



Division: Science/Mathematics **Area:** Mathematics
Course Number: MATH 162 **Course Name:** Introduction to Statistics
Prerequisite: MATH 151 or 157 or 159 or 164 or 171 or 172
or 251 or 271 or 273 or two years high school Algebra
Corequisite: NONE
Hours Required: **Class:** 45 **Lab:** 0 **Credits:** 3 (three)

Course Description/Purpose

A basic course to acquaint the student with the theory and application of statistical methods to engineering, health, social and business problems. Topics considered are graphical representation of data, central tendency measures, bivariate data, probability, distribution, sampling, hypothesis testing and correlation aspects. Out of classroom use of microcomputers will be expected.

Major Units

- Orientation and Introduction
- Measures of Variability
- Graphical Representation of Data
- Measures of Central Tendency, Dispersion and Position
- Variability and Two Measures of Variability (Correlation, Regression)
- Probability
- Probability Distribution
- Normal Distributions
- Distributions of Sample Sums and Sample Means
- Statistical Inference, Decision Making and Hypothesis Testing
- Estimation
- The t Distribution and the t Tests
- Independence and the Chi Square Distribution
- Analysis of Variance
- Regression, Prediction and Correlation
- Nonparametric Statistical Tests

Educational/Course Outcomes

Student learning will be assessed by a variety of methods, including, but not limited to, quizzes and tests, journals, essays, papers, projects, laboratory/clinical exercises and examinations, presentations, simulations, portfolios, homework assignments, and instructor observations.

- Cognitive** Each student will be expected to *Identify/Recognize*. . .
- a conceptual understanding of the descriptive and test statistics covered in this course;
 - given a practical problem, choose from a number of research and experimental designs, the one most appropriate problem.

- Performance** Each student will be expected to *Demonstrate/Practice*. . .
- given raw data, select and apply the appropriate statistics (formulas and tables) warranted by the nature of the particular study, i.e., hypothesis testing, correlational investigations, surveys, descriptive data summaries, etc.;
 - apply the laws of probability to sampling and decision problems;
 - use a computer and appropriate software to determine and display statistical results.