

## ***Topic Syllabus for Principles of Statistics***

*All course topics will concentrate (primarily) on the use of technology for calculations. There will be a special emphasis placed upon using and selecting sound statistical techniques that are appropriate for the problem at hand. The course will also focus on correct and thorough interpretation of the results of each statistical method.*

### **Introduction to Statistics**

Types of data, critical thinking, and sampling methods

### **Summarizing and Graphing Data**

Frequency distributions, histograms, and statistical graphs

### **Statistics for Describing, Exploring and Comparing Data**

Measures of center, measures of variation, measures of relative standing, and boxplots

### **Probability**

Basic concepts, addition rule, multiplication rule, and counting principles

### **Discrete Probability Distributions**

Random variables, discrete probability distributions, and descriptive statistics for distributions

### **Normal Probability Distributions**

Standard normal distribution, applications of the normal distribution, sampling distributions, biased and unbiased estimators, and the central limit theorem

### **Estimates and Sample Sizes**

Estimating one population parameter or the difference between two population parameters using confidence intervals

### **Hypothesis Testing**

Basics of hypothesis testing and testing a claim about one population parameter or the difference between two population parameters

### **ANOVA**

An extension of one sample and two sample hypothesis testing covering the fundamental concepts of the One-Way ANOVA and the Two-Way ANOVA

### **Correlation and Regression**

Correlation, simple and multiple linear regression, and the basics of logistic regression

### **Goodness-of-Fit and Contingency Tables**

Goodness-of-fit and tests of homogeneity and independence