

# COSC 310 – Software Engineering

## Winter 2007 Term 1

**Instructor:** Dr. Ramon Lawrence  
**Class Schedule:** 9:30 a.m. – 10:30 a.m. Monday/Wednesday/Friday  
**Location:** SCI 236  
**Lab time/location:** 12:30 p.m. – 2:30 p.m. Wednesdays at SCI 234  
**Office Hours:** 1:30–3:00 p.m. Monday and 1:00-3:00 p.m. Thursday or by appointment  
**Office Location:** SCI 263  
**Phone:** 807-9390  
**E-mail:** [ramon.lawrence@ubc.ca](mailto:ramon.lawrence@ubc.ca) (preferred contact method)  
**Course URL:** <http://people.ok.ubc.ca/rlawrenc/teaching/310/index.html>

### Course Description

**Official Calendar:** Design and implementation of large, multi-module program systems. Software life cycle. Design tools. Features and use of module-orientated programming languages. Intermodule communication. OUC equivalent: COSC 310.

**Specific description:** This course provides an introduction to software engineering including the fundamental activities of specification, design, implementation, testing, and maintenance. Students learn about various life-cycle models for organizing these activities to create quality software with a focus on the Unified Process. The laboratory sessions cover software development tools, UML modeling techniques, and teach good development practices. A component of the course is a semester long, group project where students apply the software engineering fundamentals to a medium-scale development project.

### Prerequisite

- COSC 222 – Computer Data Structures
- Co-requisite: COSC 304 – Introduction to Database Management Systems

### Marking and Evaluation

<b>Lab Assignments</b>	<b>20 %</b>
<b>Project</b>	<b>20 %</b>
<b>Midterm Exam</b>	<b>20 %</b> (50 minutes in class)
<b>Final Exam</b>	<b>40 %</b> (cumulative)

### Textbook and Reference Material

**Optional:** Stephen R. Schach, *Object-Oriented & Classical Software Engineering*, McGraw-Hill, 7th edition, ISBN 978-0073191263, 2006.

## Expectations

- I expect students to attend **all** classes and prepare before attending class. This includes reading relevant sections of the textbook and reviewing notes from previous lectures.
- I **strongly** recommend all students read the lecture notes **before** the lecture.
- I expect all students to learn the material in the course and undertake sufficient effort to produce all the lab assignments and quality projects.
- I want all students to enjoy attending class and feel free to participate according to their own personalities. Feel free to ask questions by raising your hand or speaking out at appropriate times.
- Please actively participate in class discussions, questions, and problem solving exercises.
- **I want all students to pass the course, receive a good grade, and feel the course was beneficial.**

## Homework Expectation

For this course, it is expected that you will spend *at least six hours per week in out-of-class preparation*.

## Grievances and Complaints Procedures

A student who has a complaint related to this course should follow the procedures summarized below.

- The student should attempt to resolve the matter with the instructor first. Students may talk first to someone other than the instructor if they do not feel, for whatever reason, that they can directly approach the instructor.
- If the complaint is not resolved to the student's satisfaction, the student should go to the departmental chair Cynthia Mathieson, at ART 300, 807-8730.

## Your Responsibilities

Your responsibilities to this class and to your education as a whole include attendance and participation. You have a responsibility to help create a classroom environment where all may learn. At the most basic level, this means you will respect the other members of the class and the instructor and treat them with the courtesy you hope to receive in return. Inappropriate classroom behavior may include: disruption of the classroom atmosphere, engaging in non-class activities, talking on a cell-phone, inappropriate use of profanity in classroom discussion, use of abusive or disrespectful language toward the instructor, a student in the class, or about other individuals or groups.

## Academic Dishonesty

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the break down of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating usually result in a failing grade or mark of zero on the assignment or in the course. Careful records are kept in order to monitor and prevent recidivism. A more detailed description of academic integrity, including the policies and procedures, may be found at:

<http://web.ubc.ca/okanagan/faculties/resources/academicintegrity.html>

**If you have any questions about how academic integrity applies to this course, please consult with your professor.**

## Disability Assistance

If you require disability-related accommodations to meet the course objectives, please contact the Coordinator of Disability Resources located in the Student Development and Advising area of the student services building. For more information about Disability Resources or academic accommodations, please visit: <http://okanagan.students.ubc.ca/current/disres.cfm>

## Missing an Exam

Only students who miss an exam for a reason that corresponds to the University of British Columbia Okanagan's policy on excused absences from examinations will be permitted to take the exam at a later time. Please note that a make-up exam may have a question format that is different from the regular exam. If the reason for absence is satisfactory, the student may either take the exam, or if a midterm exam is missed, the midterm exam can be forfeited and the student's final exam will be worth more of the final grade.

## Course Outline

The course has a substantial amount of material to be covered in a short time. This requires the student make a strong effort to keep up with the material discussed in class. Below is an outline of the topics. The professor is not bound to these topics and timelines as they only serve as a general reference.

Date	Topics Covered and Description
September 5 (W)	Introduction to course and course goals.
September 7 (F)	Overview of Software Engineering – motivation, benefits, profession (1.1, 1.2, 1.12)
September 10 (M)	Software Process – The fundamental software development activities (1.3-1.11)
September 12 (W)	Software Process Models – Waterfall, evolutionary models, spiral models (Ch. 2.)
September 14 (F)	Software Process Models (cont.) – extreme programming, model comparison (Ch. 2)
September 17 (M)	Unified Process (Ch. 3)
September 19 (W)	Tools (5.4-5.10)
September 21 (F)	Teams (Ch. 4)
September 24 (M)	Requirements Specification (Chapter 10, 11.1, 11.2)
September 26 (W)	Requirements Specification (cont.) - use-case modeling, requirements document
September 28 (F)	<b>Project requirements meeting and discussion</b>
October 1 (M)	Analysis – UML class diagrams (Chapters 12 and 16)
October 3 (W)	Analysis – UML class diagrams (cont.)
October 5 (F)	Analysis – Dynamic UML diagrams
October 8 (M)	<b>No class for Thanksgiving.</b>
October 10 (W)	Analysis – Dynamic UML diagrams (cont.)
October 12 (F)	Analysis – Data flow diagrams (11.3, 11.4)
October 15 (M)	Analysis – Putting it all together
October 17 (W)	Planning and Estimating (Ch. 9)
October 19 (F)	<b>Project analysis meeting</b>
October 22 (M)	<b>Midterm exam in class.</b>
October 24 (W)	Design – System Architectures (Chapter 13)
October 26 (F)	Design – Object-oriented design, cohesion/coupling (Chapter 13)
October 29 (M)	User Interface Design
October 31 (W)	Software re-use (Chapter 8)
November 2 (F)	<b>Project design meeting</b>
November 5 (M)	Implementation - Software development (14.1-14.18)
November 7 (W)	Verification and Validation (Chapter 6, 14.9-14.27)
November 9 (F)	Maintenance: Software evolution (Chapter 15)
November 12 (M)	<b>No class for Remembrance Day.</b>
November 14 (W)	Cost estimation (Chapter 9)
November 16 (F)	<b>Project implementation feedback meeting</b>
November 19 (M)	Quality management
November 21 (W)	Software Process Improvement (3.12-3.15)
November 23 (F)	<b>Final Project Meeting</b>
November 26 (M)	Course summary
November 28 (W)	<b>Final project presentations</b>
November 30 (F)	<b>Last day of class. Class evaluations and review for final exam.</b>

**Laboratory times:** The laboratory time is used for lab assignments that allows students to experiment and learn the ideas covered in lecture. Each laboratory time will have a defined topic with the majority of labs involving use of software engineering software and project development practice.

<b>Week</b>	<b>Dates</b>	<b>Topics Covered and Description</b>
<b>1</b>	September 5	<b>No Lab First Week of Class</b>
<b>2</b>	September 12	Lab 1: A Development Challenge
<b>3</b>	September 19	Lab 2: Tools of the Trade
<b>4</b>	September 26	Lab 3: Requirements Specification and UML Use Cases
<b>5</b>	October 3	Lab 4: Object-Oriented Analysis with UML Class Diagrams
<b>6</b>	October 10	Lab 5: Dynamic Modeling using UML Sequence Diagrams
<b>7</b>	October 17	Lab 6: Building Data Flow Diagrams
<b>8</b>	October 24	Lab 7: Project Planning with Microsoft Project
<b>9</b>	October 31	Lab 8: Object-Oriented Design
<b>10</b>	November 7	Lab 9: Automated Testing Tools and Software Inspections
<b>11</b>	November 14	Lab 10: Cost estimation
<b>12</b>	November 21	<b>Open lab for project development</b>
<b>13</b>	November 28	<b>No Lab Last Week of Class</b>