

Northwest Arkansas Community College
(Science and Mathematics Division)

Discipline Code

MATH

Course Number

2213

Course Title

Survey of Mathematical Structures I

Catalog Description

MATH 2213 Survey of Mathematical Structures I

(F, S) The fundamental element of this course is the understanding of the underlying concepts of elementary mathematics topics including patterns, word problems, sets, basic mathematical operations, integers, rational numbers, and real numbers. Discussion and demonstration of a multitude of strategies for introducing elementary mathematics along with appropriate manipulatives will be demonstrated by students in the class as they prepare and present an elementary or middle school math lesson and /or submit a research project. This course is designed for students planning to major in elementary education or middle school education at a senior institution. A WWW version of this course may be offered in addition to the traditional format. This course will not satisfy the math elective requirement for the Associate of Science in Liberal Arts and Sciences degree at NWACC. Prerequisite: College Algebra (MATH 1203) or Quantitative Reasoning (MATH 1313) with a C or better, or appropriate placement scores (See Placement Chart).

Prerequisites

MATH 1203 or MATH 1313 with a grade of C or better, or appropriate placement scores.

Credit Hours

3 credit hours

Contact hours

45 lecture contact hours

Load hours

3 load hours

Semesters Offered

Fall & Spring

ACTS Equivalent

No ACTS Equivalent

Grade Mode

A-F

Learning Outcomes

Upon successful completion of this course students should exhibit mastery of certain knowledge and basic skills. Successful Survey of Mathematical Structures I students will be able to:

- 1) Formulate and read Venn diagrams
- 2) Exhibit basic understanding of symbolic logic and create truth tables
- 3) Exhibit problem solving strategies and critical thinking skills
- 4) Understand our number systems and their properties
- 5) Understand arithmetic computations in both base 10 and other bases and perform these calculations without the aid of a calculator
- 6) Exhibit understanding of basic algebraic concepts and graphs
- 7) Construct manipulatives suitable for the K-5 classroom that will illustrate topics from the Arkansas Mathematics Standards.

General Education Outcomes Supported

- Students can achieve mathematical literacy.

Standard Practices

Topics list

- Problem solving and critical thinking
- Set Theory
- Logic
- Number Representation and Calculation
- Number Theory
- The Real Number System
- Linear Equations and Variation

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 his or her final exam.
- These questions will be in direct support of the Student Learning Outcomes 1-6. Student Learning Outcome 7 will be assessed via a common grading rubric developed by and made available to all faculty members. The results of the departmental questions, lesson project, and overall student performance will be reported when final grades are reported.

Grading guidelines

- At least 70% of the student's final course grade should come from proctored work.