I. Course Domain and Boundaries

This course presents a broad survey of the major environmental health issues facing contemporary society in first world and developing countries. The course provides an overview of the interaction of the physical, psychological, and social environments of individuals in which they work and live. The course presents ecological concerns along with factors related to personal and community health.

Course Objectives

“Environment” is broadly-conceived, and students are exposed not only to subjects such as air and water pollution and occupational health, but also to the potential connections between ecologic issues such as climate change and biodiversity—and human health. This course aims to: 1) Introduce the pathways through which individuals and communities are exposed to environmental contaminants, 2) Understand the pathogenic risks associated with exposure to certain physical, chemical, and biological environments, 3) Understand the environmental health risks at a local to global level and how risks can be communicated and mitigated, 4) Discuss contemporary environmental health concerns including global climate change, and 5) Highlight public health professions associated with environmental health.

II. MPH Competencies

Environmental health sciences represent the study of environmental factors including biological, physical and chemical factors that affect the health of a community. Upon graduation, a student with an MPH should be able to:

- Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents
- Describe genetic, physiologic and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards.
- Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.
- Specify current environmental risk assessment methods.
- Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
- Explain the general mechanisms of toxicity in eliciting a toxic response to various environmental exposures.
- Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equality.
• Develop a testable model of environmental insult.

This course will connect students to the following competencies from other domains:

Transdisciplinary Problem Solving
• Understand public health problems from a transdisciplinary perspective.
• Develop and apply transdisciplinary solutions to public health problems.

Evidence-Based Public Health
• Identify sources and quality of evidence-based information related to public health planning, research, policy, and practice.
• Understand the methods of and barriers to translating scientific evidence to public health practice.

Epidemiology
• Define and interpret a public health problem in terms of magnitude, person, time, and place.
• Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
• Explain the main study designs used in epidemiological, clinical, and population research.
• Evaluate the strengths and limitations of epidemiologic reports.

Health Policy and Management
• Identify the main issues of organization, financing, and delivery of health care and public health services in the United States.
• Understand how policy is implemented to improve the health status of populations.
• Understand how to translate and disseminate public health research to policymakers and other stakeholders.

Social and Behavioral Sciences
• Analyze determinants of health and disease using an ecological framework.

Communication and Informatics
• Understand how to capture, synthesize, communicate and disseminate ideas and data to diverse stakeholders to influence public health policy and practice.

Diversity and Culture
• Understand the impact of contexts such as gender, race, poverty, history, migration, and culture in public health policy and practice.
• Apply social justice and human rights principles when addressing public health needs.
• Develop public health programs and strategies that are responsive to the cultural values and traditions of diverse communities being served.

Leadership, Professionalism and Ethics
• Demonstrate leadership skills for collaboration and partnership among communities and organizations focused on public health goals.
• Demonstrate professional demeanor in behavior and communication
• Describe, comprehend, and adhere to the basic principles of ethical analysis (e.g., the Public Health Code of Ethics) pertaining to the collection, maintenance, and use of public health information.

Public Health Biology
• Explain the role of biology in the ecological model of population-based health.
• Articulate how biological, chemical and physical agents affect human health.
• Integrate general biological and molecular concepts into public health.
III. Brown School Academic Policies

Academic Integrity: Academic integrity in the completion of tests, oral presentations and written assignments (including statistical syntax) is expected. Violations of academic integrity (e.g., plagiarism) are very serious offenses. Violations will result in notification to the Assistant Dean for the appropriate (MSW or MPH) program and may result in referral to the Academic and Professional Integrity Committee, which could lead to dismissal from the program. Please review and adhere to the entire set of Academic Integrity guidelines in the student handbook on Inside Brown:

Student Handbook 2017-2018

Accommodations: If you have a learning disability, sensory, or physical disability or other impairment, and you may need special assistance in lectures, reading, written assignments, and/or exam taking, please contact the Brown School Director of Student Affairs who can provide coordination of accommodations at Washington University and the Brown School. The Disability Resource Center, a University-wide resource, provides diagnostic and academic accommodations support and referrals.

English Language Proficiency: If your English language proficiency is such that you may need special assistance in lectures, reading, written assignments, and/or exam taking, please communicate these needs to your instructor who may refer you to the English Language Program (ELP), a University-wide resource which provides classes and academic English language support designed to increase non-native English speaking students' English language proficiency and to facilitate their academic success at Washington University. You may also find the Academic Assistance resources available through the Office for International Students and Scholars to be helpful.

Professional Use of Electronic Devices in the Classroom: Computers or other electronic devices, including “smart pens” (devices with an embedded computer and digital audio recorder which records the classroom lecture/discussion and links that recording to the notes taken by the student), may be used by students at the discretion of the faculty member to support the learning activities in the classroom. If a student wishes to use a smart-pen or other electronic device to audio record lectures or class discussions, they must notify the instructor in advance of doing so. Permission to use recording devices will be at the discretion of the instructor, unless this is an accommodation approved by Disability Resources.

Nonacademic use of laptops and other devices is distracting and seriously disrupts the learning process for everyone. Neither computers nor other electronic devices are to be used in the classroom during class for non-academic reasons. This use includes emailing, texting, social networking, and use of the Internet. The use of cell phones during class time is prohibited, and they should be set on silent before class begins. In the case of an emergency, please step out of the room to take the call. The instructor has the right to hold students accountable for meeting these expectations, and failure to do so may result in a loss of participation points, a loss of the privilege of computer use in the classroom, or being asked to leave the classroom.

Religious Holidays: The Brown School recognizes the individual student’s choice in observing religious holidays that occur during periods when classes are scheduled. Students are encouraged to arrange with their instructors to make up work missed as a result of religious observance, and instructors are asked to make every reasonable effort to accommodate such requests.

IV. WASHINGTON UNIVERSITY ACADEMIC SUPPORT POLICIES

Accommodations based upon sexual assault: The University is committed to offering reasonable academic accommodations to students who are victims of sexual assault. Students are eligible for accommodation regardless of whether they seek criminal or disciplinary action. Depending on the specific nature of the allegation, such measures
may include but are not limited to: implementation of a no-contact order, course/classroom assignment changes, and other academic support services and accommodations. If you need to request such accommodations, please direct your request to Kim Webb (kim_webb@wustl.edu), Director of the Relationship and Sexual Violence Prevention Center. Ms. Webb is a confidential resource; however, requests for accommodations will be shared with the appropriate University administration and faculty. The University will maintain as confidential any accommodations or protective measures provided to an individual student so long as it does not impair the ability to provide such measures.

If a student comes to me to discuss or disclose an instance of sexual assault, sex discrimination, sexual harassment, dating violence, domestic violence or stalking, or if I otherwise observe or become aware of such an allegation, I will keep the information as private as I can, but as a faculty member of Washington University, I am required to immediately report it to my Department Chair or Dean or directly to Ms. Jessica Kennedy, the University’s Title IX Director. If you would like to speak with directly Ms. Kennedy directly, she can be reached at (314) 935-3118, jw kennedy@wustl.edu, or by visiting the Title IX office in Umrah Hall. Additionally, you can report incidents or complaints to the Office of Student Conduct and Community Standards or by contacting WUPD at (314) 935-5555 or your local law enforcement agency. See: Title IX

You can also speak confidentially and learn more about available resources at the Relationship and Sexual Violence Prevention Center by calling (314) 935-8761 or visiting the 4th floor of Seigle Hall. See: RSVP Center

Bias Reporting: The University has a process through which students, faculty, staff and community members who have experienced or witnessed incidents of bias, prejudice or discrimination against a student can report their experiences to the University’s Bias Report and Support System (BRSS) team. See: brss.wustl.edu

Mental Health: Mental Health Services’ professional staff members work with students to resolve personal and interpersonal difficulties, many of which can affect the academic experience. These include conflicts with or worry about friends or family, concerns about eating or drinking patterns, and feelings of anxiety and depression. See shs.wustl.edu/MentalHealth

Additional Issues or Concerns: If you feel that you need additional supports in order to be successful in your time at Brown, beyond the afore mentioned accommodations, please contact Essie Rochman, Director of Student Affairs at erochman@wustl.edu. She can assist you in navigating a myriad of concerns. Her office is in Brown Hall, room 320.

The University’s preferred name policy for students, with additional resources and information, may be found here: registrar.wustl.edu/student-records/ ssn-name-changes/preferred-name-policy/preferred-name-policy-student/.
V. Readings

Required

   This book is available at the campus bookstore, Brown Library, and an e-version is available through the Becker Library (See Blackboard – Course Materials - Electronic readings for link). Brown School/Danforth campus users have access to the e-version, but the person must be using a hard-wired school computer in order to open the e-book.

2. Links to additional required readings will be posted on Blackboard.

Recommended (but not required) textbook for more depth:

VI. Organization of the Course

The format of the course will be primarily lectures, in-class activities, group discussions, and oral presentations. I will assess your mastery of the course objectives through homework, exams, presentations, and a group project.

Inclusive learning environment statement: The best learning environment—whether in the classroom, studio, laboratory, or fieldwork site—is one in which all members feel respected while being productively challenged. At Washington University in St. Louis, we are dedicated to fostering an inclusive atmosphere, in which all participants can contribute, explore, and challenge their own ideas as well as those of others. Every participant has an active responsibility to foster a climate of intellectual stimulation, openness, and respect for diverse perspectives, questions, personal backgrounds, abilities, and experiences, although instructors bear primary responsibility for its maintenance.

A range of resources is available to those who perceive a learning environment as lacking inclusivity, as defined in the preceding paragraph. If possible, we encourage students to speak directly with their instructor or TAs about any suggestions or concerns they have regarding a particular instructional space or situation. Alternatively, students may bring concerns to another trusted advisor or administrator (such as an academic advisor, mentor, department chair, or dean). All classroom participants—including faculty, staff, and students—who observe a bias incident affecting a student may also file a report (whether personally or anonymously) utilizing the online Bias Report and Support System.

VII. Role of the Student, Instructor, and TAs

Student Expectations and Requirements

- You are expected to attend class and to arrive in class on time.
- You are responsible for reading the course syllabus, project descriptions, and any associated grading rubrics in their entirety.
- You are expected to complete the assigned material prior to class and be prepared to participate in class discussions.
- You are expected to return your assignments to me on time.
- You are expected to check blackboard regularly for any course announcements.
- Students are expected to be respectful of their peers, the instructor, guest speakers, and the learning environment.
- If you have any issues or challenges with the class, please come to me and/or the TAs first so that we can make every effort to resolve them together.
Instructor Expectations and Requirements

- I will come to class prepared, organized, and enthusiastic.
- I will be available to answer any questions that you may have about the course. Email questions will normally be answered within a 24-hour period, with the exception of weekends and holidays.
- I will provide timely feedback on assignments and exams.
- I reserve the right to make modifications to the syllabus, course content, and order of the lectures and exercises to meet the needs of students who are enrolled in the course.

Role of TAs

- The TAs will assist the instructor with preparation of materials for class and grading of student homework/exams/presentations, and will hold office hours.
- The TAs will be available by email to answer questions or facilitate answering of questions.

VIII. Assignments and Grading Criteria

Homework (15%)

Over the course of the semester you will be assigned three homework assignments. Each homework assignment will focus on the information provided in lectures and readings prior to the homework due date. The purpose of the homework assignments is to provide you with an opportunity to demonstrate knowledge and skills related to environmental health. Homework assignments are to be completed independently. Late assignments will not be accepted. At the end of the semester, I will drop the lowest homework grade.

Exams (40% total, 20% each)

Two exams will be given to evaluate the skills you are expected to master during the course. Each exam is worth 20% of your final grade. Questions may cover any material presented in lectures and/or readings due up to the day of the exam. The exams will include multiple choice, true/false, short answer, and essay questions. Make-up exams will not be given unless there are extenuating circumstances.

Hot Topics in Environmental Health presentation (5%)

Each student will present one Hot Topic news story during the semester. The topic should be environmentally-related and from current media (2016-present). The purpose of this assignment is to provide an opportunity to discuss contemporary environmental health issues. Each student will deliver a 3-5 minute presentation to the class and develop a discussion question for the class. The method of presentation is flexible with the options of PowerPoint or verbal presentation/speech. A brief description of the topic in the form of the original newspaper article, internet link, or broadcasting video should be submitted to the instructor via Blackboard by 11:59 pm the day before the presentation. The TA and I will give examples of Hot Topics presentations in the first two of weeks of classes. A schedule of presentations will be determined during the second week of class. More information about presentation expectations and a grading rubric will be provided on Blackboard.

Group project (25%)

In groups of four or five students, students will develop a policy brief (15% of final course grade) and deliver a 15-minute professional presentation (10% of final course grade) on a group-selected topic in environmental health. Groups will be determined during the second week of class, and presentation topics should be submitted to the instructor for
approval by the fourth class meeting. The presentation will summarize the environmental health issue and current policy that addresses the issue. Each group will prepare and submit a policy brief focusing on alternate policy options to address the problem. Each student will submit a group member evaluation and a peer group review evaluation as part of the project grade. More information about project expectations and a grading rubric will be provided on Blackboard.

**Participation (15%)**

Attendance and active participation are strongly encouraged. Students are expected to attend all class sessions unless illness or other emergencies make attendance impossible. If you are unable to attend class, please contact the instructor in advance, or failing that, immediately afterwards. For the 2nd and each subsequent unexcused absence, you will lose attendance points. Participation grades will be based on: **preparedness** (completing the assigned readings or other media and actively participating in class and group activities, 5% of final course grade), **attendance** (5% of final course grade), and **appropriate use of technology** (5% of final course grade). One extra credit point will be assigned to your preparedness score upon completion of the student questionnaire.

**Course Evaluations**

Course evaluations are very important for monitoring and improving course content. Two extra credit points will be assigned to 1) your Exam I score upon completion of the mid-semester course evaluation and 2) your Exam II score upon completion of the end of the semester course evaluation.

**Grading**

Final grades will be based on the following:

1) Homework (15 %)
2) Exams (40 %)
3) Hot Topics presentation ( 5 %)
4) Group project (25%)
5) Participation (15 %)

**Grade Scale:**

- 95-100: A
- 90-94: A-
- 88-89: B+
- 82-87: B
- 80-81: B-
- 77-79: C+
- 74-76, C
- 70-73: C-
- ≤ 69: F
## IX. Course Outline

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic(s)</th>
<th>Readings/Media</th>
<th>Items Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 22</td>
<td>Course Overview</td>
<td>• Friis Chapter 1&lt;br&gt;• Syllabus (see Blackboard)</td>
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<td></td>
<td></td>
<td>Intro to Environmental Health</td>
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<td>2</td>
<td>Jan 29</td>
<td>Environmental Toxicology</td>
<td>• Friis Chapter 3, pages 49-58</td>
<td>Student questionnaire due on Jan 28 at 11:59 p.m.</td>
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<td>3</td>
<td>Feb 5</td>
<td>Occupational Health Risk Assessment</td>
<td>• Friis Chapter 13&lt;br&gt;• Friis Chapter 3, pages 58-63&lt;br&gt;SEE BLACKBOARD</td>
<td>HW1</td>
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<tr>
<td>4</td>
<td>Feb 12</td>
<td>Risk Communication Pesticides and Other Chemicals</td>
<td>• Friis Chapter 7&lt;br&gt;SEE BLACKBOARD</td>
<td>HW2</td>
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<td>5</td>
<td>Feb 19</td>
<td>Environmental Policy</td>
<td>• Friis Chapter 4&lt;br&gt;SEE BLACKBOARD</td>
<td>Policy Brief-Group Topic/Group Name</td>
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<td>6</td>
<td>Feb 26</td>
<td>Environmental Justice and Vulnerable Populations cont</td>
<td>SEE BLACKBOARD</td>
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<td>7</td>
<td>Mar 5</td>
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<td>Exam I</td>
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<td>8</td>
<td>Mar 19</td>
<td>Waste Radiation</td>
<td>• Friis Chapter 12&lt;br&gt;SEE BLACKBOARD</td>
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<td>9</td>
<td>Mar 26</td>
<td>Air Quality</td>
<td>• Friis Chapter 10, pages 244-267; stop at “Global Climate Change and Global Warming”&lt;br&gt;SEE BLACKBOARD</td>
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<td>10</td>
<td>Apr 2</td>
<td>Climate Change Zoonotic and Vector-Borne Diseases</td>
<td>• Friis Chapter 10, pages 267-274&lt;br&gt;• Friis Chapter 5&lt;br&gt;SEE BLACKBOARD</td>
<td>Policy Brief-Background/Context</td>
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<tr>
<td>11</td>
<td>Apr 9</td>
<td>Water Quality</td>
<td>• Friis Chapter 9&lt;br&gt;SEE BLACKBOARD</td>
<td>HW3</td>
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<tr>
<td>12</td>
<td>Apr 16</td>
<td>The Built Environment Global Environmental Health</td>
<td>SEE BLACKBOARD</td>
<td>Policy Brief-Policy Critique/Alternatives</td>
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<td>13</td>
<td>Apr 23</td>
<td>Food Safety</td>
<td>• Friis Chapter 11</td>
<td></td>
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<td>14</td>
<td>Apr 30</td>
<td>Group Presentations</td>
<td>• See Blackboard</td>
<td>1. Policy brief&lt;br&gt;2. Presentation</td>
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<td>15</td>
<td>May 7</td>
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<td>Exam II</td>
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