

# ARAPAHOE COMMUNITY COLLEGE SYLLABUS

**Course Number:** MAT 123

**Title:** Finite Mathematics

**Credits:** 4

**Instructor:**

**Phone:**

**E-mail:**

**Office Location (if applicable):**

**Office Hours (if applicable):**

**Important Dates:**

Last day to drop with refund (include date):

Last day to withdraw without refund (include date):

**Catalog Description:**

This course is primarily intended for Business, Life Science and Social Science majors. Topics include functions, matrix algebra, linear programming, and an introduction to probability and counting techniques. Emphasis is on applications. The course may include other topics such as statistics when time permits.

**Prerequisites:** A grade of C or better in MAT 099 Intermediate Algebra (formerly known as MAT 106, Survey of Algebra) or permission of instructor.

**Text:** *Finite Mathematics and Calculus with Applications*; Eighth Edition; by Lial, Greenwell, and Ritchey; Pearson/Addison Wesley.

**Required Course Material:** Text, graph paper, and a graphing calculator (TI-83 or TI-86)

**Grading Criteria:**

**Makeup Policy:**

**Attendance Policy:**

**Online Course Evaluations:** As this course nears completion, you will have the opportunity to complete a confidential evaluation of the class online. Login instructions will be sent to your 'student.cccs.edu' e-mail address. Your feedback is important, and ensures that ACC continues to offer quality instruction that meets your needs. Please take time to complete the survey – I appreciate your feedback.

**E-mail Communication:** Effective 1/20/09 electronic correspondence from ACC employees will go to your student email account *only*. When you activate your account you can forward emails to an e-mail

account that you already have. To activate your student e-mail account, go to <http://www.arapahoe.edu> and click on the "Activate Student E-mail" link. Questions? Please call 303-797-5621

**Student Success Center for all ACC students:** Peer and professional tutoring in Room M2720 now includes student tutors, math support, and the Writing Center in one location to provide academic assistance for all your classes.

ACC math instructors provide help with concepts, homework, online resources and graphing calculator workshops. Students may watch course related videos and DVDs in the library. For information, contact the Student Success Center at 303-797-5669 or email [Mathhelp@arapahoe.edu](mailto:Mathhelp@arapahoe.edu)

Arapahoe Community College provides accommodations to qualified students with disabilities. To request accommodation, contact Disability Services in M2710 or call (303) 797-5937 v/tty.

### **Academic Honesty Statement**

Arapahoe Community College is committed to academic honesty and scholarly integrity. The College can best function and accomplish its mission in an atmosphere of the highest ethical standards. All members of the College community are expected and encouraged to contribute to such an environment by observing all accepted principles of academic honesty.

Academic dishonesty includes but is not limited to: plagiarism, cheating, fabrication, grade tampering, misuse of computers and other electronic technology, and facilitating academic dishonesty. Those found in violation may also be subject to potential disciplinary sanctions under the Arapahoe Community College Code of Conduct. **OR "Those found in violation of academic honesty will be subject to the following disciplinary actions: \_(teacher discretion)\_\_\_\_\_."**

**The safety and security of all our students, faculty, staff and visitors is of the utmost importance to the Campus Police Department. We rely on each of you to be an additional set of ears and eyes to help maintain campus safety. Please be diligent in your efforts to report suspicious or unusual behavior or circumstances to the Campus Police Department. Trust your instincts when something doesn't look, seem or feel right and tell someone. The Campus Police can be reached at 303-797-5800**

or in M2600 on the second floor behind Information Central. Additional safety information can be found on the website at <http://www.arapahoe.edu/studentsvcs/campuspolice/index.html>

**Contact Information for Learning Support Services**

<b>Library</b>	<b>M2500 303-797-5090</b>
<b>Technical Support</b>	<b>797-5700 x3199</b>
<b>Writing Center</b>	<b>M2855 303-797-5830</b>
<b>Advising/Counseling</b>	<b>M2010 303-797-5651</b>
<b>Instructional Testing Center</b>	<b>M2280 303-797-5993</b>
<b>Bookstore</b>	<b>M1200 303-797-5676</b>
<b>Computer Lab</b>	<b>M1650 303-797-5907</b>
<b>Tutorial Services</b>	<b>M2710 303.797.5669</b>
<b>Career Center</b>	<b>M2025 303-797-5805</b>
<b>eLearning</b>	<b>303-797-5700 x6700</b>

**COURSE CONTENT:**

**R Algebra Reference**

- R.1 Polynomials
- R.2 Factoring
- R.3 Rational Expressions
- R.4 Equations
- R.5 Inequalities
- R.6 Exponents
- R.7 Radicals

**1 Linear Functions**

- 1.1 Slopes and Equations of Lines
- 1.2 Linear Functions and Applications
- 1.3 The Least Squares Line

## **2 Systems of Linear Equations and Matrices**

- 2.1 The Echelon Method
- 2.2 Gauss-Jordan Method
- 2.3 Addition and Subtraction of Matrices
- 2.4 Multiplication of Matrices
  
- 2.5 Matrix Inverses
  
- 2.6 Input-Output Models

## **3 Linear Programming: The Graphical Method**

- 3.1 Graphing Linear Inequalities
- 3.2 Solving Linear Programming Problems Graphically
- 3.3 Applications of Linear Programming

## **4 Linear Programming: The Simplex Method**

- 4.1 Slack Variables and the Pivot
- 4.2 Maximization Problems
- 4.3 Minimization Problems; Duality
- 4.4 Nonstandard Problems

## **5 Mathematics of Finance**

- 5.1 Simple and Compound Interest
- 5.2 Future Value of an Annuity
- 5.3 Present Value of an Annuity; Amortization

## **6 Logic**

- 6.1 Statements
- 6.2 Truth Tables and Equivalent Statements
- 6.3 The Conditional and Circuits

6.4 More on the Conditional

6.5 Analyzing Arguments and Proofs

6.6 Analyzing Arguments with Quantifiers

## **7 Sets and Probability**

7.1 Sets

7.2 Applications of Venn Diagrams

7.3 Introduction to Probability

7.4 Basic Concepts of Probability

7.5 Conditional Probability; Independent Events

7.6 Bayes' Theorem

## **8 Counting Principles; Further Probability Topics**

8.1 The Multiplication Principle; Permutations

8.2 Combinations

8.3 Probability Applications of Counting Principles

8.4 Binomial Probability

8.5 Probability Distributions; Expected Value

## **9 Statistics**

9.1 Frequency Distributions; Measures of Central Tendency

9.2 Measures of Variation

9.3 The Normal Distribution

9.4 Normal Approximation to the Binomial Distribution

## **10 Nonlinear Functions**

10.1 Properties of Functions

10.2 Quadratic Functions; Translation and Reflection

10.3 Polynomial and Rational Functions

10.4 Exponential Functions

10.5 Logarithmic Functions

10.6 Applications: Growth and Decay; Mathematics of Finance