08-27-2004

CALIFORNIA STATE UNIVERSITY, FRESNO

Department of Health Science

HS 92 Public Health Statistics
Instructors: Dr. Michael J. Waite
Hours: M & F - 11:00 AM - 12:00 PM
E-mail: michaelw@csufresno.edu

Fall 2004
Office: McL J Wing Room 13
Phone: 278-5093

Course Description:
Introduction to descriptive and inferential statistics as applied to evaluation and research. Central tendency and dispersion; central limit theorem; hypothesis testing; ANOVA; correlation, and non-parametric methods are studied.

Course Text:

Course Objective:
The course is designed to promote learning, understanding, and motivate students in the field of descriptive and inferential statistics by presenting statistics in a context that relates to their experiences. The purpose of the course is to assist students in comprehending professional research and to give them competency in conducting and analyzing research that they would conduct.

Student Outcomes:
By the end of the course the student will be able to:

- Present and describe sets of data.
- Calculate and interpret the four basic types of descriptive statistics. (Measures of central tendency, dispersion, position, and types of distributions.)
- Analyze bivariate data.
- Apply the rules of probability.
- Identify, interpret, and use normal probability distributions.
- Identify and explain the measures and patterns of variability.
- Employ the basic concepts of estimation and hypothesis testing.
- Perform and use types of inferences concerning population parameters, proportions, and standard deviations.
- Execute and use the chi-square distribution.
- Comprehend and use the single-factor analysis of variance technique (ANOVA).

Calculators:
A handheld calculator is necessary for each class meeting. Any inexpensive pocket calculator that computes means, standard deviations and square roots is adequate. You are responsible for learning how to operate it.
Grading Scale:
Grades are based on the total scores of all exams and assigned homework or video critiques.

A = 90 - 100%
B = 80 - 89%
C = 70 - 79%
D = 60 - 69%
F = 59% and below

Three tests and the final exam are weighted approximately the same, 25 points or 20%. All homework and classroom assignments are equivalent to one test, 25 points or 20%.

No make-up of homework or tests will be given. If you are absent on a test day please contact me as soon as possible. The makeup of tests, homework, and classroom assignments are possible if there is a valid excuse. Any exemptions are based upon the validity of need for an extension due to the extenuating circumstances involving each incident. The instructor reserves the right to approve or not approve all requests for course requirement extensions. This is based upon a one-on-one discussion between the instructor and the student.

Cheating and Plagiarism:
All policies that are stated within the CSUF general catalog regarding plagiarism and cheating will be enforced.

Cheating. Cheating is the practice of fraudulent or deceptive acts for the purpose of improving a grade or obtaining course credit. Typically, such acts occur in relation to examinations. It is the intent of this definition that the term cheating not be limited to examinations situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means.

Plagiarism. Plagiarism is a specific form of cheating that consists of the misuse of the published and/or unpublished works of another by representing the material so used as one's own work.

Student Disabilities:
The Department of Health Science cooperates with the Office of Services for Students with Disabilities (SSD) to make reasonable accommodations for qualified students with disabilities (cf. American with disabilities Act and Section 504, rehabilitation act). If you have not registered with SSD, you are encouraged to do so. After meeting with the SSD counselor, present your written Accommodation Request to me as soon as possible so we may accommodate your request.
Schedule:
Reading assignments and homework will be discussed during the first class meeting of each week. Classroom exercises will be assigned and as a rule completed on Wednesdays. Classroom exercises may be individually or group assigned. All students (you) are responsible to keep up with all textbook readings and exercises within the text that are pertinent to the assignments in each chapter. Test dates will be announced at least one week prior to the exam.

Tentative Reading & Exam Schedule:
CHAPTER 1-STATISTICS
• 1.1 What is statistics
• 1.2 Introduction to basic terms
• 1.3 Measurability and variability
• 1.4 Data collection
• 1.5 Comparison of probability and statistics

CHAPTER 2-DESCRIPCITIVE ANALYSIS & PRESENTATION OF SINGLE-VARIABLE DATA
• 2.1 Graphs, pareto diagrams, and stem-and-leaf displays
• 2.2 Frequency distributions, histograms and ogives
• 2.3 Measures of central tendency
• 2.4 Measures of dispersion
• 2.5 Mean and standard deviation
• 2.6 Measures of position
• 2.7 Interpreting and understanding standard deviation
  ** #1 EXAM

CHAPTER 6-NORMAL PROBABILITY DISTRIBUTIONS
• 6.1 Normal probability distributions
• 6.2 The standard normal distribution
• 6.3 Applications of normal distributions
• 6.4 Notation

CHAPTER 7-SAMPLE VARIABILITY
• 7.1 Sampling distributions
• 7.2 The central limit theorem
• 7.3 Application of the central limit theorem
  ** #2 EXAM

CHAPTER 8-INTRODUCTION TO STATISTICAL INFERENCES
• 8.1 The nature of estimation
• 8.2 Estimation of \( \mu \) (\( \sigma \) known)
• 8.3 The nature of hypothesis testing
• 8.4 The hypothesis test (a probability-value approach)
• 8.5 The hypothesis test (a classical approach)
CHAPTER 9-INFERENCES INVOLVING ONE POPULATION
• 9.1 Inferences about the population mean (μ unknown)
• 9.3 Inferences about variance and standard deviation

CHAPTER 10-INFERENCES INVOLVING TWO POPULATIONS
• 10.1 Independent and dependent samples
• 10.2 Inferences concerning the mean difference between two dependent samples
• 10.3 Inferences concerning the mean difference between two independent samples
• 10.4 Inferences concerning the ratio of variances between two independent samples

**#3 EXAM

CHAPTER 11-ADDITIONAL APPLICATIONS OF CHI-SQUARE
• 11.1 Chi-square statistic
• 11.2 Inferences concerning multinomial experiments
• 11.3 Inferences concerning contingency tables

CHAPTER 3-DESCRIPTIVE ANALYSIS AND PRESENTATION OF BIVARIATE DATA
• 3.1 Bivariate data
• 3.2 Linear correlation
• 3.3 Linear regression

CHAPTER 12-ANALYSIS OF VARIANCE
• 12.1 Introduction to the ANOVA technique
• 12.2 The logic behind ANOVA
• 12.3 Applications of single-factor ANOVA

**FINAL EXAM – MWF 9:00am class, December 13th@ 8:45am, and MWF 10:00am class, December 15th @ 8:45am

As a courtesy to others in class please turn the ringer off on all cell phones and/or pagers. Violations of this matter will be considered as inappropriate student behavior and will be submitted for disciplinary action.