Computing Science Course Outlines

CMPT 705 - G100 Design and Analysis of Algorithms

Instructor(s): Leonid Chindelevitch

SFU Burnaby

Calendar Objective/Description:
The objective of this course is to expose students to basic techniques in algorithm design and analysis. Topics will include greedy algorithms, dynamic programming, advanced data structures, network flows, randomized algorithms. Students with credit for CMPT 706 may not take this course for further credit.

Instructor's Objectives:
The goal of this course is to provide a solid theoretical basis for the design and analysis of algorithms used throughout different branches of computer science. By the end of this course students will be able to design their own algorithms for commonly encountered computational problems and analyze their efficiency, or prove that an efficient algorithm is unlikely to exist and design and evaluate an approximation algorithm.

Prerequisites:
None

Topics:
- Greedy Algorithms
- Dynamic Programming
- Graph Algorithms
- Linear Programming
- Models of Computation
- Computational Complexity
- Approximation Algorithms

Grading:
10% participation, 20% midterm, 30% final exam, 40% assignments (best 4 out of 5).

Recommended Books:
Introduction to Algorithms, Thomas Cormen, Charles Leiserson, Ronald Rivest, Clifford Stein, MIT Press, 2009, 9780262033848

Academic Honesty Statement:
Academic honesty plays a key role in our efforts to maintain a high standard of academic excellence and integrity. Students are advised that ALL acts of intellectual dishonesty will be handled in accordance with the SFU Academic Honesty and Student Conduct Policies ( http://www.sfu.ca/policies/gazette/student.html ).