COMP 251 Data Structures and Algorithms.
WINTER 2008

Tuesday-Thursday 2:30-4:00 pm  ENGTR 1080

Lectured by Prof. Claude Crépeau
Office: McConnell 110N, Phone: 398-4716

Summary:
(3 Credit Hours)

Schedule Types: Lecture, Midterm Exam, Optional Tutorial

Prerequisites: either COMP 250 or COMP 203

Restriction: Not open to students who have taken or are taking COMP 252. For students in the B.Eng. Program, credit will be given for only one of: COMP 431, COMP 251, COMP 360.

Restrictions:
May not be enrolled in one of the following Levels:
  Doctorate
  Masters & Grad Dips & Certs
May not be enrolled in one of the following Faculties:
  Faculty of Medicine
  Faculty of Law
  Centre for Continuing Ed
  Faculty of Dentistry

GRADING:
4 homework assignments : 40 %
Midterm exam : 10 %
Final exam : 50 %

McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see http://www.mcgill.ca/integrity for more information).

COURSE WEB PAGE:
http://crypto.cs.mcgill.ca/~crepeau/COMP251/
Mandatory textbook:
(available online from within McGill at

Introduction to Algorithms, 2/e
By
Thomas H. Cormen, Dartmouth College
Charles E. Leiserson, Massachusetts Institute of Technology
Ronald L. Rivest, Massachusetts Institute of Technology
Clifford Stein, Columbia University

Contents:
* Chapter 1: The Role of Algorithms in Computing
* Chapter 2: Getting Started
* Chapter 3: Growth of Functions
Chapter 4: Recurrences
Chapter 5: Probabilistic Analysis and Randomized Algorithms
* Chapter 6: Heapsort
Chapter 7: Quicksort
Chapter 8: Sorting in Linear Time
Chapter 9: Medians and Order Statistics
* Chapter 10: Elementary Data Structures
Chapter 11: Hash Tables
* Chapter 12: Binary Search Trees
Chapter 13: Red-Black Trees
Chapter 14: Augmenting Data Structures
Chapter 15: Dynamic Programming
Chapter 16: Greedy Algorithms
Chapter 17: Amortized Analysis
Chapter 18: B-Trees
Chapter 19: Binomial Heaps
Chapter 20: Fibonacci Heaps
Chapter 21: Data Structures for Disjoint Sets
* Chapter 22: Elementary Graph Algorithms
Chapter 23: Minimum Spanning Trees
Chapter 24: Single-Source Shortest Paths
Chapter 25: All-Pairs Shortest Paths
Chapter 26: Maximum Flow
Chapter 28: Matrix Operations
Chapter 30: Polynomials and the FFT
Chapter 31: Number-Theoretic Algorithms
* Appendix A: Appendix A - Summations
* Appendix B: Appendix B - Sets, Etc.
* Appendix C: Appendix C - Counting and Probability

The lectures for this course will be selected topics from the bold chapters. Maybe not all of them will be covered. Chapters marked with a star (*) will not be covered because you are expected to understand their content already. You may wish to read these chapters as reminders. Missing chapters will definitely not be covered.