

## **Computational Public Health Statistics (HS267)**

**Spring 2008**

San Jose State University  
Department of Health Science

**Description:** Concepts and techniques in public health study design, statistics, and data analysis.

**Prerequisite:** HS167 or equivalent.

Website: [www.sjsu.edu/faculty/gerstman/hs267](http://www.sjsu.edu/faculty/gerstman/hs267)  
Class: The class meets Thursdays from 3:15 to 5:45 [6:00] in MH 321  
Final Exam: Monday, May 19, 2008 from 2:45 to 5:00 (set by the Schedule of Classes.)  
Professor: Bud Gerstman  
[B.B.Gerstman@sjsu.edu](mailto:B.B.Gerstman@sjsu.edu)  
Phone: (408) 924-2978  
Office: MH514  
Office hours: Tu 10:30 - 11:45; Th 10:30 - 12:45 and by appointment  
Required materials: (1) Gerstman, B.B. (2008). *Basic Biostatistics: Statistics for Public Health Practice*. Jones & Bartlett: Boston.  
(2) TI-30XIIS or 80 series calculator  
(3) Quad ruled graph paper  
Recommended software: SPSS version 11 or higher (Graduate pack or Student version); EpiData WinPepi; StaTable. [Software is installed in the student labs.]

The course schedule and assignments are posted on the website.

### **Objectives**

The following objectives meet CEPH accreditation expectations. Asterisks (\*) indicate that content was introduced or covered in the pre-requisite course, HS 167.

1. Describe the roles biostatistics serves in the discipline of public health.
2. Identify principles of measurement and study design with application to public health studies.\*
3. Apply descriptive and inferential statistical techniques according to the type of study design for answering a particular research question.\*
4. Describe basic concepts of probability, random variation, and commonly used statistical probability distributions.\*
5. Distinguish between different measurement scales, and implications for selection of statistical methods to be used based on these distinctions.

6. Demonstrate reliable data management using EpiData, SPSS, and other statistical software. [Apply basics techniques with vital statistics and public health records in the description of public health characteristics and public health research and evaluation.]
7. Apply descriptive techniques to summarize public health data. Explore and describe data using summary statistics, frequency tables, and exploratory plots.
8. Apply common statistical methods of inference. Calculate and interpret confidence intervals and significance tests for comparing means, variances, risks, correlation coefficients, and regression coefficients.
9. Identify appropriateness of statistical methods based on validity and distributional assumptions. Describe methodological alternatives to commonly used statistical methods when assumptions are not met.
10. Interpret results of statistical analyses found in public health studies.
11. Apply statistical methods in examples drawn from public health practice. Develop written and oral presentations based on these statistical analyses for public health professionals and educated lay audiences.

**Academic objectives** include improving reasoned judgment, learning how to distinguish pseudoscience from real sciences, and learning the strengths and limitations of statistical analyses.

**Course Organization.** The course meets weekly for 2¾ hours. In general, the first half of class is devoted to lecture and the second half of class is devoted to lab. *It is important for you to attend every class.* If you miss a class, you are responsible for catching-up on materials covered in the missed class as soon as reasonably possible. This will require extra work and effort. Here is part of the SJSU policy on this issue: “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class”.

**Rules for collaborating** (based in part on rules for UNC course EPID600, Fall 2007, Prof. Vic Schoenbach). HS 267 encourages collaboration and group work on *selected* items. In some of my courses in the past, students have gone beyond permissible collaboration and suffered serious consequences. I truly believe that when anyone breaks these rules, the entire class suffers. The belief that others are not obeying the rules erodes confidence in the ability to trust and introduces anxieties that those who do follow the rules will be disadvantaged. Having to investigate possible cheating incidents takes instructor time away from helping students learn the material. Therefore, let us make clear these basic rules for collaboration:

1. *Exams and quizzes:* You may not use published (print or web) materials when working on either in-class or take home examinations or quizzes. You may not communicate about the examination materials, even indirectly, with anyone other than an instructor.

2. *Lab reports and odd-numbered exercises:* You may use published (print or web) materials when working on lab reports and odd-numbered exercises. You may work with anyone so long as: (a) you work on every question rather than “divide and copy” and (b) *none of the individuals involved has access to the instructor answers.*

3. *Even-numbered exercises*: You may use published (print or web) materials when working on even-numbered exercises. You may communicate about even-numbered exercises **BUT ONLY** via public discussion boards under instructor supervision.

4. *Research reports (if any)*: You may use published (print or web) materials when working on reports. You may consult with experts on specific issues but you must write your report entirely by yourself. Information received from any expert must be properly cited and must constitute no more than 25% of the paper's content.  
Do you have a question? Please ask!

**Why do we devote so much attention to the rules and ethics for collaborating on course work?** Despite the fact that intellectual honesty is essential to human learning, cheating, plagiarism, and other forms of academic dishonesty are widespread in schools and universities. For example, a recent article ("Fuqua students may face expulsion", Durham Herald-Sun, 4/28/2007, A1,A4) reported on 37 Duke business students accused of cheating on a take-home exam. The article also mentioned a Center for Academic Integrity 2002-2004 survey of American MBA students in which 56% reported having cheated.

**Academic Integrity** (from the Office of Student Conduct & Ethical Development). "Your own commitment to learning, as evidenced by your enrollment at San Jose State University, and the University's Academic Integrity Policy requires you to be honest in all your academic courses. Faculty are required to report all infractions to the office of Judicial Affairs." The SJSU policy on academic integrity can be found at [www2.sjsu.edu/senate/S04-12.htm](http://www2.sjsu.edu/senate/S04-12.htm)

**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 Schedule of Classes for details about drop procedures.

**Grades:** Your course grade is based on a weighted average of homework assignments (33%), midterms (33%), and the final exam (33%). Grade cutoffs are as follows:

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-		