

Northwest Arkansas Community College
(Science and Mathematics Division)

Discipline Code

MATH

Course Number

0214

Course Title

Foundations of Algebra: 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, or appropriate placement scores (see math placement chart in the NWACC catalog).

Credit Hours

4 credit hours, none counting toward any degree requirement

Contact hours

60 lecture contact hours

Load hours

4 load hours

Semesters Offered

Fall, Spring

ACTS Equivalent

No ACTS Equivalent

Grade Mode

A-F

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

General Education Outcomes Supported

- Students can achieve mathematical literacy.

Standard Practices

Topics list

- 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

Learning activities

- Courses must, at a minimum, cover the core learning outcomes for each topic. Faculty may add to these outcomes, but may not omit any of them.

Assessments

- Each instructor will include a set of departmental final exam questions on their final exam.
- Approval to include the questions on another end-of-semester assessment tool may be granted if inclusion on the final exam is not possible.
- These questions will be in direct support of the Learning Outcomes. Department-wide results for these questions will be reported when final grades are submitted.

Grading guidelines

- At least 70% of the grade should come from proctored work.