MATH 9 Course Outline as of Spring 2017

CATALOG INFORMATION

Dept and Nbr: MATH 9 Title: FINITE MATH
Full Title: Finite Mathematics
Last Reviewed: 3/13/2023

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Sets, matrices, systems of equations and inequalities, linear programming, combinatorial techniques and probability, mathematics of finance, Markov chains, game theory.

Prerequisites/Corequisites:
Completion of MATH 154; or MATH 155 or higher (VE)

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Sets, matrices, systems of equations and inequalities, linear programming, combinatorial techniques and probability, mathematics of finance, Markov chains, game theory. (Grade or P/NP)
Prerequisites/Corequisites: Completion of MATH 154; or MATH 155 or higher (VE)
Recommended:
Limits on Enrollment:
Transfer Credit: CSU;UC.

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		Effective:	Inactive:
	B	Communication and Analytical Thinking	Fall 1981	
	MC	Math Competency		
CSU GE:	**Transfer Area**		Effective:	Inactive:
	B4	Math/Quantitative Reasoning	Fall 1981	
IGETC:	**Transfer Area**		Effective:	Inactive:
	2A	Mathematical Concepts & Quantitative Reasoning	Fall 1981	

CSU Transfer:	Transferable	Effective:	Fall 1981	Inactive:
UC Transfer:	Transferable	Effective:	Fall 1981	Inactive:

CID:
CID Descriptor: MATH 130 Finite Mathematics
SRJC Equivalent Course(s): MATH9

Certificate/Major Applicable:
Major Applicable Course

COURSE CONTENT

Outcomes and Objectives:
Upon completion of the course, students will be able to:
1. Apply linear and exponential graphs and functions to solve problems in finance economics.
2. Write a system of linear equations to solve applied problems.
3. Solve a system of linear equations using Gauss-Jordan elimination and interpret the result.
4. Find the inverse of a square matrix and use the inverse to solve a system of linear equations.
5. Solve linear programming problems in at least three variables.
6. Apply graphical and simplex methods to linear programming problems.
7. Find unions, intersections and complements of sets using Venn diagrams.
8. Apply the fundamental counting principle, permutations, and combinations to probability problems.
9. Determine the probability of a specified event.
10. Use expected value, conditional probability, and Markov chains
11. Solve applied problems in finance including simple and compound interest.
12. Solve applied problems in finance including future and present value, annuities, sinking funds, and amortization.
13. Apply fundamentals of game theory.

Topics and Scope:

I. Discrete Methods
   A. Set Theory including DeMorgan's Laws and Venn diagrams
   B. Matrices
      1. Matrix algebra, including inverses to solve systems of linear equations in at least three

variables
2. Using Gauss-Jordan elimination and reduced row echelon form and applications
C. Counting techniques
1. Fundamental counting principle
2. Permutations
3. Combinations

II. Probability
A. Finding the probability of an event given the probabilities of the simple events in a sample space
B. Finding probabilities using combinatorics including permutations and combinations
C. Expected value
D. Conditional probability
E. Markov chains

III. Linear Programming
A. Graphical methods
B. Simplex methods in at least 3 variables

IV. Mathematics of Finance and Economics
A. Applications of linear functions to economics
1. Cost, revenue, and profit
2. Supply and demand curves
3. Break-even point
4. Free market equilibrium
B. Simple and compound interest functions
1. Solving using exponential functions
2. Solving using logarithmic functions
C. Annuities
D. Present value
E. Future value
F. Sinking funds
G. Amortization

V. Game Theory
A. Fundamentals
B. Matrix methods

Assignment:

1. Daily reading outside of class (10-50 pages per week).
2. Problem set assignments from required text(s), or supplementary materials chosen by the instructor (1-6 per week).
3. Quizzes (0-4 per week).
4. Exams (3-8 per term).
5. Projects (for example, computer explorations or modeling activities, 0-10 per term).

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems	Problem solving 5 - 20%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice and free response exams; quizzes	Exams 70 - 95%

Other: Includes any assessment tools that do not logically fit into the above categories.

Projects	Other Category 0 - 10%

Representative Textbooks and Materials:
Finite Mathematics (6th ed.). Waner, Stefan and Constenoble, Steven. Cengage: 2016.
Finite Mathematics (13th ed.). Barnett, Raymond; Ziegler, Michael; Byleen, Karl. Pearson: 2014.
Finite Mathematics (11th ed.). Lial, Margaret; Greenwell, Raymond; Ritchey, Nathan. Pearson: 2015.