

EPI 820/CPH504: Epidemiology: Theory and Applications

Fall Semester 2010
3 credits

COURSE SYLLABUS

Course Description:

This course is designed to prepare the graduate student, professional student, or fellow to gain knowledge and skills in basic epidemiological concepts and applications. Major topics to be covered include epidemiological research designs, interpretation and the use of epidemiological data, and applications of epidemiologic research methods to understand disease causality, and prevention and control of public health problems.

The course is intended for graduate students and health professionals who will be enrolled in the Master of Public Health (MPH) degree or certificate program or the MSIA Clinical and Translational Research Concentration.

Instructor: Tricia D. LeVan, PhD
Assistant Professor
Director of “Facility for Mutation and Methylation Analysis”
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Teaching Assistant: TBA
email:
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Office:

Class time and location: Tuesday: 5:30 – 8:10 pm
Room: MSC 1005

Office Hours: By appointment

ADA Policy

Students with disabilities who are in need of accommodations should contact the Student Disability Services office (see below). In order to be eligible for accommodations, the student is responsible for registering with this office and providing documentation of disability. The student must register and provide documentation well in advance of the semester for which the accommodation is needed (6 weeks is suggested). Once the request has been approved, an individualized accommodation plan will be formulated, and an official “Letter of Disability Accommodation” will be issued to the student. Instructors will not provide classroom accommodations without prior approval.

Student Disability Services
Bennett Hall 6001 (402) 559-5553 E-mail: rstevens@unmc.edu

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Course Format: The course format will include 2 lectures per week. The lectures will be supplemented with small group discussions, in-class exercises, and examples from the public health literature. Students are expected to complete the readings before class and come to each class prepared to discuss the texts. All classes will begin with a 5 minute quiz covering lecture material as described in the syllabus, except in the case where the previous lecture included an exam.

Course Assignments: Assigned readings for each lecture will be posted on the course website or distributed in class.

Course Website: <http://my8.unmc.edu> (use your Lotus Notes user name and password)

Course Texts: The required textbook for the course is available in the UNMC bookstore in the Student Life Center Building:

Gordis, L, Epidemiology. 2009. 4th Edition, Saunders/Elsevier

Other Texts: These texts are on reserve in the library. They are highly recommended supplemental reading.

Fris, RH and Sellers, TA. Epidemiology. 1999. 2nd Edition, Aspen

Hennekens, CH, Buring, JE. Epidemiology in Medicine. 1987. Little, Brown

Grading: Specific information about the grading criteria for each component will be distributed with the assignment. The relative weight of each course component is as follows:

- 20% Quizzes
- 25% Exam I
- 25% Exam II
- 25% Exam III
- 5% Class Participation

The grading scale will be:

Grade Point	4.0	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0
Final %	100-98	97-93	92-90	89-88	87-83	82-80	79-78	77-73	72-70	69-68	67-63	62-60	< 60
Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

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THIS SCHEDULE IS FLEXIBLE AND MAY CHANGE AS THE SEMESTER PROGRESSES
OR ACCORDING TO STUDENT NEED/ENROLLMENT

Course Outline

wk	Date	Topics	Instructor	Gordis Required Reading	Other Reading
1	T 08/24 5:30-6:45	Course Orientation Introduction to Epidemiology	Tricia D. LeVan, PhD	1	
	6:55-8:10	Disease Causality	Tricia D. LeVan, PhD	14	3-Buring
2	T 08/31 5:30-6:45	Quiz from Week 1 "Typhoid Mary", The Play Disease Transmission	Kristin Watkins, PhD Candidate	2	
	6:55-8:10	Ethics in Infectious Disease	Lea Pounds, MBA	20	
3	T 09/07 5:30-6:45	Quiz from Week 2 Measures of frequency and association	Dana Loomis, PhD	3, 4, 12	3- Sellers 4- Buring
	6:55-8:10	Measures of frequency and association (con't)	Dana Loomis, PhD	3, 4, 12	3- Sellers 4- Buring
4	T 09/14 5:30-6:45	Quiz from Week 3 Interactive Learning Module in Epidemiological Measures	Tricia D. LeVan, PhD		
	6:55-8:10	Interactive Learning Module in Epidemiological Measures	Tricia D. LeVan, PhD		
5	T 09/21 5:30-6:45	Quiz from Week 4 Cross Sectional/Cohort Study Design	Fausto Loberiza, MD	9	6- Sellers 7- Buring
	6:55-8:10	Case/Control Study Design/Comparison between Study Designs	Shinobu Watanabe-Galloway, PhD	10, 13	6- Sellers 6- Buring
6	T 09/28 5:30-6:45	Exam I: Week 1 to Week 4	TA Proctor		
	6:55-8:10				
7	T 10/05 5:30-6:45	Quiz from Week 5 Randomized Trials/Study Design	Stephen Rennard, MD	7, 8	7- Sellers 8- Buring
	6:55-8:10	Searching the Epidemiological Literature and Databases	Teri Hartman, MLS		5- Sellers
8	T 10/12 5:30-6:45	Quiz from Week 7 Confounding and Bias	Tricia LeVan, PhD	15	11, 12- Buring 9- Sellers
	6:55-8:10	Interaction	Tricia LeVan, PhD	15	11, 12- Buring 9- Sellers
9	T 10/19	<i>Fall Break-No class</i>			
		<i>Fall Break -No Class</i>			
10	T 10/26 5:30-6:45	Quiz from Week 8 Data Inference: mean, median, RR, OR	Jane Meza, PhD	11	9, 10- Buring
	6:55-8:10	Sample Size and Power Calculations	Jane Meza, PhD	11	9, 10- Buring
11	T 11/02 5:30-6:45	Health Surveillance	Shinobu Watanabe-Galloway, PhD	3, 17	

	6:55-8:10	Exam II: Week 5 to Week 10	TA Proctor		
12	T 11/09 5:30-6:45	Screening Tests for Diseases	Devin Nickol, MD	5, 18	13- Buring 10- Sellers
	6:55-8:10	Evaluation of Screening Tests: Feasibility and Efficacy	Devin Nickol, MD	5, 18	13- Buring 10- Sellers
13	T 11/16 5:30-6:45	Quiz from Week 11, 12 Infectious Disease Epidemiology	Phil Smith, MD		11- Sellers
	6:55-8:10	Occupational Injury in Epidemiology	Risto Rautiainen, PhD		
14	T 11/23 5:30-6:45	Quiz from Week 13 Maternal and Fetal Health- An Example	Ayman El-Mohandes, MD. Dean of COPH		
	6:55-8:10	Maternal and Fetal Health-An Example	Ayman El-Mohandes, MD. Dean of COPH		
15	T 11/30 5:30-6:45	Quiz from Week 14 Genetic Epidemiology	Tricia D. LeVan, PhD	16	13- Sellers
	6:55-8:10	Ethics of Genetics	Rebecca Anderson, MS, JD		
16	T 12/7 5:30-6:45	Quiz from Week 15 Occupational Exposure Epidemiology	Susanna Von Essen, MD, MPH		12- Sellers
	6:55-8:10	Molecular Epidemiology	Jim Anderson, PhD Associate Dean		
	T 12/14 5:30-6:45	Exam III: Week 11 to Week 16	TA Proctor		
	6:55-8:10				

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Course Competencies:

Upon completion of the course, students will ordinarily be able to:

1. BASIC PUBLIC HEALTH SCIENCES SKILLS

- A. Understand the global nature and ecological model of public health and the concepts of population as the unit of measurement of public health and prevention of chronic and infectious diseases and injuries.
- B. Identify the individual's and organization's responsibilities within the context of the three core functions and ten essential services of public health.
- C. Understand/articulate the purpose, values, philosophy and historical development, structure and interaction of public health and health care systems.
- D. Define, assess and understand the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention and factors influencing the use of health services.
- E. Apply the basic public health sciences including behavioral and social sciences, biostatistics, epidemiology, environmental/occupational health and health services administration.
- F. Identify, critically appraise public health research and understand the limitations of research and the importance of observations and interrelationships.
- G. Understand systems thinking (i.e. the ability to recognize dynamic interactions among human and social systems and how they affect the relationships among individuals, groups, organizations and communities) for resolving organizational problems and community public health issues.
- H. Explain the role of biology in the ecological model of population-based health
- I. Recognize that biological, chemical, and physical agents affect human health

2. ANALYTIC/ASSESSMENT/INFORMATICS SKILLS

- A. Define a problem in multidimensional terms.
- B. Determine appropriate uses and limitations of both quantitative and qualitative data.
- C. Select and define variables relevant to defined public health problems.
- D. Identify/determine relevant and appropriate data and computerized information sources.
- E. Make relevant inferences from quantitative and qualitative data.
- F. Obtain and interpret information regarding risks and benefits to the community.

3. COMMUNICATION SKILLS

- A. Communicate effectively with individuals and groups using a variety of communication methods and techniques.
- B. Solicit input from individuals and organizations.
- C. Effectively present accurate demographic, statistical, programmatic and scientific information for professional and lay audiences.

4. EVALUATION/APPLIED RESEARCH SKILLS

- A. Participate/design, initiate and undertake evaluation of public health programs.
- B. Identify and apply fundamental research skills in public health.

5. PLANNING SKILLS

- A. Review and select appropriate theory-based strategies in public health program planning.
- B. Prepare and implement program plans.
- C. Demonstrate understanding of community assets and resources.
- D. Understand and is able to apply the rational planning cycle which includes assessment, setting objectives, selection of intervention/programming, monitoring and evaluation.

6. COMMUNITY DIMENSIONS OF PRACTICE SKILLS

- A. Identify, establish and maintains linkages with key stakeholders including professionals, frontline staff and lay individuals.
- B. Identify/understand different levels of community engagement and participation, i.e. networking, partnerships, cooperation and collaboration.
- C. Utilize leadership, teambuilding, negotiation, and conflict resolution skills to build community engagement and partnerships.

D. Develop, implement, and evaluate a community public health assessment.

7. CULTURAL COMPETENCY SKILLS

- A. Utilize appropriate methods for interacting sensitively, effectively and professionally with persons from diverse cultural, socioeconomic, educational, racial, ethnic and professional backgrounds and persons of all ages and lifestyle.
- B. Identify the role of cultural, social and behavioral factors in determining the delivery of public health services.
- C. Develop and adapts approaches to problems that take into account cultural differences.
- D. Actively listen to others in an unbiased manner, respects points of view of others and promotes the expression of diverse opinions and perspectives.

8. LEADERSHIP/PROFESSIONALISM/ ADVANCING SKILLS

- A. Create a culture of ethical standards within organizations and communities.
- B. Help create key values and shared vision and models these principles to guide action.
- C. Identify internal and external issues that may impact public health.
- D. Facilitate collaboration with internal and external groups to ensure participation of key stakeholders.
- E. Promote team and organizational learning.
- F. Contribute to development, implementation and monitoring of organizational performance standards.

9. MANAGEMENT/ADMINISTRATION /BUDGETING SKILLS

- A. Apply financial and management processes including proposing budget priorities, developing and implementing budget proposals within the constraints of available resources.
- B. Prepare proposals for funding from external sources.
- C. Understand negotiating and developing contracts and other documents for the provision of population-based services.

10. ETHICS SKILLS

- A. Identify, collect, summarize, and interpret information relevant to ethical issues pertaining to public health.
- B. Demonstrate ethical decision-making.
- C. Demonstrate knowledge and implement principles from the public health code of ethics.
- D. Describe the legal and ethical bases for public health and public health services.

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Academic integrity and professional conduct

The University of Nebraska Medical Center has established a policy on academic integrity and professional conduct. This policy may be found in the [UNMC Student Handbook](#). All graduate students are expected to adhere scrupulously to this policy. Cheating, academic misconduct, fabrication, and plagiarism are viewed as serious matters and will lead to disciplinary action as described in the [UNMC Student Handbook](#) under Procedural Rules Relating to Student Discipline. Additional materials related to Responsible Conduct in Research can be found in the [UNMC Student Handbook](#).

Selected sections from the UNMC Student Handbook include:

Cheating: A general definition of cheating is the use or attempted use of unauthorized materials or information for an academic exercise. Examples of cheating include:

1. Using unauthorized materials such as books, notes, calculators or other aids during an examination or other academic exercises;
2. receiving unauthorized assistance from another person during an exam or exercise such as copying answers, receiving answer signals, conversation or having another person take an examination for you;
3. providing assistance to another person during an exam or exercise, such as allowing your answers to be copied, signaling answers or taking an exam for someone else;
4. obtaining answers and/or other information without authorization from someone who has previously taken an examination;
5. including all or a portion of previous work for another assignment without authorization

Academic misconduct: Academic misconduct is defined as the falsification of official documents and/or obtaining records, examinations or documents without authorization. Several examples of academic misconduct are:

1. the unauthorized acquisition of all or part of an unadministered test;
2. selling or otherwise distributing all or part of an unadministered test;
3. changing an answer or grade on an examination without authorization;
4. falsification of information on an official university document such as a grade report, transcript, an instructor's grade book or evaluation file or being an accessory to an act of such falsification;
5. forging the signature of an authorizing official on documents such as letters of permission, petitions, drop/add, transcripts, and/or other official documents;
6. unauthorized entry into a building, office, file or computer data base to view, alter or acquire documents.

Plagiarism: Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit, i.e. an appropriate attribution or citation. Some examples are:

1. In the methods section of a thesis, a graduate student describes a procedure used in research for the thesis. The procedure was developed by a fellow graduate student in the laboratory of their major professor; however, neither the student who developed this procedure nor the major professor was given credit in the thesis. This implies that the author of these had himself developed the procedure.

2. In the background section of a thesis, a graduate student quotes verbatim the results of a previous investigator's work but fails to credit the individual through citation. The work is recent and thus cannot be considered common knowledge.