Discrete Mathematics for Computer Science I

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

Note: Successful completion of CPSC 141 and CPSC 142 are pre-requisites for almost all second and upper-year courses.

Instructor: Dr. David Casperson, **Office:** Lib 471, **Phone:** 960-6672, **e-mail:** `casper@unbc.ca`
Newsgroup: `unbc.cpsc141`

Dates:	
Homework:	Weekly
Midterm Test:	**Mon, Oct 07**
Thanksgiving:	Mon, Oct 13
Last drop date	Mon, Oct 20
Remembrance Day:	Tue, Nov 11
Midterm Test:	Fri, Nov 8
Course Evaluation:	Wed, Nov 27
Final Exam:	3h in 01–12 Dec

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

- The Propositional Calculus. Basic Connectivevs 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.

Objectives: to provide an introduction to the mathematical reasoning and methods used in Computer Science. This course covers material used directly in later Computer Science courses. More importantly, it stresses how to reason mathematically.

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

Times: Lectures are MWF **13:30–14:20** in Room **7-238**. There are no assigned labs or tutorials with this course. Office hours are posted on my door.

Homework: I shall assign approximately eight homework assignments. Homework is due *at the beginning of class* on the day it is due, normally Monday. All homework must be stapled in the top left-hand corner; have a name and student number in the top right hand corner; and be easily readable to be considered for marking.

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.

Text Book: *Discrete and Combinatorial Mathematics: An Applied Introduction (4th edition)*, by Ralph P. Grimaldi.

Cheating: First-time offenses result in a grade of -100 % on the assignment in question and formal notification of the Dean of the College of Science and Management. Note that allowing someone to copy your work is cheating. The UNBC Calendar describes academic offenses and possible penalties in more detail.

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