

Required Syllabus Information – all must be included in the course syllabus

MAT 123

Course Title: Finite Mathematics: MA1

Course Credits: 4

Course Description: Covers topics including functions, matrix algebra, linear programming, and an introduction to probability and counting techniques. Emphasis is on applications.

GT Pathways Requirements:

Guaranteed Transfer (GT) Pathways Course Statement:

The Colorado Commission on Higher Education has approved MAT 123 for inclusion in the Guaranteed Transfer (GT) Pathways program in the GT- MA1 category. For transferring students, successful completion with a minimum C– grade guarantees transfer and application of credit in this GT Pathways category. For more information on the GT Pathways program, go to <http://higher.colorado.gov/academics/transfers/gtpathways/curriculum.html>.

MATHEMATICS CONTENT CRITERIA GT-MA1

- a) Demonstrate good problem-solving habits, including:
 - Estimating solutions and recognizing unreasonable results.
 - Considering a variety of approaches to a given problem, and selecting one that is appropriate.
 - Interpreting solutions correctly.
- b) Generate and interpret symbolic, graphical, numerical, and verbal (written or oral) representations of mathematical ideas.
- c) Communicate mathematical ideas in written and/or oral form using appropriate mathematical language, notation, and style.
- d) Apply mathematical concepts, procedures, and techniques appropriate to the course.
- e) Recognize and apply patterns or mathematical structure.
- f) Utilize and integrate appropriate technology.

COMPETENCIES & STUDENT LEARNING OUTCOMES FOR GT-MA1

Quantitative Literacy:

- 1. Interpret Information**
 - a. Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).
- 2. Represent Information**
 - a. Convert information into and between various mathematical forms (e.g., equations, graphs, diagrams, tables, words).
- 3. Perform Calculations**
 - a. Solve problems or equations at the appropriate course level.
 - b. Use appropriate mathematical notation.

- c. Solve a variety of different problem types that involve a multi-step solution and address the validity of the results.
- 4. Apply and Analyze Information**
 - a. Make use of graphical objects (such as graphs of equations in two or three variables, histograms, scatterplots of bivariate data, geometrical figures, etc.) to supplement a solution to a typical problem at the appropriate level.
 - b. Formulate, organize, and articulate solutions to theoretical and application problems at the appropriate course level.
 - c. Make judgments based on mathematical analysis appropriate to the course level.
- 5. Communicate Using Mathematical Forms**
 - a. Express mathematical analysis symbolically, graphically, and in written language that clarifies/justifies/summarizes reasoning (may also include oral communication).

SYSTEM REQUIREMENTS:

REQUIRED COURSE LEARNING OUTCOMES

1. Solve linear equations and inequalities using appropriate techniques.
2. Analyze the graph of functions.
3. Solve linear systems.
4. Solve linear programming problems graphically.
5. Apply basic probability concepts.
6. Analyze exponential and logarithmic functions.
7. Solve application problems related to simple and compound interest.

REQUIRED TOPICAL OUTLINE

- I. Solve linear equations and inequalities using appropriate techniques
 - a. Linear equations
 - b. Linear inequalities
 - c. Solve application problems using linear regression.
- II. Analyze the graph of functions.
 - a. Functions notation, domain, range, difference quotient, transformation, piecewise functions
 - b. Quadratic functions
 - c. Applications of quadratic functions
 - d. Polynomials and rational functions
- III. Solve linear systems.
 - a. System of two equations in two variables
 - b. Matrices (perform matrix operations, solving linear systems using Gauss-Jordan and matrix equation)
- IV. Solve linear programming problems graphically.
 - a. Graphing a linear inequality with two variables

- b. Graphing a system of inequalities in 2 variables
 - c. Solving linear Programming problems graphically
- V. Apply basic probability concepts.
 - a. Sets
 - b. Basic counting principles
 - c. Permutation and combinations
 - d. Probability of events
 - e. Empirical probability
 - f. Probability of the union and intersection
 - g. Conditional probability
 - h. Bayes' formula
 - i. Probability distribution
- VI. Analyze exponential and logarithmic functions.
 - a. Exponential functions
 - b. Logarithmic functions
- VII. Solve application problems related to simple and compound interest.
 - a. Simple interest
 - b. Compound interest
 - c. Future value
 - d. Present Value

CCOnline Course Policies: <http://www.cconline.org/cconline-course-policies/>

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