MATH 102

Learning Objectives and Prerequisites

At the end of MATH 102, students should:

Critical Thinking

- Recognize the use of common fallacies in their arguments and the arguments of others
- Critically evaluate information in the media that is presented in a mathematical form
- Read and understand set notation, create and interpret Venn diagrams to use in support of findings

Dealing with Real World Numbers

- Compare two quantities using absolute and relative differences and determine which difference is most appropriate for a given situation
- Investigate and understand uses and abuses of percentages
- Understand index numbers such as the Consumer Price Index and be able to apply these numbers to make valid quantitative comparisons
- Determine the meanings of false positives and false negatives in a testing situation involving health, polygraphs, etc.

Managing Money

- Understand their personal budgeting
- Appreciate and fear the power of interest on their monies or their debts, calculate such interest, payment schedules, pay outs, future values, investments, mortgages and explain the ramifications

Descriptive Statistics

- Understand data collection strategies and how to look for bias in a study
- Create frequency tables, histograms, pie charts, box and whisker plots, scatter plots and use these representations to analyze and develop quantitative arguments, determine when a quantitative argument based on these types of representations is valid or not
- Calculate mean, median, mode, standard deviation, quartiles, range of a data set and draw conclusions based on these numbers, determine when these measures are appropriate, and explain the limitations of using these numbers to describe data
- Understand graphics in the media and analyze them for appropriateness, accuracy, and bias
- Understand the differences between correlation and causality and apply this knowledge to quantitative arguments

Probability

- Understand fundamental probability concepts and apply them to real-world contexts
- Calculate probabilities for dependent and independent events and interpret the results in a context
- Calculate combinations and permutations and apply them to finding probabilities

- Understand and apply the Law of Large Numbers to real world situations
- Use probability to understand and explain risk

Mathematical Modeling

- Apply mathematical modeling to one of the following areas:
 - Linear and Exponential Modeling
 - Geometric modeling
 - Mathematics and the Arts
 - Mathematics and Politics
- Explain the representation, solution, limitations, and interpretation of the model

Technology Tools Used

- Demonstrate proficient use of email, MyMathLab, and Blackboard technologies
- Demonstrate proficient use of a scientific calculator and Excel spreadsheets

Prerequisite Knowledge and Skills Needed

- Completion of MATH 015 (see objectives for this course) with a C or better or
- Appropriate score on math placement test (currently a 7 or above on the MapleTA); or
- A score of 430 on the quantitative section of the SAT