

GEORGE MASON UNIVERSITY
College of Health and Human Services
Fall2009

Course Number: GCH 712-001 (online course)

Course Title: **Introduction to Epidemiology**

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Course Description: Introduction to epidemiology and health service research includes a body of knowledge and methods for analyzing health problems. Students learn the role of health services research and epidemiology in health policy, health service delivery and planning, and evidence-based management and clinical practice. Students design epidemiological studies, analyze secondary data, develop their own judgment when analyzing evidence and evaluate impact of programs on health outcomes.

Course objectives:

Upon completion of this course the student will be able to:

1. Understand the application of epidemiology in clinical, public health and health service settings, and especially in the field where the student is or plans to be engaged in, either domestic or international.
2. Calculate, interpret and compare measures of disease frequency in populations, and measures of association between exposures and health outcomes.
3. Describe various epidemiological methods used in the study of diseases, health conditions and health promotion behaviors of choice, and the application of epidemiology in such areas as cardiovascular disease, cancer, biological and radioactive threats or disasters, nutrition, aging and gerontology, reproductive and maternal and child health, outbreaks and spread of infections, and the role of epidemiology in health services research.
4. Interpret findings on the natural history, pathophysiology, risk factors and methods specific to the study of the disease or condition the student has chosen.
5. Select appropriate descriptive and analytic epidemiologic methods to investigate and identify risk factors and causes of a disease outbreak.
6. Summarize and interpret epidemiological data, and appropriately interpret associations and make conclusions; identify possible sources of bias and describe methods for minimizing bias; identify possible confounders and effect modifiers and describe methods to adjust for them; and distinguish between association and causation

7. Develop and write a research proposal that demonstrates the student's ability to synthesize the current knowledge and gaps in the study of a specific health problem or condition of choice, and describe appropriate epidemiological methodology including variable selection and data collection and analysis to address a health condition, public health problem or health service improvement.

Required textbook(s):

1. Aschengrau and Seage, Essentials of Epidemiology in Public Health, Jones and Bartlett, 2003 or 2007. The book has the basics and the narrative is engaging.
2. Health Research Methodology, WHO, 2001 downloadable here:
http://www.wpro.who.int/NR/rdonlyres/3418F27F-60F0-42F3-9409-852F47E09DEF/0/Health_research_edited.pdf
3. Research Methodology: A Step-by-Step Guide for Beginners (Paperback) by Dr Ranjit Kumar (if you work or intend to work in research, this book has all you need to get started!)

Other recommended textbook(s):

- J.H. Abramson, Survey Methods in Community Medicine, Churchill Livingstone, 5th edition 1999. This book has short chapters that address all practical aspects of conducting epidemiological research in community medicine.
- Leon Gordis, Epidemiology 3rd Edition;
- J H Abramson, Making sense of data;
- John Last, A Dictionary of Epidemiology;
- Online textbook: Epidemiology for the Uninitiated:
<http://bmj.bmjournals.com/collections/epidem/epid.html>
- David Bowers, Medical Statistics from Scratch: An Introduction for Health Professionals, Wiley 2008

Recommended readings: The Tipping Point, by Malcolm Gladwell; Milestones in Public Health and The Faces of Public Health (Pfizer); Virus Hunter: 30 years battling hot viruses around the world by C.J. Peters; The BMJ, The Lancet, and the Journal of the American Public Health Association.

Additional Course Requirements:

Besides the above requirements, students are required to check weekly the following websites and be prepared to discuss in the chat-room:

- <http://www.cdc.gov/>
- <http://www.cdc.gov/mmwr/>
- <http://www2a.cdc.gov/podcasts/>
- <http://www.vdh.state.va.us/>

Course Evaluation:

1. Journal 20%
2. Quizzes 10%
3. Project proposal 25%

4. Final exam 20%
5. Participation 25%

Journal. Epidemiology is an empirical discipline and you need to develop your analytical ability to reflect and look for patterns among all the information you are being presented with. You are expected to reflect on what you are learning as you apply it to write your first epidemiological research proposal. You will be required to write and email me a journal entry once a week on your reflections about preparing your first research proposal. Do not ask me how long it has to be, that is up to you. I expect you to be concise when you make your point, though. If you need help writing or English is not your first language, I suggest you visit GMU's Writing Center at <http://writingcenter.gmu.edu/>. There are many resources and **free** help. Your writing skills will not be graded in this course, but good writing will allow to make the best of journal writing.

Quizzes and Final Exam. There will be a mock quiz and two quizzes for students to assess their progress and where they may need to do extra work. You are expected to get full mark on each quiz by resubmitting the correct answers. Quizzes include a number of multiple and open ended questions. The final exam includes a number of open ended questions regarding selected research abstracts or published papers to so the quizzes are good practice.

Project proposal. The epidemiological research proposal you will write will summarize all you have learned about Epidemiology. The proposal will also allow you to show you know how to use what you learned to study a health problem. You will write a project proposal or protocol according to the guidelines provided and you will present your proposal using PowerPoint to convince your audience, i.e. me, to fund your study. You will have five minutes to make the case for your proposal. You may record your PowerPoint presentation or call me on the phone to give your oral presentation and make your point. I suggest you start to develop this proposal on the first day of class. Although you will not be graded for your writing skills, poor writing skills may prevent your instructor from understanding your proposal. Again, visit GMU's writing center! All GMU students are expected to develop their writing skills.

Participation is measured through your work in the weekly assignments, in online chats, online discussions and virtual group work. You will also be assessed by how you stay up to date with what is going on in Epidemiology by checking websites and other sources of information. Students are expected to make themselves available for online chats. Chats may last one hour twice a week or two hours once a week. Times are decided by the group to fit students' schedules. If you have skype (www.skype.com) you can also skype me or your classmates.

I also expect you to show the attributes of "My Perfect Student"

1. Goal oriented
2. Participative
3. Expresses learning needs assertively

4. Committed to making a difference in public health
5. Entrepreneurial and proactive
6. Reflective
7. Demonstrates sense of humor

Teaching methods/strategies:

The course is launched at a one-time only face-to-face one-hour meeting to introduce each other and discuss the methodology to be used and expectations. The course also includes various learning methods: discussion of current epidemiological events, recorded PowerPoint lectures, online group chats, reading and discussion of epidemiological papers and public health reports, individual journals, use of PowerPoint to present a research plan, and weekly and extra credit assignments.

Seven Tips to Succeed in this Course:

1. Weekly lessons will be posted on Monday. First, read the assigned chapters and the weekly assignment. Then, write down your questions to be answered in the chats and discussions. If you do not get an answer to your questions during the chat, email me or call.
2. Do your weekly assignment and ask for help if needed. Assignments are due by midnight on Friday. Save the file with your name next to the name of the file and upload it. Example: **Lastname-Firstname - GCH 712-001-Week 10 Work Guide-**. I will correct assignments and upload the file with “tracked changes” during the weekend. Feel free to re-submit your assignment to improve your grade as many times as you want!
3. Participation in weekly live chats with instructor is mandatory. Two hours of live chats per week will be offered. The timing of the live chats is usually in the evening and decided in consensus with all other students.
4. Online discussions are on anytime! Students must participate at least once a week in at least two discussion threads.
5. Email me anytime, particularly when you get an idea or are planning your research proposal or have a question about an assignment.
6. **Phone calls are welcome** when you are stuck or do not know what to do. Do not wait until you are behind to ask for help! Get organized and set a time to do your course work and get the help you need. And do it!
7. Write a journal entry every week. Your journal will help you reflect on what you are learning and see if you are on track with the objectives of the course. There is no right or wrong way to write a journal. Write all entries in one single file and date each entry. Enter the latest at the start of the document, so the oldest entry will be at the end of document. Save the file with this name: **Lastname-Firstname-GCH-712-001-journal**. Your instructor will ask you for your permission if something is worth sharing with the rest of the group in a new discussion thread or email group.

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,

specially on plagiarism (<http://www.gmu.edu/facstaff/handbook/aD.html>). If you have questions about when the contribution of others to your work must be acknowledged and appropriate ways to cite these contributions, let me know. I suggest you use the Chicago or the MLA style for citations.

Students with disabilities: All students with questions or concerns about this class are encouraged to call me to discuss them, 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 to the professor. The DRC handbook is available at <http://www.gmu.edu/student/drc/drcguide.pdf>.

Course/topical outline:

Week Starting on	Topics	Readings		Notes
		Aschengrau and Seage	HRM	
1 8/27/08	Introduction to Epidemiology	Chapter 1	Chapter 1	Journal
2 9/3/08	Measuring and Comparing Disease Frequencies	Chapters 2 and 3	Chapter 2	Journal
3 9/10/08	Descriptive Epidemiology: How to investigate an outbreak	Chapter 4 and 5	Chapters 3	Journal Mock Quiz
4 9/17/08	Analytical Epidemiology: cohort and experimental studies	Chapters 6, 7 and 8	Chapters 4	Journal
5 9/24/08	Case control and randomized studies	Chapter 9	Chapter 5 -6	Journal
6 9/24/08	Planning a study	Chapter 10	Chapter 11	Quiz
7 10/10/08	How to write a proposal or application	Handout		Journal
8 10/8/08	Data Collection: How to construct a questionnaire		Annex 1	Journal
9 10/15/08	Epi Info Data Management	Handout	Annex 2	Journal
10 10/29/08	Epi Info Analysis	Handout	Chapters 7 and 8	Quiz
11 11/5/08	Presentations	Your choice!		Journal
12 11/12/08	Interpreting results: confounding, effect modification and causation	Chapters 11, 12, 13, 14 and 15	Chapters 9 and 10	Journal
13 11/19/08	Health Services Research	Chapter 16	Handout	Journal
14 12/3/08	Global and Community Health	Handout		Journal
15 12/10/08	Final Exam	Study		Celebrate!