

**Department of Computer Science and Software Engineering
Concordia University**

**Tools and Techniques for Software Engineering — COMP 5541
Course Outline Winter 2013**

Course Instructor: Greg Butler (gregb@encs) Section DD Winter 2013

Course Objectives

This course is a 4-credit course with 3 contact hours (2.5 class hours) of lecture, 1 hour of tutorial and 2 hours of lab. Materials to be covered during lectures, tutorials and labs are given in detail later in this outline. Through these three types of instruction you are taught the different perspectives of Software Engineering discipline : basic principles, formalisms, tools and team work. You will be learning a disciplined process of developing software and practicing it in a small project.

You should expect to **average** a total of 10–12 hours per week on this course. For individual weeks it will be much higher depending on your role in the project and the phase of the project. So plan your time accordingly.

Recommended Books:

Roger Pressman, *Software Engineering: A Practitioner's Approach*, McGraw-Hill Education;

Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and the Unified Process, by Craig Larman, Prentice-Hall.

Web Page There will be a course web page. You will find additional information there.

Detailed Course Plan

Part 1: Class Room Lectures

Each week is 2.5 contact hours of lecture.

Lecture Topics

1. Introduction to Software Engineering and Project Work [1.0 week]
2. Software Requirements Document and Requirements Analysis [1.0 weeks]

3. Software Engineering Principles and Qualitative Requirements [1.0 week]
4. Software Process Models [1.5 weeks]
5. Software Design [2.5 weeks]
6. Formal Specification Methods [2 weeks]
7. Software Verification, Testing, and Quality [2.5 weeks]
8. Time for Quizzes and Discussions [1.5 weeks]

Part 2: Lab Work

One hour (50 minutes of contact time) out of the two hour lab is scheduled. This means that your instructor and/or lab demonstrator will be in the lab providing you the instruction on tools or conducting various reviews related to your term projects. All students are expected to attend these scheduled labs at the specified time and place. The other lab hour is “open” and you may use it whenever necessary. You will be using the Computer Science labs; both direct and remote access facilities are available. Talk to your Lab demonstrator (or Lab monitor) to know more about this facility.

Part 3: Project Work

This is an important activity in the course — doing a team project. The most important aspect of the project is experiencing the process of software development in order to appreciate how the various phases interact, and to see the roles of the deliverables. The second most important aspect is to experience the group dynamics and interpersonal relationships of team work.

Team Formation and their functions

The class will be divided into TEAMS with approximately 10 members in each team. This will be done in the first week. The team will need documenters (for writing documents), coders (to develop designs and code), and testers (to create test cases and perform unit testing).

The project is divided into three iterations or increments followed by a wrap-up iteration. Team members rotate the roles of documenter, coder, and tester for the three iterations. For the wrap-up, it is all hands on deck depending where the improvements and reviews need to be performed.

Evaluation Scheme

The course grade is based on a clear pass (50%) in each of (i) the quizzes, and (ii) project work. There will be two quizzes each worth 22.5% of the total mark, and project work worth 45% (essentially 15% per phase for team work), plus 10% for individual effort on the project as indicated in a diary. The project work is evaluated in all three phases — based on the deliverables (meeting deadlines and quality levels appropriate to a student project), reviews (class presentations and discussions), and the final demonstration of the product (completeness with respect to the requirements, error free code, etc;). The entire team is awarded points in the project.

Your grade will depend on both your performance in the quizzes and your performance in the project. A poor performance in any single component may bring down your grade. There is no simple direct correlation between your total mark and the grade.

Important Dates to Remember

Quiz Dates:

Quiz 1: Week 6

Quiz 2: Week 11

Project Deliverables:

Requirements document; Increment 1: Week 4

Design document; Increment 2: Week 8

Test plan and Test results; Increment 3: Week 11