Technical Mathematics I
MATH125
Spring 2016

This course provides the mathematics skills necessary for success in the technology programs. A review of introductory and intermediate algebra concepts and the geometry of area and volume are included. Other topics include algebraic operations with units, the arithmetic of approximate numbers, interpolation, systems of three or more linear equations, determinants and Cramer's Rule, variation, and trigonometry of the right triangle. Applications drawn from various technical areas are stressed. The hand-held calculator is used throughout. Prerequisite: C- or higher in MATH002 Preparation for College Math II or MATH011 Introductory Algebra; waiver by placement testing results; or departmental approval.

COURSE OUTCOMES	OUTCOMES ACTIVITIES
At the end of this course students will be able to:	
Demonstrate an understanding of the fundamental concepts of algebra in order to use them to solve applied problems in this and other courses.	1. Add, subtract, multiply, and divide signed numbers (including fractions and decimals) by hand using the order of operation, and by using technology. (CT,QS,TS,R) 2. Evaluate roots and radicals by hand and technology. (CT,QS,TS,R) 3. Simplify exponential expressions by using rules of exponents. (CT,QS,R) 4. Add, subtract, multiply and divide algebraic expressions. (CT,QS,R) 5. Solve equations and applied word problems. (CT,QS,TS,R) 6. Solve for the indicated literal equation (CT,QS,R)
Demonstrate an understanding of basic terms, properties, and formulas, of geometry in order to solve application problems that included angles, lines, polygons, circles and solids.	1. Determine whether a certain angle is acute, right, obtuse, or straight. (CT,R) 2. Determine if a triangle is scalene right, obtuse or straight(CT, R) 3. Determine if a triangle is acute, right, or obtuse. (CT,R) 4. Determine if a quadrilateral is square, rhombus, trapezoid, or rectangle. (CT,R) 5. Solve problems involving similar triangles. (CT,R,QS,TS) 6. Solve problems using the Pythagorean Theorem. (CT,R,QS, TS) 7. Find the area and perimeter of polygons. (CT,QS,R,TS) 8. Identify parts of a circle: chord, arc, segment, sector, radius, diameter, central angle. (CT,R) 9. Find the area and the circumference of a circle. (CT,R,QS,TS)
Demonstrate knowledge of the basic properties or functions and their graphs in order to apply this knowledge to solve applications problems and related graphing problems found in this course and other courses.	1. Determine if a relation is a function. (CT,QS,R) 2. Find the domain and range of a function. (CT,QS,R) 3. Evaluate functions. (CT,QS,TS,R) 4. Graph a given function by plotting points and by using a calculator. (CT,QS,TS,R) 5. Find the intercepts of a function algebraically and graphing. (CT,QS,TS,R) 6. Add, subtract, multiply, and divide functions. (CT,QS,R)

	7. Evaluate the composition of functions. (CT,QS,R) 8. Use graphs to identify domain, range, and intercept. (CT,QS,TS,R) 9. Determine algebraic models for data by linear and quadratic functions. (CT,QS,TS,)
Solve problems involving right triangles trigonometry in order to solve related application problems and in order to build the foundation for the study of trigonometry functions and vectors.	1. Evaluate trigonometry functions of any acute angle by using technology. (CT,QS,TS,R) 2. Evaluate inverse trigonometry functions using technology. (CT,QS,TS.R) 3. Solve right triangles. (CT,QS,TS) 4. Solve related application problems. (CT,QS,R,TS)
Solve problems involving lines in order to apply these skills to solve related problems in this course.	1. Correctly identify the part of the rectangular coordinate system: axes, quadrants, origin. (CT) 2. Plot points whose coordinates are given. (CT,TS) 3. Find the slope and intercepts of a line. (CT,QS,R) 4. Graph oblique, vertical and horizontal lines. (CT,QS,R) 5. Find the equation of a line. (CT,QS) 6. Solve problems involving parallel and perpendicular lines. (CT,QS,R) 7. Use distance formula. (CT,QS,R)
Factor polynomials in order to use these skills to solve related problems as they are introduced in this course.	1. Factor out GCF. (CT,QS,R) 2. Factor by grouping. (CT,QS,R) 3. Factor trinomials. (CT,QS,R) 4. Factor the three special products. (CT,QS,R)
Solve problems involving rational expressions in order to use these skills to solve related problems as they occur in this course and other math related courses.	1. Add, subtract, multiply, and divide rational expressions. (CT,QS,R) 2. Simplify complex fractions. (CT,R,QS) 3. Solve equations containing rational expressions. (CT,QS,) 4. Solve related application problems. (CT,R,TS)
Solve linear and quadratic equations in order to be able to use these skills to solve related problems in this course and other related courses.	1. Solve linear equations. (CT,QS,R) 2. Solve quadratic equations by factoring and quadratic formula. (CT,QS,R,TS) 3. Solve quadratic equations using a calculator. (CT,QS,TS) 4. Solve literal equations. (CT,QS,R) 5. Solve related application problems. (CT,QS,R,TS) 6. Solve quadratic equations by completing the square. (CT,QS,R,TS)
Strengthen core competencies** in order to increase success in this and other courses in the workforce.	Referenced above

**Indicate the Core Competencies that apply to the outcomes activities and assessment tools: Critical Thinking (CT); Technology Skills (TS); Oral Communications (OC); Quantitative Skills (QS); Reading (R); Writing (W).