

**PubH 6101 Environmental Health**  
**Spring, 2018**  
**Mayo, 1250**

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**Credits:** 2  
**Meeting Days:** MW  
**Meeting Time:** 6:00-7:20 PM  
**Meeting Place:** Mayo 1250  
**Instructor:** William A. Toscano  
**Office Address:** Mayo 1165  
**Office Phone:** 612-859-2120  
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**Office Hours:** By Appointment

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**I. Course Description**

Principles of environmental public health relating to macro- and microenvironments and to products consumed or used by people.

**II. Course Prerequisites**

None

**III. Course Goals and Objectives**

**Core Objectives:**

Environmental health sciences represent the study of environmental factors including biological, physical and chemical factors that affect the health of a community.

After completing this course, you will be able to:

- Describe the action of the environment on human health;
- Identify potential environmental hazards;

- Distinguish between hazards and risks; and identify healthy environments Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents,
- Describe genomic, physiological and psychosocial factors affecting health outcomes following exposure to environments,
- Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues,
- Specify current risk assessment methods, specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety,
- Explain general mechanisms of toxicity in eliciting a human health effect after exposure to environments,
- Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equity,
- Develop a testable model of environmental insult

## **Outcome Measures:**

### **Class Attendance and Participation**

Active learning through class participation and discussion are important components of this course. The course meets for 14 2hr. sessions over seven weeks. Students are required to attend and participate in all classes.

### **Presentations**

Students are expected to give two short presentations during the indicated sessions

Students will present individually (5 to 10 min) on the Community Assessment Exercise, and as a group for the “Green Community” Exercise

### **Quizzes**

There will be weekly quizzes bases on reading assignments

### **Homework Assignment**

Students will be asked to prepare a brief written assignment on the Community Assessment

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

**Methods of Instruction:** Lecture, discussions, in-class participation. **Work expectations,** read assigned chapters or citations.

## V. Course Text and Readings

: Frumkin, H. ed. Environmental Health from Global to Local, 3<sup>rd</sup> Edition, Josey Bass (2016).

## VII. Evaluation and Grading

**1. Exercises in class: Quizzes (60), Community Assessment (20)  
Discussion (20), Total = 110 points**

## VI. Course Outline/Weekly Schedule

Date	Topic	Reading <sup>1</sup>	CEPH Competency	Course Learning Outcome	Evaluation
Jan 17	Introduction Environmental Diseases and Public Health	Ch 1 and 2	1 Explain public health history, philosophy and values 2. Identify the core functions of public health and the 10 Essential Services	Explain the scope of Environmental health and differences between medical and public health approaches to health Discuss how environmental health fits into the overall scheme of public health services	Discussion in class.
Jan 22	Science and Methods of Environmental Health	Ch 4 & 5	2. Identify the core functions of public health and the 10 Essential Services	Discuss how environmental health fits into the overall scheme of public health services	Weekly Quiz, Discussion in class.
Jan 24	Science and Methods of Environmental Health: Risk Assessment	Ch 26, 27 Quiz 1	4. Specify current environmental risk assessment methods.	Discuss science underlying public health practice. Quantitative and life-time risk assessment; exposome and health in lecture and text readings; recommend approaches for	Weekly Quiz, Discussion in class.

				<p>evaluating human exposures to potentially harmful agents</p> <p>explain similarities and differences in exposure concepts across disciplinary boundaries in environmental health</p>	
Jan 29	Infection, Microbiomes	Ch 12	1. Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents	Discuss the microbiome and health; Identify infectious agents and role in human health; distinguish between infectious and communicable diseases;	In class discussion; Weekly quiz, group exercise in class
Jan 31	Living with Nature: Air Pollution	Ch 13,14 Quiz 2	<p>1. Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents;</p> <p>3. Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.</p>	<p>Identify priority pollutants; describe diseases caused by air pollution; Identify emission sources of pollutants; distinguish between stationary and mobile sources of air pollution; discuss air quality management; explain how physical agents interact with the human body</p> <p>Discuss how to select instruments to measure exposure to physical agents</p>	Discussion in class; weekly quiz

Feb 5	Living with Nature: Water and Health	Ch 16	1. Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents	Identify major water pollution sources; describe how to mitigate water pollution; describe differences in sanitary disposal of solid waste systems; discuss	Discussion in class; weekly quiz
Feb 7	POPs; Environmental Signals; EDCs	Ch 6 Quiz 3	1. Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents	Identify properties of persistent pollutants; differentiate between natural and anthropogenic pollutants; discuss the difference between biomagnification and bioaccumulation of pollutants in the food chain	Discussion in class; weekly quiz
Feb 12	Public Health Genomics; Epigenomics	Ch 7.	2. Describe genetic, physiologic and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards.	Describe conditions suitable for population genetic screening; distinguish between mutations and epigenetic alterations in the human genome; recognize the difference between common complex diseases and rare, single-gene diseases;	Discussion in class; weekly quiz

Feb 14	Developmental Origins of Health and Diseases (DOHAD)	Prenatal environmental exposures, epigenetics, and disease. Perera, F., Herbstman, J. <i>J. Reprod. Toxicol</i> , <b>31</b> :363-373 (2011) PMCID: PMC3171169.  Ch 6	2. Describe genetic, physiologic and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards.	Identify how environmental agents affect birth outcomes; discuss environmental signals and chemical programming of development;  distinguish between Teratogenesis and developmental origins of health and disease	Discussion in class; weekly quiz
Feb 19	Environmental Justice	Ch 10, 11. Quiz 4	6. Discuss means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels	Describe the history of the environmental justice movement in the United States;  describe instances of environmental racism domestically and globally; discuss the role that government played in Flint Michigan lead poisoning;  Discuss placement of hazardous facilities, brownfields, and mixed housing	Discussion in class; weekly quiz
Feb, 21	Healthy Buildings & Healthy Communities	Ch 15, 20 Report and Presentation	7. Assess population needs, assets and capacities that affect communities' health	Describe what makes a community and built environment healthy; Discuss strategies to create non- polluting solutions to urban and rural environments	Community assessment exercise; written and oral report

Feb 26	Greening My Community	Group Report and Presentation	7. Assess population needs, assets and capacities that affect communities' health;  13. Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes	Discuss and describe pollution prevention strategies; Design a program for making community less polluting;	In class exercise on greening the community; oral presentation of green program
Feb 28	Global Climate Change	Ch12; Quiz 5	22. Apply systems thinking tools to a public health issue	Describe the ways in which climate change will affect human health.  Discuss the climate system;  Explain adaptation as a strategy to preserve health in a changing climate;  Discuss how climate change affects human social structure, effects on SES, and psycho- social development	Class discussion; weekly quiz
Mar 5	Injury prevention	Ch 8, 20 Quiz 6	1. Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents	list the regulations and guidelines that govern workplace exposure to physical agents; design a hearing conservation program; Describe a TLV	Oral discussion on noise pollution; Weekly quiz

<sup>1</sup> Readings are from: Frumkin, H. ed. **Environmental Health from Global to Local**, 3<sup>rd</sup> Edition, Josey Bass (2016). This book may be rented for the semester from Amazon.com. Though, you may use any other Environmental Health textbook

## VII. Evaluation and Grading

**1. Exercises in class: Quizzes (60), Community Assessment (20)  
Discussion, and Class attendance and Participation (10)  
Total = 100 %**

**We will have short quizzes at the beginning of class based on the reading assignments for 10 % of the grade.**

### **Late work is not accepted**

The University uses plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following:

- A 4.000 - Represents achievement that is outstanding relative to the level necessary to meet course requirements
- A- 3.667
- B+ 3.333
- B 3.000 - Represents achievement that is significantly above the level necessary to meet course requirements
- B- 2.667
- C+ 2.333
- C 2.000 - Represents achievement that meets the course requirements in every respect
- C- 1.667
- D+ 1.333
- D 1.000 - Represents achievement that is worthy of credit even though it fails to meet fully the course requirements
- S 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 CourseEval: [www.sph.umn.edu/courseeval](http://www.sph.umn.edu/courseeval). 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.

