The University of Western Ontario
Department of Computer Science

COMPSCI 2212B – Introduction to Software Engineering

Course Outline – Winter 2017

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 a discipline that applies principles of traditional engineering to improve software, as well as its development and maintainability.

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 8-10 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. Though the central programming language for the course and project is Java, we will also be exploring web-enabled full stack development frameworks such as Groovy/Grails to take learn about and exploit modern software development tools and methodologies.

Lecture Topics

The following list of topics may be covered in lectures, depending on time and the dynamics of the semester. The following list is not indicative of their order of discussion.

- Software process models
- Cost estimation and risk management
- Agile methodologies
- PERT and Gantt charts
- Object-oriented design principles
- User stories
- UML Use Case Diagrams
- UML Class Diagrams
- Design Patterns
- Software Testing methods
- Source control
- Build automation
- User interface design
- Formal Methods in Software Engineering
- Prototyping
- Introduction to Databases
- Application Program Interfaces (APIs)

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.

Instructor

Mr. Ethan C. Jackson
ejacks42
Office: MC 27C

Teaching Assistants

TBA. TAs will be assigned to specific teams for assistance and evaluation. They are your primary course contacts.

Course Web Sites

OWL is the primary course website. As we use other tools, they will be announced and linked on OWL.

Lectures

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

Lectures will be a mix of formal lectures on software engineering concepts and practices and informal tutorials focused more on exploring specific tools. Due to nature of the course content, links to online content, prepared tutorials, examples, and other documentation will often be posted before we discuss a tool in class. When such content is posted ahead of a lecture, ***it is your responsibility to review the content before class***.

Student Evaluation

	Weight	2017 Due Dates (Tentative)
Individual		
- Tutorials	10%	TBA
- Quizzes	5%	TBA
- Final Exam	30%	Scheduled by Registrar
Team Project		
- Stage 1	8%	February 10th
- Stage 2	10%	March 3rd
- Stage 3 (Final Product/Prototype Due)	25%	March 24th
- Testing		March 27th – 31st
- Stage 4 (Report and Documentation)	8%	April 7th
- Teamwork, Meetings and Minutes	4%	Ongoing

All deliverables are due by 23:59:59 on their specified due dates. Due dates are subject to change.

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 45%. If any individual components must be cancelled, the remaining individual deliverable weights will be prorated to add up to 45%.
- The project components are worth a total of 55%. If any project components must be cancelled, the remaining project deliverable weights will be prorated to add up to 55%.

Each student will receive a mark for the project, which makes up 55% 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 student must receive a Combined Project Mark of at least 40% (22 out of 55) in order to receive a passing grade in 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.

Tutorials

- 5 tutorials will be held during lecture, are each worth 2% of the student's final grade, and require an online submission for grading.

Exam

- 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.
- Each student must achieve a grade of at least 45% on the final exam 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.

Quizzes

Quizzes will include, but are not limited to, a team placement quiz, to be completed online, and a project specification quiz, to be held in class.

Conduct

We will be working with several collaborative tools. The teaching staff reserve the right to deduct marks from a student's course grade for misuse or inappropriate conduct. Students are expected to behave professionally.

Team Project

- Students are required to work cooperatively in a team to design and implement a moderately large software system.
- The instructor will ultimately decide on the composition of the teams. The instructor's decision is final. The instructor will attempt as much as possible to make sure that each team has 8-10 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 20th, 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.
- Students are required to maintain contact with their teams. Individual students who ignore and/or do not respond to emails or messages from their teams within a reasonable timeframe (1-2 weekdays) 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 specified environment for acceptance testing, but team members can develop it on their own systems. The final project must be compatible with Oracle JDK/JRE (Java). For web-enabled projects using Groovy/Grails/Spring, the project must be compatible with a modern cross-platform web browser (e.g. Chrome, Firefox, etc.)
- Acceptance testing of the software will take place the week of March 27th. This involves the instructor and TAs running and testing each team's finished implementation of the team project, as well as asking questions about the process and design of the project. At least one team member must be present for acceptance testing, though it is recommended that all team members be present, where possible.
- **No late submissions** are accepted for acceptance testing or team project deliverables.

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.

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. For further information please see the following documents for Science students:
http://www.uwo.ca/sci/undergraduate/academic_support/forms.html

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.

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.

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.

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.

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:
https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.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.

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://student.uwo.ca/for easy access.

Students who are in emotional/mental distress should refer to Mental Wellbeing http://www.uwo.ca/uwocom/mentalhealth/ for a complete list of options about how to obtain help.