COMP 2404
Introduction to Software Engineering

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Welcome

- Instructor: Dr. Christine Laurendeau

- Lecture schedule:
  - Section A: Mon. and Wed. 1:00 - 2:30 pm
  - Section B: Wed. and Fri. 4:00 - 5:30 pm

- Tutorials: begin next week, on Wed. January 15
  - full schedule is posted in *cuLearn*
  - please make note of the dates for your tutorial section

About the Instructor

- Biography:
  - BCS and MCS at U. Ottawa, graduating in early 1990s
  - worked in high-tech industry for nearly 10 years
    - Bell Canada, SHL Systemhouse, Nortel
  - PhD in Computer Science at Carleton in 2005-2009
    - specialized in wireless network security
  - full-time instructor (teaching professor) in SCS since 2009
    - teaching software engineering and systems programming

- My main goal: **your success** as a software professional
  - beyond this course, to graduation, and into your future

About the Course

- In this course, we focus on software engineering in:
  - object-oriented (OO) design
    - it's important to know how to organize our code correctly
    - correct design is independent of programming language or syntax
  - OO programming
    - getting the code to work is **not enough**!
    - it has to follow established programming conventions
    - it has to follow the principles of good software engineering
      - readability, maintainability, extensibility, among others
  - C++ language
    - widely used in the industry, including game development
    - quirky language that needs formal introduction

About the Course (cont.)

- Why is software engineering important?
  - it’s not enough to simply get a program working
  - your code has to be well designed and well written
    - it must be easy to understand by other developers
    - it must be easy to modify
    - it must be easy to adapt to new platforms and applications
  - very few professional developers write code for the end users
  - most users of your code will be **other developers**
    - using your classes and functions in their code
    - modifying your code for upgrades or bug fixes

Course Topics

- Basics of C++ development
  - Linux programming environment, programming conventions
  - simple classes, constructors, destructors
  - memory management, pointers

- Basics of object-oriented (OO) design
  - overview
  - object design categories
  - UML class diagrams

Course Topics (cont.)

- Essential OO techniques
  - encapsulation
  - inheritance
  - design patterns
  - polymorphism
  - overloading
  - templates
  - exception handling

- C++ library
  - STL, files and streams, C++11 features (time permitting)

Learning Objectives

- We will learn about:
  - object oriented design
    - how to organize your data and your logic
    - data abstraction and encapsulation
  - implementation
    - code reuse and robustness
    - the C++ programming language
- Note: this is **not** a full software engineering course
  - that will be COMP 3004

Programming Environment

- We will use a virtual machine (VM) for this course
  - use of the VM is **mandatory** for assignments and tutorials
  - this will be the common platform used by the TAs for grading

- You need to install:
  - VirtualBox
  - the official COMP 2404 virtual machine

- Details are posted in *cuLearn*

Course Page

- Check out the course page in *cuLearn*
  - course notes
  - coding examples

- Midterm and final exam cover **everything**
  - in the course notes and annotations made during lectures
  - in the coding examples done in class
  - in the assignments and tutorials
  - DO NOT RELY ON LECTURE RECORDINGS

- Course notes are never complete
  - you must attend lectures and take notes

Course Outline

- You must read the course outline *thoroughly*

- It contains:
  - expectations
  - evaluation scheme
  - information about tutorials
  - course policies

Office Hours

- Instructor office hours
  - priority to questions regarding:
    - course material
    - confidential issues, academic advising
    - problems with TAs or other students
  - please be prepared with **specific** questions
  - please be considerate with in-class time before and after lectures
    - these are **not** office hours
    - instructor availability is very limited at those times
    - for help, please come to office hours instead!

Office Hours (cont.)

- TA office hours
  - priority to questions regarding:
    - completing the assignments
    - help with debugging your code
    - grading of assignments
- Note: TAs are **not** experts in the course material
  - check with instructor on *cuLearn* forum or during office hours

Communication Policy

- Questions about assignments: **post them in *cuLearn***
  - all students can benefit from the question and the answer
  - more questions get answered, instead of one question 400 times
- Problems with your code: see a TA during office hours
- Questions about the course material
  - please see instructor during office hours (it's nice to talk in person)
- Emailing the instructor
  - only regarding confidential matters, never for assignment questions
  - anything complex is best discussed in person, during office hours
  - please be courteous and professional

Ready to Get Started?

- One more thing: please don’t talk during the lectures
  - your talking disrupts the students seated around you
  - if other students can’t hear me, it interferes with their learning
  - if you have questions or comments, please raise your hand!
    - it’s always nice to have class-wide discussions about the material

- Questions before we move on?