**Preparation for College Math I**
**MATH001**
**Fall 2015**

This is a computer-based learning course designed to provide the fundamental concepts of arithmetic and algebraic and examine some application of these concepts, i.e. word problems. Students are required to complete a minimum of 5 modules, but are encouraged to complete as many of the 15 modules as possible. Students who begin at module 12 or higher are required to finish through module 15. The modules cover whole numbers, signed numbers, fractions, decimals, ratios and proportions, percentages, descriptive statistics, algebraic expressions, linear equations and inequalities, graphing lines and inequalities, systems of equations, exponents, polynomials, factoring, rational expressions, quadratic equations, and related applications. Credits earned in this course cannot be applied towards graduation. Prerequisite: Placement testing is required.

Modules 1-5

| **COURSE OUTCOMES** | **OUTCOMES ACTIVITIES** |
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| At the end of this course, students will be able to | |
| Apply the understanding of place value and the operations on whole numbers in order to facilitate the use of these operations in related topics and problem solving in mathematics. | 1. Add, subtract, multiply, and divide whole numbers. (QS)<br>2. Demonstrate an understanding of place value by writing a given numeral in standard notation, expanded notation, and in words. (R,QS)<br>3. Round whole numbers to a given place value. (QS)<br>4. Find the prime factorization of a number and express it in exponential notation. (QS)<br>5. Simplify an expression using the order of operations agreement. (CT)<br>6. Solve related application problems. (R,QS,W,CT) |
| Apply the rules of integers and the order of operations agreement using integers in order to have the basic skills necessary to successfully complete this and future mathematics courses. | 1. Add, subtract, multiply and divide signed numbers. (QS)<br>2. Demonstrate an understanding of absolute value by evaluating expressions in which it is used. (QS)<br>3. Simplify integer expressions according to the order of operations agreement. (QS,CT)<br>4. Solve related application problems. (R,QS,W,CT) |
| Apply the operations on rational numbers and mixed numerals in order to facilitate the use of these operations in related topics and problem solving in this and future math courses. | 1. Add, subtract, multiply, and divide rational numbers and mixed numerals. (QS)<br>2. Use the Property of One and the fundamental properties of fractions to form equivalent fractions in higher and lower terms. (QS)<br>3. Simplify rational expressions according to the order of operations agreement. (QS,CT)<br>4. Simplify complex fractions. (QS,CT)<br>5. Solve related application problems. (R,QS,W.CT) |

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| Understand the structure of a decimal number system and to apply the basic operations on decimals in order to facilitate the use of these operations in related topics and problem solving in this and other courses in mathematics. | 1. Demonstrate the understanding of decimal place value by<br>a. expressing a numeral in expanded notation, standard notation, and in words. (QS)<br>b. rounding a decimal numeral to a given place value. (CT)<br>c. comparing decimal numerals. (QS,CT)<br>2. Add, subtract, multiply, and divide decimal numerals. (QS)<br>3. Simplify decimal expressions according to the order of operations agreement. (QS,CT)<br>4. Convert fractions to their decimal equivalents. (QS,CT)<br>5. Convert terminating decimals to their fractional equivalents. (R,QS,W,CT) |
| Understand the concept of percent and its relationship to fractions and decimals in order to develop techniques to solve problems involving percent applications. | 1. Convert among decimal fraction and percent notation. (CT,QS)<br>2. Solve the basic 3 types of percent equations. (CT,W,QS,R)<br>3. Solve real life application problems, such as simple interest and sales tax, percent increase and decrease, sales discount and commission. (W,R,CT,QS) |
| Apply the concepts of ratio and proportion to solve problems that can be modeled by these types of relationships in this and future courses. | 1. Write a ratio in its three forms. (QS,CT)<br>2. Find rate and unit rate. (QS,CT)<br>3. Solve proportions. (QS,CT)<br>4. Solving application problems using proportion. (W,R,QS,CT) |
| Use standard units of measurement to find the perimeter, area, and volume of geometric figures. | 1. Use the appropriate formula to find perimeter, area and volume. (CT,QS)<br>2. Use the appropriate unit of measure and equivalent conversions where applicable. (CT,QS,R,W) |
| Solve simple linear equations in order to solve problems that can be modeled by these forms in this and future courses. | 1. Use the addition principle to solve equations in the form $x + a = b.$ (QS,CT)<br>2. Use the multiplication property to solve equations in the form $ax = b.$ (QS,CT) |
| OPTIONAL:<br><br>Use both the English and metric systems of measurements appropriately. | 1. Recognize the appropriate unit of measure for a given situation; e.g. liquid, distance, very large, very small, etc. (QS,CT)<br>2. Make conversions within each system and between systems. (QS,CT) |
| Strengthen Core Competencies** in order to increase success in this and other courses and in the workplace. | 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).