

*Infectious Disease Epidemiology and Surveillance*

EOH-575  
Spring 2006

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**Course Description:**

This course will provide the learner with the descriptive and analytical tools of epidemiology and biostatistics. The student will be given data set for analysis using the Centers for Disease Control epidemiological package, EpiInfo, which can be downloaded from <http://www.cdc.gov/epiinfo/>. The course consists of three components: 1) reading chapter in text book and any additional reading assignments; 2) reviewing lectures by the instructor on various epidemiological methods. Audio presentations are available in WebCT. These presentations are also provided in written form for students who prefer to read rather than listen to lectures. Much of the lecture material reinforces material presented in text; 3) completing three problem sets using the CDC free statistical package, EpiInfo.

The instructor will be available for discussion of course material using the WebCt discussion forum. This forum will be available to all students because a question that one student asked is probably a question that other students are also struggling with. If a student needs to discuss an issue with me privately, he/she can either call me or send me an e-mail message.

## **Course Objectives:**

At the conclusion of this course a student will be able to demonstrate:

- The ability to understand and use epidemiological and biostatistical methods.
- The ability to use epidemiological tools to analyze a data set.
- An understanding of frequently used surveillance methods.

## **EpiInfo Assignments**

There will be three assignments for which you will use EpiInfo to complete the calculations. The assignments will be posted on WebCt one week before they are due. Due dates are March 20, March 27, and April 3.

## **Course Outline**

- Epidemiology Principles
  - Incidence and prevalence
  - Rate measures and standardization
  - Measures of association
  - Statistical significance
  - Statistical Procedures
    - Multivariate analysis and interaction
    - Survival analysis
  - Mathematical models for epidemics

- Graphical display of data
- Study designs
  - Case control
  - Cohort
  - Cross-sectional
- Study Design Issues
  - Precision
  - Validity
  - Confounding
  - Selection bias
  - Information bias
  - Effect modification
- Outbreak Investigation
  - Estimating the extent of an outbreak
  - Selecting a case definition
  - Conducting a field investigation
  - Laboratory Support
- Surveillance
  - History of surveillance
  - CDC attributes of a surveillance system
    - Sensitivity
    - Timeliness
    - Representativeness
    - Predictive value positive
    - Simplicity
    - Acceptability
    - Flexibility
  - Uses of surveillance for infectious diseases
  - Sentinel surveillance
  - Role of the alert physician
  - Planning an infectious disease surveillance system
  - Case definitions
  - Active and passive systems
    - Sources of information
    - Timeliness of information
    - Analysis of information
    - Interpretation of information
  - Using computers to organize, analyze, and display data
  - Geographic Information Systems
  - Communicating Information
  - Importance of exercising the system

- Legal issues in surveillance
- Barriers to establishing a surveillance system

### Evaluation of Performance:

Mid-term Examination

Final Examination

Evaluation of an infectious disease data set using EpiInfo

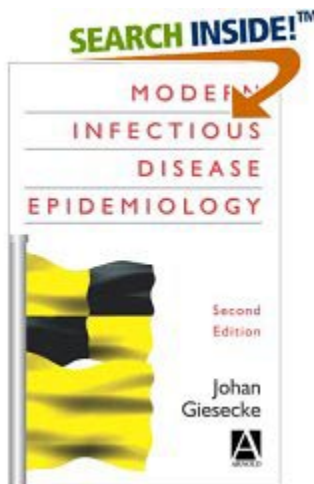
(10 points for each exercise)

35%

35%

30%

### Required Reading:



#### Modern Infectious Disease Epidemiology (Paperback)

by [Johan Giesecke](#) "What is epidemiology and why should one spend time studying it?..." ([more](#))

**SIPs:** [eaten cheesecake](#), [serial interval](#), [discharge registry](#), [random misclassification](#), [basic reproductive rate](#) ([more](#))

**CAPs:** [Hope Simpson](#), [Infect Dis](#), [New Year](#), [Los Angeles](#), [Cases Controls Exposed](#) ([more](#))

★★★★★ (2 customer reviews)

**List Price:** \$32.50

**Price:** **\$32.50** and this item ships for **FREE with Super Saver Shipping**. [See details](#)

**Availability:** Usually ships within 24 hours. Ships from and sold by Amazon.com.

### Weekly Assignments

Week 1

Week of January 16

- Read chapters 1 and 2 in Modern Infectious Disease Epidemiology
- Listen to or read the lecture: *Introduction to Epidemiological Methods* in WebCT

Week 2

Week of January 23

- Read chapter 3 in Modern Infectious Disease Epidemiology
- Listen to or read the lecture: *Descriptive Epidemiology* in WebCT
- Listen to or read the lecture: *Analytical Epidemiology* in WebCT

Week 3

Week of January 30

- Read chapter 4 in Modern Infectious Disease Epidemiology
- Listen to or read the lecture: *Ratios and Rates* in WebCT
- Listen to or read the lecture: *Evaluating Risk of Disease* in WebCT

Week 4

Week of February 6

- Read chapters 5 and 6 in Modern Infectious Disease Epidemiology
- Listen to or read the lecture: *Controlling Bias and Confounding and Determining Causality* in WebCT

Week 5

Week of February 13

- Read chapters 7 and 8 in Modern Infectious Disease Epidemiology
- Listen to or read the lecture: *Calculating Statistical Significance and Confidence Intervals* in WebCT
- Listen to or read the lecture: *Sensitivity and Specificity* in WebCT

Week 6

Week of February 20

- Read chapters 9 and 10 in Modern Infectious Disease Epidemiology
- **Take Mid-term Exam**

Week 7

Week of February 27

- Read chapters 11 and 12 in Modern Infectious Disease Epidemiology

Week 8

Week of March 6

- Read chapters 13 and 14 in Modern Infectious Disease Epidemiology
- Listen to or read the lecture: *The Role of Surveillance* in WebCT
- Read Chapter 3 *Surveillance* in Field Epidemiology from E-reserves

Week 9

Week of March 13

- Read chapters 15 and 16 in Modern Infectious Disease Epidemiology

Week 10

Week of March 20

- Read chapters 17 and 18 in Modern Infectious Disease Epidemiology
- Completion of EpiInfo assignment #1

Week 11

Week of March 27

- Read chapters 19 and 20 in Modern Infectious Disease Epidemiology
- Completion of EpiInfo assignment #2

Week 12

Week of April 3

- Listen to or read the lecture: *Conducting a Field Investigation* in WebCT
- Completion of EpiInfo assignment #3

Week 13

Week of April 10

- **Take Final Exam**

## **School of Public Health Policies**

According to The Graduate School, the only final grades allowed are: A ( $\geq 93$  to 100 points), B+ ( $\geq 90$  to 93 points), B ( $\geq 83$  to 90 points), B- ( $\geq 80$  to 83 points), C ( $\geq 73$  to 80 points) and F ( $< 73$  points).

**Feedback on Assignments:** Timely feedback on assignments is needed in order to assure that students are aware of their progress. For routine assignments, quizzes, presentations, and exams feedback will be provided within two weeks after the due date. For longer assignments such as term papers and PhD exams, feedback will be provided within three weeks after the due date of the assignment or the completion date of the doctoral exam. In the rare event that these deadlines cannot be met, students should be informed of the delay and the extra time needed in providing feedback.

**Attendance:** Regular class attendance is an important part of one's graduate education in public health. Students are expected to attend all scheduled class meetings. In rare circumstances (e.g., illness, accident, death in one's family), absences will be excused. However, if a student misses more than seven (7) hours of a three-credit course, they may be asked to withdraw from the course and re-take the course at a later time.

### **Academic Integrity Policy**

All students enrolled in MPH Program courses are also expected to abide by and uphold Saint Louis University's Policy on Academic Integrity and Ethics. This policy is reprinted below:

The University is a community of learning, whose effectiveness requires an environment of mutual trust and integrity, such as would be expected at a Jesuit, Catholic institution. As members of this community, students, faculty, and staff members share the responsibility to maintain this environment. Academic dishonesty violates it. Although not all forms of academic dishonesty can be listed here, it can be said in general that soliciting, receiving, or providing any unauthorized assistance in the completion of any work submitted toward academic credit is dishonest. It not only violates the mutual trust necessary between faculty and students but also undermines the validity of the University's evaluation of students and takes unfair advantage of fellow students. Further, it is the responsibility of any student who observes such dishonest conduct to call it to the attention of a faculty member or administrator.

Examples of academic dishonesty would be copying from another student, copying from a book or class notes during a closed-book exam, submitting materials authored by or editorially revised by another person but presented as the student's own work, copying a passage or text directly from a published source without appropriately citing or recognizing that source, taking a test or

doing an assignment or other academic work for another student, tampering with another student's work, securing or supplying in advance a copy of an examination without the knowledge or consent of the instructor, colluding with another student or students to engage in an act of academic dishonesty; and making unauthorized use of technological devices in the completion of assignments or exams.

Where there is clear indication of such dishonesty, a faculty member or administrator has the responsibility to apply appropriate sanctions. Investigations of violations will be conducted in accord with standards and procedures of the school or college through which the course or research is offered. Recommendations of sanctions to be imposed will be made to the dean of the school or college in which the student is enrolled. Possible sanctions for a violation of academic integrity include, but are not limited to, disciplinary probation, suspension, and dismissal from the University.

#### Policy on Style for Citation and Plagiarism

The two key purposes of citation are to 1) give appropriate credit to the authors of information, research findings, and/or ideas (and avoid plagiarism) and 2) facilitate access by your readers to the sources you use in your research.

Quotations: When directly quoting an outside source, the borrowed text, regardless of the amount, must be surrounded by quotation marks or block quoted. Quoted text over two lines in length should be single-spaced and indented beyond the normal margins. Every quote must include a source—the author, title, volume, page numbers, etc.—whether an internal reference, footnote, or endnote is used in conjunction with a bibliography page.

Paraphrasing or Citing an Idea: When summarizing an outside source in your own words or citing another person's ideas, quotation marks are not necessary, but the source must be included.

Plagiarism is a serious violation of the academic honesty policy of the School of Public Health. If a student plagiarizes others' material or ideas, he or she may receive an "F" in the course. The faculty member may also recommend further sanctions to the Dean, per School disciplinary action policy.

Generally speaking, the three keys of acceptable citation practice are: 1) thoroughness, 2) accuracy, and 3) consistency. In other words, be sure to fully cite all sources used (thoroughness), be accurate in the citation information provided, and be consistent in the citation style you adopt. All references should include the following elements: 1) last names along with first and middle initials; 2) full title of reference; 3) name of journal or book; 4) publication city, publisher, volume, and date; and 5) page numbers referenced. When citing information from the

Internet, include the WWW address at the end, with the “access date” (i.e., when you obtained the information), just as you would list the document number and date for all public documents. When citing ideas or words from an individual that are not published, you can write “personal communication” along with the person’s name and date of communication. Typical formats for citing references and books can be found in the American Journal of Public Health.

Additional Reading:

Lathrop A, Foss K. Student Cheating and Plagiarism in the Internet Age. Englewood, CO: Libraries Unlimited, Inc.; 2000.

(available to check out from Brenda McDaniel)