This course is an introduction to discrete mathematics. It introduces methods of reasoning used in mathematics and computing science. This course is theoretical.

Learning Resources:

- **Prerequisites:** BC High School Math 12, or MATH100

- *Discrete and Combinatorial Mathematics (an Applied Introduction)*, by Ralph P. Grimaldi

- **Supplementary materials:**
  
  2. *Book of Proof*, by Richard Hammock

  An website of the text is maintained by the author. (url: www.people.vcu.edu/~tilda/hammock/BookOfProof)

- **Course webpage:** www.cs.sfu.ca/~binay/2018/macm101/

  Please refer to this page regularly for information related to the course.

- **Quiz:** There will be 4 to 5 quizzes over the entire semester. Each quiz will be about 50 minutes long. A list of assignment questions relevant to the quiz
will be handed out prior to the quiz. You can expect some similar questions in the quiz. These assignments will not be marked. The tentative dates of the quizzes will be announced soon.

- **Final Exam** The final exam will cover all materials discussed in the class. It is closed-book and closed-notes.

- **Grading:** Your final average will be computed as follows:
  1. Quizzes: 40%
  2. Final: 60%

- **Make-up Work:** I do not give make-up tests. For genuine cases, I will allow an interview like question period.

- **Office:** Please feel free to stop by my office whenever you have a question, particularly, if you are having trouble. Catching up can be very difficult once you get behind.

- **Exercises:** You should work as many exercises as possible for practice. Answers or hints are provided for the odd-numbered questions in the text. Some of these questions will be used for the quizzes and the final exam. If you have doubts solving any problem, talk to the TA or the instructor.
Learning Outcomes

- Familiarizing the basic terminology and methods of discrete mathematics.
- State practical problems as discrete mathematics problem and solve them.
- Interpret the solutions obtained by methods of discrete mathematics (mathematically and practically).
- Construct proofs for all the topics covered in the course using proof techniques such as mathematical induction, contradiction, counter example and construction.
- Manipulate expressions in propositional logic and first order predicate logic. Perform simple proofs of equivalence of propositional logic sentences. Apply logic to real world problems.
- Perform simple combinatorial and combinatorial probabilistic calculations. Prove the binomial theorem and results derived from it.
- Construct and solve recurrence relations.
- Formulate and prove theorems in simple number theory, including proofs about prime numbers.
- Express real life problems in the language of graph theory.