MACM 101-D100: Discrete Math I
(Fall 2019)

Instructor: Binay Bhattacharya
Office: TASC I 8017
E-mail: binay@cs.sfu.ca

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

Learning Resources:

- **Prerequisites:** BC High School Math 12, or MATH100
- *Discrete and Combinatorial Mathematics (an Applied Introduction)*, by Ralph P. Grimaldi
- **Course webpage:** www.cs.sfu.ca/~binay/2019/macm101/
  Please refer to this page regularly for information/announcements related to the course.
- **Supplementary materials:**
  1. *Discrete Mathematics and Its Applications*, by K.H. Rosen
  2. *Book of Proof*, by Richard Hammock
     An website of the text is maintained by the author.
     (https://www.people.vcu.edu/~rhammack/BookOfProof/

- **Tutorials:** You are expected to attend the tutorials regularly. Problems, relevant to the topics being covered in the class, will be discussed in the tutorials. Short problems will also be assigned for you to solve during the tutorial. You will receive credit for completing these.

- **Homeworks:** Five homeworks will be assigned during the semester. You are required to submit the solutions to the problem set. Practice problems from the text will be assigned. These problems will help you understand the concepts. You are not required to submit the solutions.

- **In-class Tests:** There will be two in-class tests. Each test will be about 50 minutes long. The tentative dates of the tests are October 9 and November 13.

- **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. Tutorial activities: 10%
    2. Assignments: 15%
    3. Quizzes (two): 25%
    4. Final: 50%

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

- **Office:** Please feel free to stop by my office whenever you have an issue, particularly, if you are having trouble with the course material. Catching up can be very difficult once you get behind.

- **Exercises:** You should work on as many exercises as possible for practice. Answers or hints are provided for the odd-numbered questions in the text. For the even-numbered questions, a file will be maintained containing hints on how to solve them. 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.
- Construct proofs for all the topics covered in the course using proof techniques such as mathematical induction, contradiction, counterexample 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.
- Formulate and prove theorems in simple number theory, including proofs about prime numbers.