

# Principles of Epidemiology (HS261)

Fall 2009

San Jose State University  
Health Science Department

**Description:** Introduction to epidemiologic concepts and methods with applications to public health practice for students intending to engage in, collaborate in, and interpret epidemiologic studies in the appraisal of disease prevention and health promotion.

Website: [www.sjsu.edu/faculty/gerstman/hs261](http://www.sjsu.edu/faculty/gerstman/hs261)  
Class: Wednesdays from 3:00 pm to 5:45 pm in MH 223  
Final exam: Wed 12/16/09 1215 – 1430  
Professor: Bud Gerstman  
Email: Please use the *Blackboard e-mail* for all course correspondence. All such correspondence will be answered within 24-hours.  
Phone: (408) 924-2978  
Office: MacQuarrie Hall 514  
Office hours: See [www.sjsu.edu/faculty/gerstman](http://www.sjsu.edu/faculty/gerstman)  
Required text: Gerstman, B.B. (2003). *Epidemiology Kept Simple* (2nd ed.) New York: Wiley-Liss.  
Calculator: Texas Instrument 30XIIS of TI-81  
Optional: Last, J. M. (Ed.) (2001). *A Dictionary of Epidemiology* (3rd ed.). New York: Oxford. (ISBN: 0195141695)

The course calendar and assignments are posted online.

**Objectives:** The following essential objectives meet CEPH accreditation expectations:

1. To explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health problems; to define basic epidemiologic terms and methods for describe disease and risk factor occurrence.
2. To apply causal concepts in the prevention of disease.
3. To apply epidemiologic principles of screening for disease.
4. To calculate and interpret basic epidemiologic measures of occurrence.
5. To calculate and interpret basic epidemiologic measures of association and potential impact.
6. To draw appropriate inferences from various types of epidemiologic studies, and to comprehend ethical principals involved in the study of human subjects.
7. To identify and assess systematic errors in public health research.
8. To communicate epidemiologic information to lay and professional audiences.

**Content:** The course covers the following material:

1. **Background and principles:** basic epidemiologic terms, uses of epidemiology, morbidity and mortality patterns in the 20<sup>th</sup> century, history of epidemiology, causal models and concepts, describing disease occurrence (“descriptive epidemiology”).
2. **Occurrence and association:** counts vs. “rates”, incidence vs. prevalence, incidence proportion (average risk), incidence rate (density), prevalence, risk difference, relative risk, attributable fraction
3. **Rate adjustment:** crude- and strata-specific rates, concept of confounding, direct method of adjustment, indirect method of adjustment.
4. **Study design:** experimental study principals and examples (clinical trial, field trial, community trial), observational study principals and examples (cross-section and ecological, cohort, case-control)
5. **From association to causation:** causal inference principals, Surgeon General’s Report of 1964, Hill’s Framework for assessing causality
6. **Screening for disease:** repeatability, kappa, validity, sensitivity, specificity, predictive value positive, predictive value negative, prior probability (prevalence), screening programs

**Grades:** There are *weekly* assignments and/or quizzes. Each assignment and quiz is worth 10 points. Your course grade will be based on these score and the final exam (50 points) based on the following cutoffs:

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-		

**Academic integrity.** Academic and intellectual integrity is essential to the mission of San José State University. Students are expected to perform their own work except when collaboration is expressly permitted by the course instructor. ***Students are not permitted to consult with students who have already taken the course or with individual outside the course on graded assignments.*** Academic integrity ensures that all students are graded fairly. Violations to academic integrity policy undermine the educational process and demonstrate a lack of respect for oneself, fellow students, the course instructor, and the disciplines of epidemiology and public health. Cheating and plagiarism ruins the university’s reputation and the value of the degrees it offers. We share the obligation to maintain an environment which practices academic integrity. Violators of the Academic Integrity Policy will be subject to failing this course and being reported to the Office of Judicial Affairs for disciplinary action which could result in suspension or expulsion from San José State University. Faculty are required to report all infractions to the Office of Student Conduct & Ethical Development (S04-12).

In some of my courses in the past, students have gone beyond permissible collaboration and suffered serious consequences. I sincerely 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. Investigating possible cheating incidents takes instructor time away from helping students learn the material.

**Rules for collaborating**

1. **Exams and quizzes:** You may *not* use any print or web materials (other than permissible formula sheets) when working on exams or quizzes. You may *not* communicate about quizzes or examinations directly or indirectly with anyone except the instructor.
2. **Exercises:** Rules for collaboration are determined on an assignment-by-assignment basis. If you are uncertain about the rules for a particular assignment, please communicate directly with Dr. G.
3. **Labs:** Students may discuss questions openly via Bb discussion threads. All discussion must be open and publicly viewable and open for debate. Private discussions are discouraged, Answers are submitted via the Assignment tool and graded using pre-coded keys. Even incorrect answers can at times receive credit as long as the response is reasonable and has a sound *scientific* basis. Avoid fabrication, hyperbole, and popular unsupported myths. ***It is a violation for any student to have access to keys distributed during prior semesters.***

If you have questions, please ask!

**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.