Approved 03/03/03

Departmental Syllabus
Math 4330 -- Theory of Numbers

Textbook: Elementary Number Theory and its Applications (Fourth Edition), by Kenneth Rosen

Prerequisites: MATH 2640 and junior standing or consent of department chair

Calculators: No specific calculator required.

Course Description: Integers, divisibility, prime numbers, Euclidean algorithm, linear Diophantine equations, congruences, Wilson's and Euler's theorems, Fermat's little theorem, and other selected topics.

Topics and sections to be covered:

1.1 Numbers, Sequences, and Sums
1.2 Mathematical Induction
1.3 The Fibonacci Numbers
1.4 Divisibility

2.1 Representations of Integers

3.1 Prime Numbers
3.2 Greatest Common Divisors
3.3 The Euclidean Algorithm
3.4 The Fundamental Theorem of Arithmetic
3.6 Linear Diophantine Equations

4.1 Introduction to Congruences
4.2 Linear Congruences
4.3 The Chinese Remainder Theorem

5.1 Divisibility Tests

6.1 Wilson's Theorem and Fermat's Little Theorem
6.3 Euler's Theorem

7.1 The Euler Phi-Function
7.2 The Sum and Number of Divisors