

NorthWest Arkansas Community College  
Division of Science and Mathematics

## Course

MATH 1103, Survey of College Mathematics

## Catalog Description

Designed to acquaint students with the breadth and practicality of mathematics, this college-level survey course will include the following topics: a review of ratio, proportion and unit analysis; problem solving; set theory; logic; geometry; probability and statistics. This course is designed for non-transfer students, enrolled in certain AAS programs. It is recommended that students intending to earn a baccalaureate degree take College Algebra.

## Prerequisite

Intermediate Algebra (MATH 0103 or MATH 0114) with a grade of "C" or better or appropriate placement scores (see college catalog).

## Credit/Contact/Load Hours

3 credit hours, 3 contact hours, 3 load hours

## Target Audience and Transfer

This course is designed for non-transfer students, enrolled in certain AAS programs. It is recommended that students intending to earn a baccalaureate degree take College Algebra.

## Course Objectives

Although each instructor has his or her own specific objectives, there are some shared by all. A student who is successful in Survey of College Mathematics should be able to:

1. Perform basic set operations and formulate and read Venn diagrams
2. Exhibit basic understanding of symbolic logic, determine the validity of logical arguments, and create truth tables
3. Exhibit understanding of ratios and proportions, calculate area and volume of polygons, and exhibit problem solving strategies
4. Use basic counting techniques and compute basic probabilities
5. Compute measures of central tendency and dispersion, distinguish statistical sampling techniques, and create statistical graphs.
6. Model linear applications using linear correlation and regression

## Required Topics

- 1) Review of Rational and Irrational Numbers and the Real Number System
- 2) Graphing Calculator Introduction
- 3) Estimation, Graphs, and Mathematical Models
- 4) Problem Solving
- 5) Set Concepts

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- 6) Subsets
- 7) Venn Diagrams and Set Operations
- 8) Set Operations and Venn Diagrams with Three Sets
- 9) Survey Problems
- 10) Statements, Negations, and Quantified Statements
- 11) Compound Statements and Connectives
- 12) Truth Tables for Negation, Conjunction, and Disjunction
- 13) Truth Tables for the Conditional and Biconditional
- 14) Equivalent Statements, Variations of the Conditional Statements, and De Morgan's Laws
- 15) Arguments and Truth Tables
- 16) Arguments and Euler Diagrams
- 17) Linear Equations in One Variable
- 18) Applications of Linear Equations
- 19) Ratio, Proportion, and Variation
- 20) Linear Functions and Their Graphs
- 21) Point, Lines, Planes, Angles
- 22) Triangles
- 23) Polygons and Perimeters
- 24) Area and Circumference
- 25) Volume
- 26) The Fundamental Counting Principle
- 27) Permutations
- 28) Combinations
- 29) Fundamentals of Probability
- 30) Probability with the Fundamental Counting Principle, Permutations, and Combinations
- 31) Events Involving "not" and "or", Odds
- 32) Events involving "and"; Conditional Probability
- 33) Expected Value
- 34) Sampling, Frequency Distributions, and Graphs
- 35) Measures of Central Tendency
- 36) Measures of Dispersion
- 37) The Normal Distribution
- 38) Scatter Plots, Correlation, and Regression Lines

### Required Instructional Activities

The content of the course should be taught with graphing calculator usage as an integral part of the curriculum. However, no TI-89, TI-92, or comparable calculators are allowed.

### Required Forms of Assessment

Each instructor must include a set of 6 departmental final exam questions on his or her final exam. These questions will be in direct support of the specific objectives stated in the Core Course Objectives, will be based on material covered in the Required Text Coverage section. These questions will compose at least 10% of the students' overall grade in the course and will be graded according to a standard grading rubric. The

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results of these questions and overall student performance will be reported when final grades are turned in. Please note that no resources other than a graphing calculator are allowed for use by students during the final exam (e.g., no formula sheets, no notes, no index cards, etc.)

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