Biostatistics (HS 167)

Spring 2010

Department of Health Science
San Jose State University

Website:	www.sjsu.edu/faculty/gerstman/hs167 "Shortcut": www.sjsu.edu/biostat > hs167
Description:	Statistical analysis of health and biomedical data; data management, exploratory data analysis (EDA), descriptive statistics, random variation and probability, statistical inference for quantitative and categorical outcomes. *Prerequisite*: HS 67 or equivalent or Graduate student status.
Professor:	Bud Gerstman
Lecture:	Tu *and* Th 12:00 – 1:15 [12:50] in BBC 004 (HS 167-06)
Labs:	Tu 2:00 – 3:15 in MH 321 (HS 167-08) – Dr. G. Tu 3:15 – 4:30 in MH 321 (HS 167-03) - Michael We 12:00 – 1:15 in MH 321 (HS 167-s04) – Matt Th 2:00 – 3:15 in MH 321 (HS 167-s09) – Rebecca
Blackboard:	Check the Blackboard (Bb) website on Monday, Friday, and Sunday each week for important information. Use the Bb Email tool for all course correspondence. I will respond to Bb email inquiries within 24 hours. I will not respond to regular email inquiries.
Office:	Location: MH 514 Hours: Tu 4:00 – 5:00; We 1:00 – 2:15; Th 1:30 – 2:15 Office phone 408 924-2978
Prerequisites:	**Math pre-req**: You must complete the CSU Entry Level Math (ELM) requirement before entering the class. It is assumed that you have knowledge in each of these areas: (a) the order of mathematical operations, (b) fractions, (c) decimals, (d) powers and square roots, (e) percents, (f) ratios, (g) mathematical notation, (h) negative numbers, (i) word problems, (j) exponents and logarithms, (k) significant figures, and (l) rounding. *Competency* is expected. **Stat pre-req**: You must complete either HS 67 (Introductory Health Statistics) or an equivalent lower division statistics course with a C or better before beginning the class. It is assumed you have knowledge in each of these areas: basic descriptive statistics (mean, standard deviation, median, quartiles, frequency tables and proportions), graphing techniques (stemplots, scatterplots), probability (rules of probability, Normal distribution, standard Normal distribution), and introduction to inferential statistics (confidence intervals and significance tests for μ).

Time requirement:	Successful completion of this course requires approximately 8 hours per week each and every week. Cramming is ineffective. If you do not have adequate time to devote to this course, you should drop this course immediately and enroll at a future date.
Text:	Gerstman, B.B. (2008). *Basic Biostatistics: Statistics for Public Health Practice.* Jones & Bartlett: Boston.
Calculator:	TI-30XIIS or equivalent. (Only the TI-30XIIS will be supported.)
Software:	All necessary software is installed in the College of Applied Sciences and Arts Computer Labs (MH 321 and MH332). Open lab hours for MH 332 are posted on http://www.casa.sjsu.edu/openhours.asp.
Homework:	*Weekly* assignments are posted on online. Late assignments will not be accepted.

Academic Integrity (Office of Student Conduct & Ethical Development)

Your commitment to learning as evidenced by your enrollment at San Jose State University requires you to be honest in all academic work. **Unless explicitly stated otherwise, graded work is to be done entirely on your own.** In the past, students in this class have gone beyond permissible collaboration and have suffered serious consequences. **When anyone breaks these rules, the entire class suffers.** The belief that others are not obeying the rule erodes confidence and introduces anxieties that those who do follow the rules will be disadvantaged. Having to investigate possible cheating and plagiarism incidents takes instructor time away from helping students learn the material, and erodes confidence. Infractions will be reported to the Office of Student Conduct & Ethical Development according to policy S04-12. For additional information, see http://www.sa.sjsu.edu/judicial_affairs/.

The **rules for independent work** are:

1. **Exams and quizzes** are to be done on your own without that aid of published (print or web) materials other than those expressly permitted according to the rules of the test.
2. **Labs:** You may collaborate freely on **lab** exercises.
3. **Homework exercises:** Rules for collaborate will be addressed on a case-by-case basis. You are encouraged to communicate openly about homework exercise on the Blackboard discussion boards.

Disability

If you need course adaptations or accommodations because of disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible or see me during office hours. Presidential Directive 97-03 requires that students with disabilities register with DRC to establish a record of their disability.

University Drop Policy

Please see the SJSU Schedule of Classes and http://www.sjsu.edu/sac/advising/latedrops/policy/ for details about the drop procedure.

Course content:

1. **Data (Ch 1 & Ch 2)** —quantitative, ordinal, and categorical measurements; create SPSS variables and an SPSS data table; articulate the importance of valid measurements; articulate the difference between experimental studies and observational comparative studies.
2. **Exploratory Data Analysis (Ch 3 & Ch 4)** —construct and interpret stemplots, construct and interpret frequency tables (frequency, relative frequency, cumulative frequency); calculate and interpret means and standard deviations; calculate and interpret medians and quartiles; draw and interpret Tukey's boxplots.
3. **Probability (Ch 5, Ch 6, Ch 7)** — understand and apply basic rules of probability; determine probabilities using the area under the curve concept; determine Normal probabilities and percentiles values using a Standard Normal z table
4. **Inference for quantitative outcomes (Chapters 8 - 11)** — calculate and interpret confidence intervals for means and mean difference; test means for significance (*z* and *t* procedures); calculate power and sample size requirements when testing means.
5. **Inferences for categorical outcomes (Ch 16 & Ch 17)** — calculate and interpret confidence intervals for proportions; calculate and interpret confidence intervals for relative risks.

Chapters are *not* covered in their entirety.

GRADED COMPONENTS

Lab Work	Your scores	possible points
LM3 - Intro hyp test (3/16 - 3/18)		5
LM4 - Intro est (3/23 - 3/25)		5
LM5 - Paired (4/6 - 4/8)		5
LM6 - Independent (4/13 - 4/15)		5
LM7 - Proportions (4/20 - 4/22)		5
LM8 - RR (5/11 - 5/13)		5
Lab_Reb_Min - Drop lowest lab report		*-5*
Lab_Rep_Tot - Lab report total		25
Lab_Rep_% (Lab reports as a percentage)	**A**	100

HW & Misc	Your scores	possible points
Math test (2/2 - 2/4)		10
LM1 - Data table (2/16 - 2/18)		10
LM2 - EDA (2/23 - 2/25)		10
HW1A - EDA, (2/23)		10
HW1B - EDA (2/23)		10
HW2 - Intro to hyp test (3/16)		10
HW3 - Intro to est (3/23)		10
HW4A - One- & Paired t (4/13)		10
HW4B - Independent (4/13)		10
Assess_Min - Drop lowest 10-pointer		-10
Asses_Tot Total Assignment		80
Assess_% Assessments as a percentage	**B**	100

Exams	Your scores	possible points
Midterm 1 as a percentage (3/4)	**C**	100
Midterm 2 as a percentage (4/27)	**D**	100
Final Exam as a percentage (5/19)	**E**	100

Total points	**A + B + C + D + E**	**500**

Your course grade (as percentage) = yellow cell / blue cell x 100

Your course grade is your average HW and lab score, midterm score, and final score. Grade cut-offs are:

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