MA 111 – INTRODUCTION TO CONTEMPORARY MATH
COURSE OUTLINE

Include parts I, II, and III plus at least one of parts IV or V and at least one of parts VI or VII.

I. Voting Methods
   A. Methods
      1. Plurality
      2. Runoff
      3. Borda’s
      4. Condorcet Winner
      5. Approval
   B. Strategic Voting
   C. Arrow’s Impossibility Theorem

II. Apportionment
    A. Quota Methods
       1. Hamilton
       2. Lowndes
    B. Divisor Methods
       1. Jefferson
       2. Webster
       3. Hill-Huntington
    C. Properties of Ideal Methods

III. Math of Money
    A. Equations
       1. \( a = x^b \)
       2. \( a = b^x \)
    B. Simple Interest
    C. Compound Interest
    D. Systematic Savings Plans
    E. Amortized Loans

IV. Paths and Networks
    A. Eulerian Paths and Circuits
    B. Hamiltonian Paths and Circuits
    C. Traveling Salesman Problem

V. Tiling Patterns and Polyhedra
   A. Polygons
   B. Tilings
   C. Polyhedra

VI. Number Theory
    A. Divisibility and Primes
    B. Modular Arithmetic
    C. Divisibility Tests
    D. Check Digits

VII. Game Theory
    A. Alternate Move Games
    B. Game Trees
    C. Optimal Strategy