Course Outline

Course: Stat 1: Introduction to Statistics
Professor: Abe Mirza

Office Hours: Tue/Thu 5:15 - 6:30 and Thu 3:30 – 4:00 (BRH:121) MATH LAB: Free math help (BRH:118)


Catalog Description: Descriptive statistics, basic concepts of probability and sampling with the aim of introducing fundamental notions and techniques of statistical inference. Students will be given periodic writing assignments, which encourage them to express various concepts of the course.

Class website: http://www.csus.edu/indiv/m/mirzaagham/stat/
Email: abemirza@csus.edu In emailing me in subject line indicate your section by CS12, or CS13

YOU NEED TO GO TO MY WEBSITE,
1) TO PRINT COURSE MATERIALS
2) CHECK THE ANNOUNCEMENT AND YOUR CLASS REPORT ON REGULAR BASIS.

Prerequisites: Math 9 or three years of high school mathematics that includes two years of algebra and one year of geometry; passing score on the ELM and the Intermediate Algebra Diagnostic.

Pass the Intermediate Algebra Diagnostic exam (IAD) with a score of 29 or higher by the end of the first week (The result is good for only ONE year. Go to the Math lab BRH 118 to sign up for the IAD tests during the first week). Students with scores in the range of 27-31 will be admitted provisionally; any provisionally admitted student, who receives a Not Pass sixth week report must drop the course at that time.

Very Important: If you do not have taken IAD or your score is not the minimum, or has been more than a year that you took IAD, be sure you use the link below to make an appointment to take IAD.
IAD info: http://www.csus.edu/math/courses/diagnostic.htm

Drop Policy: Please check the below link for Math Dept. Drop Policy http://www.csus.edu/math/policies/drop.pdf

Learning Objectives: Introduce the terminology and methods employed in descriptive statistics. Establish a foundation in the concepts of probability and sampling. Extend these ideas to inferential statistics and various hypothesis tests.

Area B-4 Mathematical Concepts and Quantitative Reasoning Student Learning Outcomes. Students will be able to:
A) Solve problems by thinking logically, making conjectures, and constructing valid mathematical arguments.
B) Make valid inferences from numerical, graphical and symbolic information.
C) Apply mathematical reasoning to both abstract and applied problems, and to both scientific and non-scientific problems.

Writing Component: STAT 1 satisfies Area B4 of the GE requirements. Students are advised to practice interpreting the results of statistical analyses using technical and non-technical language while solving assigned word problems dealing with real life situations. Class discussions will emphasize this writing component requirement of the course through the above criterion.

Students will be able to:
A. Solve problems by thinking logically, making conjectures, and constructing valid mathematical arguments.
B. Make valid inferences from numerical, graphical and symbolic information.
C. Apply mathematical reasoning to both abstract and applied problems, and to both scientific and non-scientific problems.
Expectations: I expect that you
• Come to class on time and remain the entire time
• Come to class prepared. This includes, but is not limited to, the following: reading the sections prior to class; bringing a calculator to class; keeping up with homework
• Turn off all electronic devices, except your graphing calculator, during class
• Be respectful to others in the classroom
• Do all the assigned homework on time
• Ask questions when you do not understand

The course is divided into 4 parts.

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<th>Part 1</th>
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<th>Part 3</th>
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<tr>
<td>Descriptive Statistics</td>
<td>Probability</td>
<td>Central Limit Theorem</td>
<td>Test of Hypothesis</td>
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<td>Linear Regression</td>
<td>Binomial Probability</td>
<td>Estimation</td>
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<td>Basic Probability</td>
<td>Normal Distribution</td>
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<td>Q1-Q4</td>
<td>Q5-Q7</td>
<td>Q8-Q11</td>
<td>Q12-Q15</td>
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<td>Test 1</td>
<td>Test 2</td>
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Required Material: 1. A two-variable statistics calculator (TI-83/84 model) 2. Regular Graph Paper 3. A binder

Quizzes: There will be 15 quizzes plus one as extra credit, each for 10 points or more. If your absent is unexcused, absolutely there will not be a make up for missing quizzes. If you miss a quiz by any unexcused reason, then you will be receiving a zero score for that missing quiz. Be sure you try to do practice quizzes posted on the class website before each quiz.

Homework: All four homework are posted on my web. The due date will be announced in class or will be posted on the announcement link. YOU ARE STRONGLY ADVISED TO DO ALL THE HOMEWORK PROBLEMS. Absolutely, after the due date no homework will be accepted. If you miss submitting homework on due date, by any unexcused reason, you will be receiving a zero score for late homework.

Tests: There will be a total of 4 tests (excluding final) given for the entire semester. All the tests weigh 100 points. If your absent is unexcused, absolutely there will not be a make up for missing tests. If you miss a test by any unexcused reason, then you will be receiving a zero score for that missing test.

Final will be comprehensive and will worth 200 points

Academic Honesty:
Each student is responsible for understanding the policies on academic honesty set forth by CSUS Policies. Any student found in violation of these policies will be held strictly accountable. Please remember that using a "term paper service" or having another student write your paper is plagiarism. Use of the instructor’s copy of the text is considered a violation of the academic honesty policy.

Points Distribution

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<tr>
<th>Points Distribution</th>
<th>Grade Distribution</th>
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<tr>
<td>Projects</td>
<td>A 90.5 - 100%, A- 87.5 - 90.4%, B+ 84.5 - 87.4%, B 80.5 - 84.4%, B- 77.5 - 80.4%, C+ 74.5 – 77.4%, C 70.5 – 74.4%, C- 67.5 – 70.4%, D+ 64.5 – 67.4%, D 60.5 – 64.4%, D- 57.5 – 60.4%, F 57.4% and below</td>
</tr>
<tr>
<td>Quizzes</td>
<td>150 Points</td>
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<tr>
<td>Homework</td>
<td>80 Points</td>
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<tr>
<td>Tests:4@100</td>
<td>400 Points</td>
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<tr>
<td>Final:</td>
<td>200 Points</td>
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<td>Total:</td>
<td>850 Points</td>
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Grading Policy:

Final examination:

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<th>Class Day(s)</th>
<th>Section</th>
<th>Fall Exam Day</th>
<th>Exam Time</th>
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<tr>
<td>TR</td>
<td>Section 12</td>
<td>Thu, May 18</td>
<td>10:15 - 12:15</td>
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<td>TR</td>
<td>Section 13</td>
<td>Tue, May 16</td>
<td>12:45 - 2:45</td>
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Extra Credit: You must watch the videos lessons posted on Lecture videos links on class website and write (type) a summery for each one. They are also due on the same day that HW for each part is due.
For part 1: lessons 1 through 25. For 10 extra credit points. A minimum of 2 pages single-spaced typed
For part 2: lessons 26 through 29. For 5 extra credit points. A minimum of 1.5 pages single-spaced typed
For part 3: lessons 30 through 34. For 5 extra credit points. A minimum of 1.5 pages single-spaced typed
For part 4: lessons 35 through 37. For 5 extra credit points. A minimum of 1.5 pages single-spaced typed

Topics covered: Stat 1

I. Descriptive Statistics (3 1/2 weeks)
1. What is statistics?
2. Basic terminology and concepts
3. Graphical presentations of statistical data
4. Frequency distributions, histograms, and ogives
5. Measures of central tendency
6. Measures of variability
7. Measures of position
8. Bivariate data and scatter diagrams
9. Linear correlation
10. Linear regression

II. A Probability (IIA 2 weeks)
1. Experiments, sample space, events
2. Different approaches to probability
3. Probability axioms
4. Rules of probability:
   a. generalized addition rule
   b. complement rule
5. Conditional probability, independence, and the multiplication rule
   * 6. Bayes' rule

II. B Discrete Random Variables (IIB 2 weeks)
1. Random variables and their probability distributions
2. Connection between relative frequency distributions and probability distributions of discrete random variables
3. Mean and variance
4. The binomial probability distribution
   * 5. Using the binomial distribution tables; mean and variance of the binomial distribution

III. A The Normal Probability Distribution (IIIA 3 weeks)
1. Continuous random variables
2. The normal distribution
3. The standard normal distribution
4. Normal approximation of the binomial distribution
   * 5. Digression: How to MINITAB!
6. Sampling distributions
7. The Central Limit Theorem and its applications

III. B Inference (4 1/2 weeks)
1. Introduction to inference - estimation and testing of hypotheses
2. Point and interval estimation
3. Testing statistical hypotheses:
   a. Type I and Type II errors
   b. Critical regions
c. p-values
4. Inferences concerning one population
   a. Tests and confidence intervals for the population mean (large and small samples).
   b. Tests and confidence intervals for proportions
   c. Inference about the population variance
5. Inferences concerning two populations
   a. The differences of two means (large and small samples)
   b. Paired t-tests and the pooled t-test
   c. The difference between two proportions
   d. The ratio of two variances
6. Uses of chi-square statistics
   a. Tests of goodness of fit
   b. Contingency tables
* 7. Introduction to one-way ANOVA
* 8. Nonparametric methods
MATHEMATICS AND STATISTICS DEPARTMENT

DROP POLICY

PRINCIPLES:

1. In registering for a class, the student makes a definite commitment to attend and complete the course.
2. In offering a course, the University and department make a definite commitment to provide, through instruction in the subject matter, the opportunity to learn.

ATTENTION STUDENTS: Although instructors may exercise their ability to administratively drop any student who fails to attend during the first two weeks of instruction or to satisfy prerequisites for the course (e.g., diagnostic exam, coursework), it is your responsibility to drop the course. If you fail to drop officially, you will receive a final grade of "F" or "WU" in the class.

I. Dropping SELECTED Classes:

A. DROPPING DURING THE FIRST FOUR WEEKS - Deadline: Census Date (Friday, February 17, 2017).
   • Until the end of the second week of instruction, students are expected to drop courses by using "My Sac State" (https://www.my.csus.edu).
   • During the third and fourth weeks, students may drop any mathematics or statistics course by submitting a signed drop permit to the Mathematics Department Office in BRH 141. You will not receive a "W" if you drop during this time. Students submitting a drop permit should check on "My Sac State" that the course has been dropped from their schedule prior to the 5:00 pm deadline on the Census Date.

   Drops after the fourth week of the semester (census date) are called withdrawals. The approved PETITION TO ADD/DROP/WITHDRAW FROM COURSES AFTER DEADLINE must be submitted to the Registrar’s Office (Lassen Hall) after the fourth week. Withdrawals will result in a "W" grade.
   • It is the student’s responsibility to obtain signatures and submit the petition in Lassen Hall.
   • Students may withdraw from no more than 18 units in their undergraduate career unless an exception is granted (any “W” grades received prior to the Fall 2010 semester do not count towards the 18 unit maximum).
   • Withdrawals after the fourth week of the semester are granted only for “serious and compelling” reasons. Withdrawal during the 5th and 6th week of the semester requires the signature of the course instructor and the department chair. Reasons for dropping during this period include medical, carrying an excessive course load, student’s inadequate academic preparation for the course, or the student having significant job or career changes.

C. DROPPING AFTER THE SIXTH WEEK
   • Withdrawal during the 7th through the 12th week requires the signature of the course instructor, the department chair, and the college dean. Reasons for withdrawal during this period include medical or work related reasons clearly beyond the control of the student; a student initiated job change, carrying an excessive course load or inadequate preparation does not qualify.
   • Withdrawal is allowed after the 12th week of instruction only in exceptional cases, such as in cases of accident or serious illness where the cause is due to circumstances beyond the student’s control. All signatures are required and the student must meet with an Academic Advisor in the Academic Advising Center. Withdrawals approved during the last three weeks of the semester will not count towards the 18 unit maximum; however, a grade of “W” is still recorded on the transcript.

The performance of each student enrolled in a mathematics or statistics class will be evaluated by the class instructor no later than Wednesday of the sixth week of instruction and each student shall be informed of his/her performance using the A, B, C, D, F standard by Friday of the sixth week of classes.

Beginning Monday of the seventh week of classes, students will be allowed to drop a class ONLY IF

1. The student is passing the course with a grade of A, B, or C
   AND
2. The student provides documentation on letterhead for career or medical excuse.

II. Dropping ALL Classes (Total Withdrawal From The University)

In accordance with University policy students who are withdrawing from the University (dropping their entire schedule) will have permission to drop any mathematics or statistics class. Students wishing to withdraw from all courses should fill out the SEMESTER WITHDRAWAL FORM. For further information on withdrawal procedures, see ‘Registration/Enrollment’ procedures in the latest CSUS Catalog.

Please check your class schedule on My Sac State by Thursday, February 16th to verify your enrollment. This will allow you one day to make corrections, if needed, before the deadline.

- Adding after the 4th week of classes is allowed only under extenuating circumstances. (Not knowing you were not enrolled is not an extenuating circumstance.)