

## **PubH 6100-002**

### **Topics: Environmental Public Health Biology Spring 2018**

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<b>Credits:</b>	<b>2</b>
<b>Meeting Days:</b>	<b>Tuesdays</b>
<b>Meeting Time:</b>	<b>10:10-12:00</b>
<b>Meeting Place:</b>	<b>1155 Mayo Building</b>
<b>Instructor:</b>	<b>Craig Hedberg</b>
<b>Office Address:</b>	<b>1205 Mayo Bldg.</b>
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<b>E-mail:</b>	<b>hedbe005@umn.edu</b>
<b>Office Hours:</b>	<b>Available by appointment</b>

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#### **I. Course Description**

This course addresses the biological context of Environmental Public Health. In particular, it will address ecological aspects of disease transmission, environmental and food microbiology, and the use of biological systems to abate environmental hazards. The course will address the needs of students on the Environmental Infectious Disease, Global Health, and Environmental Epidemiology tracks within the Environmental Health Sciences Major.

#### **II. Course Prerequisites**

Environmental Health Sciences student, instructors consent.

#### **III. Course Goals and Objectives**

Upon completion of the course, students will be able to:

1. Explain the role of biology in the ecological model of population-based health.
2. Apply biological principles to development and implementation of disease prevention, control, or management programs.
3. Apply evidence-based biological concepts to inform public health laws, policies and regulations.

#### IV. Methods of Instruction and Work Expectations

The course is comprised of lectures, exercises, group discussions, and individual assignments. Each student will prepare a technical briefing for the class related to policy implications of a scientific issue. The class schedule and all quizzes and assignments will be accessed through the course web-site on Moodle.

#### V. Course Text and Readings

There is no text book for this course. Assigned readings will be available on-line.

#### VI. Course Outline/Weekly Schedule

The course outline (below) the direction of flow for the progression of the course. It will not strictly follow a weekly schedule to allow for incorporation of current events and emergence of group interests within specific topics.

Week	Topic/Assignment	Readings
Week 1 Jan. 23, 2018	The Web of Life: Overview of biological systems.  Assignment 1: Moodle site due Jan. 28, 2018 11:55 p.m.	Hebert PDN, Hollingsworth PM, Hajibabaei M. From writing to reading the encyclopedia of life. <i>Philosophical Transactions of the Royal Society B: Biological Sciences</i> . 2016;371(1702):20150321. doi:10.1098/rstb.2015.0321.
Week 2 Jan. 30, 2018	Public Health: Pulling a strand on the web of life-Using impacts on population health as a lens to examine the functions of biological systems as they relate to agent, host, and environment interactions.	Goodrich JK, Davenport ER, Waters JL, Clark AG, Ley RE. Cross-species comparisons of host genetic associations with the microbiome. <i>Science</i> . 2016 Apr 29;352(6285):532-5. doi: 10.1126/science.aad9379.
Week 3 Feb. 6, 2018	One Health concepts and interdisciplinary approaches to understand the connection between human, animal, and environmental health.  Assignment 2: Moodle site, due Feb. 11, 2018 11:55 p.m.	Zeppelini CG, de Almeida AM, Cordeiro-Estrela P. Zoonoses As Ecological Entities: A Case Review of Plague. <i>PLoS Negl Trop Dis</i> . 2016 Oct 6;10(10):e0004949. doi: 10.1371/journal.pntd.0004949.
Week 4 Feb. 13, 2018	.Environmental aspects of infectious disease transmission, including important disease vectors and reservoir.  Quiz 1; Moodle site, due Feb. 18, 2018 11:55 p.m.	Rupprecht CE, Burgess GW. Viral and vector zoonotic exploitation of a homo-sociome memetic complex. <i>Clin Microbiol Infect</i> . 2015 May;21(5):394-403. doi: 10.1016/j.cmi.2015.02.032.
Week 5 Feb. 20, 2018	Environmental aspects of infectious disease transmission, including important disease vectors and reservoirs (continued)  Assignment 3: Moodle site, due Feb 25, 2018 11:55 p.m.	
Week 6 Feb. 27, 2018	Ecosystem disruption, including climate change, and the emergence of biological hazards.	Verner G, Schütte S, Knop J, Sankoh O, Sauerborn R Health in climate change research from 1990 to 2014: positive trend, but still underperforming. <i>Glob Health Action</i> . 2016 Jun 21;9:30723. doi:

		10.3402/gha.v9.30723..
Week 7 Mar. 6, 2018	Agricultural systems, food production, and food systems.  Assignment 4: Moodle site, due March 11, 2018 11:55 p.m.	Adams MS, Adams RB, Wessman CA, Demmig-Adams B. Nutritional Cues Tie Living Organisms to Their Environment and Its Sustainability. <i>Front Nutr.</i> 2016 Aug 12;3:28. doi: 10.3389/fnut.2016.00028.
Mar. 13, 2018	Spring break	
Week 8 Mar. 20, 2018	Water and waste treatment systems.  Quiz 2; Moodle site, due Mar. 25, 2018 11:55 p.m.	Mahmood Q, Pervez A, Zeb BS, Zaffar H, Yaqoob H, Waseem M, Zahidullah, Afsheen S. Natural treatment systems as sustainable ecotechnologies for the developing countries. <i>Biomed Res Int.</i> 2013;2013:796373. doi: 10.1155/2013/796373.
Week 9 Mar. 27, 2018	Surveillance, risk assessment, and acceptable levels of control.(continued)  Assignment 5: Moodle site; due Apr. 1, 2018 11:55 p.m.	Peeler EJ, Reese RA, Thrush MA. Animal Disease Import Risk Analysis--a Review of Current Methods and Practice. <i>Transbound Emerg Dis.</i> 2015 Oct;62(5):480-90. doi: 10.1111/tbed.12180. Review.
Week 10 Apr. 3, 2018	Development of evidence to guide public health interventions.	LaKind JS, Overpeck J, Breyse PN, Backer L, Richardson SD, Sobus J, Sapkota A, Upperman CR, Jiang C, Beard CB, Brunkard JM, Bell JE, Harris R, Chretien JP, Peltier RE, Chew GL, Blount BC. Exposure science in an age of rapidly changing climate: challenges and opportunities. <i>J Expo Sci Environ Epidemiol.</i> 2016 Nov;26(6):529-538. doi: 10.1038/jes.2016.35.
Week 11 Apr. 10, 2018	Development of evidence to guide public health interventions. (continued)	
Week 12 Apr. 17, 2018	Anticipating unintended consequences.  Quiz 3; Moodle site, due April 22, 2018 11:55 p.m.	Schwartz JL. The first rotavirus vaccine and the politics of acceptable risk. <i>Milbank Q.</i> 2012 Jun;90(2):278-310. doi: 10.1111/j.1468-0009.2012.00664.x.
Week 13 Apr. 24, 2018	Global aspects of biological systems and their effects on public health.  Technical briefing documents: Moodle site, due April 29, 2018 11:55 p.m.	Galloway SE, Petzing SR, Young CG. Reassessing Biological Threats: Implications for Cooperative Mitigation Strategies. <i>Front Public Health.</i> 2015 Nov 30;3:251. doi: 10.3389/fpubh.2015.00251.
Week 14 May 1, 2018	What is the relationship between good science and good policy?	Singer AC, Shaw H, Rhodes V, Hart A. Review of Antimicrobial Resistance in the Environment and Its Relevance to Environmental Regulators. <i>Front Microbiol.</i> 2016 Nov 1;7:1728.
Week 15	Final exam; Moodle site, due May 7, 2018 11:55 p.m.	

## VII. Evaluation and Grading

The course grade will be comprised of 100 points that will be distributed as follows:

5 assignments/ exercises	50 points
3 quizzes	15 points
1 technical briefing	25 points
Final exam	10 points

Grades will be assigned based on the following scale:

A	>= 92 (-Represents achievement that is outstanding relative to the level necessary to meet course requirements)
A-	90-91
B+	88-89
B	82-87 ( - Represents achievement that is significantly above the level necessary to meet course requirements)
B-	80-81
C+	78-79
C	72-77 ( - Represents achievement that meets the course requirements in every respect)
C-	70-71
D+	68-69
D	62-67 ( - Represents achievement that is worthy of credit even though it fails to meet fully the course requirements)
S	>= 70 (Represents achievement that is satisfactory, which is equivalent to a C- or better).

**For additional information, please refer to:**

<http://policy.umn.edu/Policies/Education/Education/GRADINGTRANSCRIPTS.html>.

### Course Evaluation

The SPH will collect student course evaluations electronically using a software system called CoursEval: [www.sph.umn.edu/courseval](http://www.sph.umn.edu/courseval). The system will send email notifications to students when they can access and complete their course evaluations. Students who complete their course evaluations promptly will be able to access their final grades just as soon as the faculty member renders the grade in SPHGrades: [www.sph.umn.edu/grades](http://www.sph.umn.edu/grades). All students will have access to their final grades through OneStop two weeks after the last day of the semester regardless of whether they completed their course evaluation or not. Student feedback on course content and faculty teaching skills are an important means for improving our work. Please take the time to complete a course evaluation for each of the courses for which you are registered.

### Incomplete Contracts

A grade of incomplete "I" shall be assigned at the discretion of the instructor when, due to extraordinary circumstances (e.g., documented illness or hospitalization, death in family, etc.), the student was prevented from completing the work of the course on time. The assignment of an "I" requires that a contract be initiated

and completed by the student before the last official day of class, and signed by both the student and instructor. If an incomplete is deemed appropriate by the instructor, the student in consultation with the instructor, will specify the time and manner in which the student will complete course requirements. Extension for completion of the work will not exceed one year (or earlier if designated by the student's college). For more information and to initiate an incomplete contract, students should go to SPHGrades at: [www.sph.umn.edu/grades](http://www.sph.umn.edu/grades).

### **University of Minnesota Uniform Grading and Transcript Policy**

A link to the policy can be found at [onestop.umn.edu](http://onestop.umn.edu).

## **VIII. Other Course Information and Policies**

### **Grade Option Change** (if applicable):

For full-semester courses, students may change their grade option, if applicable, through the second week of the semester. Grade option change deadlines for other terms (i.e. summer and half-semester courses) can be found at [onestop.umn.edu](http://onestop.umn.edu).

### **Course Withdrawal:**

Students should refer to the Refund and Drop/Add Deadlines for the particular term at [onestop.umn.edu](http://onestop.umn.edu) for information and deadlines for withdrawing from a course. As a courtesy, students should notify their instructor and, if applicable, advisor of their intent to withdraw.

Students wishing to withdraw from a course after the noted final deadline for a particular term must contact the School of Public Health Office of Admissions and Student Resources at [sph-ssc@umn.edu](mailto:sph-ssc@umn.edu) for further information.

### **Student Conduct Code:**

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University you are expected adhere to Board of Regents Policy: *Student Conduct Code*. To review the Student Conduct Code, please see: [http://regents.umn.edu/sites/default/files/policies/Student\\_Conduct\\_Code.pdf](http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf).

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

### **Use of Personal Electronic Devices in the Classroom:**

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. For complete information, please reference: <http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

### **Scholastic Dishonesty:**

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct Code: [http://regents.umn.edu/sites/default/files/policies/Student\\_Conduct\\_Code.pdf](http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf)) If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see: <http://policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html>.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: <http://www1.umn.edu/oscai/integrity/student/index.html>. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

**Makeup Work for Legitimate Absences:**

Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, and religious observances. Such circumstances do not include voting in local, state, or national elections. For complete information, please see: <http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html>.

**Appropriate Student Use of Class Notes and Course Materials:**

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see: <http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

**Sexual Harassment:**

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy: <http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf>

**Equity, Diversity, Equal Opportunity, and Affirmative Action:**

The University will provide equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy: [http://regents.umn.edu/sites/default/files/policies/Equity\\_Diversity\\_EO\\_AA.pdf](http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf).

**Disability Accommodations:**

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center Student Services is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DRC at 612-626-1333 or [drc@umn.edu](mailto:drc@umn.edu) to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with DS and have a current letter requesting reasonable accommodations, please contact your instructor as early in the semester as possible to discuss how the accommodations will be applied in the course.

For more information, please see the DS website, <https://diversity.umn.edu/disability/>.

**Mental Health and Stress Management:**

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: <http://www.mentalhealth.umn.edu>.

**The Office of Student Affairs at the University of Minnesota:**

The Office for Student Affairs provides services, programs, and facilities that advance student success, inspire students to make life-long positive contributions to society, promote an inclusive environment, and enrich the University of Minnesota community.

Units within the Office for Student Affairs include, the Aurora Center for Advocacy & Education, Boynton Health Service, Central Career Initiatives (CCE, CDes, CFANS), Leadership Education and Development – Undergraduate Programs (LEAD-UP), the Office for Fraternity and Sorority Life, the Office for Student Conduct and Academic Integrity, the Office for Student Engagement, the Parent Program, Recreational Sports, Student and Community Relations, the Student Conflict Resolution Center, the Student Parent HELP Center, Student Unions & Activities, University Counseling & Consulting Services, and University Student Legal Service.

For more information, please see the Office of Student Affairs at <http://www.osa.umn.edu/index.html>.

**Academic Freedom and Responsibility: for courses that do not involve students in research:**

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.\*

**OR:**

**Academic Freedom and Responsibility, for courses that involve students in research**

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom and conduct relevant research. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.\* When conducting research, pertinent institutional approvals must be obtained and the research must be consistent with University policies.

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, (Dr Kristin Anderson, SPH Dean of Student Affairs), or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost.

*\* Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".*

**Student Academic Success Services (SASS): <http://www.sass.umn.edu>:**

Students who wish to improve their academic performance may find assistance from Student Academic Support Services. While tutoring and advising are not offered, SASS provides resources such as individual consultations, workshops, and self-help materials.

*Template update 9/2014*