

**EPID 5100**  
**PRINCIPLES OF EPIDEMIOLOGY**  
**2009 Summer Institute**  
**University of North Texas Health Science Center**  
**School of Public Health**

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Phone: 817-735-5081  
Office hours: By appointment

**Time and Place:** TBD  
Monday – Friday 8:30-11:30 am  
June 29- July 17, 2009

**Course Credit:** 3 credit hours

**Required Textbook:**

Gordis L. *Epidemiology, 4th Edition*. W.B. Saunders Company, 2009.  
ISBN: 978-1-4160-4002-6

Other texts available for your reference (but not required):

- Auschengrau A. Seage G. *Essentials of Epidemiology in Public Health, 2<sup>nd</sup> Edition*. Jones and Bartlett Publishers, 2007 ISBN: 978-0763740252
- Friis R, Sellers T. *Epidemiology for Public Health Practice, 4<sup>th</sup> Edition*. Jones and Bartlett Publishers, 2009
- J.M. Last. *A Dictionary of Epidemiology*. New York: Oxford University Press, 2001

**Course web site:**

Notes and other materials are available on the class website at <http://ecampus.unt.edu>. There will generally be no handouts distributed in class (except exams, last minute additions and materials not easily or legally posted to the web-site).

**Course Goals:**

The overall purpose of this course is to introduce public health students to epidemiology so that they may understand how epidemiology contributes to (1) identifying factors that cause diseases, (2) assessing the public health importance of diseases, (3) describing the natural history of diseases, and (4) evaluating procedures for preventing diseases. After completing this course, students should be able to understand the basic concepts and methods to current public health.

Specific objectives include the following:

1. Understand the principles of epidemiology
2. Identify questions amenable to epidemiologic investigations
3. Understand the basic concepts in infectious disease epidemiology and fundamental steps in an outbreak investigation
4. Perform descriptive epidemiology using Person, Place, and Time
5. Be able to calculate and interpret measures of disease frequency appropriately such as incidence proportion, incidence rate, prevalence, odds, mortality rate. Know how to choose different measures in different situations
6. Know how to compare different frequencies in different populations. Be able to calculate measures of associations at the relative scale (risk ratio, rate ratio, and odds ratio) and the additive scale (risk difference, rate difference). Be able to apply and interpret measures of associations appropriately in epidemiologic studies
7. Understand epidemiologic study designs. Describe and differentiate among different types of epidemiologic studies and indicate research questions that would be appropriate for each kind: case-control study, cohort study, cross-sectional study, clinical trial, and ecologic study
8. Explain relative strengths and limitations of different epidemiologic study designs
9. Understand the role of surveillance in designing population based studies
10. Understand the concept of confounding. Understand how confounding occurs, its consequence, and how to prevent or control it in epidemiologic studies
11. Understand the concept of bias and different types of biases. Understand how bias occurs, its consequence and how to prevent it in epidemiologic studies
12. Understand the principles of screening. Evaluate screening in terms of sensitivity, specificity, and positive predictive value
13. Understand causal inference in epidemiologic studies. Describe the criteria that support a causal inference. Give examples of the application of each criterion.
14. Understand the importance of ethical issues in epidemiologic studies.
15. Understand the components in critically reviewing epidemiologic literature

### **Course Format:**

The primary format of this course consists of a 90 minute lecture and a 90 minute lab for each session. Lectures will be given utilizing powerpoint presentations and, where appropriate, class handouts to illustrate or summarize key concepts. Lab sections are designed to foster interactive discussion on important concepts and methods illustrated in the lecture section. Lab handouts that contain example and questions will be used to facilitate this discussion. Students are also encouraged to bring questions they would like to discuss to the lab section. Students are expected to attend the lab section of this course.

### **Course Grade:**

#### *Grading Scheme*

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|------------------|-------|
| 1. Mid-term Exam | (35%) |
| 2. Final Exam    | (35%) |
| 3. Final Paper   | (20%) |
| 4. Participation | (10%) |

A letter grade will be assigned as follows:

95 +	A
90-94	A-
85-89	B+
80-84	B
75-79	C+
65-74	C
<65	F

#### Exams:

Competency in meeting the objectives of the course will also be assessed by a mid-term and final examination. The exams are a combination of multiple choice, true/false, and short answer. You will be given the full three hours to complete the exam. A week before the exams, you be given an article from a peer-reviewed journal to study. You will need this article to answer the exam questions, so remember to bring it to the exam with you. You are allowed to write formulas and/or class notes on the article, but only on the article (ie, additional sheets of notes will not be allowed). Textbooks, class notes, or other memory aids will not be permitted. Calculators will be needed for each exam so remember to bring them. Bookbags and cellphones must be left at the front of the room where you can pick them up after you turn in your exam. You may keep the article after you turn in your exam.

#### Final Paper

At the end of the semester you will hand in your final paper. This involves your critique of one assigned journal article. This is an independent project (no collaboration allowed). The article will be posted on the course website and will be due on the last day of the semester (July 17<sup>th</sup>). A maximum of 4 pages (typed and double spaced will be allowed).

#### Participation

Class participation (in BOTH lab and lecture) will be noted and may be used to make a final determination of your grade. For example, if your grade is hovering between 89 and 90 and you have been an active participant during class, it will raise your grade to an A.

If pass marks on the examination and quizzes have NOT been achieved, options are to withdraw (by having Dr. Felini sign a withdrawal form) or to fail the course. In the event that illness, family emergencies, work or other problems seriously interfere with your ability to meet the requirements of this course, please see the course instructor as soon as possible. Such problems can and do occur unexpectedly, and we try to be flexible to accommodate these situations. Adequate communication concerning special circumstances is essential and must originate from the student.

## **Procedures**

Lectures are designed to supplement, not supplant, the readings. Assigned readings for each lecture are expected to be completed BEFORE the lecture. The only exception to this is the first class. In general, for class readings and exercises, you should expect to spend at least two hours out of class for each hour in class.

My powerpoint presentations will be posted on the course website to download before lecture. There may be minor changes to a few slides as I'm constantly reviewing the content of these slides for accuracy and relevance in light of the new findings occurring daily in public health. Be aware that powerpoint presentations are intended to facilitate your note making, not serve as an alternative textbook or a substitute for coming to class. If you miss a lecture, it will be a good idea to obtain a copy of notes from someone who makes good ones. You are strongly encouraged to share your notes and form study groups.

Please silence all audible electronic devices, such as pagers and phones.

Class discussion is strongly encouraged. Please do not feel intimidated by the size of the class or the nature of the material. No one has ever asked a 'stupid question' in this course. If something puzzles you, the chance is excellent that the same thing puzzles several of your classmates. I cannot answer any questions you do not ask.

## **Honor Code**

Students are reminded that all work performed at UNTHSC is governed by the Honor Code. I believe working with others is educationally beneficial and encourage it through group projects. The Honor Code permits collaborative work, but means that all members of the group must be acknowledged as contributors, even in written materials prepared by one individual. As always, individual assignments must be the original work of the author, and intellectual contributions of others, whether written or oral, must be properly attributed. Written plagiarized work, defined as submitting as your own work that which contains direct or paraphrased quotes from another source, will be deemed a violation of the Honor Code. Any violation of scholastic integrity will result in failure of the course and disciplinary actions deemed necessary and appropriate by the school administration.

**Principles of Epidemiology (EPID 5100)**  
**Schedule of Lectures**  
**Summer 2009**

<b>DATE</b>	<b>LECTURE</b>	<b>LAB</b>	<b>READINGS</b>
06/29	Course introduction Introduction of Epidemiology	SEMINAR: History of Epidemiology (Dr. Morabia, recorded presentation)	Gordis: Chapter 1
06/30	Concepts in Infectious Disease Epidemiology & Outbreak Investigations	LAB: Investigating an Outbreak	Gordis: Chapter 2
07/01	Measures of Disease Frequency	LAB: Measures of Disease Frequency and Adjusted Rates (standardization)	Gordis: Chapters 3, 4
07/02	Measures of Associations	LAB: Measures of Association	Gordis: Chapters 11, 12
07/03	Study Designs: Randomized Clinical Trial	LAB: Randomized Controlled Trials	Gordis: Chapters 7, 8
07/06	Study Designs: Cohort studies	LAB: Cohort studies	Gordis: Chapter 9
07/07	Study Designs: Case-control and Cross-sectional studies	LAB: Case-control studies	Gordis: Chapters 10, 13
07/08	Study Designs: Ecologic studies  <i>Midterm exam review</i>	SEMINAR: Epidemiologic Surveillance	Gordis: Chapter 14 (pg 228-230)
07/09	<b>In-Class Midterm Exam</b>	No LAB	-----
07/10	Bias	LAB: Assessing for bias	Gordis: Chapter 15 (pg 247-251)

07/13	Confounding	LAB: Assessing for confounding	Gordis: Chapter 15 (pg 251-256)
07/14	Causal Inference	LAB: Causality	Gordis: Chapter 14 (pg 234-245)
07/15	Screening	LAB: Screening	Gordis: Chapter 5, 18
07/16	Ethical Issues in Epidemiologic Research <i>Review for final examination</i>	LAB: Gene Hunters DVD	Gordis: Chapter 20
07/17	<b>In-Class Final Exam</b>	No LAB	-----