

Summary

People come into contact with many potentially hazardous chemical, physical, biological, injury, and social/behavioral hazards in the home, work, and outdoor environments. Exposure is a quantitative measure of the contact between a person and a potentially hazardous agent. In this course, students will learn how to recognize potential exposures in a variety of settings and how to evaluate many of those exposures. Some class sessions will be in a traditional lecture format; others will focus on discussion and group work. Course grades will be based on written responses to the readings assigned for class sessions, directed discussions about assigned readings, homework assignments, and an individual poster project on human exposure to one of a variety of agents of interest.

Course Information

Tuesdays & Thursdays (September 8, 2015 – October 26, 2015), 5:45 – 7:40 PM
Moos Tower 1-451
2 credits

Instructor Information

Lead Instructor:

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Additional Instruction:

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Course Objectives

By the end of the course, students should be able to:

- explain what is meant by "environmental health"
- define "exposure" and related terms in context of the environmental health paradigm

- recognize human exposures to potentially harmful agents in a variety of settings (home, work, outdoors) and a variety of media (air, water, food)
- identify conditions that may lead to disparities in exposure
- recommend approaches for evaluating human exposures to potentially harmful agents
- suggest potential strategies for limiting exposures to harmful agents
- explain similarities and differences in exposure concepts across disciplinary boundaries in environmental health
- apply the knowledge they develop to real-world exposures to harmful agents
- describe what has been learned through effective written, verbal, and visual communication

Course Materials

There is no text for this course. Reading and/or video assignments will be required for each class session. Students will access all assigned readings and videos using hyperlinks on the course's Moodle site, which can be accessed at <https://ay15.moodle.umn.edu/course/view.php?id=2892>, or through <https://ay15.moodle.umn.edu/my/> or <https://www.myu.umn.edu>.

Assignments

Per university policy, students should expect their workload outside of class to exceed 8 hours per week (<http://www.policy.umn.edu/Policies/Education/Education/STUDENTWORK.html>).

Individual Response Assignments

The course will include short written individual responses to the assigned readings and/or videos for eight of the class sessions. The reading/video assignments and the requirements for the written responses will be posted for each class session at least 1 week before the session on the course Moodle site. These assignments will be "handed in" by posting them to the Moodle site by 5:45 PM on the day of the session. Failure to respond by this time will result in a grade of 0 for the assignment. The responses will be graded on a 5-point scale. Students may discuss these written responses together, but each student should write her/his own response and post it individually to the course Moodle site.

Moodle Discussion Assignments

Students are required to contribute to small group discussions on the Moodle course site of the assigned readings and/or videos for four of the class sessions. The reading/video assignments and the requirements for the discussions will be posted for each class session at least 1 week before the session on the course Moodle site. You will meet your small group during the first class session so you will be able to put a face to the names in your group. All group members will need to participate in the discussion and will need to post several comments to complete the assignment. Thus, each member will need to post to the Moodle site well in advance of the final deadline for the complete discussion assignment at 5:45 PM on the day of the session. Specific suggestions regarding when each step should be completed will be posted as part of the assignment. The responses will be graded on a 5-point scale.

Homework Assignments

Two homework assignments will be included as part of the course. These assignments, due in the hands, email inbox, or mail slot of Dr. Raynor on the dates indicated on the course schedule, will each be graded on a 100-point scale. The assignments will be posted on the course Moodle site at least 1 week before they are due. Grades will be reduced by 10 points for each weekday

that the assignment is late. Students may work together on homework assignments. However, each student should submit her/his own assignment for grading.

Poster Project

Each student will create a poster with information on different aspects of exposure to a potentially-hazardous agent. The poster topic may be selected from a list on the course Moodle site or chosen from the student's own interests. Each student's topic choice must be approved by Dr. Raynor. A draft of the poster will be due to Dr. Raynor two weeks before the poster presentation date. Suggestions for changes to the content and layout of the poster will be provided as part of the grading of the draft posters. Each poster will be presented in one of four joint poster sessions on the last day of class. Additional details of the assignment can be found on the course's Moodle site.

Students must not spend money on professionally-printed posters. For this assignment, students should create a series of 10 to 12 sheets of paper (8.5"x11") that can be taped to the wall of the classroom. At the poster sessions, fellow students will be assigned to grade each poster presentation according to criteria that the students will help develop during the course. In addition, Dr. Raynor will grade the final posters after the session. Food and drink will be provided at the poster session.

Course Grading

The course will have neither a midterm nor a final exam. For all assignments, partial credit will be awarded generously. In addition, the neatness of the work and good grammar in your writing is important because the instructor will be able to follow the students' reasoning more easily when trying to award partial credit. The breakdown of grading for the course is:

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|---|------|
| Individual Response Assignments | 24 % |
| Moodle Discussion Assignments | 12 % |
| Homework Assignments | 24 % |
| Poster Project Drafts | 5 % |
| Final Poster Projects: Student Evaluation In-Class | 5 % |
| Final Poster Projects: Instructor Evaluation Post-Class | 25 % |
| Poster Session Participation | 5 % |

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>.

Final grades will be assigned as follows:

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| A = 4.000 | (93-100 %) | Outstanding achievement relative to course requirements |
| A- = 3.667 | (90-93 %) | |
| B+ = 3.333 | (87-90 %) | |
| B = 3.000 | (83-87 %) | Achievement significantly above course requirements |
| B- = 2.667 | (80-83 %) | |
| C+ = 2.333 | (77-80 %) | Achievement meeting course requirements in every respect |
| C = 2.000 | (73-77 %) | |

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| C- = 1.667 | (70-73 %) | |
| D+ = 1.333 | (67-70 %) | |
| D = 1.000 | (60-67 %) | Achievement below requirements, but worthy of credit |
| F = 0.000 | (< 60 %) | No credit awarded |

The School of Public Health collects student course evaluations electronically using a software system called CourseEval: <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: <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.

For additional information, please refer to:

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

What the Instructors Expect from Students

- Students are expected to attend all classes, arrive on time, and pay attention.
- Students should be sure that electronic devices are muted during class sessions.
- Students will download handouts and assignments from the course's Moodle site that can be accessed at <https://ay15.moodle.umn.edu/course/view.php?id=2892>.
- Students are expected to complete the reading/video assignments prior to class.
- Students are expected to be aware of current events as they relate to environmental health and exposure to potentially hazardous agents.
- Students are expected to answer questions posed by the instructors and participate in classroom discussions.
- Students are responsible for asking questions and/or letting instructors know when they do not understand lectures or course materials.
- Students are expected to turn assignments in on time.
- Although students may discuss the Individual Response Assignments as they prepare their responses and may work together on Homework Assignments, each student should turn in a separate assignment.
- Students are expected to utilize the University of Minnesota Libraries as necessary, either on-line or in person.
- Students are encouraged to provide constructive feedback to the instructors when they are dissatisfied with the course content or teaching methods.

What Students Should Expect from the Instructors

- The instructors will be enthusiastic about the class and the subject matter.
- The instructors will post reading/video assignments on the course's Moodle site more than 1 week before the class session.
- The instructors will post homework assignments on the course's Moodle site more than 1 week before they are due.

- The instructors will post lecture slides on the course's Moodle site more than 24 hours before class time.
- The instructors will make the objectives clear for each day's session
- The instructors will begin and conclude class sessions on time.
- The instructors will take a 5-10 minute break about halfway through each class session.
- The instructors will answer all questions posed during class by students. Whenever possible, questions will be answered immediately. As an alternative, an instructor may indicate that the question will be addressed later in the class or that he will answer the question at the beginning of the next lecture if he does not know the answer.
- The instructors will ensure that all discussions in class are conducted in a professional and collegial manner.
- The instructors will create assignments with clear expectations.
- The instructors will grade and return assignments within one week of submission.
- The instructors will grade assignments objectively using criteria shared with the students in advance.
- The instructors will provide feedback on assignments that identifies both strengths and weaknesses in student work with constructive suggestions for improvement.
- The instructors will make themselves available outside of class to discuss any aspect of the course with students.
- The instructors will differentiate between facts and their opinions during their lessons.

Additional Information

Students should refer to the Refund and Drop/Add Deadlines for the particular term at <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 Student Services Center at sph-ssc@umn.edu for further information. 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 <http://onestop.umn.edu>.

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: <http://www.sph.umn.edu/grades>.

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>.

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. As defined in the Student Conduct Code (http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf), 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. Students engaged in scholastic dishonesty may be given an "F" or an "N" for the course or otherwise penalized, and offenses may be reported to the SPH Associate Dean for Academic Affairs who may file a report with the University's Academic Integrity Officer. 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 the course instructor. He can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of the class.

Plagiarism is an important element of this policy. It is defined as the presentation of another's writing or ideas as your own. Serious, intentional plagiarism will result in a grade of "F" or "N" for the entire course. For helpful information about preventing plagiarism, please consult <http://writing.umn.edu/tww/sources/index.html>. Students are urged to be careful that they properly attribute and cite others' work in their own communications. For guidelines for correctly citing sources, go to <https://www.lib.umn.edu/reference/791>, especially the examples in Chapter 15 of *The Chicago Manual of Style Online*. In addition, original work is expected in this course. Unless the instructor has specified otherwise, all assignments, papers, reports, etc. should be the work of the individual student. It is unacceptable to hand in assignments for this course for which you receive credit in another course unless by prior agreement with the instructor. Building on a line of work begun in another course or leading to a thesis, dissertation, or final project is acceptable.

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>.

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. Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Division Head, your advisor, the Associate Dean for Academic and Student Affairs, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost.

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."

"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>

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.

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. Disability Services (DS) 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 DS at 612-626-1333 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/>.

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>.



Course Schedule

9/8/15 Session 1 **Course Introduction (Raynor)**
 Syllabus review; fact vs. hypothesis vs. opinion; definitions related to environmental health; scope of environmental health; epidemiologic triangle; classifications for environment, agent, and host

9/10/15 Session 2 **Basic Concepts of Exposure (Raynor)**
 Definitions of exposure, and dose; environmental health paradigm; routes of exposure; acute vs. chronic exposures; exposure as part of risk assessment; calculating exposure and dose

INDIVIDUAL RESPONSE #1 DUE

9/15/15 Session 3 **Recognizing Exposures: Home Environments (Raynor)**
 Types of housing; injuries in the home; indoor air quality; demolition debris; disparities in air quality and health outcomes by location; asthma triggers; indoor cooking

INDIVIDUAL RESPONSE #2 DUE

9/17/15 Session 4 **Recognizing Exposures: Work Environments (Raynor)**
 Types of workplace hazards; government agencies responsible for occupational health and safety; occupational exposure limits; coal mining

INDIVIDUAL RESPONSE #3 DUE

9/18/15 **POSTER TOPICS SELECTED**

9/22/15 Session 5 **Recognizing Exposures: Water Pollutants (Raynor)**
 Global water supplies; sources of water pollution; hazardous wastes; drinking water pollutants and standards; drinking water and wastewater treatment; fish consumption advisories

MOODLE DISCUSSION #1 DUE

- 9/24/15 Session 6 **Recognizing Exposures: Air Pollutants (Raynor)**
 Definition of pollution; properties of the atmosphere; criteria air pollutants; ozone depletion; UV index; toxic air pollutants; air quality index; air pollution in Minnesota; air pollution worldwide
- INDIVIDUAL RESPONSE #4 DUE**
- 9/29/15 Session 7 **Recognizing Exposures: Global Climate Change (Raynor)**
 Greenhouse effect; greenhouse gas emissions; carbon dioxide levels; effects of greenhouse gases on climate; potential public health impacts of climate change; model uncertainty; climate change policy
- MOODLE DISCUSSION #2 DUE**
- 10/1/15 Session 8 **Recognizing and Evaluating Exposures: Environmental Microorganisms (Hedberg)**
 Microbiological hazards in the environment; detection of microorganisms; chain of infection; disease surveillance; routes of transmission; emerging infectious diseases
- INDIVIDUAL RESPONSE #5 DUE**
HOMEWORK #1 DUE
- 10/6/15 Session 9 **Recognizing and Evaluating Exposures: Food Safety (Medus)**
 Prevalence of foodborne illness; causes of foodborne illness; major foodborne disease problems; role of epidemiology in food safety; surveillance methods; outbreak investigations
- MOODLE DISCUSSION #3 DUE**
- 10/8/15 Session 10 **Evaluating Exposures: Modeling of Exposures (Ramachandran)**
 Definition of mathematical modeling; reasons to use models for exposure assessment; data required for modeling; complexity of models; modeling examples
- INDIVIDUAL RESPONSE #6 DUE**
DRAFT POSTERS DUE
- 10/13/15 Session 11 **Evaluating Exposures: Chemical Measurements (Raynor)**
 Reasons to make chemical measurements; grab vs. integrated sampling; active vs. passive sampling; area vs. personal sampling; direct-reading instruments; biomarkers and biomonitoring
- MOODLE DISCUSSION #4 DUE**

