CMPT 295 - D100 Introduction to Computer Systems

Instructor(s): Bradley Bart

Calendar Objective/Description:
The curriculum introduces students to topics in computer architecture that are considered fundamental to an understanding of the digital systems underpinnings of computer systems.

Instructor's Objectives:
This course is primarily a course on computer systems and low-level programming. We will discuss the relationship between the computer architecture (the hardware) and the applications that run on it (the software), and the issues that influence the design of both. Programs will be written in both C and x86-64 assembly, and will involve many of the GNU tools in the linux environment. We will explore how instructions are encoded and executed and how binary data types are encoded and interpreted by computer hardware, and how these issues relate to the performance and reliability of your applications.

Prerequisites:
Either (MACM 101 and ((CMPT 125 and CMPT 127) or CMPT 135)) or (MATH 151 and CMPT 102 for students in an Applied Physics program). Students with credits for CMPT 150 or 250 may not take this course for further credit.

Topics:
- Machine language programs
- Representation of symbolic and numeric data
- Representation of instructions (instruction set architecture)
- Machine code optimization
- Basic digital systems
- CPU organization
- Memory organization
- Timing attacks (time permitting)

Grading:
Labs 6x 0.5%; Assignments 9x 2%; Midterms 2x 17%; Final Examination 1x 45%. (To be confirmed during the first week of lectures)
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).