

University of North Alabama
Departmental Syllabus

COURSE TITLE: Finite Mathematics

COURSE NUMBER: MA 110

CREDIT: 3 Semester Hours

COURSE PREREQUISITE: A minimum mathematics ACT score of 22 and credit in high school Algebra I, Algebra II, and Geometry; or grade of C or better in Intermediate Algebra; or Mathematics for Liberal Arts.

COURSE DESCRIPTION: This course is intended to give an overview of topics in finite mathematics together with their applications and is taken primarily by students who are not majoring in science, engineering, commerce, or mathematics (i.e., students who are not required to take calculus). The course includes sets, counting, permutation, combinations, basic probability (including Bayes' Theorem), an introduction to statistics (including work with Binomial Distribution and Normal Distribution), matrices and their applications to Markov chains and decision theory. Additional topics may include symbolic logic, linear models, linear programming, the simplex method and applications.

COURSE OBJECTIVES: **The student shall demonstrate knowledge of:**

1. *Counting techniques, including permutations and combinations*
2. *Basic probability, including Bayes' Theorem*
3. *Basic statistics, including work with binomial and normal distributions*
4. *Matrices and their applications to Markov chains and decision theory*

COURSE OUTLINE:

- I. Set Theory
 1. Introduction to sets
 2. Subsets
 3. Complement, union and intersection of sets
 4. Venn Diagrams
 5. Applications
- II. Probability
 1. Basic Concepts
 2. Conditional probability; Independence
 3. Bayes Theorem
- III. Counting Principles
 1. Permutation and combinations
 2. Applications of Counting
 3. Binomial Probability
 4. Probability distribution and expected value
- IV. Statistics
 1. Frequency distributions
 2. Measures of central tendency
 3. Measures of variation

4. Normal distribution
5. Binomial distribution

V. Matrices

1. Addition and scalar multiplication
2. Matrix multiplication

VI. Application

1. Markov chains and applications
2. Decision making (game theory)

Assessment of Student Progress:

There will be a minimum of 3 hourly examinations at 100 points each and a comprehensive final examination.

ACCOMMODATION STATEMENT:

In accordance with the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973, the University offers reasonable accommodations to students with eligible documented learning, physical and/or psychological disabilities. Under Title II of the Americans with Disabilities Act (ADA) of 1990 and Section 504 of the Rehabilitation Act of 1973, a disability is defined as a physical or mental impairment that substantially limits one or more major life activities as compared to an average person in the population. It is the responsibility of the student to contact Developmental Services prior to the beginning of the semester to initiate the accommodation process and to notify instructors within the first three class meetings to develop an accommodation plan. Appropriate, reasonable accommodations will be made to allow each student to meet course requirements, but no fundamental or substantial alteration of academic standards will be made. Students needing assistance should contact Developmental Services.