

GCH 712: Introduction to Epidemiology Syllabus

Department of Global and Community Health
George Mason University

Fall 2009

Class Information

Wednesdays, 7:20-10:00
Innovation Hall 209

Instructor Information

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Course Objectives

At the completion of this course, each student should be able to:

1. Define common terms used in population health research.
2. Calculate, interpret, and compare measures of disease frequency in populations.
3. Describe key characteristics of ecological, cross-sectional, case-control, cohort, and experimental study designs.
4. Calculate and interpret measures of association between exposures and health outcomes.
5. Select appropriate epidemiological study designs for use in data collection and analysis.
6. Explain the processes used to collect, manage, and analyze data.
7. Distinguish between association and causation.
8. Identify possible sources of bias, confounding, and effect modification and describe methods for minimizing or adjusting for them.
9. Critically read epidemiologic articles published in peer-reviewed journals.
10. Describe the process for applying epidemiologic principles in surveillance, screening, outbreak investigation, program evaluation, medical research, and other applied settings.

Resources

Required textbook: Epidemiology for Public Health Practice by Friis and Sellers

Recommended: Epidemiological Methods by Koepsell and Weiss
Modern Epidemiology by Rothman, Greenland, and Lash
Epidemiology for the Uninitiated by Coggan, Rose and Barker
(<http://www.bmj.com/epidem/epid.html>)

Academic Honesty

George Mason University operates under an honor system, which is published in the University Catalog and deals specifically with cheating, attempted cheating, plagiarism, lying, and stealing. Please familiarize yourself with the honor code, especially the statement on plagiarism. If you have questions about how to correctly cite the contributions of published articles, internet resources, people, and other sources to your work, please talk with the professor.

Students with Disabilities

All students with questions or concerns about this class are encouraged to set up a time to meet with the professor, preferably during the first 2 weeks of the semester. Students with disabilities should work with the Disabilities Resource Center (DRC) to identify appropriate accommodations and communicate those with the professor.

Assignments and Grading

Exercises

There will be five graded exercises throughout the semester. Each exercise is designed provide the student with the opportunity to demonstrate knowledge obtained from the course in a practical manner. Details for each exercise will be provided separate from the syllabus.

Exams

One final exam will be given in this course. The purpose of the exam is to test the retention and application of knowledge of information presented in class and supplemental sources. The final exam will cover material presented and utilized in the entire course. The final exam will be conducted during the University scheduled final exam period. The final exam schedule was posted prior to the start of the semester; thus, it is not appropriate to ask to take the exam at a different time because of personal scheduling conflicts. In the event of a last-minute emergency or University-approved absence, please discuss with the professor.

Individual Project

One individual project will be due at the end of the semester. The final work product of the individual project will be a written report. The purpose of the project is to use knowledge learned in class to critically review how epidemiology research is conducted and presented and to utilize skills learned to propose a potential research project.

Group Project

One group project will be due at the end of the semester. To reflect the nature of the working world in which you often do not choose with whom you work, you will be randomly assigned into groups. The final work product of the group project is a presentation by the group. The purpose of the project is to utilize skills learned in class to present a descriptive epidemiological overview of a domestic or international health problem.

Grading

Activity	Points
Exercises (n=5)	200
Individual project	100
Group project	100
Final exam	100
TOTAL POSSIBLE	500

Points	Grade	Points	Grade
486-500	A+	386-400	C+
468-485	A	368-385	C
451-467	A-	351-367	C-
436-450	B+	<350	F
418-435	B		
401-417	B-		

Attendance and Class Participation

Specific points are not given for attendance and class participation. However, students are responsible for obtaining class material and information from another student. In the event of an absence, do not ask the professor for missed material.

Late Assignments

Late assignments will be accepted, but the total possible points will be reduced by 10% for each day that it is late, e.g. each assignment turned in on time is worth a maximum of 40 points and an assignment that is 2 days late will have a total possible score of 32 points. Late assignments will not be accepted more than five days after their original due date.

Assignments Turned in to Mailbox

The instructor has a mailbox in the Global and Community Health Department Office (Robinson B 423). If you know you will miss class and want to turn your assignment in early, you may turn it in to this mailbox. The assignment must be received in the mailbox before the start of class that it is due in order to avoid late assignment penalties.

Assignments Turned in by Email

You may e-mail your assignment to the instructor if you have an emergency or if you know you need to miss class. However, you may utilize this privilege a maximum of one time. If you e-mail an assignment to the instructor, you will not be allowed to do so again during the remainder of the semester. Assignments may be emailed to the instructor on or before their due date to avoid late assignment penalties.

Blackboard

A Blackboard site is available to students enrolled in the course at: courses.gmu.edu. You will need to log on using your GMU user name and password. Blackboard will be used to post lectures and supplemental materials. Lectures will not be posted prior to class; they will be posted as soon after the class as possible. Students will also be able to check their grades via Blackboard.

Email Communication

Per university policy, the professor will only communicate with students to their GMU email accounts. If you email the professor from another account (e.g. gmail, hotmail, yahoo, etc), you will not receive a response.

Extra Credit

There will be one opportunity for extra credit. The extra credit will be worth a possible 30 points. In brief, the extra credit assignment will involve the creation of a teaching module for a specific epidemiologic concept. This module will include a 10-minute lecture, assignment, and assignment key. You must indicate your intention to complete the extra credit by noon on November 17 via email to the professor. Your assigned day for presenting will be provided in class on November 18. Details regarding the extra credit will be provided separate from the syllabus. There will be no other opportunities for extra credit.

Schedule

This schedule is a guide and subject to change to accommodate learning pace and schedules of potential guest lecturers through the semester.

Date	Topics	Readings	Assignments Due
September 2	History and Scope of Epidemiology; Practical Applications of Epidemiology	Friis & Sellers: Ch 1+2	
September 9	Measures of Morbidity and Mortality Used in Epidemiology	Friis & Sellers: Ch 3	
September 16	Descriptive Epidemiology	Friis & Sellers: Ch 4	
September 23	Sources of Epidemiological Data	Friis & Sellers: Ch 5	
September 30	Study Designs: Ecologic, Cross-Sectional, Case-Control	Friis & Sellers: Ch 6	Assignment 1: Descriptive Epidemiology
October 7	Study Designs: Cohort Studies	Friis & Sellers: Ch 7	
October 14	Study Designs: Experimental; Sampling; Meta-analyses and Systematic Reviews	Friis & Sellers: Ch 8	
October 21	Association and Causation; Critical Review of Epidemiological Literature		Assignment 2: Study Designs

October 28	Measures of Effect	Friis & Sellers: Ch 9	
November 4	Data Analysis and Interpretation; Presentation Tutorial	Friis & Sellers: Ch 10	Assignment 3: Article Review
November 11	Screening; Infectious Disease Epidemiology;	Friis & Sellers: Ch 11+12	
November 18	Occupational and Environmental Epidemiology; Spatial Epidemiology	Friis & Sellers: Ch 13	Assignment 4: Data Analysis and Interpretation
November 25	No class - Thanksgiving		
December 2	Molecular and Genetic Epidemiology; Psychologic, Behavioral, and Social Epidemiology (possibly extra credit presentations, if necessary)	Friis & Sellers: Ch 14+15	Assignment 5: Case Study
December 9	Group Project and Extra Credit Presentations		Group Project; Extra Credit
December 16	Final exam (note: class will be held from 7:30-10:15)		Individual Project

INDIVIDUAL PROJECT DESCRIPTION

DUE DATE: December 16, 2009

PURPOSE: To use knowledge learned in class to critically review epidemiology research and to utilize skills learned to propose a potential research project.

WHAT TO COMPLETE: A literature review of descriptive epidemiology and original research and a proposed research study for a public health issue. Prior to starting work, you should submit your topic for approval to the professor, no later than September 23. You should primarily use research journals as sources for your information. You can use scientific internet sources (e.g. the World Health Organization or the Centers for Disease Control), review articles, and scientific books as supplemental sources of information. You should do a comprehensive literature search related to your topic and identify 10-15 key original research articles to review. In relation to the descriptive epidemiology, review and synthesize the available information on prevalence and incidence of the public health issue. In relation to the original research review, critically review each article with regard to the methodology and results of the research. Synthesize your review in a comprehensive report as described in what to turn in. As part of your report, develop your opinion as to the important unanswered questions in this area of research and what additional research you believe would help to answer these questions. Then outline a potential research study to address one of these questions. The details for the potential research study should include: 1) hypothesis, 2) justification for the study, 3) proposed study population, and 4) proposed study design and methods.

WHAT TO TURN IN: One 8-12 page written report. The report should typewritten, single-spaced, with 11 or 12 point font, and with 1 inch margins. Each page should be numbered with the page number in the bottom right corner. Please staple the report together. Please do not turn in any sort of report folder or cover with the report. The report should consist of these sections: title page, introduction, review of literature, conclusions, and references. Each section of the report (with the exception of the title page) should include a heading to that section. The title page should include a title for your topic, your name, and the semester in which the work was completed (i.e., Fall 2009). The introduction should include a description of the topic chosen and why this topic is an important public health issue. It is recommended that you utilize statistics and information from scientific sources to provide support to the introduction. The review of the literature should include a comprehensive and cohesive review of the literature. Please summarize and synthesize the literature. Please do not use each paragraph to provide a summary of each different source. The conclusions should include a summary of the key points of the literature, what unanswered questions are there related to the chosen topic, and your opinion about what additional research would help to answer these unanswered questions. References should be formatted in the style of the journal *Epidemiology*. For guidance on formatting references, please refer to <http://edmgr.ovid.com/epid/accounts/ifaauth.htm>.

HOW THE ASSIGNMENT WILL BE EVALUATED: Assignment will be evaluated on the following criteria:

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| 1) Comprehensiveness and persuasiveness of the introduction | 10 points |
| 2) Ability to critically review and synthesize research articles | 30 points |
| 3) Appropriateness and persuasiveness of the conclusions | 10 points |
| 4) Appropriateness and overall description of proposed study | 30 points |
| 5) Choice of reference sources | 10 points |
| 6) Following directions in relation to formatting | 5 points |
| 7) Overall writing quality of the report (grammar, spelling, etc) | 5 points |

GROUP PROJECT DESCRIPTION

DUE DATE: December 9, 2009

PURPOSE: To present a descriptive epidemiological overview of a domestic or international health problem

WHAT TO COMPLETE: In groups of 3-4 people as assigned by the professor, you will research a domestic or international health issue. This should be a broad-based issue. For example, “global burden of malaria”, “trends and risk factors for pancreatic cancer”, and “pediatric asthma in the U.S.” Gather information from various sources to provide a descriptive epidemiologic overview of the health issue you have chosen as a group. The presentation should include an overview of the health issue, a review of the descriptive epidemiology of the health issue, a summary of what you believe are the key priorities for further epidemiologic research and for public health interventions or policies, and your recommendations for meeting those priorities. The presentation should be developed as a presentation that you would give to colleagues that are somewhat knowledgeable about the topic but are not necessarily experts.

WHAT TO TURN IN: You will present your topic as a group to the class on December 9, 2009. The presentation should be no longer than 20 minutes in length.

HOW THE ASSIGNMENT WILL BE EVALUATED: The presentation and group work will be graded based on evaluation from the professor and the students. The presentation and group work will be evaluated on the following criteria:

Presentation:

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| 1) Ability to present information clearly and concisely | 20 points |
| 2) Ability to work as a team while presenting information | 20 points |
| 3) Content and thoroughness of information presented | 40 points |

Group Work:

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| 1) Evaluation of contribution by other team members | 20 points |
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