

Common 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, or eligible for MATH 1100
4. Co-requisites: None
5. MnTC Goals: 4

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: November 2021**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 MATH 1100 a student should be able to determine the following for each of the outcomes below:

- What is the central question?
 - What information is relevant?
 - What assumptions are being made?
 - What mathematical knowledge/tools will apply?
 - How well does the mathematical model used actually fit the situation?
 - Exactly how do the mathematical tools help me answer the central question?
1. Determine the domain, range, and any symmetries of a function. (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. Find an equation for, and graph, the inverse of an invertible 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. Model data using an appropriate function. (2b, c; 4d)
8. Solve exponential, logarithmic, polynomial, and rational equations. (4a, c, d)
9. Convert between logarithmic and exponential equations. (4b, d)
10. Use laws of exponents and logarithms to simplify expressions and solve equations. (4a, b, d)
11. Solve applied problems involving exponentials and logarithms. (2a, c; 4a, b, d)
12. Solve systems of linear equations – including with the use of matrices. (2c; 4b, c, d)
13. Graphically solve systems of linear inequalities, and solve linear programming problems. (2a, c; 4a, b, d)
14. Use the right triangle definitions of the trigonometric functions to solve abstract and applied problems. (2b; 4b, c, d)

E. Methods for Assessing Student Learning

The instructor will choose from among various evaluation techniques including – but not limited to – online and in-class testing, take-home testing, assignments, quizzes, and attendance. The instructor will also choose a method for end-of-the-semester evaluation.

F. Special Information

Internet access is required. For most sections, content and learning aids are available online. A scientific or graphing calculator may be required.