CMPT 135 - D100 Introduction to Computer Programming II

**Instructor(s):** Toby Donaldson

**SFU Surrey**

**Calendar Objective/Description:**
A second course in systems-oriented programming and computing science that builds upon the foundation set in CMPT 130 using a systems-oriented language such as C or C++. Topics: a review of the basic elements of programming; introduction to object-oriented programming (OOP); techniques for designing and testing programs; use and implementation of elementary data structures and algorithms; introduction to embedded systems programming.

**Instructor's Objectives:**
This course is a rigorous introduction to object-oriented programming and computing science using C++, intended for students who have already taken CMPT 130 as an introduction to algorithms and programming. Students will learn basic principles of algorithm design and basic and intermediate techniques for object-oriented software development. It is expected that students already know the C or C++ programming language.

**Prerequisites:**
CMPT 130. Students with credit for CMPT125, 126 or 129 may not take this course for further credit. Quantitative

**Topics:**
- Brief review of elementary programming and introduction to C++.
- Basic object-oriented programming and software design.
- Polymorphism and inheritance.
- Program design, specification, and testing; problem solving.
- Abstract data types; elementary data structures; fundamental algorithms; recursion.
- An informal introduction to computability and complexity analysis.
- Templates and the Standard Template Library

**Grading:**
Course work will consists of lab exercises, quizzes, assignments, a midterm exam, and a final exam. The marking scheme will be given in the first week of the course.

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:**
Problem Solving with C++ (10th edition), Walter Savitch, Pearson, 2017, 9780134448282

**Reference Books:**
The C++ Programming Language (4th edition), Bjarne Stroustrup, Addison-Wesley Professional, 2013, 9780321563842

C++ Primer (5th Edition), Stanley B. Lippman, Josée Lajoie, Barbara E. Moo, Addison-Wesley Professional, 2013, 9780321714114, This is available as an eBook.
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