CMPT 125 - D100 Intro.Cmpt.Sci/Programming II

Instructor(s): Toby Donaldson

Calendar Objective/Description: Intro.Cmpt.Sci/Programming II

Instructor's Objectives:
This course is a rigorous introduction to computing science, intended primarily for students who have taken CMPT 120. Students will learn fundamental concepts of computing science and basic principles of algorithm design and software development. The C and C++ languages will be introduced in the course.

This course will be entirely online: there are no required face-to-face lectures, labs, or office. The details of assessment and how the course will work will be described in the first week.

You must have a computer and Internet connection to access the course materials on Canvas. Also, while not necessary, it would be helpful to have a camera and microphone to talk online with the teacher, TAs, and other students.

Your computer must also be able to run VirtualBox (or other virtual machine software). Any modern laptop or computer should be able to do this.

Prerequisites:
see go.sfu.ca

Topics:
- Brief review of elementary programming and problem solving; introduction to C.
- Performance measurements; algorithm design and analysis; asymptotics; fundamental algorithms.
- Recursion: simple recursion; recursion on trees; divide and conquer algorithms.
- Reasoning about programs: assertions, invariants, and correctness.
- Good coding style; defensive coding practices; testing.
- The memory model: addresses, dynamic data types, safe initialization, safe cleanup, and safe arrays.
- Encodings of basic types: int, unsigned, float, char, pointer.
- Compound data types; basic object/method design in C++.
- Abstract data types; information hiding; elementary data structures.
- Introduction to Social Issues

Grading:
To be discussed 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).

**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).