Course Outline

Course: Stat 300 Hybrid (Introduction to Probability and Statistics) transferable to UC/CSU

Prof. Abe Mirza

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Class website: http://ic.arc.losrios.edu/~mirzaam/Statistics/

Course Prerequisite: MATH 120, 124, or 125 with a grade of "C" or better.

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Learning Outcomes and Objectives: ***Upon completion of this course, the student will be able to:***

- organize and display data appropriately using tables and graphs.
- analyze data by computing measures of central tendency, measures of dispersion, and measures of position.
- analyze bivariate data for linear trends using the least-squares regression model and the correlation coefficient.
- distinguish between probability models appropriate to different chance events and calculate probability according to these methods.
- analyze both discrete and continuous probability distributions, including binomial probability and normal distributions, by examining and interpreting areas under the graph of a histogram or a normal curve.
- apply inferential statistical methods to compare population parameters, make predictions, and draw conclusions about hypotheses.
- select the appropriate hypothesis test, perform the necessary computations and comparisons for the test, and explain the conclusion of the test.
- test the significance of correlation and make predictions based on linear trends using the least-squares regression model.
- create and interpret confidence interval estimates for population parameters based on appropriate probability models.
- use statistical software to calculate single-variable and two-variable statistics and analyze the results.

Text Book(Optional): Elementary Statistics by Larson 12 edition **ISBN:** 9780321693624

YOU NEED TO GO TO MY WEBSITE,

1) TO **PRINT** COURSE MATERIALS
2) **CHECK** THE **ANNOUNCMENT** (on a **daily bases**) AND YOUR **CLASS REPORT** ON REGULAR BASIS.
3) BE SURE YOU **REFRESH** THE WEBSITE PAGES **(BY USING F5 KEY)** EACH TIME YOU GO TO MY WEBSITE

Required Material:

1. A two- variable statistics calculator (TI-83 or TI 84) All the lecture references will be on these 2 types.
2. Regular Graph Paper
3. A binder (yes a binder)
4. 8 sheets of 882E Scantron and 15 sheets of 815 Scantron

This is a 4-**unit class**.
By college standards, the course requires 2 hours of outside work per week per unit. But because it is a hybrid, **you in order to succeed are expected to work 16 hours per week outside of class.**

The course is divided into 4 parts.
Important: You need to go to my website and download the pages related to each part.

Part 1	**Part 2**	**Part 3**	**Part 4**
Descriptive Statistics Linear Regression Basic Probability	**Probability Binomial Probability Normal Distribution**	**Central Limit Theorem Estimation**	**Test of Hypothesis**
Q1-Q4	**Q5-Q7**	**Q8-Q11**	**Q12-Q15**
Test 1	**Test 2**	**Test 3**	**Test 4**

Attendance Requirements: Attendance **I**s **M**andatory! (**AIM**)

I expect each student to be fully prepared to participate in each class session.
If your name appears on the roster as being enrolled in this course, it is your responsibility to follow the proper procedures, in a timely manner, if you decide to withdraw. Acquaint yourself with the dates for withdrawing and any associated financial requirements as detailed in the school catalog.
The instructor may drop students for not attending class for a total of 2 unexcused absences during the summer term. Such drop is purely within the discretion of the instructor, if you decide not to continue at any time, you must officially withdraw, do not count on, nor ask the instructor, to drop you. At the end of the term, the instructor MUST issue a grade to all students listed on the final roster.
An "**excuse**" is an official document from either your physician or the school Health Center attesting to your inability to attend class on the meeting date(s) in question.

Please remember coming late or leaving early will be counted absent.

Quizzes:
There will be 15 quizzes 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.

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 3 tests 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.

Only for excused absences (Doctor Notes, etc.) a **make-up** test will be given.

Final will be the last test and will worth 200 points

Academic Honesty

Each student is responsible for understanding the policies on academic honesty set forth by American River College and the Los Rios Community College District. Any student found in violation of these policies will be held strictly accountable. Cheating is submitting for credit the work of another as your own. (Allowing another to submit your work as their own is also cheating.) Cheating will not be tolerated.
There are severe penalties for cheating. Worse, cheating deprives you of an education.
• Do not "glance" at other quizzes or exams.
• Do not "chat" during quizzes or exams.
As student, your goal is conceptual understanding that allows you to solve problems in other settings. When asked, you will be able to explain your reasoning in your own words and solve similar problems.

Classroom etiquette:

Learning requires a respectful exchange of ideas. Everyone will treat each other with respect at all times. You are here to learn, as are your classmates.
Please respect the following rules:
• Be respectful of others.
• Turn off pagers and cellular phones.
Absolutely **no use of cell phone** or **texting** in the entire class period.
• Arrive on time; leave after class is dismissed.
• Listen when others are speaking.

Points Distribution **Grading Policy**:

Projects	20 points			
Quizzes	150 Points		A	90% - 100% of possible points
Homework	80 Points		B	80% - 90% of possible points
Tests:3@100	400 Points		C	70% - 79% of possible points
Final:	200 Points		D	60% - 69% of possible points
Total:	**650** Points		F	0% - 59% of possible points

The total counted points for the course will be **850** points..

Amendments: I reserve the right to alter this syllabus to conform to Los Rios Community College District Policies, state law, or to improve the quality of education offered by the class. Any changes will be announced in class.

Important Days

Last Day to Drop Class to Qualify for a **Refund** for Enrollment and Tuition Fee	**Sep 07**
Last Day to Drop Class **Without Notation** on Record	**Sep 09**
Last Day to Drop Class with a **"W" Grade**	**Nov 20**

Final: On the last day of the class **Dec:14** Same room Same time

COURSE COVREAGE

1.0 Introduction to Statistics

1.1 Overview
1.2 Types of Data
1.3 Critical Thinking

2.0 Describing, Exploring, and Comparing Data

2.1 Overview
2.2 Frequency Distributions
2.3 Visualizing Data
2.4 Measures of Center
2.5 Measures of Variation
2.6 Measures of Relative Standing
2.7 Exploratory Data Analysis (EDA)

3.0 **Probability**

3.1 Overview
3.2 Fundamentals
3.3 Addition Rule
3.4 Multiplication Rule: Basics
3.5 Multiplication Rule: Complements and Conditional Probability

4.0 Probability Distributions

4.1 Overview
4.2 Random Variables
4.3 Binomial Probability Distributions
4.4 Mean, Variance and Standard Deviation for the Binomial Distribution

5.0 Normal Probability Distributions

5.1 Overview
5.2 The Standard Normal Distribution
5.3 Applications of Normal Distributions
5.4 Sampling Distributions and Estimators
5.5 The Central Limit Theorem
5.6 Normal as Approximation to Binomial

6.0 Estimates and Sample Sizes

6.1 Overview
6.2 Estimating a Population Proportion
6.3 Estimating a Population Mean: σ Known
6.4 Estimating a Population Mean: σ Not Known

7.0 Hypothesis Testing

7.1 Overview
7.2 Basics of Hypothesis Testing
7.3 Testing a Claim About a Proportion
7.4 Testing a Claim About a Mean: σ Known
7.5 Testing a Claim About a Mean: σ Not Known

8.0 Inferences from Two Samples

8.1 Overview
8.2 Inferences About Two Proportions
8.3 Inferences About Two Means: Independent Samples
8.4 Inferences from Matched Pairs

9.0 Correlation and Regression

9.1 Overview
9.2 Correlation
9.3 Regression

10.0 Chi-Square and Analysis of Variance

10.1 Overview
10.2 Multinomial Experiments: Goodness-of-Fit
10.3 Contingency Tables: Independence and Homogeneity
10.4 Analysis of Variance