

MAT 152 Statistical Methods I

COURSE DESCRIPTION:

Prerequisite(s): Take One Set:

Set 1: DMA-010, DMA-020, DMA-030, and DRE-098

Set 2: DMA-010, DMA-020, DMA-030, and ENG-002

Set 3: DMA-010, DMA-020, DMA-030, and BSP-4002

Set 4: DMA-025, and DRE-098

Set 5: DMA-025, and ENG-002

Set 6: DMA-025, and BSP-4002

Set 7: MAT-003 and DRE-098

Set 8: MAT-003 and ENG-002

Set 9: MAT-003 and BSP-4002

Set 10: BSP-4003 and DRE-098

Set 11: BSP-4003 and ENG-002

Set 12: BSP-4003 and BSP-4002

Corequisite(s): MAT 052

This course provides a project-based approach to the study of statistics. It covers the following topics: Descriptive Statistics, Probability, and Inferential Statistics. The course is designed to provide students with a solid foundation in statistical methods and their applications. The course is divided into two semesters, with the first semester covering Descriptive Statistics and Probability, and the second semester covering Inferential Statistics. The course is taught in a lecture format, with students participating in group projects and presentations. The course is approved by the American Statistical Association (ASA) and the American Society for Quality (ASQ).

- III. Numerically Summarizing Data
 - A. Measures of Central Tendency
 - B. Measures of Dispersion
 - C. Measures of Position and Outliers
 - D. The Five-Number Summary and Boxplots

- IV. Probability
 - A. Probability Rules
 - B. The Addition Rule and Complements

- V. Discrete Probability Distributions
 - A. Discrete Random Variables
 - B. The Binomial Probability Distribution

- VI. The Normal Probability Distribution
 - A. Properties of the Normal Distribution
 - B. Applications of the Normal Distribution

- VII. Sampling Distributions
 - A. Distribution of the Sample Mean
 - B. Distribution of the Sample Proportion

- VIII. Estimating the Value of a Parameter Using Confidence Intervals
 - A. Estimating a Population Proportion
 - B. Estimating a Population Mean

- IX. Hypothesis Tests Regarding a Parameter
 - A. The Language of Hypothesis Testing
 - B. Hypothesis Tests for a Population Proportion
 - C. Hypothesis Tests for a Population Mean

- X. Inferences on Two Samples
 - A. Inferences about Two Population Proportions
 - B. Inferences about Two Means: Dependent Samples
 - C. Inferences about Two Means: Independent Samples

- XI. Describing the Relation Between Two Variables
 - A. Scatter Diagrams and Correlation
 - B. Least Squares Regression

- XII. Oral and Written Presentation of statistical results/analysis throughout the course

REQUIRED TEXTBOOK AND MATERIAL:

The textbook and other instructional material will be determined by the chair/instructor.