Course Outline for: MATH 0601 Pre-College Math 1

A. **Course Description:**
1. Number of credits: 3
2. Lecture hours per week: 3
3. Prerequisites: High School GPA: 1.70+; or
                        ACCUPLACER Arithmetic Score of 250+; or
                        ACCUPLACER Quantitative Reasoning score of 230+; or
                        MCA Algebra Score of 1148-1157
4. Corequisite: None
5. MnTC Goals: None

MATH 0601 offers a complete review of pre-college level mathematics. Topics include linear equations and inequalities, graphs of linear equations, exponents and polynomials, linear, quadratic, exponential and logarithmic functions, problem solving and systems of equations, rational and radical expressions and equations. The number of new topics that each student will study and the number of courses that each student will need in the MATH 0601, 0602, 0603 set will vary based on the results of their initial assessment and the sequence of mathematics courses that the student intends to pursue. Eligibility for a subsequent mathematics course is determined by a specific level of mastery of the topics in MATH 0601. Students completing MATH 0601 who have achieved eligibility for their intended sequence of math courses do not need
MATH 0602 or MATH 0603. MATH 0601 serves as a preparation for MATH 0630, 0700, 0990, 1020, 1055, 1080, 1095, or 1100 based on the number of learning objectives mastered.

B. **Date last reviewed:**   January 2023

C. **Outline of Major Content Areas:**
1. Solving Linear Equations and Inequalities
2. Graphing Linear Equations
3. Exponents and Polynomials: Operations and Factoring
4. Quadratic Expressions and Equations
5. Functions: Linear and Quadratic
6. Functions: Exponential and Logarithmic
7. Problem Solving and Systems of Equations
8. Rational Expressions and Equations
9. Radical Expressions and Equations

D. **Course Learning Outcomes:**

1. Solve linear equations and inequalities in one variable.
2. Convert verbal expressions into algebraic form; solve applied problems.
3. Determine slope of a line from its graph, equation, or two points on the line.
4. Graph linear equations given a point and the slope.
5. Solve systems of linear equations.
6. Apply the rules for exponents.
7. Add, subtract, multiply, and divide polynomials.
8. Factor polynomials.
9. Solve rational equations.
10. Solve a formula for a specific variable.
11. Simplify complex rational expressions.
12. Determine whether a relation is a function, identify its domain and range, and determine if it is one-to-one.
13. Find the inverse of a relation or function; find the composition of two functions.
14. Find equations of lines and identify parallel and perpendicular lines.
15. Simplify expressions involving radicals and rational exponents.
16. Perform basic arithmetic operations with complex numbers.
17. Solve quadratic equations using factoring, the principle of square roots, completing the square, and the quadratic formula, and use the discriminant to determine the nature of the roots (real, complex) of a quadratic equation.
18. Graph equations of the type $y = a(x-h)^2 + k$, finding the vertex, the line of symmetry, and the maximum or minimum value.
19. Graph exponential and logarithmic functions; solve exponential and logarithmic equations; apply the properties of logarithms and convert between logarithmic and exponential functions.
20. Solve applied problems involving the following mathematical concepts: rational equations, proportion, variation, functions, linear functions, radical equations, quadratic equations, exponential functions, logarithmic functions, graphs and their interpretations.

E.   Methods for Assessing Student Learning:
P/NC is the default grading method, with A-F grading option upon request by student. Each instructor will design an evaluation system based on some combination of the following:
1. Continuous increase in number of objectives mastered.
2. Sufficient time spent working on learning objectives in class and outside of class.
3. Attendance.
4. Proctored Assessments.
5. Alternate participation requirements.

F.   Special Information:
1. Students who successfully demonstrate mastery of the learning objectives for MATH 0630 and 0990, or 1020, 1055, 1080, and 1095 in MATH 0601, 0602 or 0603 will have their eligibility changed as appropriate.

2. Students who successfully demonstrate mastery of the learning objectives for Intermediate Algebra in MATH 0601 or MATH 0602 or MATH 0603 will be given a grade of P on their transcript for MATH 0700, and be eligible for MATH 1100 (College Algebra).
3. Reliable internet access from off campus is highly recommended. Content, learning aids and testing are available online.
4. The course will require a commitment of at least 6 hours per week including 3 hours in class (if applicable) and 3 hours homework.