CMPT 307 - D100 Data Structures

Instructor(s): David Mitchell

SFU Burnaby

Calendar Objective/Description:

Data Structures

Instructor's Objectives:

The objective of this course is to introduce concepts and problem-solving techniques that are used in the design and analysis of efficient algorithms. This is done by studying various algorithms and data structures.

Prerequisites:

see go.sfu.ca

Topics:

- The following topics may be included:
- Motivating example: the stable matching problem
- Greedy (graph) algorithms, BFS, DFS, Dijkstra's Kruskal's and Prim's
- Simple data structures: priority queues (with heaps) and union-find
- Divide and conquer algorithms and their analysis: solving recursions
- Dynamic programming algorithms and their analysis
- Flow algorithms and matching
- Randomized algorithms
- NP-completeness

Grading:

The course has a final examination (worth 25% of the total grade). There will be five homework assignments which won't be collected and graded. There will be five 45-min quizzes (worth 15% each).

Required Books:

Algorithm Design, J. Kleinberg, É. Tardos, Addison Wesley, 2006, 9780321295354

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).