

Skills you are assumed to have before enrolling in Math 251 include, but are not limited to:

Course outcomes (Math 10):

- use a variety of problem-solving techniques to analyze and solve problems from a variety of disciplines. Techniques will include exploring patterns, developing mathematical models, working backwards, creating tables of data, estimating the reasonableness of an answer using a calculator or other appropriate technology
- use rectangles to model multiplication
- describe and use divisibility rules for 2, 3, 4, 5, 6, 8, 9, and 10
- use divisibility rules to determine factors of a given number
- define prime numbers and write a number as a product of prime numbers (with and without exponents)
- perform computations and solve problems involving fractions
- perform computations and solve problems involving decimals
- use correct order of operations to simplify expressions involving whole numbers, decimals, and fractions
- understand and identify place value for whole and decimal round whole and decimal numbers and use rounding to estimate the answer to problems involving calculations with whole numbers, decimals, and fractions
- use symbolic notation for “less than” and “greater than” to compare whole numbers, decimals, and fractions

Course outcomes (Math 20):

- write ratios and solve problems involving proportions
- solve problems involving percents
- convert between fractions, decimals and percents
- demonstrate a conceptual understanding of perimeter, area and volume
- compute areas of polygons (specifically triangles, rectangles, parallelograms, and trapezoids) and circles; compute volumes of corresponding prisms, pyramids and the sphere
- explain how formulas for areas of polygons (specifically triangles, rectangles, parallelograms, and trapezoids) and volumes of corresponding prisms and pyramids can be generated
- explain and demonstrate how shape affects area for a given perimeter and perimeter for a given area
- identify and measure using appropriate measurement systems and units for measuring length, capacity and weight
- convert within units of length, capacity and weight using the metric system
- convert within units of length, capacity and weight using the standard system
- perform the four basic arithmetic operations using signed numbers (integers and rational numbers)
- use correct order of operations to simplify expressions using signed numbers
- use the Pythagorean Theorem to solve problems involving lengths of sides of right triangles

Course outcomes (Math 60):

- use a calculator of their choice to perform multi-step computations requiring order of operations. graphing calculators are not required for this course
- simplify expressions consisting of real numbers
- algebraically manipulate/simplify algebraic expressions
- algebraically solve/manipulate linear equations of one or two variables
- algebraically solve/manipulate literal equations in terms of a linear variable
- model and solve real-world, and theoretical mathematical problems requiring solving linear equations in one and two variables
- translate relationships between verbal, numeric, algebraic, and graphical representations (specifically lines) create, analyze, draw inferences and make predictions from charts, tables and graphs summarizing data from real-world and theoretical situations
- represent mathematical relationships using tables, graphs and equations (specifically lines)

Course outcomes (Math 65):

- solve problems involving quadratic equations using a variety of methods including factoring, the quadratic formula, and graphing
- explain how the algebraic and graphical techniques for solving quadratic equations are related and be able to interpret results obtained by each method, including complex numbers
- simplify, solve and model applied and theoretical mathematical problems using the basic operations of addition, subtraction, multiplication, division and simplification of polynomial equations
- simplify, solve and model applied and theoretical mathematical problems of
- rational and radical equations
- solve linear equations algebraically and graphically
- solve systems of two equations algebraically and graphically
- simplify expressions containing exponents

Course outcomes (Math 95):

- model and solve applied, real-world, and theoretical mathematical problems requiring the solution of linear and quadratic equations; use narrative, symbolic, graphic and numeric strategies and translate among them
- use a graphing calculator to create appropriate graphs that represent mathematical models, determine appropriate viewing windows and accurately interpret and draw inferences regarding the meaning, implications and limitations of the graphical solution to a problem
- solve equations involving quadratic, polynomial, radical, rational, and absolute value expressions both algebraically and graphically and be able to explain the relationship between the algebraic and graphical methods and solutions
- examine a variety of relationships stated in narrative, symbolic, graphical, or tabular form and determine which represent functions; determine what the domain and range of functions are; and draw inferences regarding the meaning, implications and limitations of the given functional representation of the problem
- investigate and solve one-variable linear and absolute value inequalities by coordinate graphing and algebraic means and explain the relationship between the methods and solutions

Course outcomes (Math 111):

- model and solve applied, real-world, and theoretical mathematical problems requiring the solution of linear, quadratic, polynomial, rational, exponential, and logarithmic functions
- use a graphing calculator to create appropriate graphs that represent mathematical models, determine appropriate viewing windows and accurately interpret and draw inferences regarding the meaning, implications and limitations of the graphs
- examine a variety of relationships stated in symbolic, graphical, or tabular form and determine which represent functions; determine what the domain and range of functions are; and draw inferences regarding the meaning, implications and limitations of the given representation of the function
- modify and combine algebraic and graphical representations of functions and describe the relationship between the methods and functional representations
- investigate and solve one-variable non-linear inequalities by coordinate graphing and algebraic means and explain the relation between the methods and solutions

Course outcomes (Math 112):

- model and solve applied, real-world, and theoretical mathematical problems involving right-triangle and oblique-triangle trigonometry
- model and solve problems using symbolic, graphic and numeric strategies and translate among written descriptions, symbolic, graphic and numeric representations of trigonometric functions
- use a graphing calculator to create trigonometric graphs that represent mathematical models, determine appropriate viewing windows and accurately interpret and draw inferences regarding the meaning and limitations of the graphs
- understand, apply, and interpret the meaning of trigonometric identities to solve trigonometric equations.