Computing Science Course Outlines 2020 Fall

CMPT 225 - D100 Data Structures/Programming

Instructor(s): David Mitchell

SFU Burnaby

Calendar Objective/Description:
Data Structures/Programming

Instructor's Objectives:
This course will explore ideas of data and program organization that can help in developing elegant and efficient solutions to complex tasks. The primary topics are abstract data types (ADTs) to help manage the complexity of programs, and data structures to support efficient algorithms. We will study the specification, analysis, implementation (in C++), experimental evaluation, and application of fundamental ADTs and data structures. We will also study fundamental searching and sorting algorithms. (Lectures will be available for streaming online. Live online help time will be during scheduled lecture times, and possibly some other times. Tests will be online, so a suitable room and computer with internet access will be needed.)

Prerequisites:
see go.sfu.ca

Topics:
- Abstract data types (abstraction, encapsulation, information hiding).
- Data structures: arrays, lists, stacks, queues, trees, heaps, sets, search trees, hash tables.
- Algorithms: searching and sorting; correctness and efficiency.
- Programming: object-oriented programming for ADT re-use; efficient implementation.

Grading:
Assignment and lab activities (30%); midterm tests (50%); final exam (20%). Details will be provided in a course outline distributed in the first week of classes, which may supersede this grading scheme. Students must attain an overall passing grade on the programming portions of assignments in order to obtain a clear pass (C- or better).

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:

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 ).