

**University of Arkansas – Fort Smith 5210 Grand Avenue
P.O. Box 3649
Fort Smith, AR 72913-3649
479-788-7000**

**General Syllabus
MATH 11003 College Algebra**

Credit Hours 3 Lecture Hours 3 Laboratory Hours 0

Prerequisite: Required placement score

Corequisite: MATH 03071 College Algebra Drill or MATH 03072 College Algebra Extended Drill, if needed per math placement score.

Effective Catalog: 2026-2027

I. Course Information

A. Catalog Description

This course covers fundamental algebraic concepts including linear equations and inequalities, absolute value equations, and a variety of functions including linear, quadratic, polynomial, exponential, logarithmic, and rational. Students will learn to interpret and graph functions, solve systems of equations, and apply matrices. The course is designed to build essential mathematical skills needed to support success in degree programs and future coursework. (ACTS: MATH 1103)

B. Additional Information

This is one of the lowest level mathematics courses acceptable for a bachelor's degree in Arkansas' public colleges and universities. It is also the first college level course leading to higher mathematics courses required for majors in mathematics, engineering business, and several pre-professional fields.

II. Student Learning Outcomes

A. Subject Matter

Upon completion of this course, the student will be able to:

1. Solve linear equations in one variable and apply the solution process to real-world problems.
2. Solve linear inequalities in one variable and represent the solution graphically and in interval notation.
3. Solve absolute value equations in one variable.
4. Define functions, interpret and use function notation to evaluate and express relationships.
5. Determine and interpret the domain and range of functions given different representations.
6. Identify and analyze parent functions from a standard library (e.g., linear, quadratic, exponential, etc.).

7. Graph linear functions and apply them to model and solve real-world problems.
8. Analyze quadratic functions, including vertex form and standard form. Solve related applications involving maximum and minimum values and graph quadratic inequalities.
9. Identify and analyze polynomial functions and their characteristics (e.g., degree, end behavior, and zeros).
10. Evaluate and apply exponential and logarithmic functions to solve growth and decay problems.
11. Analyze rational functions, including asymptotes, intercepts, and domain restrictions.
12. Solve systems of two linear equations algebraically and graphically and interpret solutions in real-world contexts.
13. Perform matrix operations and solve systems of equations using matrix operations.

B. University Learning Outcomes

College Algebra enhances student abilities in the following area:

Quantitative Reasoning: Students will assign and use numbers, read and analyze data, create models, draw inferences, and support conclusions based on sound mathematical reasoning. Students will apply appropriate mathematical skills to solve problems. Students will represent mathematical information symbolically, visually, numerically and verbally and will interpret models and data to draw inferences.

III. Major Course Topics

- A. Equations and Inequalities
 1. Solving linear equations in one variable
 2. Solving and graphing linear inequalities in one variable
 3. Solving absolute value equations
- B. Functions
 1. Function notation
 2. Domain and range
- C. Functions and Their Graphs
 1. Linear functions and their applications
 2. Quadratic functions and their applications
 3. Graphing Quadratic Inequalities
 4. Polynomial functions
 5. Exponential and logarithmic functions and their applications
 6. Rational functions
- D. System of Equations
 1. Solving systems of two linear equations
 2. Matrices