

MATH-1460: FINITE MATHEMATICS

Cuyahoga Community College

Viewing: MATH-1460 : Finite Mathematics

Board of Trustees:

May 2026

Academic Term:

Fall 2026

Subject Code

MATH - Mathematics

Course Number:

1460

Title:

Finite Mathematics

Catalog Description:

A course in Finite Mathematics with applications in business, social sciences, and life sciences. Topics include functions, mathematics of finance, systems of linear equations, matrices, systems of linear inequalities, fundamentals of probability, and basic statistics.

Credit Hour(s):

4

Lecture Hour(s):

4

Requisites

Prerequisite and Corequisite

MATH-0965 Intermediate Algebra or qualified math placement; or departmental approval for equivalent coursework. Note: MATH-1240 Contemporary Mathematics taken prior to Fall 2024 will also be accepted to meet prerequisite requirements for this course.

Outcomes

Course Outcome(s):

Analyze, define, utilize, and apply functions of various types.

Essential Learning Outcome Mapping:

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

Objective(s):

1. Use linear functions to model and solve application problems.
2. Define, evaluate, and graph exponential functions.
3. Define, evaluate, and graph logarithmic functions.
4. Use exponential and logarithmic functions to solve application problems.

Course Outcome(s):

Interpret, evaluate, and apply various formulas related to the mathematics of finance.

Essential Learning Outcome Mapping:

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

Objective(s):

1. Interpret and compute simple interest.
2. Interpret and compute compound interest, including continuous compounding.
3. Compute future value and present value using compound interest.
4. Compute effective rate (annual percentage yield).
5. Compute future value and present value of annuities.

Course Outcome(s):

Analyze, graph, solve, and apply systems of linear equations, including utilization of matrices.

Essential Learning Outcome Mapping:

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

Objective(s):

1. Solve systems of two linear equations in two variables by graphing, substitution, and/or elimination.
2. Define and utilize matrices to represent systems of equations.
3. Solve systems of linear equations in two or more variables using Gaussian and/or Gauss-Jordan elimination.
4. Solve application problems using systems of linear equations.
5. Perform and apply matrix algebra, including addition, subtraction, scalar multiplication, and multiplication.
6. Interpret and compute the inverse of a matrix.
7. Use the inverse of a matrix to solve a system of linear equations.

Course Outcome(s):

Analyze, graph, solve, and apply systems of linear inequalities.

Essential Learning Outcome Mapping:

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

Objective(s):

1. Graph linear inequalities and systems of linear inequalities in two variables.
2. Set up the mathematical model for a linear programming problem.
3. Solve linear programming problems graphically.
4. Solve linear programming problems in Standard Maximum Form using the Simplex Method.

Course Outcome(s):

Utilize and apply fundamentals of probability.

Essential Learning Outcome Mapping:

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

Objective(s):

1. Compute probabilities of events and complements of events.
2. Interpret and compute conditional probabilities.
3. Identify and compute probabilities for independent and dependent events.
4. Identify and compute permutations and combinations.
5. Utilize counting techniques to compute probabilities.

Course Outcome(s):

Utilize and apply basic elements of statistics.

Essential Learning Outcome Mapping:

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

Objective(s):

1. Identify and interpret basic statistical graphs.
2. Compute and interpret measures of center, including mean, median, and mode.
3. Compute and interpret measures of dispersion, including range, variance, and standard deviation.

Course Outcome(s):

Utilize technology to graph, model, and solve a variety of problems.

Essential Learning Outcome Mapping:

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

Objective(s):

1. Use graphing calculators, computer software, and/or online tools to graph functions and model application problems.
2. Use graphing calculators, computer software, and/or online tools to aid in solving a variety of problems throughout this course.

Methods of Evaluation:

1. Exams
2. Quizzes
3. Homework
4. Projects/activities
5. Collaborative work
6. Comprehensive final exam

Course Content Outline:

1. Functions
 - a. Linear functions
 - b. Linear models
 - c. Exponential functions
 - d. Logarithmic functions
 - e. Applications with exponential and logarithmic functions
2. Mathematics of finance
 - a. Simple interest
 - b. Compound interest
 - c. Continuous compounding
 - d. Future value
 - e. Present value
 - f. Effective rate (annual percentage yield)
 - g. Future value of annuities
 - h. Present value of annuities
3. Systems of linear equations and matrices
 - a. Solving systems of two equations in two variables by graphing, substitution, and/or elimination
 - b. Matrices
 - c. Representing systems of equations using matrices
 - d. Gaussian and/or Gauss-Jordan elimination
 - e. Matrix addition
 - f. Matrix subtraction
 - g. Scalar multiplication
 - h. Matrix multiplication
 - i. Inverse of a matrix
 - j. Using the inverse of a matrix to solve a system of linear equations

4. Systems of linear inequalities
 - a. Linear inequalities
 - b. Graphing linear inequalities
 - c. Systems of linear inequalities
 - d. Graphing systems of linear inequalities
 - e. Linear programming
 - f. Solving linear programming problems graphically
 - g. Standard maximum form
 - h. Simplex method
5. Fundamentals of probability
 - a. Probabilities of events
 - b. Complements of events
 - c. Conditional probabilities
 - d. Independent events
 - e. Dependent events
 - f. Permutations
 - g. Combinations
 - h. Using counting techniques to compute probabilities
6. Basic elements of statistics
 - a. Statistical graphs
 - b. Mean
 - c. Median
 - d. Mode
 - e. Range
 - f. Variance
 - g. Standard deviation
7. Technology
 - a. Using technology to graph and model
 - b. Using technology to solve a variety of problems

Religious Accommodation

Before reviewing the course schedule, students should carefully review the following religious accommodation policy and other required instructional policies:

Religious Accommodation:

Students seeking an accommodation for absences permitted under Ohio's Testing Your Faith Act must provide the instructor with written notice of the specific dates for which the student requires an accommodation and must do so not later than fourteen (14) days after the first day of instruction. Please submit requests for accommodations at this link: <https://portal2.tri-c.edu/ReligiousAccommodation/> Religious Accommodation Form. Students with questions about their religious accommodations under Ohio's Testing Your Faith Act may contact the College's Office of General Counsel and Legal Services by phone at 216.987.4856 or via email at legal@tri-c.edu.

Other Required Instructional Policies:

<https://www.tri-c.edu/student-resources/curriculum/documents/syllabus-part-b.pdf>

Weekly Schedule

	Topics
Week 1	Linear functions and models Exponential functions
Week 2	Logarithmic functions Applications with exponential and logarithmic functions
Week 3	Simple interest Compound interest Continuous compounding Future value and present value
Week 4	Effective rate Future value of annuities Present value of annuities

Week 5	Systems of linear equations Solving by graphing, substitution, and/or elimination
Week 6	Matrices Representing systems of equations using matrices Solving by Gaussian and/or Gauss-Jordan elimination
Week 7	Matrix algebra (addition, subtraction, scalar multiplication, and multiplication) Inverse of a matrix Using the inverse of a matrix to solve a system of linear equations
Week 8	Midterm
Week 9	Linear inequalities Graphing linear inequalities Graphing systems of linear inequalities
Week 10	Linear programming Solving linear programming problems graphically
Week 11	Standard maximum form Solving linear programming problems using the Simplex Method
Week 12	Fundamentals of probability Probabilities of events and complements of events Conditional probabilities Independent and dependent events
Week 13	Permutations and combinations Using counting techniques to compute probabilities
Week 14	Basics of statistics Statistical graphs
Week 15	Measures of center (mean, median, mode) Measures of dispersion (range, variance, standard deviation)
Week 16	Final Exam

The Course Schedule is subject to change due to pedagogical needs, instructor discretion, parts of term, and unexpected events.

Required/Recommended Readings

Readings may be selected from the textbooks, digital learning platforms, and additional resources listed in this course outline.

Resources for the Instructor

Lial, Margaret L., Thomas W. Hungerford, John P. Holcomb, Jr., and Bernadette Mullins. *Finite Mathematics with Applications in the Management, Natural, and Social Sciences*. 13th ed. Hoboken, NJ: Pearson Education, 2024.

Lial, Margaret L., Raymond N. Greenwell, and Nathan P. Ritchey. *Finite Mathematics*. 12th ed. Hoboken, NJ: Pearson, 2022.

Waner, Stefan and Steven R. Costenoble. *Finite Mathematics*. 8th ed. Boston, MA: Cengage, 2023.

Lial, Margaret L., Raymond N. Greenwell, Nathan P. Ritchey. *Finite Mathematics and Calculus with Applications*. 11th ed. Hoboken, NJ: Pearson Education, 2022.

Barnett, Raymond A., Michael R. Ziegler, Karl E. Byleen, and Christopher J. Stocker. *Finite Mathematics for Business, Economics, Life Sciences, and Social Sciences*. 14th ed. Hoboken, NJ: Pearson Education, 2019.

Tan, Soo T. *Finite Mathematics for the Managerial, Life, and Social Sciences*. Boston, MA: Cengage, 2018.

Additional Resources for the Instructor

- Digital Learning Platforms (such as Pearson MyLab & Mastering, Cengage WebAssign, McGraw Hill ALEKS, Hawkes Learning System, etc.)
- Open Source Textbooks & Tools (such as OpenStax, MyOpenMath, Carnegie Math Pathways, Ximera, Desmos, etc.)
- Online Videos & Tutorials (from sources such as Khan Academy, TED-Ed, Purplemath, MathTV, World of Math, etc.)
- Math & Statistics Software (such as Maple, Mathematica, StatCrunch, Minitab, Excel, R, SPSS, etc.)
- Data Sets & Statistics (from sources such as the US Government's Open Data, US Census Bureau, Kaggle, Statista, Pew Research Center, etc.)
- News Sources (such as AP News, Reuters, BBC, New York Times, Wall Street Journal, CNN, MSNBC, Fox News, Plain Dealer, etc.)
- Journal Articles (from scientific, peer-reviewed journal sources such as Science, Nature, etc.; and from math/educational organizations such as AMATYC, AMS, MAA, etc.)
- Informational Websites (for real-life applications of math/statistics, such as regional transit websites, lottery websites, real estate websites, financial websites, playing cards websites, etc.)

Instructional Services

OAN Number:

Ohio Transfer 36 TMM028

Top of page

Key: 5430