalism:** Perform effectively on a team (pair); and promote collegiality, inclusion, trust and ethical principles in learning experiences.

\* For simplicity, the term "environment" here encompasses work environments.

**Supportive learning objectives:** At the end of this course, the student should be able to:

1. Foundations
  - **Hazards:** Specify major (representative) chemical, microbial, and physical health hazards found in air, water, food, soil, and waste; and describe their principal effects on health.
  - **Exposure:** Describe basic strategies for identifying, evaluating, preventing, and controlling exposures to health and safety hazards in environmental and occupational settings.
  - **Health risk:** Describe basic strategies to assess health risk and identify acceptable levels of risk associated with environmental hazards.
  - **Vulnerability:** Discuss the importance of factors that contribute to individual and population vulnerability, such as biological susceptibility, existing health or social disparities, and cumulative burden of health impacts.
  - **Values:** Discuss the importance of equity, justice and sustainability in addressing problems related to the environment and health.

- **Policies:** Describe major policies, regulations, and institutions involved in controlling or mitigating environmental health risks.
2. Global Health
    - **Contrasts:** Contrast environmental health problems and applicable policies between higher-income and lower-income countries or populations.
    - **Trends:** Describe and discuss potential impacts of demographic change, economic development, energy demand, human-modified environments, global-scale pollution, and global environmental change on human health, food security, water security, and equity.
  3. Contexts and Systems
    - **Environmental context:** Identify and discuss how the current or changing status of natural ecosystems and human-altered environments might influence health, well-being and equity.
    - **Social context:** Identify and discuss how socioeconomic, political, cultural, behavioral and perceptual factors might interact with environmental factors and influence health risks.
    - **Systems thinking:** Examine relationships between and cumulative influences of environmental hazards, environmental and social contexts, and vulnerability on health, well-being and equity.
  4. Policy
    - **Stakeholders:** Identify stakeholders; characterize assets, power and inequities; and anticipate needs, concerns and risk perceptions.
    - **Opportunities:** Identify opportunities for and barriers to sustainable changes that promote health, well-being and equity.
    - **Alternatives:** Formulate evidence-based, context-appropriate and sustainable alternatives to address the problem and enhance health, well-being and equity.

**Course schedule**

The course is organized in 2 week modules (see figure). Each module examines 1-2 major environmental media or domains, with focus on selected case situations: at least one case based in the US, and at least one contrasting case in another country. Each module examines representative hazards and human health effects; mechanisms of exposure, risk and health impact; influences of the broader social and environmental context; population vulnerability and inequity; and general strategies to control exposure and promote health- and equity-favorable change. Most modules introduce a major foundational environmental health concept or strategy, and illustrate application within the module theme. *Preparation for each class session is essential.* The instructor will assume students have completed the assigned readings or viewings. Class sessions may include short mini-lectures but will rely as much as possible on active, student-engaged approaches to: clarify confusing or problematic points; reinforce key facts, concepts and strategies; apply those concepts and strategies to the selected cases and other examples; and explore the complexity of addressing environmental public health problems in the real world.

| Week          | (Wed)  | Wednesday                                       | Friday  |
|---------------|--------|---|---|
| 1             | 6-Jan  | <b>Big picture</b>                              |   |
| 2             | 13-Jan | <b>Climate change</b>                           |   |
| 3             | 20-Jan | <b>Water and sanitation</b>                     |   |
| 4             | 27-Jan |   |   |
| 5             | 3-Feb  | <b>Waste and contamination</b>                  | Midterm exam  |
| 6             | 10-Feb |   |   |
| 7             | 17-Feb | <b>Work</b>                                     | [Policy brief] *  |
| 8             | 24-Feb | <b>Air and energy</b>                           | [Take-home midterm]   |
| 9             | 2-Mar  | <b>Land, food system, and built environment</b> |   |
| 10            | 9-Mar  |   |   |
| <b>Finals</b> |        | Final exam (Monday)                             | * Assignment due dates in square brackets: Fridays at 5 pm. |

### **Required reading and viewing**

**Reading and viewing materials** will be on the course Canvas site. The assigned materials are introduced in an intentional sequence on Canvas course-module pages, with guiding and explanatory text. In general, this is accompanied by additional background information, intermittent questions and reflective prompts, reference citations, and (optional) resource material. Materials include a mix of: instructor mini-lectures (short narrated slide presentation); short video lectures by subject experts; online tutorials at external sources; prominent reports and monographs (usually summary or introductory chapters); informational web pages; news articles or videos; and/or original research articles.

Some assigned materials are interspersed with **questions** or provocative statements that may require a multiple-choice or short written response. Some questions or prompts only ask the student to “ponder” a point, without written response, as preparation for the class session.

**No textbook:** There is no required textbook. Suggested, optional resource: *Environmental Health: From Global to Local*. Howard Frumkin, editor. Second edition, 2012. Accessible online for FREE via UW Libraries.

**Recommended:** The assigned policy brief should be written in “plain language.” The Canvas site will include resources. Students are encouraged to complete the NIH online plain-language training (8 modules).

### **Assignments**

- Preparation – before class session
  - Reading and viewing
  - Questions and prompts
  - Food-handler online training
- Participation in class
  - Clicker response
  - Quick-writes
  - Question and oral answer
  - Discussion
- Exams
  - Midterm
  - One take-home midterm
  - Final
- Policy brief
  - Policy brief, with annotated references
  - Peer review
- Professionalism
- OPTIONAL: Field experience

**Preparation:** *Preparation for each class session is essential.* Students are required to complete preparatory reading and viewing assignments *before* each class session.

Students will complete the online Washington state **food handler training** before Week 8. This takes <1 hour. The training is free, unless you choose to get a food handler permit (optional, \$10). To demonstrate completion, simply print the completion screen as a pdf, don’t pay \$10, and post the pdf to the course assignment site. You are not required to complete the training if you have an active permit.

**Participation:** Participation in class will include instructor questions, with clicker, quick write, and/or verbal student response. For verbal responses or discussion, the instructor will either solicit volunteers or call individual students from a randomly sorted student list.

Each student will acquire a **clicker** (Turning Technologies RF Response Card) to enhance individual participation and interaction during class. Unfortunately, because of the technical challenges in having more than one response system, it is not acceptable to use the virtual clicker software or app on a smartphone or other personal device.

Otherwise, **students are expected not to use electronic devices and computers in class**, unless needed for a class task or to accommodate an individual student’s needs. The instructor will explain the rationale for this rule. Copies of any slides will be posted on the Canvas site.

**Exams:** One midterm exam is administered as a **take-home exam**, with >1 week to complete it; due by 5 pm Friday, February 26 (Week 8). Two exams are administered in class: **midterm**, Friday February 5; **final**, Monday of Finals week (March 14). Students are allowed to bring a one-page, handwritten “cheat” sheet, which will be turned in with the exam.

**Policy brief; annotated references:** Each student will work in a self-selected **student pair** to write one public health policy brief (with annotated reference list) about an environmental health issue of their choice. The policy brief and reference list are due by 5 pm on Friday, February 19 (Week 8). The topic should be related to a Pacific Northwest case or issue, US federal policy issue, or international policy issue. Topics must be approved by the instructor or TA. Additional details will be provided during class. You may ask, what is a policy brief?

“A policy brief is a concise summary of a particular issue, the policy options to deal with it, and some

recommendations on the best option. It is aimed at government policymakers and others who are interested in formulating or influencing policy. Policy briefs can take different formats. A typical format...contain[s] perhaps 700 words. It has an attractive design, and may have one or more photograph[s]. Longer briefs (up to 8 pages, or 3,000 words) and other formats are also possible." [FAO Food Security Communications Toolkit]

The policy brief for this assignment should be  $\leq 1000$  words, not counting references. Since this is an academic exercise, the policy brief should include line-item reference notations linked to a separate annotated reference list. Annotations are optional but encouraged, if a brief statement about the cited reference would be helpful to clarify or support points in the policy brief.

**Peer review:** Each student pair will subsequently review one other student-pair's policy brief. This is due by 5 pm on Friday, March 11 (Week 10). Additional details will be provided during class.

**Field experience (optional):** Students are encouraged but not required to complete a field experience. Additional details will be provided during class, including possible examples. The experience can be connected to the student's policy brief or completely separate. Each student will write a reflective statement about the experience, to be shared with the class on an electronic discussion board. The experience and reflection will count as extra credit in the overall course grade.

**Professionalism:** Students are expected to perform collaboratively and effectively in their student pair; and promote collegiality, inclusion, trust and ethical principles in all learning experiences.

## Grading

Weighting of course assignments for overall course grade:

|                                 |             |                         |
|---------------------------------|-------------|-------------------------|
| • <b>Preparation</b>            | <b>10%</b>  |                         |
| ○ Questions and prompts         |             | ( 8%)                   |
| ○ Food-handler online training  |             | ( 2%)                   |
| • <b>Participation</b>          | <b>15%</b>  |                         |
| • <b>Exams</b>                  | <b>50%</b>  |                         |
| ○ Midterm                       |             | (15%)                   |
| ○ One take-home midterm         |             | (15%)                   |
| ○ Final                         |             | (20%)                   |
| • <b>Policy brief</b>           | <b>25%</b>  |                         |
| ○ Policy brief, with references |             | (20%)                   |
| ○ Peer review                   |             | ( 5%)                   |
| <b>Total</b>                    | <b>100%</b> |                         |
| • Professionalism               |             | Additive or subtractive |
| • OPTIONAL: Field experience    |             | Additive                |

**Preparation:** Graded preparation tasks are scored simply as completed *on time*, or not.

**Participation tasks:** Each class session is weighted equally for the overall course participation grade, even though the number of tasks differs between sessions. Clicker responses and other tasks are scored as: 1) correct answer, full credit; other response, 2/3 credit; no response, 0% credit; or 2) if the task has no single correct or best answer, the task is scored simply as any reasonable response, full credit; no response, 0% credit.

**Verbal responses** to instructor questions or prompts are also scored simply: response or not, regardless of correctness. Repeated exemplary contributions to class discussion can earn extra participation credit.

**Exams** are graded on a linear scale. The scale is anchored to overall class performance: "100%" is set by the top student point score; adjusted percentage scores  $\geq 95\%$  = A grade (4.0); and the lower linear-scale reference point is adjusted for the class distribution (in general, adjusted percentage 50-65% = D grade, 1.0).

**Policy brief and peer review:** These are graded categorically, using evaluation rubrics based on course learning objectives. Rubrics will be shared with students before they begin the assignment. Credit is reduced for late submissions. Grading guidelines are adapted from Department of Health Services guidelines: [\[link\]](#)

- 3.9-4.0 Excellent and exceptional work...for a graduate student. Work at this level is unusually thorough, well-reasoned, sophisticated, and well-written. Work shows an incisive understanding of issues, and demonstrates clear recognition of appropriate approaches to address problems and questions.
- 3.7-3.8 Strong work.... Work at this level is thorough and well-reasoned, indicates strong understanding of appropriate approaches to address problems and questions, and demonstrates clear recognition and good understanding of salient

issues and problems.

- 3.4-3.6 Competent and sound work.... Work at this level is thorough and well-reasoned, and shows sound understanding of appropriate approaches to address problems and questions. Shows adequate understanding of issues and problems. Minor misunderstandings or errors may (or may not) be present.
- 3.2-3.3 Adequate work..., although some weaknesses are evident. Work at this level is moderately thorough and well-reasoned, but understanding of the important issues is less than complete. Approaches to address problems and questions are generally adequate. However, the work has one or more weaknesses or limitations.
- 2.9-3.1 Borderline work.... Work at this level meets minimal expectations. Understanding of salient issues is incomplete. Approaches to address problems and questions are minimally adequate. The work has substantial weaknesses or limitations.
- 2.7-2.8 Deficient but acceptable work.... Work at this level does not meet minimal expectations. Work is inadequately developed or flawed by numerous errors and misunderstanding of important issues. Approaches to address problems and questions are weak and fail to demonstrate the expected knowledge or competence.
- <2.7 Unacceptable work.... Work below this level is graded relative to performance expected for an undergraduate student. See these two UW web pages for information ([student guide](#); [faculty resource](#)).

**Professionalism:** Exemplary performance can earn extra credit in the overall course grade. Conversely, inappropriate performance can earn a decrement in credit. Depending on severity, the decrement for cheating or substantial plagiarism can be failure on the affected assignment, ≤0.5 point decrement on the 4-point course grade, and/or course failure. Students have the right to challenge any such decrement, in accordance with SPH Academic Integrity Policy.

### **Academic integrity**

Students at the University of Washington 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.

### **Access and accommodations**

Your experience in this class is important to me (Bill Daniell, instructor). If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course.

If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations, 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). Qualifying conditions include but are not limited to mental health, attention-related, learning, vision, hearing, physical or health impacts. 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 and DRS. It is policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law.

### **Diversity, inclusion and respect**

Diverse backgrounds, embodiments and experiences are essential to the critical thinking endeavor at the heart of university education. Therefore, I expect you to follow the UW Student Conduct Code in your interactions with your colleagues and me in this course, by promoting an inclusive environment and respecting the many social and cultural differences among us. These may include but are not limited to: race, ethnicity, age, cultural background, disability, family status, gender identity and presentation, citizenship and immigration status, national origin, religious and political beliefs, sex, sexual orientation, socioeconomic status, and veteran status.

Please talk with me right away if I fail to meet these or your expectations, or if you experience or witness disrespect in this class. I will work promptly to address it in a constructive and educational manner, while assuring your privacy. Alternatively, you could communicate your concerns through a course TA, the Graduate Program director (Richard Fenske, [rfenske@uw.edu](mailto:rfenske@uw.edu)) or manager (Rory Murphy, [rmurphy@uw.edu](mailto:rmurphy@uw.edu)) in my department, or your chosen contact person in your department or the Dean's office.