

School of Public Health

Syllabus and Course Information



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

PubH 6140 Occupational and Environmental Epidemiology Spring Semester 2019

Credits: 2
Meeting Days: Thursdays
Meeting Time: 9:00-11:00 am
Meeting Place: Mayo Room 1155
Instructor: Hyun Kim, MSc, ScD
Office Address: Room 1116 Mayo, 420 Delaware Street SE, Minneapolis, MN 55455
Office Phone: 612-626-0435
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Office Hours: Arranged by appointment

Teaching Assistant:
 Douglas DeMoulin, PhD student
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I. Course Description

This course offers an overview of methods and topics in occupational and environmental epidemiology. The course will focus on the concepts of epidemiologic methods as they are applied in occupational and environmental epidemiology. The course will be an open structure that students determine learning methods throughout the course. Such as classical instructor oriented lectures, directed readings, and classroom exercises. Throughout the course, student will learn from research topic development, epidemiologic study designs, exposure assessment, ascertainment of health outcomes, approaches to analysis, special considerations for studying the health of a working population or the effects of environmental exposures, and dissemination.

II. Course Prerequisites

Coursework in epidemiology, biostatistics.

III. Course Goals and Objectives

By the end of the course, students will gain a sufficient understanding of the application of epidemiologic methods to the study of occupational and environmental exposure disease relationships to facilitate their comprehension of published epidemiologic literature and assist in the design and conduct of original research.

IV. Methods of Instruction and Work Expectations

Course Web Site

The course web site is available through Moodle: access your myU account, click on my Courses tab, click on PubH 6140 Moodle Site link. Information on how to navigate through Moodle is available at: <http://www1.umn.edu/moodle/>. The web site may contain PDF files of the required readings. Lecture notes and/or PowerPoint presentations will also be posted.

The web site will be updated on a regular basis. Students are responsible for checking the web site for changes. Required readings will be posted at least one week in advance.

Classroom Lectures

The lectures in the class will cover a wide range of topics that students decided within occupational and environmental health and learn how epidemiologic methods are utilized in the sub-discipline of occupational and environmental epidemiology. Included will be discussions of the types and sources of data available for research, how populations are defined, how outcomes and exposures are measured, and some of the practical aspects of epidemiology. The lectures will be presented in modules related to epidemiologic study designs; however, similarities in study designs, rather than differences will be emphasized.

Classroom Exercises

The classroom exercises will involve discussions of stages of conducting epidemiologic study. In preparation for class discussions, students will critically read the assigned readings (papers) or perform activities that instructor assigned. When indicated, a brief (500 word maximum) one page review and critique (summary) of a paper or other students' work will be assigned. The papers should be submitted to the Moodle page. The critique should address items in the **STROBE checklist** (<http://www.strobe-statement.org/?id=available-checklists>). The objectives of the written critiques are to give the student practice putting their interpretation of a paper in writing, and to guide discussion. The critiques are due before the class on the topic. The written critiques are to be critical reviews evaluating the scientific communication in the paper. They are not to be book reports. The goal is to summarize what is learned from the paper and how well conclusions drawn are supported, and ask relevant questions about the paper. Points will be awarded for being clear and concise. When reviewing the *papers that report on studies* and preparing for discussion, be mindful of the following questions:

1. What is the underlying hypothesis or research question of this paper?
2. What is the target population? How well does the study population(s) represent the target? Is it appropriate for addressing the study question?
3. Are the disease or outcome, exposure, and covariates measured in a reasonable manner? How well do these measured factors relate to the intended objective of the paper and the conclusions drawn? If not, what are the limitations of the methods and how could the limitations affect the study results?
4. Is the presentation of the data clear? If not, what additional information in table or text would be helpful for interpreting the study?
5. Do the authors indicate what their causal assumptions are? Is the analysis appropriate?
6. To what extent, and how, could the results of the paper be influenced by:
 - a. Selection bias?
 - b. Misclassification of exposure, disease, or potentially confounding variable?
 - c. Confounding? If so, is there evidence to support this?
 - d. Effect modification?
7. Have the authors addressed the limitations of the study? Quantitatively or qualitatively?
8. Are the results and conclusions drawn from the results reasonable?
9. What is your overall interpretation of the paper?
10. What else would you like to know to help you understand the paper?

This list is not exhaustive. These points are meant to be a guide, but not all of the points necessarily need to be answered in each critique.

When the *paper is methodological in intent*, the critique should summarize key points the authors make, consider the validity and applicability of the methodology, how it is illustrated using real data, whether you feel the methods are helpful in understanding study results, and how you would use the method in your own work.

Individual Project

Purpose

The purpose of the project is to allow the students to explore in depth one issue in occupational and environmental epidemiology, and communicate that information to a wide audience. Each student will be responsible for distilling information from the scientific literature about a current topic and planning a study to help fill the knowledge gaps. The project will consist of several parts and evolve over the semester. Each student will be responsible for sharing knowledge with the rest of the class. The topic of your interest is open, but with approval from the instructor.

Requirements

The project will be broken into several stages of conducting epidemiologic study. For each part, each student will be responsible for making a presentation to the class. The presentations need to be informative, but not formal.

For each presentation, the class will be responsible for being fully engaged: asking questions, offering observations, challenging assumptions. Students will be responsible for reading other students' papers and participating in a class discussion on the papers.
Method for submission of papers will be guided in each session.

V. Course Text and Readings

Required:

Research Methods in Occupational Epidemiology, Oxford University Press, 2004, Harvey Checkoway, Neil E. Pierce, David Kriebel. Available online access:
<http://www.oxfordscholarship.com.ezp2.lib.umn.edu/view/10.1093/acprof:oso/9780195092424.001.0001/acprof-9780195092424>

Recommended:

- *The Medical Detectives*, Plum; Reprint edition 1991, Truman Talley.
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VI. Course Outline/Weekly Schedule

Readings and schedule are subject to change, especially readings for guest lecturers. Students will be notified via email when readings for guest lecturers have been updated or the schedule has been changed.

Date	Topic	Reading	Instructor
January 24 Week 1	Introduction of occupational and environmental epidemiology	Chapter 1 https://www.iarc.fr/en/publications/pdfs-online/epi/cancerepi/CancerEpi-18.pdf	Kim
January 31 Week 2	Research topic development <i>Assignment: develop research topic and reviewing other students research topic</i>	Brian Haynes, R. Forming research questions (2006) <i>Journal of Clinical Epidemiology</i> , 59 (9), pp. 881-886. Farrugia, P., Petrisor, B. A., Farrokhyar, F., & Bhandari, M. (2010). Research questions, hypotheses and objectives. <i>Canadian Journal of Surgery</i> , 53(4), 278.	Kim
February 7 Week 3	Searching for research grants <i>Assignment: identify four research grants at 1) UMN, 2) State, 3) Federal, and 4) Global levels</i>	https://www.lib.umn.edu/researchsupport/grants	Kim
February 14 Week 4	Developing research plan - Study hypotheses - Background and justification - Study population and recruitment <i>Assignment: 1) Revise study hypothesis, background and justification from session 1 2) describe study population and recruitment methods and review other students' work</i>	https://www.framinghamheartstudy.org/about-fhs/background.php Mahmood, Syed S. et al. "The Framingham Heart Study and the Epidemiology of Cardiovascular Diseases: A Historical Perspective." <i>Lancet</i> 383.9921 (2014): 999–1008. <i>PMC</i> . Web. 26 Jan. 2018. Farrugia, Patricia, et al. "Research questions, hypotheses and objectives." <i>Canadian Journal of Surgery</i> 53.4 (2010): 278.	Kim

February 21 Week 5	Developing research plan - Study design <i>Assignment:</i> 1) describe the best study design for your topic 2) describe the most realistic study design for your topic 3) review other students' work	Chapter 3 http://www.who.int/ipcs/publications/ehc/216_disinfectants_part_4.pdf	Kim
February 28 Week 6	Developing research plan - continue on study design <i>Assignment:</i> 1) revise study design for your topic 2) review other students' work	Chapter 3 http://www.who.int/ipcs/publications/ehc/216_disinfectants_part_4.pdf	Kim
March 7 Week 7	Developing research plan - Hazard identification - Exposure assessment <i>Assignment:</i> 1) determine the best methods of measuring exposures and confounders 2) review other students' work	Chapter 2 and 10 https://www.epa.gov/sites/production/files/2014-11/documents/guidelines_exp_assessment.pdf https://www.iarc.fr/en/publications/pdfs-online/epi/cancerepi/CancerEpi-2.pdf	Kim
March 14 Week 8	Developing research plan - Outcome measurement <i>Assignment:</i> 1) determine the best methods of measuring outcomes 2) review other students' work	Chapter 10 https://www.iarc.fr/en/publications/pdfs-online/epi/cancerepi/CancerEpi-2.pdf	Kim
March 18	Spring break: No Class		
March 28 Week 9	Developing research plan - Precision and Validity <i>Assignment:</i> 1) identify potential limitations in precision and validity of your measurements 2) review other students' work	Chapter 4 Streiner, David L., and Geoffrey R. Norman. "Precision" and "accuracy": two terms that are neither." <i>Journal of clinical epidemiology</i> 59.4 (2006): 327-330.	Kim
April 4 Week 10	Developing research plan - Statistical analysis <i>Assignment:</i> 1) determine the best statistical methods to test your hypothesis 2) review other students' work	Chapter 9 Student identify one paper describing the statistical method student chose and share to the class	Kim
April 11 Week 11	Developing research plan - Epidemiologic causal inference <i>Assignment:</i> 1) identify methods for causal inference of your study and potential limitations 2) review other students' work	Chapter 10 Rothman, Kenneth J., and Sander Greenland. "Causation and causal inference in epidemiology." <i>American journal of public health</i> 95.S1 (2005): S144-S150.	Kim

April 18 Week 12	Conducting research - Pilot study	Thabane, Lehana, et al. "A tutorial on pilot studies: the what, why and how." <i>BMC medical research methodology</i> 10.1 (2010): 1.	Kim
	<i>Assignment:</i> 1) <i>using your research plan, conduct small pilot study and describe any barriers encountered</i> 2) <i>review other students' work</i>	Pilot Studies: Common Uses and Misuses https://nccih.nih.gov/grants/whatnccihfunds/pilot_studies	
April 25 Week 13	Conducting research - Data analysis	Woodward, Mark. <i>Epidemiology: study design and data analysis</i> . Chapman and Hall/CRC, 2013.	Kim
	<i>Assignment:</i> 1) <i>using your research plan, conduct data analysis</i> 2) <i>review other students' work</i>		
May 2 Week 14	Conducting research - Dissemination and preparation for bigger study	Neta, Gila, Ross C. Brownson, and David A. Chambers. "Opportunities for epidemiologists in implementation science: A primer." <i>American journal of epidemiology</i> 187.5 (2017): 899-910.	Kim
	<i>Assignment:</i> 1) <i>Describe your pilot study findings and strategy to improve the bigger.</i> 2) <i>review other students' work</i>	Data Dissemination. Atlanta, GA: Centers for Disease Control and Prevention (CDC), 2013 https://www.cdc.gov/globalhealth/healthprotection/fetp/training_modules/21/datadissemination_pg_final_09252013.pdf	
May 9 Week 15	Presentation	Von Elm, Erik, et al. "The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies." <i>PLoS medicine</i> 4.10 (2007): e296.	Kim
	<i>Assignment:</i> 1) <i>Prepare 10 min (approximately 10 pages of PPT) presentation for your study finding dissemination</i>		
May 16	Submit final proposal by 5 pm	Write Your Application (NIH) https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/write-your-application.htm Guide for writing a Research Protocol for research involving human participation (WHO) https://www.who.int/rpc/research_ethics/guide_rp/en/	

VII. Evaluation and Grading

Grading

Classroom exercises and participation in discussions (40%).

Students are expected to fully participate in the course, including attending classes, presenting your project, and actively joining discussions. Students are also expected to submit weekly assignment on time (by Monday), so other students can review each other's work. Your review on other students' work is due by Wednesday.

Assignments (30%)

Assignments are designed to learn important steps of conducting epidemiologic study in the field of occupational and environmental health. Your assignments will be reviewed by other students in the classroom and discuss further in the class. See full descriptions of each assignment on the moodle.

Final proposal (30%)

Final proposal will be a summary of your project discussed and presented throughout the course. Develop Minimum 3 pages of proposal in NIH format (<https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/write-your-application.htm>) and submit it by May 16, 5pm.

Course Evaluation

SPH collects 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. 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/>.

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>.

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.*

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, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost. *[Customize with names and contact information as appropriate for the course/college/campus.]*

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

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