DRAFT – Introductory Health Statistics (HS067)
GE Area B4 (Mathematical Concepts)
Department of Health Science
San Jose State University

Semester: Spring 2005

Class meetings: Tu & Th 9:00 - 10:15

Location: CCB 102

Office hours: see www.sjsu.edu/faculty/gerstman

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Course Description

This course provides a practical introduction to statistical methods used in a variety of health and human service settings. Concepts are illustrated with examples that demonstrate how principles apply.

Prerequisite: You must satisfy the Entry Level Mathematics (ELM) requirement prior to enrollment in this course.

General Education Objectives - This course qualifies for Area B4 (Mathematical Concepts) General Education credit. The overall objectives of the San José State University General Education program are: To develop analytical skills and reasoning powers; To increase the ability to communicate ideas effectively both in speaking and in writing; To enhance the ability to live and work intelligently, responsibly, and cooperatively in a multicultural society and an increasingly interdependent world; To provide a fundamental understanding of science and the natural world; To further knowledge and appreciation of the arts and letters; To promote citizenship through knowledge of the forces that shape the individual and modern society; To develop abilities to address complex issues and problems using disciplined analytic skills and creative techniques. The major goal of GE area B4 is to enable the student to use numerical and graphical data in personal and professional judgments and in coping with public issues. This course prepares student to use mathematical methods to solve quantitative health problems, including those presented in verbal form; demonstrate the ability to use mathematics to solve real life health problems; and arrive at conclusions about health and disease based on numerical and graphical data.

Course Organization -- The course meets twice weekly for lecture with occasional breakout groups for discussion.

Learning Objectives

Upon completion of the course, the student will be able to:

1. Calculate, display, and interpret rates and proportions used in studies of health and disease.
2. Organize and present continuous measures using tables, graphs, and summary statistics.
3. Use probability as a tool for coping with random variation and the distribution of statistical relations; use the Normal and related distributions (*t*, chi-square) for addressing variation.
4. Calculate and interpret confidence intervals for means, mean differences (paired and independent samples), proportions, and proportion differences.
5. Understand the conceptual basis of significance testing.
6. Calculate statistical tests for means, mean differences (paired and independent samples), proportions, proportion differences, and regression coefficients.

7. Determine sample size requirements for surveys and trials that test the above parameters.

Materials

(1) *Text*: Moore, D. S. (2004). The Basic Practice of Statistics (3rd ed.). New York: Freeman.
(2) TI-3X statistical calculator (about $10).
(3) Graph paper.

SJSU Policy on Academic Integrity- San Jose State University has established a policy on academic integrity intended to prevent cheating and plagiarism. The policy is available on the SJSU website under "Academic Programs." Students should familiarize themselves with the definitions and sanctions of the policy as adopted by the Academic Senate. Students enrolled in this course are expected to know and abide by this policy. Violations of this policy will can result failure in the course and/or dismissal from the university.

Writing Assignment (Statistical Reports) - Writing assignment will total at least 1500 words and will consist of statistical reports. Reports will be turned in on the dates specified on the Schedule of Topics. Please keep backup copies of your reports. If you want your final report returned, please attach a stamped self-addressed envelope with sufficient postage for return. Reports will be evaluated based on: (1) accuracy, (2) content, (3) organization, (4) critical thinking, and (5) grammar and clarity of expression. Additional information about statistical reports is available online.

University Drop Policy - Please see the Schedule of Classes for details on drop procedures.

EXAMS, PAPERS, AND ASSIGNMENTS

Component	Description	% of Grade
Homework exercises	$n = 9$. Weekly exercises graded for accuracy, organization, and clarity of expression. See the course Web site for assignments.	30%
Statistical Reports	$n = 3$. Writing assignments will be incorporated into HW assignments 3, 6 and 9. See instructions on course website.	15%
Exams	$n = 3$. The course includes two midterms (15% of grade, each) and a comprehensive final (25% of grade). The exams are closed-book with formula sheets provided Statistical and numerical concepts are addressed in verbal and computational form.	55%
TOTAL		100%

Grading is based on percentage of total points earned as follows:

100-97%	. . . . . A+	79-77%	. . . . . . C+	Below 60% . . . . F	
96-93%	. . . . . A	76-73%	 C		
92-90%	. . . . . A$^-$	72-70%	. . . . . . C$^-$		
89-87%	. . . . . B+	69-67%	. . . . . . D+		
86-83%	. . . . . B	66-63%	. . . . . . D		
82-80%	. . . . . B$^-$	62-60%	. . . . . . D$^-$		

Example of grade calculation

COMPONENT	% EARNED	×	weight		contribution
Average HW score	90	×	.30	=	27.00
Statistical Report #1	80	×	.05	=	4.00
Statistical Report #2	85	×	.05	=	4.25
Statistical Report #3	95	×	.05	=	4.75
Midterm #1	100	×	.15	=	15.00
Midterm #2	82	×	.15	=	12.30
Final	85	×	.25	=	21.25
Total Score					88.55
					Grade: B+

SCHEDULE OF TOPICS

Week	TOPIC
Week 1 1/27	**Introduction**
Week 2 2/1 -	**Picturing distributions ((Chap 1)** HW1 Assigned
Week 3 2/8 -	**Describing distributions with numbers (Chap 2)** HW1 due; HW2 assigned
Week 4 2/15 -	**The Normal distribution (Chap 3)** HW2 due; HW3 assigned
Week 5 2/22 -	**Review** HW3 due
Week 6 3/1-	**Tuesday - Exam 1** **Thursday Data by Sampling and Experimentation (Chaps 7 & 8)**
Week 7 3/8 -	
Week 8 3/15 -	
Week 9 3/22 -	
Week 10 3/29 -	

Week	TOPIC
Week 11 4/5 -	**Exam 2**
Week 12 4/12 -	
Week 13 4/19 -	
Week 14 4/26 -	
Week 15 5/3 -	
Week 16 5/10 -	
Week 17 5/17 -	Last day of class (student opinion surveys and such)

FINAL EXAM – Monday 5/23/05 7:15 - 9:30