Math 126-Precalculus I: College Algebra

1. **Course Description**
   - Math 126 is the first in a two-semester precalculus sequence designed for students majoring in STEM. Concepts are covered with the expectation that students are preparing to take Calculus I and beyond.
2. **Topics Covered**
   - Math 126 covers advanced algebra topics including functions and their properties. Students in this course study a variety of different types of functions (linear, quadratic, polynomial, rational, exponential, and logarithmic). Each type of function is studied in depth including their graphs and applications. Students in this course also study inverse functions, systems of equations, and polynomial and rational inequalities.
3. **What to expect?**
   - **Time:** The most common term lengths are listed below; others would be proportionate. Outside of class time is studying, completing homework, reviewing, etc.

Length of term	In-class time	Out-of-class time (typical)	Total hours/wk (typical)	Total Term hours (typical)
17 weeks	4 hrs/wk	8 hrs/wk	12	204
6 weeks	11.3 hrs/wk	22.7 hrs/wk	34	204

   - Technology: The class requires a graphing calculator. The TI-83/84 is recommended. No prior knowledge of using a graphing calculator is needed.
   - Grading: Students who earn a grade of C or higher in Math 126 will pass this course and can take the next Math class that they need for their major.
4. **Who should enroll?**
   - This pre-calculus course is recommended for any student who majors in STEM.
   - Students who are majoring in STEM will take Math 131 after taking this course.
5. **What prior knowledge students need to know to be successful?**
   - Solving Equations
     - Solving linear equations
     - Solving quadratic equations by: factoring, square root property, completing the square, and quadratic formula
     - Solving radical equations
     - Solving basic exponential and logarithmic equations
     - Solving rational equations
     - Solving linear systems of equations
   - Polynomials
     - Addition, subtraction, and multiplication of polynomials
     - Factoring
   - Inequalities and Interval Notation
     - Solving linear inequalities
     - Writing solutions in interval notation including unions and intersections
   - Exponents and Radicals

- Rules of exponents
- Simplifying radical expressions
- Rationalizing the denominator

- Rational Expressions
  - Reduce to lowest terms by factoring if necessary
  - Multiplying and dividing
  - Least common denominator and addition/subtraction
  - Simplifying complex fractions
  - Polynomial long division
- Complex Number System
  - Standard form of a complex number
  - Addition, subtraction, multiplication, division of complex numbers
- Relations and Functions
  - Determine if a relation defines a function
  - Evaluating functions
  - Domain and range of a function
- Rectangular Coordinate System
  - Graphing a function by plotting points
  - Determine domain and range by looking at a graph
  - Graph vertical and horizontal lines
- Linear Functions
  - Slope
  - Find equation of a linear function when given various information
  - Parallel and perpendicular lines
- Logarithmic and Exponential Functions
  - Definitions
  - Properties
  - Graphs of $f(x) = b^x$ and $f(x) = x$