SYLLABUS Spring 2014

Course Title: Environmental and Occupational Epidemiology
Course Number: EPID 0650
Course Location: SPH Room 334
Course Dates: Thursdays 3:10 – 6:00 pm
Course Instructor: Elizabeth G. Marshall, Ph.D., Department of Epidemiology
                     Jaime Madrigano, Sc.D., M.P.H., Department of Environmental and Occupational Health
Office Hours: By Appointment       Course Assistant: None
Optional Course Text: Epidemiology, Leon Gordis, 4th Edition

Course Description:
Environmental and Occupational Epidemiology is an intermediate level course designed to familiarize students with the evaluation and conduct of environmental and occupational epidemiology studies. Students will become familiar with specific environmental and occupational research areas, as well as the unique epidemiologic or exposure methodologies used in those studies. Students will be asked to analyze, evaluate, summarize, and present published studies used to investigate health effects related to environmental and occupational exposures. The final project will include a summary of current literature and the proposal of a possible future study. Please see https://www.moodle.rutgers.edu course website (under SPH on your homepage). Class materials, readings, and lectures will be posted there.

Selected Department Competencies Addressed:

The following Epidemiology competencies are addressed in part by this course:

- Critique epidemiologic literature, assess its strengths and weaknesses and determine if conclusion(s) are supported;
- Use epidemiologic techniques to quantitatively assess patterns and changes in disease occurrence;
- Formulate a specific hypothesis and determine an appropriate study design and analysis plan;
- Design, implement and assess ordinary data collection systems for public health
- Communicate and present study findings to professional audiences.

The following Environmental and Occupational Health Competencies are addressed by this course:
• Describe the major environmental health problems to the general public as well as specific communities within that population.
• Develop a testable model of environmental exposures and adverse health outcomes.
• Describe the federal and state regulatory programs that relate to environmental and worker protection.

Course Objectives: By the completion of this course, students will be able to:
• Identify epidemiologic study designs and basic statistical analysis methods used in environmental and occupational epidemiology studies.
• Apply knowledge of epidemiologic principles, including confounding, bias, measurement principles, and random error, to understanding the strengths and weaknesses of environmental and occupational epidemiology studies.
• Develop a familiarity with some of the primary environmental and occupational exposures and health effects.
• Critically evaluate articles in the environmental and occupational epidemiology literature.

Course Requirements:

Students are required to attend class each week. Each class will consist of a lecture followed by discussion. Students will work together to complete study critiques based on a review of a journal article relevant to that week’s lecture. Students will also complete a literature review on a topic of their choice, followed by a proposal for an epidemiological study. Students will also provide feedback on their peers’ proposals and contribute to discussion during class and online.

Instructors—office hours by appointment
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Grades:  
30% Study critiques
25% Literature Review
30% Proposal and Proposal Presentation
15% Class participation and attendance

There are no required textbooks. Readings and homeworks for the next class will be posted on this course's site on Moodle. You will also be assigned to a discussion team via Moodle for in-class projects and review of study proposals.

School of Public Health Honor Code: Students are expected to abide by the School of Public Health's Honor Code and to conduct themselves with honesty and integrity. The School of Public Health Honor Code is found in the student bulletin (sph.rutgers.edu/academics/catalog/index.html). Each student bears a fundamental responsibility for maintaining academic integrity and intellectual honesty in his or her graduate work. For example, all students are expected to observe the generally accepted principles of scholarly work, to submit their own rather than another's work, to refrain from falsifying data, and to refrain from receiving and/or giving aid on examinations or other assigned work requiring independent effort. In submitting written material, the writer takes full responsibility for the work as a whole and implies that, except as properly noted by use of quotation marks, footnotes, etc., both the ideas and the works used are his or her own. In addition to maintaining personal academic integrity, each student is expected to contribute to the academic integrity of the school community by not facilitating inappropriate use of her/his own work by others and by reporting acts of academic dishonesty by others to an appropriate school authority. It should be clearly understood that plagiarism, cheating, or other forms of academic dishonesty will not be tolerated and can lead to sanctions up to and including separation from the Rutgers School of Public Health.
CLASS 1 - January 23, 2014

Topics: Review of Epidemiologic concepts I
1. Measures of Disease Occurrence/Association
2. Basic Study Designs
3. Confounding
4. Methods to control for confounding
5. Random error
6. Selection and Information bias
7. Effect modification
8. Truth, Chance, Bias, Confounding

Discussion: Identification of study designs and epidemiologic principles based on abstracts

CLASS 2 - January 30, 2014

Topics: Environmental and Occupational Surveillance I: Disease Data Sources
Review and discussion of critique #1

Practice Critique Due: Auchincloss et al. Neighborhood health-promoting resources and obesity risk (the Multi-Ethnic Study of Atherosclerosis). Obesity. 2013 March; 21(3)

CLASS 3 - February 6, 2014

Lecture: Geographic Methods for Environmental Epidemiology
Environmental Public Health Tracking Program - NJDOH

CLASS 4 - February 13, 2014

Lecture: Reproductive Outcomes and Environment/Occupational Epidemiology

Homework: Critique #1 Due

Journal Article: Lawson et al AJOG Nurses and SA 2012

Background reading: Workgroup report: implementing a national occupational reproductive research agenda – decade one and beyond. Lawson et al EHP 2003;114:435-441

Nieuwenhuijsen Review Environment 2013

CLASS 5 - February 20, 2014

Lecture: Mercury, Cadmium, Chromium, and Arsenic

CLASS 6 – February 27, 2014
Geographic Methods in Environmental Epidemiology
Methods for literature review and study design
Topics for Literature Review Due-One Paragraph Summary

CLASS 7 – March 6, 2014
Lecture: Solvents/Benzene
Homework:

CLASS 8 – March 13, 2014
Lecture: Air Pollution Epidemiology: Birth Outcomes and Exposure Assessment
Homework:
Critique #4 Due
Other Reading: Background on exposure assessment-posted on Moodle

SPRING BREAK – March 20, 2014

CLASS 10 – March 27, 2014
Lecture: Reproductive Health
Discussion: Journal Article : Lawson et al AJOG Nurses and SA 2012
Background reading: Workgroup report: implementing a national occupational reproductive research agenda – decade one and beyond. Lawson et al EHP 2003;114:435-441
Nieuwenhuijsen Review Environment 2013
LITERATURE REVIEW DUE

CLASS 11 - April 3, 2014
Lecture: Air Pollution and Cardio-respiratory Outcomes: Panel and Epidemiology Studies
Homework: Readings TBA
Discussion: Proposal preparation and requirements

CLASS 12 – April 10, 2014 Climate Change
Lecture: Health effects of climate change
Homework: Read Journal Article (TBA) to be discussed in class
Discussion: Student proposal plans and questions
CLASS 13 – April 17, 2014
Lecture: Recent Research in Childhood Lead Exposure
Discussion: Design study for next steps for evaluating developmental effects of low-level lead exposure (via Moodle and in-class discussion)
Summary of Proposed Study DUE to Fellow Team Members (May 1 Groups)

CLASS 14 – April 24, 2014
Homework: Occupational Lung Disease
Read Journal Article for Discussion (TBA)
In class work on final projects as needed
Summary of Proposed Study DUE to Fellow Team Members (May 8 Groups)

CLASS 15 – May 1, 2014
Topic: Class Presentations

READING DAYS –May 6-7, 2013

CLASS 16 - (Exam Date) - May 8, 2013
Topic: Class Presentations