

Revised Course Proposal
MAT 2190G: Finite Mathematics, Honors

1. Catalog Description

- a. Course level: MAT 2190G
- b. Title: Finite Mathematics, Honors
- c. Credit: 3-0-3
- d. Term to be offered: On Demand
- e. Short Title: Finite Math
- f. Course Description: Elementary counting theory, probability, and linear programming, with applications to business and social science.
- g. Prerequisites: MAT 1271 with a grade of C or better, or satisfactory placement by department guidelines, and admission to the University Honor Program.
- h. The course is writing active.

2. Student Learning Objectives

- a. *List student learning objectives that are designed to help students achieve one or more of the established goals of general education and university-wide assessment.*

In completing this course, students will be able to:

- i. express themselves in the language of mathematics using correct mathematical exposition and symbolism (*writing*).
- ii. read, interpret and solve linear programming problems graphically and by computational methods such as Simplex, Crown's Method, and the Dual Method (*critical thinking, writing*).
- iii. read, interpret and solve counting problems using Venn diagrams, the Fundamental Principle of Counting, combinations, permutations, and complements (*critical thinking, writing*).
- iv. read, interpret and solve probability problems using counting techniques and the rules of probability (*critical thinking, writing*).
- b. *Indicate additional student learning objectives, if any, that are designed to help students achieve the goals of the course and/or a particular discipline or program.*

Upon successful completion of this course, students will:

- i. be prepared for more advanced courses requiring knowledge of linear programming and probability.
- ii. appreciate the importance of mathematics and its applications in both business and the social sciences.

3. Course Outline

The following is a sample syllabus. The textbook has a variety of topics that allows each instructor and class to tailor the course to their specific interests.

Week 1	Linear Equations <ul style="list-style-type: none"> graphing lines systems of linear equations word problems using linear systems
Week 2	Matrix Solutions to Linear Systems <ul style="list-style-type: none"> formulating systems of equations from real-world applications solving linear systems using matrices solutions of dependent systems of equations
Weeks 3-4	Linear Programming <ul style="list-style-type: none"> systems of linear inequalities graphical solution of linear programs
Weeks 5-7	Algebraic Solutions of Linear Programs <ul style="list-style-type: none"> Simplex Method Crown's Method Dual Method (optional)
Weeks 8-10	Counting Techniques <ul style="list-style-type: none"> Fundamental Principle of Counting permutations combinations special counting techniques
Weeks 11-15	Probability <ul style="list-style-type: none"> introduction to vocabulary and basic concepts applying counting techniques to probability

- the Addition Rules of Probability
- dependent vs. independent events
- conditional probability
- the Multiplication Rules of Probability
- Bayes' Theorem
- binomial experiments

4. Evaluation of Student Learning

- a. Evaluation may include quizzes, 3-4 tests, group problem solving, and a final exam. A writing project to meet the standards of the Honors Program will be included.
- b. This course satisfies the criteria for a writing active course through the emphasis on correct mathematical writing when the student supplies complete reasoning as part of the solutions to problems.

5. Rationale

- a. The course develops critical thinking skills and the ability to apply mathematics. It will be placed in the Mathematics segment of the general education program.
- b. This course has always been taught at the 2000 level, since the skills and concepts covered in the course require a more than minimal level of mathematical maturity. It is a course which builds on students' skills in algebra and geometry, with a prerequisite of MAT 1271 or its equivalent.
- c. This course is a revision of MAT 2190C and should maintain the same curriculum identification number as MAT 2190C. This course does not duplicate any other course.
- d. MAT 2190G or MAT 2120G is required in the following majors and programs: all majors in the School of Business; economics; and economics with international studies.

6. Implementation

- a. The course will be taught by select faculty members in the Department of Mathematics.
- b. The text to be used is *Finite Mathematics, An Applied Approach*, 2nd edition, by Long and Graening, Addison-Wesley, 1997.

- c. There are no additional costs to the student.
- d. This course will first be offered in Spring 2001.

7. Community College Transfer

A community college course may be judged equivalent to this course.

- 8. Date Approved by the Department:** 4/10/00
- 9. Date Approved by the College Curriculum Committee:** 4/21/00
- 10. Date Approved by CAA:** 10/19/00

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