

MAT382H1S Topics in Mathematics: Number Theory

- divisibility, primes, and the fundamental theorem of arithmetic
- linear and quadratic congruences, primitive roots and Hensel's lemma
- quadratic reciprocity
- arithmetic functions (the totient function, mobius function, etc..)
- quadratic forms
- Tchebychev's theorem
- Pells equation and continued fractions

Time permitting we will also cover some other topics including elementary cryptography, some diophantine equations (easy cases of Fermat's little theorem) and elliptic curves.

Textbook: We will follow Niven, Zuckerman, and Montgomery: *An Introduction to the Theory of Numbers* for much of the course.

Prerequisites: MAT257Y

Co-requisite: MAT347Y