CMPT 405 - D100 Design and Analysis of Computing Algorithms

Instructor(s): Qianping Gu
SFU Burnaby

Calendar Objective/Description:
Models of computation, methods of algorithm design; complexity of algorithms; algorithms on graphs, NP-completeness, approximation algorithms, selected topics.

Instructor's Objectives:
This is an advanced course on algorithms. We will review basic paradigms of algorithm design (greedy, divide-and-conquer, dynamic programming, etc.), and then explore some of the more advanced topics (e.g., NP-completeness, randomized algorithms, approximation algorithms, algorithms for special cases of NP-hard problems, etc.)

Prerequisites:
CMPT 307.

Topics:
- Greedy Algorithms
- Divide and Conquer
- Dynamic Programming
- Network Flow
- NP and Computational Intractability
- Approximation Algorithms
- Randomized Algorithms
- Algorithms for special cases of NP-hard problems
- Selected topics on advanced algorithms

Grading:
The lectures will be delivered online at the scheduled class time (currently 9:30-10:20am, M/W/F), recorded and posted at some website. Grading will be based on assignments, midterm tests and final exam. Details will be announced during the first week of classes.

Students must attain an overall passing grade on the weighted average of exams in the course in order to obtain a clear pass (C- or better).

Required Books:
Algorithm Design, J. Kleinberg, E. Tardos, Addison-Wesley, 2006, 9780321295354

Reference Books:
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).