

PUB HLTH 302 (Section 21)
Introduction to Biostatistics
1.0 Credit
Fall 2006 (September 20 – December 6, 2006)

Day/Time: Mondays, 2:00-3:30 PM
Wednesdays, 2:00-3:30 PM

Classroom Location: 680 N. Lake Shore Drive, Suite 1102, Large Conference Room

Course Instructors:

Dorothy Dunlop, Ph.D.
Research Associate Professor
Institute for Healthcare Studies
676 N. St Clair #200
(312)695-9545
ddunlop@northwestern.edu

Denise Scholtens, Ph.D.
Assistant Professor
Department of Preventive Medicine
680 N. Lake Shore Drive Suite 1102
(312)503-7261
dscholtens@northwestern.edu

Office Hours :

Dorothy Dunlop: Thursdays, 3:00-4:00 PM
Denise Scholtens: Mondays, 1:00-2:00 PM

I. Course Description

This course is designed to equip students to engage in three common statistical tasks: 1) collecting data, 2) summarizing and exploring data, and 3) drawing conclusions and making decisions based on data.

II. Prerequisites

None formally, but 1 year of calculus would be helpful

III. Course Objectives

After completion of the course, the students should be able to:

- a. Describe basic ideas of probability, random variables, and probability distributions.
- b. Discuss principles of designing studies for collecting data.
- c. Summarize different types of data with graphics and descriptive statistics.
- d. Describe sampling distributions of statistics.
- e. Perform statistical inference through point estimation, confidence interval estimation, and hypothesis testing for single samples, two samples, proportions, and count data.
- f. Fit a straight line to a set of paired data using simple linear regression and interpret the regression parameters.

IV. Teaching Format

New material will be presented in lectures. Homework assignments will be handed in for evaluation and will be discussed in class the day they are due. Students will be expected to read the text prior to the lecture.

V. Student Evaluation

- a. Homework (30%): Written homework assignments will be handed in for each chapter. They will be checked for completeness, and a subset of the problems will be graded for accuracy. Each homework assignment will be given a score of $\sqrt{-}$, $\sqrt{}$, or $\sqrt{+}$.
- b. Solution Set (10%): Each student will be asked to prepare one homework solution set for distribution to the rest of the class. Solution sets will be due on the class following the homework due date. Solution sets should not only contain the correct answer, but also demonstrate a thorough approach to solving each problem. Solutions should be emailed to the instructors as Microsoft Word documents. Solutions sets will be graded for accuracy and clarity of presentation.
- c. Examinations I & II (30% each): Examination I will cover Chapters 1-6 and Examination II will cover Chapters 7-10. They will be given in class on the scheduled days, and will each last 1 hour. The exams may consist of multiple choice, true-false, short answer, and statistical computations. Make up examinations should be arranged in advance and will only be given under extenuating circumstances.

VI. Required Textbook

Statistics and Data Analysis: From Elementary to Intermediate. Ajit Tamhane and Dorothy D. Dunlop. Prentice Hall, 2000.

The online Course Management System – Blackboard at <https://courses.northwestern.edu/webapps/login/> will be used to transmit and share all course materials including the syllabus, assignments (and answers to assignments), lecture notes, and email correspondence.

VII. Required Software

Intercooled Stata. See 'Access to Stata for MPH/MS Students on the NU Chicago Campus' for purchasing instructions.

VIII. Course Evaluations

The Programs in Public Health administer web-based course evaluations to students for each course near the end of the quarter. ***Your completion of both the unit (course) and faculty evaluation components is required; failure to complete either of the evaluations will result in an incomplete grade until the evaluations are submitted.*** You will be sent the web link and instructions via email later in the quarter. You will have about two weeks time to complete the evaluations before grades are submitted.

IX. Course Outline

Extra lab sessions are noted in italics.

Date	Chapter	Topic	Homework Due*
9/20	Chapter 2	Introduction/ Probability Theory	
9/25	Chapter 2		
9/27	Chapter 3	Collecting Data	
9/27 3:30-5:00	<i>Stata</i>	<i>Introduction to Stata</i>	
10/2	Chapter 4		Chapters 2 and 3
10/4	Chapter 4	Summarizing Data	
10/9	Chapter 5		Chapter 4
10/11	Chapter 5	Sampling Distributions	
10/16	Chapter 5		
10/18	Chapter 6	Basic Concepts of Inference	
10/23	Chapter 6		Chapter 5
10/25	Chapter 6		
10/27 1:30-3:00	<i>Review for Exam 1</i>	<i>Review Chapters 1-6</i>	Chapter 6
10/30	Exam 1/Chapter 7	Exam Chapters 1-6	
11/1	Chapter 7	Inference for Single Samples	
11/1 3:30-5:00	<i>Stata</i>	<i>Stata for Inference Testing</i>	
11/6	Chapter 8	Inference for Two Samples	Chapter 7
11/8	Chapter 8		
11/13	Chapter 8		
11/15	Chapter 9	Inference for Proportions	
11/20	Chapter 9		Chapter 8
11/22	Chapter 10	Simple Linear Regression	
11/27	Chapter 10		Chapter 9
11/29	Chapter 10		
12/4	Review for Exam		Chapter 10
12/6	Exam 2	Exam Chapters 7-10	

*Homework will be discussed in class the day it is due.