Course Outline for: MATH 1100 College Algebra

A. **Course Description:**
1. Number of credits: 4
2. Lecture hours per week: 4
3. Prerequisites: MATH 0700 (C- or better); OR
   MATH 0991 (C- or better); OR
   High School GPA: 2.80+ and high school Algebra II math course with a grade of C- or better; OR
   ACT Math Sub-Score: 22+; OR
   ACT Math Sub-Score: 20+ & High School GPA 2.70+; OR
   SAT Math Score: 530+; OR
   SAT Math Score: 520-529 & High School GPA 2.70+; OR
   Accuplacer Advanced Algebra Score of 250+; OR
   Accuplacer Advanced Algebra Score of 236-249 & High School GPA 2.70+; OR
   MCA Algebra Score of 1158+; OR
   MCA Algebra Score of 1152-1157 & High School GPA 2.70+
4. Corequisites: None
5. MnTC Goals: Goal 4 Mathematical/Logical Reasoning

This is a college-level algebra course that emphasizes properties of functions and their graphs. Linear, quadratic, polynomial, rational, exponential, and logarithmic functions are covered. Other topics include: solving equations and inequalities, and systems of equations and inequalities. This course also includes a basic introduction to right triangle trigonometry.

B. **Date last reviewed/updated:** January 2024

C. **Outline of Major Content Areas:**
1. Functions, Graphs, and Models
2. Polynomial Equations and Functions
3. Algebraic and Graphical Approaches to Solving Inequalities
4. Rational Equations and Functions
5. Exponential and Logarithmic Equations and Functions
6. Systems of Linear Equations and Inequalities
7. Right Triangle Trigonometry

D. **Course Learning Outcomes:**
Upon successful completion of the course, the student will be able to:
1. Analyze functions by determining their domain, range, and symmetries. (4b)
2. Graph transformations of functions and perform algebraic operations on functions. (4a, b, d)

3. Solve quadratic, rational, and absolute value inequalities, interpret their solutions graphically, and express the solutions in interval notation. (4b, c, d)
4. Identify the inverse of an invertible function, formulate its equation, and create graphical representations of the inverse function. (4b, d)
5. Graph polynomial functions using intercepts, leading coefficients, and degree. (4a, b, d)
6. Graph rational functions using features such as intercepts, and asymptotes. (4b, d)
7. Solve equations and applied problems involving exponential, logarithmic, polynomial, and rational equations. (2a, 4a, c, d)
8. Convert between logarithmic and exponential equations. (4b, d)
9. Apply the laws of exponents and logarithms to simplify expressions and solve equations. (4a, b, d)
10. Solve systems of linear equations. (2c; 4b, c, d)
11. Graphically solve systems of linear inequalities and solve linear programming problems. (2a, c; 4a, b, d)
12. Utilize the right triangle definitions of the trigonometric functions to solve abstract and applied problems. (2b; 4b, c, d)

E.   Methods for Assessing Student Learning:
Methods for assessment may include, but are not limited to, the following:
1. In-class testing
2. Take-home testing
3. Assignments
4. Quizzes
5. Attendance
6. Group or individual projects
7. Research

F.   Special Information:
A scientific or graphing calculator may be required.