

**COLLIN COUNTY COMMUNITY COLLEGE
COURSE SYLLABUS**

COURSE NUMBER: Math 1324

COURSE TITLE: Finite Mathematics

CREDIT HRS: 3 **LECTURE HRS:** 3 **LAB HRS:** 1 **CLN/REC HRS:** 0

ASSESSMENTS:

Prior to enrolling in this course, the student must demonstrate eligibility to enroll in the following: MATH 1314, MATH 1324, or MATH 1342.

PREREQUISITE: TSI placement

COREQUISITE: None

TEXTBOOK:

Mathematical Applications for the Management, Life, and Social Sciences, Harshbarger & Reynolds, 9th edition, Custom Edition for Collin College, Cengage Learning.

SUPPLIES: Graphing calculator required

COURSE DESCRIPTION:

Not for math majors. Equations, inequalities, functions, matrices, linear programming including the simplex method, probability, and statistics.

COURSE MEASURABLE LEARNING OUTCOMES:

Upon completion of this course the students should be able to do the following:

1. Solve linear and quadratic equations with applications to business and economics.
2. Classify and graph linear, quadratic, polynomial and other special functions.
3. Use appropriate mathematical models to solve applications in business and economics.
4. Use matrices to solve systems of linear equations with applications to business and economics.
5. Solve exponential and logarithmic equations with applications to business, economics, and finance.
6. Compute probabilities of events and apply to decision making problems in business and economics.

COURSE REQUIREMENTS:

Attending lectures, completing assignments, completing required exams and labs, and knowledge of calculator use are all required.

COURSE FORMAT:

Lecture, lab and guided practice.

METHOD OF EVALUATION:

A minimum of four written exams, a lab component grade, and a comprehensive final exam. Homework and/or quizzes may be used in place of one exam or in addition to exams. The weight of each of these components of evaluation will be specified in the individual instructor's addendum to this syllabus. All out-of-class course credit, including take-home exams, home assignments, service-learning, etc. may not exceed 25% of the total course grade; thus, at least 75% of a student's grade must consist of exams given in the class or testing center, and no student may retake any of these exams.

COURSE REPEAT POLICY:

All students may repeat this course only once after receiving a grade, including W. For example students who have taken this course twice have to choose a different course to take after two trials.

ADA STATEMENT:

It is the policy of Collin County Community College to provide reasonable and appropriate accommodations for individuals with documented disabilities. This college will adhere to all applicable federal and state laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the responsibility of the student to contact the ACCESS office located in room G200 at the Spring Creek Campus (972)881-5898 or TDD(972)881-5950, in a timely manner if he/she desires to arrange for accommodations.

ATTENDANCE POLICY:

Attendance is expected of all students. If a student is unable to attend it is his/her responsibility to contact the instructor to obtain assignments. Please see the schedule of classes for the last day to withdraw.

RELIGIOUS HOLY DAYS:

In accordance with section 51.911 of the Texas Education Code, the college will allow a student who is absent from class for the observance of a religious holy day to take an examination or complete an assignment scheduled for that day within a reasonable time. A copy of the state rules and procedures regarding holy days and the form for notification of absence from each class under this provision are available from the Admissions and Records Office.

ACADEMIC ETHICS:

The college may initiate disciplinary proceedings against a student accused of scholastic dishonesty. Scholastic dishonesty includes, but is not limited to, statements, acts, or omissions related to applications for enrollment or the award of a degree, and/or the submission of material as one's own work that is not one's own. Scholastic dishonesty may involve one or more of the following acts: cheating, plagiarism, collusion, and/or falsifying academic records.

Cheating is willful giving or receiving of information in an unauthorized manner during an examination, illicitly obtaining examination questions in advance, using someone else's work for assignments as if it were one's own, copying computer disks or files, and any other dishonest means of attempting to fulfill the requirements of a course.

Plagiarism is the use of an author's words or ideas as if they were one's own without giving credit to the source, including, but not limited to, failure to acknowledge a direct quotation. Contact Dean of Students at 972.881.5771 for the student disciplinary process and procedures or consult the CCCC Student Handbook.

SPECIFIC REQUIREMENTS/COURSE CONTENT:

The student will be responsible for knowing all definition and statements of theorems for each section outlined in the following modules.

MODULE 1: Linear Equations and Functions

The student will be able to:

1. Find the domains of certain functions.
2. Use function notation.
3. Graph linear functions.
4. Graph a line, given its slope and y-intercept or its slope and one point on the line.
5. Write the equation of a line, given information about its graph.
6. Use a graphing calculator to graph functions.
7. Solve a system of linear equations using substitution and elimination.
8. Find the cost function, price-demand function, revenue function, or profit function.
9. Given a revenue function and a cost function, or a profit function, find the break-even point.
10. Given a price-demand function and a price-supply function, find the equilibrium point.

MODULE 2: Special Functions

The student will be able to:

1. Solve a quadratic equation.
2. Find the vertex of the graph of a quadratic function.
2. Determine whether a vertex is a maximum point or a minimum point.
3. Find the zeros of a quadratic function.
4. Graph quadratic functions.
5. Determine the range of a quadratic function.
6. Given a revenue function and a cost function, or a profit function, find the break-even point.
7. Given a price-demand function and a price-supply function, find the equilibrium point.
8. Maximize revenue or profit, and minimize cost.
9. Plot the basic functions (Identity, Constant, Power, and Root).
9. Plot the basic functions using transformations (vertical and horizontal).
10. Given the degree of a polynomial function determine the maximum and minimum number of turning points
11. Use the graphing calculator to graph a polynomial function.
12. Use the graphing calculator to approximate the real zeros of a polynomial function.
13. Given a rational function determine the domain.
14. Given a rational function determine any vertical or horizontal asymptotes.
15. Use polynomial or rational functions to solve applications problems.
16. Graph piece-wise defined functions.
17. Use the graphing calculator to find the regression line of given data.
18. Plot the regression line with the given data.

MODULE 3: Matrices

The student will be able to:

1. Add and subtract matrices.
2. Organize and interpret data stored in matrices.
3. Multiply a matrix by a scalar.
4. Multiply two matrices.
5. Use matrices to solve systems of equations with unique solutions.
6. Use matrices to solve systems of equations with non-unique solutions.
7. Find the inverse of a square matrix.
8. Use inverse matrices to solve systems of linear equations.
9. Interpret Leontif technology matrices. (Optional)
10. Use Leontif models to solve input-output problems. (Optional)

MODULE 4: Inequalities and Linear Programming

The student will be able to:

1. Graph and solve linear inequalities in one variable.
2. Graph and solve linear inequalities in two variables.
3. Solve systems of linear inequalities in two variables.
4. Use graphical methods to find the optimum value of a linear function subject to constraints.
5. Use the simplex method to maximize functions subject to constraints.

MODULE 5: Exponential and Logarithmic Functions

The student will be able to:

1. Graph a basic exponential function.
2. Graph base e exponential functions.
3. Define the logarithmic functions as the inverse of an exponential function.
4. Write a log function in exponential form and vice-versa.
5. Graph a basic logarithmic function.
6. Use the properties of log functions to simplify log expressions and solve log equations.
7. Use the calculator to find common logs and natural logs.
8. Use logarithms to solve exponential equations.
9. Use logarithms to solve application problems.
10. Solve application problems involving growth/decay.

MODULE 6: Mathematics of Finance

The student will be able to:

1. Compute simple interest.
2. Find the total amount due on a loan using simple interest.

3. Compute the future value using compound interest.
4. Compute the present value using compound interest.
5. Find the effective rate.
6. Compute the growth time of an investment.
7. Compute the future value of an ordinary annuity.
8. Compute the present value of an ordinary annuity.
9. Compute the regular payments necessary to amortize a loan.
10. Create an amortization schedule.

MODULE 7: Introduction to Probability

The student will be able to:

1. Compute the probability of a single event occurrence.
2. Construct a sample space for a probability experiment.
3. Compute the probability that one or the other of two mutually exclusive events will occur.
4. Compute the probability that one or the other of two non-mutually exclusive events will occur.
5. Compute the expected value of an experiment.