### MATH 9 Course Outline as of Fall 2014

# **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	<b>Course Hours Total</b>	
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 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 higher (VE) Recommended: Limits on Enrollment: Transfer Credit: CSU;UC.

# **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

AS Degree:	Area B	Thinking	n and Analytical	Effective: Fall 1981	Inactive:
CSU GE:	MC <b>Transfer Area</b> B4	Math Competency Math/Quantitative Reasoning		Effective: Fall 1981	Inactive:
IGETC:	<b>Transfer Area</b> 2A	Mathematical Quantitative Re	1	Effective: Fall 1981	Inactive:
CSU Transfer	: Transferable	Effective:	Fall 1981	Inactive:	
UC Transfer:	Transferable	Effective:	Fall 1981	Inactive:	

#### CID:

CID Descriptor:MATH 130	<b>Finite Mathematics</b>
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. Define sets and perform matrix operations.
- 2. Apply matrix methods of solving systems of equations.

3. Apply the fundamental counting principle, permutations, and combinations to probability problems.

- 4. Use expected value, conditional probability and Markov chains.
- 5. Apply graphical and simplex linear programming methods.
- 6. Apply compound interest, annuities, present value, sinking funds, amortization formulas.
- 7. 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
    - 2. Methods of solving systems of equations
  - C. Permutations
  - D. Combinations

### II. Probability

- A. Counting techniques
  - 1. Fundamental counting principle
  - 2. Permutations

- 3. Combinations
- B. Application of counting techniques to probability
- C. Expected value
- D. Conditional probability
- E. Markov chains
- III. Linear Programming
  - A. Graphical methods
    - B. Simplex methods
- IV. Mathematics of Finance
  - A. Compound interest
  - B. Annuities
  - C. Present value
  - D. Sinking funds
  - E. 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.

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

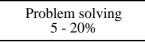
Homework problems

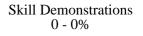
**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

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

Writing 0 - 0%	





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 (5th ed.). Waner, Stefan and Constenoble, Steven.Cengage: 2010. Finite Mathematics (12th ed.). Barnett, Raymond; Ziegler, Michael; Byleen, Karl. Pearson: 2010.

Finite Mathematics (10th ed.). Lial, Margaret; Greenwell, Raymond; Ritchey, Nathan. Pearson: 2012.