Biostatistics (HS 167)

Fall 2009

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), random variation and probability, statistical inference for quantitative and categorical outcomes. *Prerequisite*: HS 67 or equivalent or Graduate student status.
Professor:	Bud Gerstman
Lecture:	HS 167-7 (49320): Tuesdays and Thursdays from 3:00 – 4:15 in MH 324
Labs:	Lab A: Tuesdays 4:30 - 5:45 in MH 321 Lab B: Wednesdays 12:00 – 1:15 in MH 321 Lab C: Thursdays 4:30 - 5:45 in MH 321 Lab D: Tuesdays 4:30 - 5:45 in MH 332
Communication:	You must check Bb Discussion and e-mail tools at least every other day. *Email correspondence through the (Bb) email tool will be answered within 24 hours.* I can be reach by phone (408 924-2978) during my office hours.
Office & office hours	Tu 11:30 – 1:00, We 1:00 – 2:00, Th 11:30 – 1:00 MH 514
Lab instructors	Deborah Danielewicz (deb@mac.com) Seena Nair (sn2006sj@gmail.com) Adriana Delgadillo (adelgadillo29@yahoo.com)
Prerequisites:	**Math *competency and requirements***. This course requires knowledge of: a) the order of mathematical operations, b) fractions, c) decimals, d) powers and square roots, e) percents, f) ratios, g) formula use and checking, h) negative numbers, i) word problems, j) properties of exponents and logarithms, k) graphing , and l) basic probability. *Competency* is expected at the high school level. Undergraduates must complete the CSU Entry Level Math (ELM) requirement before entering the class. Graduate students are expected to act as graduate students. **Statistics *requirement*.** Undergraduate students must complete a lower division (General Education) statistics course with a C or better sometime after Fall 2003. You are expected to come to the course knowing basic descriptive statistics (mean, standard deviation, median, quartiles, frequency, relative frequency, cumulative frequency), graphing techniques (stemplots, scatterplots), probability (rules of probability, Normal distribution characteristics and use), and inferential statistics (confidence intervals and significance tests for means using *t* procedures).

Time requirements:	Successful completion of this course requires approximately 8 hours/week × 15 weeks = 120 hours of study time. Cramming is ineffective. If you do not have adequate time to devote to this course, you are strongly encouraged to drop and then enroll at a future date.
Final Exam:	Friday December 11, 2009 1215 – 1430 in the lecture room
Text:	Gerstman, B.B. (2008). *Basic Biostatistics: Statistics for Public Health Practice.* Jones & Bartlett: Boston.
Manual:	Biostatistics Lab Manual. Available at campus store by ~8/31/09.
Calculator:	TI-30XIIS or TI-8x
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. Graduate students are strongly encouraged to install SPSS (any version) and WinPEPI (public domain) on their home computers (see Lab 0).
Homework Assignments:	*Weekly* assignments are posted on the online. Late assignments will not be accepted unless there is a serious and compelling reason documented by an objective source.

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 entirely on your own, without that aid of published (print or web) materials other than those expressly permitted according to the rules of the test. You may not communicate about examinations or quizzes with anyone other than a course instructor.
2. You are encouraged to collaborate freely during **lab**.
3. You are allowed to collaborate on **odd-numbered homework exercises**.
4. You are NOT allowed to collaborate on **even-numbered homework exercises**. *However*, if you run into a problem doing an even-numbered problem, you ARE ALLOWED to communicate openly about the problem in class or via the Blackboard discussion tool. You may NOT to work on even-numbered problems with individual students or with small groups. Thus, all such communication is open, allowing everyone, including instructors, access to the same facts and ideas.

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.

Learning objectives

The course occurs in five modules:

1. **Data (Ch 1 & Ch 2)** —identify quantitative, ordinal, and categorical measurements; understand that the importance of valid measurements; differentiate between surveys and comparative studies, and between experimental studies and observational comparative studies; address the different types of sampling.
2. **Exploratory Data Analysis (Ch 3 & Ch 4)** —construct and interpret stemplots and histograms, construct and interpret frequency tables, calculate and interpret means, standard deviations, medians, and quartiles (Tukey's hinge method); draw and interpret boxplots.
3. **Probability (Ch 5, Ch 6, Ch 7)** —apply basic rules of probability; use *pmf*s or *pdf*s to determine probabilities; calculate and interpret binomial probabilities; calculate and interpret Normal probabilities and values.
4. **Inference about quantitative outcomes (Chapters 8 - 11)** — understand sampling distributions of means; calculate and interpret confidence intervals for means; hypothesis test means; calculate and interpret power or sample size estimates when testing means.
5. **Inferences about categorical outcomes (Ch 16 & Ch 17)** — calculate and interpret confidence intervals for proportions; calculate and interpret relative risks and confidence intervals for relative risks.

Grades

Homework assignments and labs are graded every week. Scores are averaged to derive an HW and lab scores, respectively. Exam dates are posted on the course calendar (Oct 29 and Dec 10). Your course grade is your average HW, lab, midterm 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−		

A grade worksheet is posted on the course website.