Computational Public Health Statistics (HS267)

Spring 2005 (Course number 21893)
San Jose State University
Health Science Department

Concepts and techniques in public health statistics and data analysis; coverage of study design, data management, risk analysis, exploratory data analysis, comparison of means, comparison of variance, and correlation/regression.

Website:	www.sjsu.edu/compstat
Prerequisite:	HS167 or equivalent.
Class:	Thursday 3:00 - 5:45 in MH321
Professor:	Bud Gerstman
Contact info:	See www.sjsu.edu/faculty/gerstman/
Materials:	(1) *Course Reader*. Available from Spartan Bookstore (2) Lab Workbook. Available from Spartan Bookstore. (2) Gerstman, B. B. (2003). *Epidemiology Kept Simple* (2nd ed.). Chapter 9 and Chapter 10. New York: Wiley-Liss. (3) College of Applied Sciences and Arts computer account (sign up during first lab). (4) An email account that you check at least every other day. (5) Calculator with *e* and natural log functions. (6) Quad-ruled composition notebook (for *Procedure Notebook*).
Software (optional):	(1) *SPSS* version 11 or higher (Student version of SPSS OK for all but lab 9) (2) WinPepi (free download) (3) EpiData (free download)

See www.sjsu.edu/faculty/gerstman/hs267 for the schedule of topics and assignments.

Grading: Your grade is based on your average score on homework exercises, midterms, and the final exam. An example of a grade calculation follows:

Component	% Earned	×	Weight	=	Points earned
Homework exercises	94	×	0.33	=	31.3
Midterm(s)	90	×	0.33	=	30.0
Final	85	×	0.33	=	28.3
			1.00		89.7
				Grade:	A–

Grade cutoffs: Highest score in class = A+, all other scores greater than 91% = A; 91%–90% = A-; 89%–88% = B+; 87%–82% = B; 81%–80% = B-; and so on.

HOMEWORK POLICIES

1. Please print the online exercises the day they are assigned, and *not* before.

2. **You must do even-numbered problems on your own.** Limited collaboration is allowed *after* you complete the exercise according to the following rule: you may compare answers but you may *not* copy answers. You may then revise your work if you find a mistake. Plagiarism is "the act of passing off as one's own the ideas or writings of another." In addition, if you received specific help from someone, acknowledge it in writing (http://www.georgetown.edu/honor/plagiarism.html).

3. We adhere to the SJSU academic integrity policy.

4. Homework is due at 3:00 on Thursday. (No late papers please.)

5. I encourage you to submit questions about exercises to the group by means of the electronic bulletin board. Use descriptive subject lines when submitting questions. Form threads when responding to specific questions.

6. A sample of assigned problems are graded. The sample is determined before assignments are submitted.

7. Results should be reported neatly and should conform to *APA Publication Guidelines* for text and numbers when possible. Use *judgement* when reporting results.

8. I do not accept faxed or emailed assignments without prior permission. (In the event of an emergency, contact me before class to arrange alternative form of delivery.)

OBJECTIVES

The general objectives of the course is to improve reasoned judgement. After completion of the course, students should be able to:

1. Identify principles of measurement and study design in the application of public health studies.

2. Demonstrate reliable data management and analysis using EpiData, SPSS or other statistical software.

3. Explore and describe data using summary statistics, frequency tables, and exploratory plots.

4. Calculate and interpret confidence intervals and tests in the comparison of means, variances, correlation coefficients, regression coefficients, risk ratios, and odds ratios,

5. Identify appropriateness of statistical methods based on validity and distributional assumptions; and use or not use other methods as appropriate.

Specific curriculum is documented in the Reader.

Notation:

	Parameter	**Estimator**
Risk Ratio	ϕ (also RR)	$\hat{f}$ (also"RR hat")
Odds Ratio	ψ (also OR)	$\hat{y}$ (also "OR hat")
Variance	σ^2	s^2
Variance ratio	σ^2_1 / σ^2_2	s^2_1 / s^2_2
Mean	μ_i	$\bar{x}_i$
ANOVA	σ^2_B / σ^2_W	s^2_B / s^2_W
Mean difference	$\mu_i - \mu_j$	$\bar{x}_i - \bar{x}_j$
Correlation	ρ	r
Regression	β	b