Revised: Fall 2016

MTH 157
ELEMENTARY STATISTICS

COURSE OUTLINE

Prerequisites:

Completion of MTE 1-5 or placement into MTH 157 on the Virginia Placement Test (VPT).

Course Description:

Presents elementary statistical methods and concepts including descriptive statistics, estimation, hypotheses testing, linear regression, and categorical data analysis. Credit will not be awarded for both MTH 157 and MTH 241.

Semester Credits: 3 **Lecture Hours: 3 Lab/Recitation Hours: 0**

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Course Outcomes

At the completion of this course, the student should be able to:

1. **Interpret graphical representations of data and draw appropriate conclusions.**
2. **Construct graphical representations given univariate or bivariate data sets (this can be done using a statistics package).**
3. **Analyze data sets either by calculating descriptive statistics or using descriptive statistics such as mean, median, mode, range, variance, and standard deviation.**
4. **Calculate and interpret problems involving various types of probabilities (including binomial probabilities).**
5. **Make use of various types of probability distributions (including the normal distribution) to perform statistical analysis.**
6. **Make use of point estimates to construct a confidence interval and give a reasonable interpretation of the interval.**
7. **Perform a hypothesis test and make the appropriate conclusions about the claims from the results of the test procedure.**
8. **Use a linear regression model to analyze quantitative, bivariate data and make conclusions from the analysis.**
9. **Analyze categorical data using tables and inferential methods.**

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Required Materials:

Textbook:

A First Course In Statistics, 11th Edition (McClave/Sincich) with MINITAB Student Version 15 (ISBN-13: 9780321656353).

The following supplementary materials are available but not required:

1. Scientific Calculator Suggestions: TI-30XII, Casio FX-300MSPlus, or FX-300ES.
2. Student Solutions Manual
3. Skill Builder CD that accompanies the textbook

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Topical Description: (Outline chapters and sections to be covered in the book – may include timeline)

Topics	Chapter
1. Statistics, Data, and Statistical Thinking	1
2. Methods for Describing Sets of Data	2
3. Probability	3
4. Random Variables and Probability Distributions	4
5. Inferences Based on a Single Sample (Confidence Intervals)	5
6. Inferences Based on a Single Sample (Hypothesis Testing)	6
7. Comparing Population Means (ANOVA Optional)	7
8. Comparing Population Proportions	8
9. Simple Linear Regression	9

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Notes to Instructors

1. If sufficient time exists you may want to cover ANNOVA.
2. An out of class project should be given.
3. A final exam is required.

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