I. **Course Description**

This course is designed for students who are interested in public health and environmental issues. We live with various hazards, ranging from chemical and physical to social and behavioral hazards. This course focuses on how assessment of exposure to hazards and the adverse health effects they may cause is used to evaluate environmental health risk, and how environmental policy is developed to protect public health. Students will explore the forces and strategies that contribute to the development of environmental health policy, including the roles of scientific evidence, strategic decision-making, and the political process.

II. **Course Prerequisites**

PubH 6102 Issues in Environmental Health, PubH 6101 Environmental Health, or permission of instructors.
III. Course Goals and Objectives

By the end of this course, students will be able to do the following:

- Recognize hazards present in various environments
- Identify mechanisms and pathways of exposure to environmental hazards
- Recognize how psychosocial factors interact with and influence the effects of environmental exposures
- Analyze risk by integrating exposure and health effects data with particular attention to diverse and vulnerable populations
- Develop and evaluate risk management strategies and interventions using education, policy, and technology
- Communicate effectively with public health stakeholders

IV. Methods of Instruction and Work Expectations

This class consists of lectures and interactive learning including class discussions, small group interactions and group projects. The main objectives of the course will be achieved through lectures and assigned readings to develop the subject in a logical sequence. It is expected that students will read assigned articles before class to facilitate active and informed class discussions.

Student performance will be based on the following criteria:

- Web postings; three postings (15%)
- Participation in in-class activities (10%)
- Policy debate topic paper (15%)
- Composition of a letter or email to a legislator on an environmental health issue (10%)
- Team presentations and debates (35%)
- Policy briefs to support debates (15%)

Grading of class participation will be based on percent completion of in-class activities:

Full credit: 80 – 100% satisfactory completion of assignments
70% credit: 70 – 79% satisfactory completion of assignments
50% credit: 60 – 69% satisfactory completion of assignments
30% credit: 50 – 59% satisfactory completion of assignments
0 credit: less than 50% satisfactory completion of assignments

V. Course Text and Readings


A variety of journal articles and book chapters are assigned as readings to complete before the designated class. There will also be websites to review. Additional readings from the primary literature and other sources may be added during the course.
VI. Course Outline/Weekly Schedule

Week 1
Tuesday, January 16
Course Introduction: Pat McGovern, Elizabeth Wattenberg
Mechanisms and Pathways of Exposure to Environmental Hazards: Jesse Berman

Readings: To be announced.

Thursday, January 18
Environmental Measurements: Susan Arnold and Kim Anderson
Readings: To be announced

Assignment: Web posting 1 due

Week 2
Tuesday, January 23
Biomonitoring: Jean Johnson, Minnesota Department of Health


Thursday, January 25
Biomonitoring: Pat McGovern, Elizabeth Wattenberg (Possible guest speaker, Mageen Caines, Epidemiologist, City of Minneapolis)


Week 3
Tuesday, January 30
Introduction to Exposure Modeling: Pete Raynor

Readings: to be announced.

Thursday, February 1
Introduction to Exposure Modeling: Pete Raynor

Readings: to be announced.
Week 4
Tuesday, February 6
Introduction to Toxicology, Dose-response: Elizabeth Wattenberg

Readings: Review the slides shown on the website below under the section Toxicology Tutor I: Dose and Dose Response. Taking the quizzes included in this module is highly recommended.

Thursday, February 8
Toxicology Study Design, Safety Evaluation: Elizabeth Wattenberg

Readings: Review the slides shown on the website below under the section Toxicology Tutor I: Toxic Effects and Toxicity Testing Methods and Risk Assessment. Taking the quizzes included in this module is highly recommended.

Assignment: Web Posting 2 due

Week 5
Tuesday, February 13
Environmental Health Risk Assessment: Elizabeth Wattenberg

Readings: Review the slides shown on the website below under the section Toxicology Tutor I: Risk Assessment. Taking the quizzes included in this module is highly recommended.

Review the Weight of Evidence classifications from USEPA and IARC posted on Moodle site

Watch the Risk Bites YouTube videos: A New Way to Evaluate Chemical Safety - TOX21
https://www.youtube.com/watch?v=vKhn1HRXgn8

Hazard vs. Risk – Same Difference
https://www.youtube.com/watch?v=VF-8QksiU7c

What does “Probably Cause Cancer” actually mean?
https://www.youtube.com/watch?v=CbBkB81ySxQ

Thursday, February 15
How Our Internal Environment Affects Our Response to Our External Environment: Elizabeth Wattenberg

Readings: Review the slides shown on the website below under the section Toxicology Tutor II: Introduction, Absorption, Distribution, Excretion and Biotransformation. Taking the quizzes included in this module is highly recommended.

Week 6
Tuesday, February 20
Introduction to Environmental & Occupational Health Policy, Politics and Decision Making: Pat McGovern

The Case of Wild Rice Protections

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Thursday, February 22
Introduction to the Legislative Process: Melissa Finnegan and Pat McGovern


**Week 7**

Tuesday, February 27
Environmental Regulations: Overview and Application: Pat McGovern


Thursday, March 1
Overview of the Clean Air Act, Foundations for Disparities in Exposure to Hazardous Substances: Pat McGovern and Greg Pratt


Review: Clean Air Act, Minnesota Pollution Control Agency, accessed 8/27/17 at https://www.pca.state.mn.us/air/clean-air-act and https://www.pca.state.mn.us/air/air-we-breathe

**Assignment:** Letter/email to an elected representative is due

**Week 8**

Tuesday, March 6:
Overview of Climate Change, Politics and Policy: Pat McGovern


Thursday, March 8
Climate Change, Adverse Health Consequences from Heat Impacts and Preventative Measures: Pat McGovern and Yang Liu

**Readings:** Chapter 4A Heat impacts on work, human performance and daily life (pp: 73-86) and Chapter 4B. Disorders related to heat. (pp:87-104).

Y Liu, B Hoppe, Convertino M. Threshold Evaluation of Emergency Risk Communication for Temperature Related Health Risks. (Manuscript in review)
Week 9
Tuesday, March 13
Climate Change, Adverse Health Consequences and Preventative Measures from Vector-Borne Diseases: Rich Danila and Pat McGovern

**Readings:** B.S. Levy and J.A. Patz. Chapter 6, Vector-Borne Diseases (pp: 129156)


**Assignment:** Web Posting 3 due

Thursday, March 15
Climate Change, Adverse Health Consequences and Preventative Measures associated with food and water insecurity: Pat McGovern and Guest Speaker (Possible guest instructor, Jessica Helman, Institute on the Environment (IonE)), and Overview of Policy Evaluation Framework: Pat McGovern

**Readings:** B.S. Levy and J.A. Patz. Chapter 7, Waterborne and Food Borne Diseases (pp: 157-172) and Chapter 8, Health Impacts related to Food and Nutrition Insecurity (pp: 173-193).


Spring Break

Week 10
Tuesday, March 27
Clean Water Act and The Economic Value of Clean Water: (Possible guest instructor, Bonnie Keeler, IonE)

Policy Evaluation Framework: Pat McGovern


**Assignment:** Policy proposal assignment

Thursday, March 29
Safe Drinking Water Act and the Case of Nitrates: Tannie Eshenar, Deanna Scher, Pat McGovern


Week 11

Tuesday, April 3
Risk Communication and Health Literacy: Tannie Eshenar, Deanna Scher, Pat McGovern


Policy proposal due for peer feedback

Thursday, April 5
Disaster Preparedness: MDH leadership, Katie Haugen and Pat McGovern

Readings: To be announced.


Assignment: Final policy proposal due to Instructor

Week 12

Tuesday, April 10
Mental Health Impacts

Readings: To be announced.


Thursday, April 12
Resilient Communities: Minneapolis’ Chief Resilience Officer (Kate Knuth)

Readings: To be announced.

Policy debates teams developed & in-class meetings of groups (1)

Week 13

Tues, April 17
Overview to Occupational Health Policy and the Occupational Safety and Health Act: Pat McGovern

Online Module. Nanotechnology and Chemicals in the Workplace – Perspective on Oversight by Gurumurthy Ramachandra, PhD, Professor, Environmental Health and Engineering, Johns Hopkins University


Required Policy debates teams developed & in-class meetings of groups (1)
Thurs, April 19:
Overview to The Americans’ with Disabilities Act and the Role of the Courts in Shaping Policy: Pat McGovern, David Cossi


Week 14

Tuesday, April 24: Overview to Occupational Health Policy and Workers Compensation: Pat McGovern and Bill Lohman


Review Online Module; Overview to Workers Compensation and the Case of Mental Illness Coverage

Policy debates teams have in-class meetings (2)

Thursday, April 26: students

Debates & Briefs

No assigned readings

Week 15

Tuesday, May 1: students

Debates & Briefs

Thursday, May 3: students

Debates & Briefs

VII. Evaluation and Grading

The University utilizes 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 CoursEval: 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. 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.

University of Minnesota Uniform Grading and Transcript Policy
A link to the policy can be found at 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.

Course Withdrawal:
Students should refer to the Refund and Drop/Add Deadlines for the particular term at 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 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.

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) 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.

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 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.

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