Fall 2021 Graduate Course Offering
Computational Discrete Mathematics

The course COMP 8920-02 is being offered in fall 2021 on the subject of *computational discrete mathematics*. Selected topics from computational algebra, number theory, and logic will be covered. Problems studied will include computing with integers of arbitrarily large size, efficiently performing arithmetic like multiplication and division, testing numbers for primality or factoring them, and solving problems in Boolean logic. Techniques used include Euclid's algorithm, the fast Fourier transform, and the Davis–Putnam–Logemann–Loveland procedure. Applications to cryptography and computer-assisted proofs will be discussed.

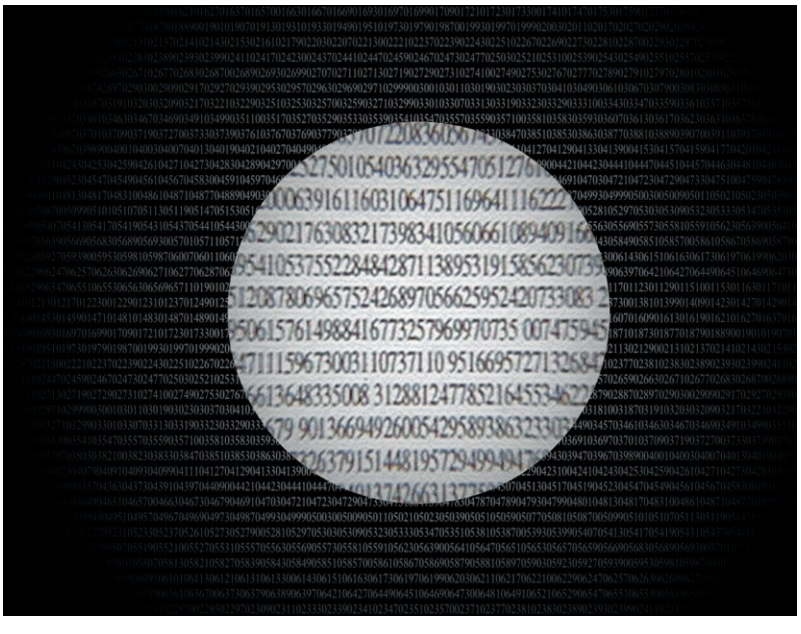
The course may be of interest to students in both computer science and mathematics. Students should be comfortable with mathematical proofs and some computer programming. Contact Curtis Bright <cbright@uwindsor.ca> for more information.

Suggested References

Prime Numbers: A Computational Perspective, Richard Crandall and Carl Pomerance

Modern Computer Algebra, Joachim von zur Gathen and Jürgen Gerhard

A Computational Introduction to Number Theory and Algebra, Victor Shoup



A magnified view of a small portion of the 7.2 million decimal digits of the prime number $2^{24036583} - 1$. [Crandall and Pomerance, 2005]