Course Title: _Topics in Finite Mathematics_  
Course No. MAT 210 No. of Credits 3-4  
Associate Degree Designation: MS  
Catalog description: Matrices, linear programming and applications, probability, Markov chains and mathematics of finance.

Course content (list of topics normally covered):
1) Matrices and systems of linear equations; Gauss-Jordan elimination; inverse matrices; applications of linear systems.
2) Linear programming and the simplex method; nonstandard linear programming problems and dual problems.
3) Mathematics of Finance; annuities and their applications.
4) Finite sets; counting via permutations and combinations.
5) Probability for finite sample spaces; relative frequencies; rules of probability; conditional probability and Bayes’ Theorem; expected value.
6) Stochastic processes and Markov chains; absorbing Markov chains (optional).

Content-based department proficiencies:
- Be able to formulate and solve applications as systems of linear equations or linear inequalities.
- Be able to formulate and solve applications of linear systems in matrix form; be able to interpret and solve applications using matrix operations.
- Be able to distinguish standard and nonstandard linear programming problems; be able to use the simplex method; and be able to interpret and solve practical applications as linear programming problems.
- Be able to recognize simple annuities; be able to distinguish present and future values in practical applications.
- Be able to count large finite sets.
- Be able to construct probability models; be able to distinguish the relative frequency model from the uniform probability model; be able to distinguish a Markov chain from an arbitrary stochastic process.

Colleges-wide proficiencies assigned to course:

Students should be able to demonstrate the following:

A. **Analytical skills** Performance Indicators: Students should be able to:
1. Interpret and synthesize information and ideas.
4. Select and apply scientific and other appropriate methodologies.

B. **Quantitative skills** Performance Indicators: Students should be able to:
1. Solve quantitative and mathematical problems.
2. Interpret graphs, tables, and diagrams.

**Representative textbooks used for the courses:** (editions change over time)  
Finite Mathematics for the Managerial, Life, and Social sciences, 6th ed. S.T. Tan  
Finite Mathematics, 6th ed. Lial, Miller, and Greenwall