

# MATHEMATICS 136

## INTRODUCTION TO THE THEORY OF NUMBERS

**Text:** *Elementary Number Theory, 2<sup>nd</sup> edition*, by Vanden Eynden

Topics covered include prime and composite integers, number theoretic functions, Diophantine equations, congruences of integers, quadratic reciprocity and the real and complex numbers.

TOPICS	SUGGESTED NO. OF 50 MIN. CLASSES
Prime numbers.....4 (§§ 1.1-2.5)  Divisibility, the Euclidean division property, congruences, finite induction, Fundamental Theorem of Arithmetic.	
Numerical functions.....3 (§§ 2.6-3.6)  Sigma and tau functions, Fermat and Mersenne numbers, the Euler and Möbius functions.	
Congruence equations.....10 (§§ 4.1-5.4)  Chinese Remainder Theorem, linear congruences, theorems of Euler, Fermat and Wilson, RSA cryptographic encoding, polynomial congruences, quadratic residues and reciprocity.	
The real and complex numbers.....2 (§§ 6.1, 6.6)  Rational and irrational numbers, primitive roots.	
Diophantine equations.....4 (§§ 7.1-7.3)  Pythagorean triples, sums of squares.	