

NorthWest Arkansas Community College
Division of Science and Mathematics

Course Number and Title - MATH 0214 Foundations of Algebra for STEM

Catalog Description:

This developmental algebra course is designed for students planning to major in a Science, Technology, Engineering or Math (STEM) field. It covers the content of both Beginning and Intermediate Algebra in a single semester. Topics include linear equations and inequalities, graphing and finding equations of lines, function concepts (including domain and range, notation, evaluation, and graphing), solving systems of linear equations in two variables, exponential properties, polynomial operations, factoring, working with rational, radical, and quadratic expressions and equations, and interwoven modeling and problem solving. Some previous algebra background is recommended.

Prerequisites:

Pre-Algebra (MATH 0013) with a grade of C or better, Developmental Math (MATH 0023) with a grade of C-7 or better, or appropriate placement scores (see math placement chart in the NWACC catalog).

Credit hours/Contact hours/Load hours

4 credit hours/4 contact hours/4 load hours, none counting toward any degree requirements

Target Audience/Transferability:

This course is intended for college students who plan to major in a STEM field, have had some algebra, and need a review of Beginning and Intermediate Algebra concepts to strengthen skills in preparation for College Algebra. Foundations of Algebra for STEM is a non-transfer course.

Student Learning Outcomes:

1. Students will solve single variable linear equations, inequalities, and related applications.
2. Students will graph and write linear equations in two variables. Students will graph linear inequalities in two variables and their intersections.
3. Students will solve linear systems and applications in two variables.
4. Students will simplify expressions with integer exponents, perform operations on polynomials, and work with linear and polynomial functions.
5. Students will factor polynomials, and solve equations and applications by factoring.
6. Students will multiply and divide rational expressions and functions, solve rational equations, graph rational functions, and solve applications that involve rational equations.
7. Students will graph radical functions, work with rational exponents, simplify, add, subtract, multiply and divide radical expressions, solve equations with radicals, and work with complex numbers.

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8. Students will solve quadratic equations using the quadratic formula, solve quadratic applications, and graph quadratic functions.

Topics:

Linear Equations, Inequalities, & Applications
Equations and Inequalities in Two Variables
Linear Systems & Applications in Two Variables
Exponents, Polynomials, & Functions
Factoring Polynomials, Solving Equations & Applications
Rational Expressions, Equations, & Functions
Radical Expressions, Equations, & Functions
Quadratic Equations, Functions, & Applications

Forms of Assessment:

As part of our assessment program, each instructor must include six departmental questions on his or her final exam. These questions relate directly to the established student learning outcomes. The questions will be graded using a departmental grading rubric. Instructors will fill out a report for each of their classes listing the score of each individual student on each of the six departmental questions.