# 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 | 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 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.

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. 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. | Writing<br>0 - 0% |

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

| | |
|---|---|
| Homework problems | Problem solving<br>5 - 20% |

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

| | |
|---|---|
| None | Skill Demonstrations<br>0 - 0% |

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

| Multiple choice and free response exams; quizzes | | Exams<br>70 - 95% |
|---|---|---|

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

| Projects | | Other Category<br>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.