

Discrete Mathematics for Computer Science I

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Newsgroup: unbc.cpsc141

Prerequisites: Math 12, or MATH 115, or permission of instructor.

Dates:	Homework: Weekly Midterm Test: Fri, Oct 08 Thanksgiving: Mon, Oct 11 Remembrance Day: Thurs, Nov 11 Midterm Test: Fri, Nov 12 Course Evaluation: Mon, Nov 29 Final Exam: 3h in 07–15 Dec	Objectives: to provide an introduction to the mathematical background for Computer Science and computer programming. This course mainly covers material used directly in later Computer Science courses. More importantly, it stresses how to use mathematical reasoning.
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Times: Lectures are MWF 13:30–14:20 in **Room** 7-212. There are no assigned labs or tutorials with this course. Office hours are posted on my door.

Syllabus: Most of the material covered comes from Chapters 2–6 of Grimaldi. Topics include:

- The Propositional Calculus. Basic Connectives and Truth Tables. Logical equivalence. Logical Implication. Inverses, converses, and contra-positives. The principle of duality.
- Predicate Calculus. Quantifiers. Negation and simplification of quantified statements.
- Set theory. Sets and subsets. Set operations and the laws of set theory. Set operations in terms of predicate calculus. Counting and Venn diagrams. Power sets.
- Mathematical induction. Well-ordered sets. Strong induction.
- Arithmetic. The division algorithm. Prime numbers. Greatest common divisors and least common multiples. Euclid's algorithm.
- Functions and relations. Cartesian products. Relations. Functions. 1-1 functions. Onto functions. Projections. Counting functions and relations.
- Languages and Finite State Machines.

The list of topics may not be exactly as shown above.

Homework: I shall assign approximately eight homework assignments. Homework is due *at the beginning of class* on the day it is due, normally Monday. Homework that isn't stapled and legible, or doesn't have a name and student number in the top right hand corner shall result in marks being deducted.

Marking Scheme Homework is worth 20% of your mark. There are two one-hour midterm examinations each worth 20% of your mark. There is one three-hour final examination worth 40% of your mark. *I reserve the right to change the weight of any portion of this marking scheme. If changes are made, your grade will be calculated using the original weighting and the new weighting, and you will be given the higher of the two.*

Text Book: *Discrete and Combinatorial Mathematics: An Applied Introduction* (4th edition), by Ralph P. Grimaldi. *The 3rd edition is substantially similar, and should be an adequate substitute for the 4th edition.*

Recommended Book: *Schaum's Outline : Discrete Mathematics* (2nd edition), by Seymour Lipschutz and Marc Lipson.

References: *Discrete Mathematics* (3rd edition), by Ross & Wright.
Discrete Mathematics by Biggs.