

University of Arkansas – Fort Smith
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General Syllabus

MATH 03174 Beginning and Intermediate Algebra

Credit Hours: 4

Lecture Hours: 4

Laboratory Hours: 0

Prerequisite: Required placement score.

Effective: 2018-2019

I. Course Information

A. Catalog Description

Introduces students to the basic concepts of algebra. Consists of five major sections: linear equations and inequalities, exponents and polynomials, factoring and rational functions, radical functions, and graphing.

B. Additional Information

This course is designed to prepare students to enter MATH 11003 College Algebra. Course is graded A, B, C, D, F, or Pass.

II. Student Learning Outcomes

A. Subject Matter

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

1. Solve linear equations.
2. Apply linear equations to solve application word problems.
3. Solve absolute value equations.
4. Solve linear inequalities.
5. Use the rules of integer exponents to simplify polynomials.
6. Execute operations on polynomials.
7. Factor polynomials of four terms or less by one of several methods.
8. Solve quadratic equations by factoring.
9. Apply quadratic equations to solve application word problems.
10. Simplify rational expressions.
11. Execute operations on rational expressions.
12. Solve rational equations.
13. Apply rational equations to solve application word problems.
14. Simplify radical expressions.

15. Perform basic operations on radical expressions.
16. Simplify expressions with rational exponents.
17. Graph linear, quadratic and non-linear equations.
18. Find the equation of a line.
19. Define a function.
20. Use domain and range of a function to evaluate and analyze graphs.

B. University Learning Outcomes

This course enhances students' abilities in the following areas:

Communication Skills (written and oral)

Students will communicate proficiently. Students will compose written answers to word problems appropriate to an audience of their peers.

Analytical Skills

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 in order to draw inferences.

III. Major Course Topics

- A. Equations and inequalities
 1. Graphing Linear Equations
 2. Slope of a line
 3. Writing equation of lines
 4. Introduction to function
 5. Solving linear inequalities in one variable
 6. Solving absolute value equation and inequalities
 7. Solving system of linear and quadratic inequalities in two variables
- B. Polynomials
 1. Polynomials and polynomial functions
 2. Adding and subtracting polynomials
 3. Multiplying polynomials
- C. Factoring and rational functions
 1. Greatest common factor
 2. Factoring by grouping
 3. The sum and difference of two squares
 4. The sum and difference of two cubes
 5. Operation of rational functions
 6. Solving equations containing rational expressions
 7. Synthetic division
- D. Radical functions
 1. Simplify a radical expression
 2. Add and subtract radical expressions

3. Multiply radical expressions
 4. Solve an application containing a radical expression
- E. Graphing
1. Two-dimensional coordinate system
 2. Graph a linear function
 3. Graph a quadratic function
 4. Graph a rational function