Departmental Syllabus
Math 1630 – Finite Mathematics with Applications


Prerequisites: MATH 15 with a grade of “C-” or better or a mathematics proficiency level of 15 or above.

Calculators: A scientific calculator (such as one of the TI-30 models) or a graphing calculator (such as the TI-83, 84, 85, 86 or the TI-Nspire with TI-84 keypad) is required. For a student who does not already own a graphing calculator, it is recommended that a purchase of a graphing calculator be delayed until after the first class meeting, when an instructor will provide specific calculator requirements for that class. Calculators with Computer Algebra Systems (CAS), (e.g. the TI-89, TI-92 and TI-Nspire with CAS keypad, or their equivalent), are not allowed in any math classes. On occasion, individual instructors may restrict the use of any type of calculator.

Course Description:
Part I  Linear Algebra: coordinate systems and graphs, linear systems, matrices, linear programming from a geometric perspective.

Part II  Probability: set theory, counting techniques, probability, Markov chains, game theory.

Student Learning Outcomes: Students should be able to:
• use basic operations on matrices to solve systems of linear equations;
• solve linear programming problems;
• solve counting problems; and
• calculate basic and conditional probabilities.

General Education Learning Outcomes: UW-Platteville students shall
1-2 Demonstrate ability to work with numbers, space and data
1-7 Demonstrate skills in problem-solving
1-8 Distinguish between valid and invalid reasoning
1-9 Assess the plausibility of proposed solutions

Topics and sections to be covered:

Part I  Linear Algebra
1.1  Slopes and Equations of Lines
1.2  Linear Functions and Applications
1.3  The Least Squares Line (Optional)

2.1  Solution of Linear Systems by the Echelon Method
2.2  Solution of Linear Systems by the Gauss-Jordan Method
2.3  Addition and Subtraction of Matrices
2.4  Multiplication of Matrices
2.5 Matrix Inverses
2.6 Input-Output Models

3.1 Graphing of Linear Inequalities
3.2 Solving Linear Programming Problems Graphically
3.3 Applications of Linear Programming

Part II Probability
7.1 Sets
7.2 Applications of Venn Diagrams
7.3 Introduction of Probability
7.4 Basic Concepts of Probability
7.5 Conditional Probability; Independent Events
7.6 Bayes’ Theorem

8.1 The Multiplication Principle; Permutations
8.2 Combinations
8.3 Probability Applications of Counting Principles
8.4 Binomial Probability
8.5 Probability Distributions; Expected Value

10.1 Basic Properties of Markov Chains
10.2 Regular Markov Chains
10.3 Absorbing Markov Chains

11.1 Strictly Determined Games
11.2 Mixed Strategies
11.3 Game Theory and Linear Programming

If you require an accommodation due to a disability, please make an appointment to see me as soon as possible to discuss arrangements for the accommodations. You will need a Verified Individualized Services and Accommodations (VISA) form from Services for Students with Disabilities.