Truman State University
HLTH 367 Introduction to Epidemiology
Department of Health and Exercise Science
Spring 2003

Instructor: Jennifer L. Eldridge Houser, MS
Office: Pershing Building 328, 785-4173, eldridge@truman.edu
Class Meets: PB 231, 10:30 to 11:20 MWF
Office Hours: Monday and Wednesday 2:30-3:30 p.m.
Tuesday and Thursday 1:30-2:30 p.m.

After class, e-mail, and voice-mail are the best ways to take care of QUICK problems, instead of attending office hours. Extensive questions about course materials and SPSS need to be answered in my office. Do not hesitate to drop by my office or make an appointment at one of my available times.

Text:


Philadelphia, PA: W. B. Saunders

Course Description: This course is designed for those students entering the field of health education, medicine, or public health. Increasing an understanding of epidemiological concepts, practices, and methods is a primary focus. Topics covered during the course are history of epidemiology; disease etiology; measures of morbidity and mortality; descriptive means of epidemiology; data uses in the field; study designs; measures of effect; data interpretation issues; screening guidelines; and epidemiological aspects of infectious diseases, work, and the environment. A separate focus will be placed on the practice of analyzing data in epidemiological investigations. Previously established data sets will be used to foster course concepts.

Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
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<tbody>
<tr>
<td>A</td>
<td>940-1045</td>
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<tr>
<td>B</td>
<td>836-939</td>
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<td>C</td>
<td>731-835</td>
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<tr>
<td>D</td>
<td>627-730</td>
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<td>F</td>
<td>522-626</td>
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Explanation of Course Components:
I. Quizzes (7 @ 75 points each): Quizzes cover course lecture notes, handouts, and assigned reading material. Note that epidemiological concepts are innately more difficult to master. Do not wait until the last minute to study. Those who visit me with questions about the material do much better on the exams. Questions for the quiz will include any of the following: (a) short-answer, (b) true/false, (c) multiple-choice, (d) calculations, and/or (e) essay. Quizzes will contain no more than 25 questions each, and may include a take-home portion. See Chart below for specific assigned readings and dates.

**Assigned Readings and Quiz Dates**

<table>
<thead>
<tr>
<th>Week</th>
<th>Quiz Number</th>
<th>Date of Quiz</th>
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<tbody>
<tr>
<td>1-3</td>
<td>1</td>
<td>January 31</td>
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**Chapter 1 Epidemiological Approaches, Contributions, and Issues:** epidemiology defined, clinical epidemiology, classical epidemiology, types of epidemiology, clinical decision analysis, stages of disease, causes of disease, epidemiological triangle, BEINGS model, human ecology, creation of problems, ecological thinking, herd immunity, sanitation, synergy of disease, investigating epidemics, new diseases, iceberg phenomenon, surveillance, disease priorities, treatment of disease, research, epidemiological testimony

**Chapter 2 Epidemiological Data Sources and Measurements:** Sources of health data, census, death certificates, epidemiology measurements, frequency, risk, rates, standardization of rates, maternal and infant health rates, definitions of basic epidemiological concepts and measurements

**Chapter 3 Epidemiological Surveillance and Outbreak Investigation:** surveillance of disease, purpose, surveillance systems, baseline data, time trends, documentation of outbreaks, disease interventions, steps to investigating epidemics

**CDC MMWR** pages 1-7 (foodborne botulism) FOUND ON U DRIVE- printout and bring to class

| 4-6   | 2           | February 21  |

**Chapter 4:** causal relationships, determination of cause and effect, temporal relationships, pitfalls in causal research (bias)

**Chapter 5 Common Research Designs Used in Epidemiology:** research designs, observational, cross-sectional studies, ecologic studies, longitudinal, cohort studies, case-control, nested case-control, experimental studies, randomized control trials, field trials, data summary and analysis

**Chapter 6 Assessment of Risk in Epidemiological Studies:** study groups, comparing risks, other risks, using risk data, number needed to treat, risk reduction calculations for practical treatment, cost-benefit/effectiveness analysis, value of interventions, applying risk to counseling patients

**CDC MMWR** pages 7 (Botulism, Infant) – 13 (Encephalitis)

| 7-10  | 3           | March 19     |
Chapter 7: Understanding Errors in Clinical Medicine: data collection and analysis, accuracy, precision, errors, screening and diagnostic tests, false positive/negative, sensitivity, specificity, predictive values, ratios, cut-off points, ROC curves, measuring agreement, kappa ratio

Chapter 8: Improving Decisions in Clinical Medicine: Bayes’ Theorem, decision analysis, meta-analysis

Chapter 9 Describing Variation in Data: sources of variation in medicine, statistics and variables, frequency distributions (do not memorize formulas) of continuous variables, problems with frequency distributions, depicting a frequency distribution, frequency distributions of dichotomous and ordinal data, (ignore Box 9-4)

CDC MMWR pages 13 (e coli) – 19 (Hepatitis, Viral)

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<thead>
<tr>
<th>Week</th>
<th>Quiz Number</th>
<th>Date of Quiz</th>
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<tr>
<td>10-12</td>
<td>4</td>
<td>April 2</td>
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Chapter 10 Statistical Inference and Hypothesis Testing: types of reasoning, mathematics and statistics, hypothesis testing, errors, null hypothesis, alpha and probability levels, individual observations, tests of statistical significance, types of variation, internal/external validity

Chapter 11 Bivariate Analysis: choosing appropriate statistical tests, inferences, Pearson Correlation Coefficient, ordinal data, Mann-Whitney U Test, Wilcoxon Matched-Pairs Signed-Ranks Test, Kruskal-Wallis Test, Spearman, Kendall Correlations, Sign Test, Contingency Tables, Chi-Square, Percentages, Expected Counts, Interpretation of the results, McNemar Tests, Fisher Exact Probability, Standard Errors, Strength of Association, Person Time Methods, Life Table Analysis

Chapter 12 Sample Size, Randomization, and Probability Theory: sample size, Alpha and Beta Error, calculations, enlisting study subjects, randomization goals, methods of randomization, data dredging, probability theory

CDC MMWR pages 19 (HIV, pediatric) - 26 (through Plague)

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<tr>
<th>Week</th>
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<tr>
<td>13-14</td>
<td>5</td>
<td>April 16</td>
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Chapter 13 Multivariate Analysis: equations, best estimates, linear model, ANOVA (one-way, higher way or N way), ANCOVA, multiple linear regression, logistic regression, log-linear analysis, and discriminate function analysis

Chapter 14 Introduction to Preventive Medicine: health, adaptation, functioning, measures of health status, natural history, levels of prevention, economics of prevention

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<td>15-16</td>
<td>6</td>
<td>April 30</td>
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Chapter 15 Methods of Primary Prevention: Health Promotion: society’s contribution to health, nutritional factors, environmental and occupational factors in health promotion, behavioral factors

Chapter 16 Methods of Primary Prevention: Specific Protection: immunity & vaccines, antimicrobial drugs, prevention

Chapter 17 Methods of Secondary Prevention

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<td>16-17</td>
<td>7</td>
<td>May 12 @ 9:30</td>
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Chapter 18: Methods of Tertiary Prevention: requirements for diseases, screening tests, and health care systems, application of screening example, individual case finding, risk assessment opportunities for prevention, disability limitation, rehabilitation

Chapter 19: Selected Topics in Prevention maternal and child health, AIDS, tuberculosis, chemical substance abuse, mental health, injuries, occupational health, toxins, dental health, genetics

Chapter 20: Public Health Systems: Structure and Function definition of public health, administration, responsibilities, goals, Healthy People 2010, organization and training

Chapter 21 Medical Care Organization, Policy, and Financing medical care systems, terminology, need and demand, goals, requirements for good medical care, historical overview, levels of medical care, institutions, payment for medical care, cost containment, medical commons

CDC MMWR pages 47 (genital herpes) - 54
II. Pharyngitis in Louisiana (100 points): Pharyngitis in Louisiana is designed for public health workers, particularly those who are likely to lead or participate in an outbreak investigation. The assignment software is divided into 7 days of investigation work. However, I would suggest that you do the assignment in one sitting, if possible. The software has been loaded onto all university computers. Your submitted answers on one page should follow these guidelines: (a) no cover sheet, (b) name in the upper right hand corner and Epidemiology, (c) question number with answers listed in three columns with answers 1-21 in the first column, 22-42 in the second column, and 43-55 in the third column. You can access this software on any computer on campus. Go to Start/Programs/Pharyngitis in Louisiana. Due January 31 in class.

III. Epidemiologist Professional Interview (120 points) Interview an epidemiologist who is practicing in the field or who has retired. Prepare a list of interview questions for this person and write the report using the framework below (Five to Eight pages). Note the point values.

1) Identify the area of epidemiology (i.e., infectious diseases, policy making, chronic diseases, etc.) in which this professional works, their occupational title, and their background/experience (25 points)

2) Develop a list of interview questions (75 points)

3) What do they like most about their job? Least?
   a) What do they find most frustrating about public health?
   b) If they could change one aspect of their job, what would it be?
   c) What trends do they see happening in their particular profession?
   d) Have there been any new policies that have affected their job? Positively or negatively?
   e) If they could change anything about the field of epidemiology, what would it be?
   f) Are there any professional experiences they will remember the most?
   g) Please add or modify questions to your needs.

4) Reflection on the interview (15 points)
   a) learning outcomes
   b) opinions
   c) responses

Due March 21 in class

V. Analyzing Data with CDC data: This project will require to use data that has already been collected by the CDC. The dataset will be specified in class. You will use this data set to answer questions regarding odds, ratio, relative risk, chi-square and others discussed in the textbook. A detailed list of objectives will be presented in class during the 10th week of class. This project will be due the week prior to finals week. (150 points)

V. Book report: The field of Epidemiology is extremely interesting and many lay books have been written on the topic. Three that are recommended are: 1) Investigating Disease Patterns: The science of Epidemiology by Stolley, & Lasky, 2) Level 4: Virus Hunters of the CDC by McCormick & Fisher-Hoch and Medical Detectives by Roueche. All of these books can be purchased for fewer than 12 dollars. However, you are free to choose your own book as long as you have not read it before, it is non-fiction, and it is about epidemiology. (150 points)
Academic Dishonesty

Taken from Truman State University’s Handbook:

“Students are expected to do their own academic work. Any student involved in cheating on an examination or in any other form of academic dishonesty will be subject to disciplinary action, including suspension or expulsion from the class, the student’s academic program, or the University.”

As future health educators, we need to be made aware of the SOPHE (Society of Public Health Educators) Code of Ethics. The Code of Ethics provides a framework of shared values within which Health Education is practiced. The Code of Ethics is grounded in fundamental ethical principles that underlie all health care services: respect for autonomy, promotion of social justice, active promotion of good, and avoidance of harm. The responsibility of each Health Educator is to aspire to the highest possible standards of conduct and to encourage the ethical behavior of all those with whom they work.

For continued enrollment in the class each student must read and sign the SOPHE Code of Ethics and return to the professor. This code is available on Blackboard.

As the instructor of this class, it is my policy to fail the student on any project or quiz they are perceived by the professor as using someone else’s work to complete, meaning they get zero points. Depending on the situation, the professor may drop the student from the class all together.

**Missing a deadline** – 10 percent of the points will be taken away for each day that the assignment is late.
Example: 10% of the points awarded to each assignment will be taken away for turning it in one day late. 20% of the points awarded to each assignment will be taken away for turning the assignment in 2 days late etc.

**Missing a quiz** – Only University events, illness, family crisis, or other emergency will be accepted if a student misses a quiz. They must bring proof of illness in the form of a note from student health or other official proof of being treated by other medical facilities such as a clinic or a hospital. If in doubt of whether or not your excuse is acceptable, get proof of where you were. Bring proof to Professor Houser along with the date and class name that you missed. Quizzes will be rescheduled as close to the actual date of the quiz as possible.

**Early work** – No early work will be accepted, unless you are unable to make to class on the day of the deadline.

**Grades** – KEEP TRACK OF YOUR OWN GRADE!! DO NOT ASK THE PROFESSOR WHAT YOU ARE GETTING IN THE CLASS.