I. Course Description

This is a 3 credit hour course. The prerequisite for this course is qualification through placement. The material for this course is basic college algebra: linear and quadratic equations, inequalities, functions and graphs of functions, and exponential and logarithm functions. Students may not receive credit for both MATH 111 and MATH 115.

II. Goals and Learning Outcomes

The first goal of this course is quantitative reasoning. Throughout this course, you will learn to critically examine data you are exposed to on a daily basis, such as statistics given in news reports, information given to you at work, and statistics that are presented to you in other courses. Learning quantitative reasoning will also help you use data to supplement your own reports and presentations.

The second goal of this course is to prepare you for more advanced math courses required by your major, such as MATH 112, MATH 122, MATH 170 or MATH 221.

By the end of the course, you will be able to:

- differentiate between accurate and misleading interpretations of data;
- construct models for analyzing single-variable data; i.e. construct pie diagrams and histograms;
- construct models for analyzing two-variable data; i.e. construct graphs and functions;
- construct algebraic models of real world problems;
- apply algebraic techniques to solve real-world problems.

Section-by-section course objectives:

Section	Topic
1.1	Analyzing single variable data
1.2	The relationship between two variables
1.3	Introduction to functions
1.4	Function terminology
1.5	Visualizing functions
2.1	Introduction to the average rate of change
2.2	Analyzing the change in the average rate of change
2.3	Introduction to slopes
2.4	Interpreting data
2.5	Introduction to linear functions (constant rates of change)
2.6	Visualizing linear functions (the effects of slopes and intercepts)
2.7	Graphs and equations of linear functions
2.8	Proportionality; horizontal and vertical lines; parallel and perpendicular lines
2.9	Linear models for data
4.1	Scientific notation
4.2	Positive integer exponents
4.3	Negative integer exponents
4.5	Fractional exponents
4.6	Orders of magnitude
4.7	Introduction to base 10 logarithms
5.1	Exponential growth
5.2	Linear vs. exponential functions
5.3	Exponential decay
5.4	Visualizing exponential functions
5.5	Introduction to exponential functions (constant percent change)
6.1	Solving equations using logarithms
6.2	Introduction to base e; Applications using continuous compounding
6.3	Introduction to the natural logarithm
6.4	Introduction to logarithmic functions
6.5	Converting base a to e^k
8.1	Introduction to quadratic functions
8.2	Finding the vertex
8.3	Finding horizontal intercepts; Solving quadratic equations; Introduction to the quadratic formula
8.5	Introduction to polynomial functions
8.6	New functions from old (stretching, compressing, reflecting, shifting, symmetry)
8.7	Combining functions (adding, subtracting, multiplying, dividing)
8.8	Composition and Inverse Functions