

# THE UNIVERSITY OF WESTERN ONTARIO

DEPARTMENT OF COMPUTER SCIENCE  
LONDON, ONTARIO, CANADA

## Computer Science 2212b Introduction to Software Engineering Course Syllabus - Winter 2014

### 1 Course Description

The informal approaches that most individual programmers use when writing small programs do not work very well when applied to the development of large pieces of software and team programming situations. *Software engineering* is, according to the author of the text for this course, “the process of solving customers’ problems by the systematic development and evolution of large, high-quality software systems within cost, time and other constraints”.

In this course, we will examine the stages of the software engineering process, including requirements gathering, specification, design, implementation, and testing. The principles of object-oriented design and analysis and user interface design will be stressed, while a term project completed within a team of 4-6 students will serve to reinforce concepts learned and give students practical experience developing software in a team environment. UML (Unified Modeling Language), the standard tool for expressing designs in software engineering, will be introduced. All programming for this course will be done in Java.

### 2 Lecture Topics

The following list of topics may be covered, depending on time and the dynamics of the semester.

- Software process models
- Agile methodologies
- PERT and Gantt charts
- OO Review
- User stories
- UML Use Case Diagrams
- UML Class Diagrams
- Design Patterns
- White box and black box testing, testing coverage tools
- UML state diagrams and sequence diagrams
- Coupling and Cohesion Issues
- Source control
- Build automation
- GUI design

### 3 Prerequisites

- Computer Science 2210a/b and 2211a/b
- Students are assumed to be familiar with the Java programming language

**Note:** Unless you have either the prerequisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

### 4 Instructor

Name	Office	Office Hours	Email
Jeff Shantz	Middlesex College 346	To be announced	x@y where x = jeff, y = csd.uwo.ca

### 5 Course Web Site

The course web site is available at the following address:

<http://www.csd.uwo.ca/courses/CS2212b>

All course materials will be posted at this site. Lecture notes will be posted after lectures on this site, and announcements will be posted on the main page. It is the student's responsibility to check the course web site on a frequent and regular basis.

### 6 Recommended Textbook

*Object-Oriented Software Engineering: Practical Software Development using UML and Java*

Timothy Lethbridge and Robert Laganriere

McGraw-Hill, Second Edition, 2004

ISBN: 978-0077109080

There will be one copy of the text available at the Taylor Library on 1-day reserve.

### 7 Lecture and Lab Schedule

There are 3 lecture hours per week. See the online timetable at  
<https://studentservices.uwo.ca/secure/Timetables/mastertt/ttindex.cfm>

### 8 Lectures

Copies of lecture notes will be available on the course web site after each lecture for the purpose of review. You are advised that these are copies of the instructor's notes and are not complete course notes. They are not a substitute for attending lectures.

## 9 Student Evaluation

Students will be evaluated based on the following components:

		Weight	Due (Tentative)
Individual	Take-Home Labs	15%	Fri Feb 14, 2014
	Specifications Quiz	1%	Wed Jan 22, 2014 (in class)
	Final Exam	30%	Final exam period
Team project	Report 1	7%	Fri Feb 07, 2014
	Report 2	7%	Mon Feb 24, 2014
	Report 3	7%	Fri Mar 07, 2014
	Report 4	7%	Fri Mar 28, 2014
	Unit Tests	9%	Fri Mar 28, 2014
	Acceptance Testing	15%	Week of Mar 31, 2014
	Meeting minutes	2%	Weekly

### Notes:

- If, for any reason, the schedule given above cannot be adhered to, the marks will be prorated as follows:
  - The individual components are worth a total of 46%. If any individual components must be cancelled, the remaining individual deliverable weights will be prorated to add up to 46%.
  - The project components are worth a total of 54%. If any project components must be cancelled, the remaining project deliverable weights will be prorated to add up to 54%.
- All deliverables are due by 23:59:59 on their specified due dates. Due dates are subject to change.

## 10 Take-Home Labs

There will be five (5) take-home labs, with each lab taking approximately 1 - 1.5 hours. Therefore, doing five labs should be equivalent to the length of a small to medium-sized Computer Science assignment.

Take-home labs are intended to give you practical exposure to in-demand technologies that will be useful both for your project, and for your career. They consist mostly of following step-by-step instructions. You are required to do four common take-home labs, and one specialty lab.

The tentative list of take-home labs is as follows:

Lab Type	Title	Weight
Common (do all)	Version Control with Git	2%
	Build Automation with Maven	2%
	Unit Testing with JUnit	3%
	GUI Development with Swing	3%
Specialty (do one)	Continuous Integration with Jenkins	5%
	Reporting with JasperReports	5%
	Data Persistence with JPA	5%
	Spreadsheets with JTable	5%
	Email with Amazon SES	5%

- All labs will be made available on or before Wednesday January 22, and all labs will be due by 23:59:59 on Friday February 14, giving you nearly four weeks to complete them.
- **No lates will be accepted with no exceptions** (except religious and medical reasons with proper documentation submitted to the Dean's office). This is to ensure that each student has the knowledge required to be a contributing member of his/her team.
- Labs will be marked on a **all-or-nothing basis, with no part marks given** (since they mostly involve simply following instructions). You will be expected to follow submission instructions precisely since most labs will be automatically marked and thus certain file and directory naming structures will be assumed.
- For labs that are automatically marked, you can resubmit your lab without penalty as many times as you like prior to the deadline.
- Labs are expected to be an individual effort.
- All specialty labs must be covered by members of your team. In other words, each specialty lab must be completed by at least one person in your team.
- No bonus marks will be given for doing extra labs. The first five labs submitted will be the labs marked.

## 11 Exams

- There will be no midterm in this course.
- A 3-hour, closed-book final exam will be held at the end of the course, during the final exam period.
- No calculators or reference materials of any kind are allowed.
- Each student must achieve a grade of at least 45% on the final exam in order to be given a passing grade in the course.
- Students must bring their UWO identification to the exam.
- The final exam is scheduled by the Office of the Registrar during the final exam period. Details will be provided when they are available. Students are advised not to make travel plans until they have consulted the final exam schedule.
- As an important note, computer-marked multiple-choice exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

## 12 Quizzes

- There is one closed-book quiz worth 1% to be held in class on Wednesday January 22.
- The quiz is simply intended to ensure that you have read the project specification thoroughly so that you are prepared for your team meetings
- There will be no make up quiz. If you miss the quiz, you will receive a mark of 0.

## 13 Team Project

- Students are required to work cooperatively in a team to design and implement a moderately large software system.
- The instructors will decide on the composition of the teams. The instructors' decisions are final. The instructors will attempt as much as possible to make sure that each team has 4-6 members.
- Individual students may submit requests to be taken out of the team to which they were initially assigned, if such requests are received by Friday January 24, and a good reason (such as a prior conflict with one of the team members) is given. Individual students may not specify to which team they want to be assigned instead; the instructors will choose an appropriate team.
- During the course, individuals are **required** to keep in contact with their teams. Individual students who ignore and/or do not respond to emails from their teams within a reasonable timeframe (1-2 days) may be removed from their team by the instructors. This may affect a student's ability to pass the course.
- The project must run on the course virtual machine for acceptance testing, but team members can develop it on their own systems. It must be programmed in the Java programming language. A copy of the course virtual machine will be made available within the first few weeks of class.
- During the course of the project, teams are required to have weekly meetings to discuss progress and plan for the future. Each team is required to draw up minutes of each meeting, listing who was in attendance and which team members were assigned which tasks. These minutes must be submitted via the course web site.
- All code and executable files for the project must be submitted by 23:59:59 on Friday March 28, 2014.
- **No lates** are accepted for acceptance testing or team project deliverables.
- Acceptance testing of the software will take place the week of March 31. This involves the instructor and TAs running and testing each team's finished implementation of the team project. At least one team member must be present for acceptance testing, though it is recommended that all team members be present, where possible.
- *Peer Evaluations*
  - At the end of each assignment, each student will be required to evaluate his/her own work and the work of the others in their team. These *peer evaluations* will be taken into account in assigning individual project marks.
  - If a student, for one of the assignments, receives several below average peer evaluations from his/her peers, he/she may be warned and given guidance on how to rectify the situation.
  - If a student continues to receive poor evaluations from his/her peers, he/she may be removed from his/her team. This may affect the student's ability to pass the course.
  - Students are expected to complete a reasonable, fair, and equitable portion of their team project. Failing to do so may result in a **significant deduction** of the final mark allocated to the project at the discretion of the instructor.
  - It is the student's responsibility to ensure that he/she is working to a satisfactory level. A student should consult with his/her TA or instructor if concerns or questions arise.

- Peer evaluations will remain confidential. However, should an appeal of a project mark be received, the instructor reserves the right to release excerpts from your evaluation to the team member launching the appeal. In such a case, every effort will be made to maintain your anonymity.
  - Failure to submit meaningful peer evaluations will result in a 4% deduction from the student's overall mark in the course (there will be a 1% deduction for each peer evaluation that was not submitted)
  - Peer evaluations are due within 72 hours of the assignment due date for each team assignment (thus you should be submitting 4 peer evaluations for each individual in your team, including yourself).
  - **No lates** are accepted for peer evaluations
- One of the main purposes of each team assignment is to ensure that teams are progressing steadily toward successful completion of the project. Because of the assignment schedule, it will not always be possible for the markers to return an assignment to students before the next one is due. We therefore encourage students to keep a copy of important project-related documents that they have handed in, either online and accessible to all members of the team, or in hardcopy.

## 14 Team Project Marking

- Each individual team member will be given the same mark for each of the team tasks as the other members in his/her team (but see *Combined Project Mark*, below).
- Meeting minutes are worth 2%. To receive full marks for minutes, teams must consistently (every week) submit minutes of their meetings, in the proper format, on the course web site.
- The minutes form must be submitted in a timely fashion. Any set of minutes that is received by the professor more than one week after the meeting that the minutes are describing, will cause 0.25% deduction from the 2% given for minutes.
- The minutes must be helpful to the instructor, TA, and team members. Thus, the first set of minutes that are either very sparse OR overly descriptive will get a warning from either the professor or the TA. After the first warning, each subsequent set of minutes that is deemed inappropriate will receive a 0.5% deduction from his/her overall mark (25% of the 2% given for the minutes).
- If a team assignment has to be cancelled for any reason, the remaining team project marks will be prorated to add up to the same amount.
- *Combined Project Mark*
  - Each student will receive a combined mark for the project, which makes up 54% of their final grade in the course.
  - Normally, the individual's Combined Project Mark will be computed directly from the team marks for the team tasks. However, the instructors reserve the right to adjust an individual's mark – raising or lowering it – based on peer evaluations, meeting minutes, and the TAs' or instructor's knowledge of a student's attendance and participation in the course and/or mastery of the course material.
  - Each individual must receive a Combined Project Mark of at least 40% in order to receive a passing grade in the course.

## 15 Academic Accommodation for Medical Illness

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to your Dean's office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with his or her instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a *Recommendation of Special Examination* form must be obtained from the Dean's Office immediately. For further information please see the following document:

<http://www.uwo.ca/univsec/handbook/appeals/medical.pdf>

A student requiring academic accommodation due to illness should use the *Student Medical Certificate* when visiting an off-campus medical facility or request a *Records Release Form* (located in the Dean's Office) for visits to Student Health Services. The form can be found at the following address:

<https://studentservices.uwo.ca/secure/medical.document.pdf>

## 16 Email Contact

We occasionally need to send email messages to the class or to students individually. Email is sent to your UWO email address as assigned to you by ITS (Information Technology Services). It is your responsibility to read this email frequently and regularly. You may wish to have this email forwarded to an alternative email address. See the ITS web site for directions on forwarding email.

You should note that email at ITS and other email providers may have quotas or limits on the amount of space they dedicate to each account. Unchecked email may accumulate beyond those limits and you may be unable to retrieve important messages from your instructors.

Email contact to the instructor and/or teaching assistants is discouraged; instead, you should ask questions on the course web site. Email containing questions about course material and/or assignments will not be answered. However, if you have a special situation that you need to discuss with the teaching staff, please feel free to email from your UWO account.

## 17 Computing Facilities

Each student will be given an account on the Computer Science Department senior undergraduate computing facility, GAUL. In accepting the GAUL account, a student agrees to abide by the department's Rules of Ethical Conduct. An introduction to the GAUL environment will be provided in the first lab.

After-hours access to some Computer Science lab rooms is granted electronically by student card. If a card is lost, a replacement card will no longer open these lab rooms, and the student must bring the new card to a member of the Systems Group in Middlesex College Room 346, or to the I/O Counter in MC 352.

## 18 Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x82147 for any specific question regarding an accommodation.

## 19 Tutoring

The role of tutoring is to help students understand course material. Tutors should not write part or all of an assignment for the students who hire them. Having employed the same tutor as another student is not a legitimate defense against an accusation of collusion, should two students hand in assignments judged similar beyond the possibility of coincidence.

## 20 Ethical Conduct

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a scholastic offence, at the following address:

<http://www.uwo.ca/univsec/handbook/appeals/scholoff.pdf>

All assignments must be completed individually. You may discuss approaches to problems with other students; however, the work handed in must be your individual effort.

Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a serious and major academic offence (see Scholastic Offence Policy in the Western Academic Calendar).

Assignments that are judged to be the result of academic dishonesty will, for the student's first offence, be given a mark of zero with an additional penalty equal to the weight of the assignment. Students are responsible for reading and respecting the Computer Science Department's policy on Scholastic Offences and Rules of Ethical Conduct.

The University of Western Ontario uses software for plagiarism checking. Students will be required to submit their programs in electronic form for plagiarism checking.

## 21 Support Services

For your reference, here are the web sites for Registrarial Services (<http://www.registrar.uwo.ca>), Student Support Services provided by the USC (<http://westernusc.ca/services>) and Student Services (<http://studentservices.uwo.ca>), for easy access.

Students who are in emotional/mental distress should refer to Mental Health@Western (<http://www.uwo.ca/uwocom/mentalhealth/>) for a complete list of options about how to obtain help.