**CALIFORNIA STATE UNIVERSITY, HAYWARD**

**DEPARTMENT OF STATISTICS**

**STATISTICS 3502/6304**

**Spring 2015**

**Lecture:** TTh 2-3:50 ScN 221

**Instructor:** Prof. Eric A. Suess **Office:** ScN 221 **Phone:** 885-3879 **e-mail:** eric.suess@csueastbay.edu

**Office Hours:** TTh 1:00-2:00 or by appointment

**My Website:** <http://www.sci.csueastbay.edu/~esuess/classes/Statistics_3502/sta3502.htm>

**Required Text:**

* Ott and Longnecker, Statistical Methods and Data Analysis 6th ed, Brooks/Cole CENGAGE Learning, 2010.

**Material To Be Covered:**

* Basic Statistical Concepts: population, sample, variability, distribution, statistical reasoning
* Types of Data: quantitative, qualitative
* Descriptive Statistics: graphical methods (pie chart, bar graph, stem-plot, histogram, scatterplots) and numerical methods (mean, median, mode, percentiles, quantiles, variance, standard deviation, IQR)
* Basic Probability Concepts: sample space, outcome, event, probability, mutually exclusive, additive rule, independence, multiplication rule
* Probability Models: discrete models (binomial), continuous models (normal, t, exponential), expectation, variance
* Sampling and Sampling Distributions: simple random sampling (SRS), Central Limit Theorem (distribution of the sample mean)
* Statistical Inference: confidence level, confidence intervals, statistical significance, hypothesis tests
* Linear Regression: correlation, least-squares regression line, hypothesis testing for model significance
* Chi-square Tests: Test of Homogeneity, Test of Independence
* Analysis of Variance: Comparison of many group means

**Homework:** A list will also be on the website.

**Quizzes and Exams:** Two short quiz, two midterms will be given and the final. You are expected to bring a calculator with you to all exams and your Student I.D. for identification.

**Grading:**

* Homework 10%
* Quizzes 5%
* Projects 10%
* Midterm I 25%
* Midterm II 25%
* Final 25%

**Policy on Make-up Exams:** You are expected to take the quizzes and exams at the scheduled times. In case of genuine emergency, illness or hardship, for which you can present written documentation I may agree to arrange for a make-up exam. Make-up exams must always be arranged BEFORE the regular exam is given and always take place AFTER the regular exam. Quizzes *may not* be made up!

**Stat 3502 SLOs**

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| **Student Learning Outcomes (SLO's):** |  |  |  |  |
| Students graduating with an B.S. in Statistics from Cal State East Bay will be able to: |  |  |  |
| 1. Apply basic computational skill in descriptive statistics and graphical displays; hypothesis testing and confidence intervals; modeling and error analysis |
| 2. Communicate to others results involving descriptive statistics and graphical displays; hypothesis testing and confidence intervals; modeling and error analysis |
| 3.Analyze data using appropriate statistical computer software and to interpret the results covering descriptive statistics and graphical displays; hypothesis testing and confidence intervals; modeling and error analysis |

**Stat 6304 SLOs**

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| **Student Learning Outcomes (SLO's):** |  |  |  |  |
| Students graduating with an M.S. in Statistics from Cal State East Bay will be able to: |  |  |  |
| 1. Apply statistical methodologies, including a) descriptive statistics and graphical displays, b) probability models for uncertainty, stochastic processes, and distribution theory, c) hypothesis testing and confidence intervals, d) ANOVA and regression models (including linear, and multiple linear) and analysis of residuals from models and trends. |
| 2. Derive and understand basic theory underlying these methodologies |
| 3. Formulate and model practical problems for solutions using these methodologies |
| 4. Produce relevant computer output using standard statistical software and interpret the results appropriately |
| 5. Communicate statistical concepts and analytical results clearly and appropriately to others; and |
| 6. Understand theory, concepts, and terminology at a level that supports lifelong learning of related methodologies. |