I. COURSE DOMAIN AND BOUNDARIES

This course presents a broad survey of the major environmental health issues facing contemporary society. 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.

“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 FOUNDATIONAL KNOWLEDGE AND COMPETENCIES ADDRESSED IN THIS COURSE

Foundational Knowledge

- Explain public health history, philosophy and values.
- Explain effects of environmental factors on a population’s health.
- Explain biological and genetic factors that affect a population’s health.
- Explain how globalization affects global burdens of disease.
- Explain an ecological perspective on the connections among human health, animal health and ecosystem health (e.g., One Health).

Foundational Competencies

- Advocate for political, social or economic policies and programs that will improve health in diverse populations.
- Communicate audience-appropriate public health content, both in writing and through oral presentation.
- Perform effectively on interprofessional teams.
Other Competencies

Environmental health sciences represent the study of environmental factors including biological, physical, chemical, social, and psychosocial factors that affect the health of a community. This course will connect students to the following competencies:

- 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.

III. BROWN SCHOOL ACADEMIC POLICIES

**Academic Integrity:** If a faculty member or student suspects that academic or professional integrity has been violated, they are required to submit an Academic Integrity or Professional Integrity Violation form found on Inside Brown for review by the Assistant Dean of the program. The Assistant Dean or designated representative will aid in the investigation of the violation, which includes but is not limited to gathering relevant evidence; conversations with the instructor, student(s) involved, witnesses, and others as necessary. Depending on the seriousness of the case, the Assistant Dean may choose to refer the matter directly to the University Student Conduct Board. This referral procedure will generally be followed if it is believed that the penalty is likely to involve suspension or expulsion from the University. The Assistant Dean for the program or designated representative will offer to meet privately with the student(s) against whom the complaint has been made. It is the student’s responsibility to familiarize themselves with the behaviors that constitute an academic integrity violation requiring referral.

**Student Handbook 2019**

**Accommodations:** If you have a learning, sensory, or physical disability or any other diagnosis that requires accommodations and/or assistance in lectures, reading, written assignments, and/or exam taking, please work with the Disability Resource Center, a University-wide resource that provides academic accommodations support and referrals. After requesting academic accommodations by providing appropriate documentation, students approved for accommodations will provide an Accommodation Letter to the instructor and are encouraged to work directly with the instructor to discuss specific course needs. The student’s Academic Advisor and/or the Assistant Dean for Academic Affairs can support a student through this process.

**Pronouns:** The Brown School embraces and promotes gender expansiveness as reflective of the lived experiences of many students, staff, faculty and members of our expanded community. The correct use of an individual’s pronouns is a critical part of an individual's identity and of building an inclusive community. Students, faculty and staff are encouraged to use pronouns during introductions, are expected to use expressed pronouns of all Brown School community members, and are encouraged to apologize when mistakes are made. Educational resources are available at: [https://campuslife.wustl.edu/lgbtqia/lgbt-resources/gender-pronouns/](https://campuslife.wustl.edu/lgbtqia/lgbt-resources/gender-pronouns/)
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 Brown Communications Lab. If you would like help seeking additional English language resources, please visit the Global Programs Suite in Brown 309. 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 that 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. These activities include taking notes and accessing course readings under discussion. 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 is at the discretion of the instructor, unless this use is an accommodation approved by Disability Resources.

Nonacademic use of laptops and other devices and use of laptops or other devices for other coursework is distracting and seriously disrupts the learning process for other people in the classroom. Neither computers nor other electronic devices are to be used in the classroom during class for nonacademic reasons or for work on other coursework. Nonacademic use includes emailing, texting, social networking, playing games, instant messaging, and use of the Internet. Work on other coursework may include, but is not limited to, use of the Internet, writing papers, using statistical software, analyzing data, and working on quizzes or exams. The nonacademic 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 or attendance points, a loss of the privilege of device 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, Director of the Relationship and Sexual Violence Prevention Center, or Jen Durham Austin, Support Services Counselor. Both Kim Webb and Jen Durham Austin are confidential resources; 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, jwkennedy@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) 935-3445 for an appointment 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 Mental Health Resources.

Center for Diversity and Inclusion (CDI): The Center of Diversity and Inclusion (CDI) supports and advocates for undergraduate, graduate, and professional school students from underrepresented and/or marginalized populations, creates collaborative partnerships with campus and community partners, and promotes dialogue and social change. One of the CDI's strategic priorities is to cultivate and foster a supportive campus climate for students of all backgrounds, cultures and identities. See: diversityinclusion.wustl.edu/

Additional Issues or Concerns: If you feel that you need additional supports in order to be successful in your time at Brown, beyond the mentioned accommodations, please contact your Academic Advisor or Danielle Bristow, Assistant Dean for Academic Affairs. They can assist you in navigating a myriad of concerns.

V. READINGS

Required

1. Friis, R. Essentials of Environmental Health, Jones and Bartlett Publishers; 3rd edition (2012). This book is available at the campus bookstore and an e-version is available through the Brown Library (See Canvas for link). Brown School users have access to the e-version.

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

Recommended (but not required) textbook for more depth:

Frumkin, H. Environmental Health: From Global to Local, Jossey-Bass; 3rd edition.

VI. ORGANIZATION OF 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, quizzes, 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 TA 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
VII. ROLE OF THE STUDENT, INSTRUCTORS, AND TA

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 Canvas 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 TA 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 TA

- The TA will assist the instructor with preparation of materials for class and grading of student homework/exams/presentations, and will hold office hours.
- The TA 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 two 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.

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 (2019-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 Canvas 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 Canvas.

Group project (25%)

In groups of three or four 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 fifth 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 Canvas.

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 activities and quizzes, 5% of final course grade), attendance (arriving late to class, leaving early from class or taking long breaks during class will count as an absence, 5% of final course grade), and professional conduct (appropriate use of technology, being respectful to classmates, the TA, and the instructor, and refraining from side conversations and other disruptive behavior during class, 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 if 90% of the class completes the mid-semester course evaluation and 2) your Exam II score if 90% of the class completes the end of the semester course evaluation.

Grade Scale:

<table>
<thead>
<tr>
<th>Score</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>95-100</td>
<td>A</td>
</tr>
<tr>
<td>90-94</td>
<td>A-</td>
</tr>
<tr>
<td>88-89</td>
<td>B+</td>
</tr>
<tr>
<td>82-87</td>
<td>B</td>
</tr>
<tr>
<td>80-81</td>
<td>B-</td>
</tr>
<tr>
<td>77-79</td>
<td>C+</td>
</tr>
<tr>
<td>74-76</td>
<td>C</td>
</tr>
<tr>
<td>70-73</td>
<td>C-</td>
</tr>
<tr>
<td>≤ 69</td>
<td>F</td>
</tr>
</tbody>
</table>

IX. MPH COMPETENCY ALIGNMENT TO ASSESSMENT OPPORTUNITY

<table>
<thead>
<tr>
<th>MPH Competency(ies)</th>
<th>Assessment Opportunity</th>
</tr>
</thead>
</table>

SSS-5005.01
Environmental Health  Fall 2019
6
| Task                                                                 | Grade
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Advocate for political, social or economic policies and programs that will improve health in diverse populations.</td>
<td>Group project</td>
</tr>
<tr>
<td>Communicate audience-appropriate public health content, both in writing and through oral presentation.</td>
<td>Group project</td>
</tr>
<tr>
<td>Perform effectively on interprofessional teams.</td>
<td>Group project</td>
</tr>
</tbody>
</table>
| Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents | Exam

Hot Topics presentation
Group project |
| Describe genetic, physiologic and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards. | Exam

Hot Topics presentation
Group project |
| Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues. | Exam

Group project |
| Specify current environmental risk assessment methods. | Exam |
| Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety. | Exam |
| Explain the general mechanisms of toxicity in eliciting a toxic response to various environmental exposures. | Exam |
| Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equality. | Exam

Hot Topics presentation |
## X. 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>Aug 28</td>
<td>Course Overview&lt;br&gt;Intro to Environmental Health</td>
<td>• Syllabus (see Canvas)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Sep 4</td>
<td>Population Dynamics&lt;br&gt;Global Environmental Health</td>
<td>• Friis Chapter 1&lt;br&gt;SEE CANVAS</td>
<td>Student questionnaire due on Sep 3 at 11:59 p.m.</td>
</tr>
<tr>
<td>3</td>
<td>Sep 11</td>
<td>Environmental Epidemiology&lt;br&gt;Environmental Toxicology</td>
<td>• Friis Chapter 2&lt;br&gt;• Friis Chapter 3, pages 51-62; stop at “Link Between Toxicology and Risk Assessment”&lt;br&gt;• SEE CANVAS</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Sep 18</td>
<td>Risk Assessment&lt;br&gt;Risk Communication</td>
<td>• Friis Chapter 3, pages 62-67&lt;br&gt;• SEE CANVAS</td>
<td>HW1</td>
</tr>
<tr>
<td>5</td>
<td>Sep 25</td>
<td>Environmental Policy&lt;br&gt;Environmental Justice and Vulnerable Populations</td>
<td>• Friis Chapter 4&lt;br&gt;SEE CANVAS</td>
<td>HW2</td>
</tr>
<tr>
<td>6</td>
<td>Oct 2</td>
<td>Pesticides and Other Chemicals</td>
<td>• Friis Chapter 7&lt;br&gt;SEE CANVAS</td>
<td>Policy Brief-Group Topic</td>
</tr>
<tr>
<td>7</td>
<td>Oct 9</td>
<td><strong>Exam I</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Oct 16</td>
<td>Occupational Health</td>
<td>• Friis Chapter 13&lt;br&gt;• SEE CANVAS</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Oct 23</td>
<td>Water Quality</td>
<td>• Friis Chapter 9&lt;br&gt;SEE CANVAS</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Oct 30</td>
<td>Air Quality</td>
<td>• Friis Chapter 10, pages 241-262; stop at “Global Climate Change and Global Warming”&lt;br&gt;SEE CANVAS</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Nov 6</td>
<td>Climate Change&lt;br&gt;Zoonotic and Vector-Borne Diseases</td>
<td>• Friis Chapter 10, pages 262-268&lt;br&gt;• Friis Chapter 5&lt;br&gt;SEE CANVAS</td>
<td>Policy Brief-Draft</td>
</tr>
<tr>
<td>12</td>
<td>Nov 13</td>
<td>Waste Radiation</td>
<td>• Friis Chapter 8&lt;br&gt;• Friis Chapter 12&lt;br&gt;SEE CANVAS</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Nov 20</td>
<td>Group Presentations</td>
<td>--</td>
<td>Policy Brief-Presentation</td>
</tr>
<tr>
<td>14</td>
<td>Nov 27</td>
<td>NO CLASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Dec 4</td>
<td>The Built Environment&lt;br&gt;Food Safety</td>
<td>• Friis Chapter 11&lt;br&gt;SEE CANVAS</td>
<td>Policy Brief</td>
</tr>
<tr>
<td>16</td>
<td>Dec 11</td>
<td><strong>Exam II</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>