CS2212B Introduction to Software Engineering

Course Outline --- Winter 2018

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 4 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.

Lecture Topics

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

- 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

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

Prof. Kostas Kontogiannis
@csd.uwo.ca email id: kostas
Office MC375

Teaching Assistants

Your TA's will play a large role in the course and your Team will meet with them regularily.   Email and availability will be posted as soon as available.

Course Web Sites and Tools

We will be using OWL to host the course content. Eclipse will be used for software development, Slack will be used for group collaboration, and BitBucket for source code version control.

Lectures

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

Our classes will combine instruction on current technologies, software design and engineering methods with collaborative note development and discussion of course topics.

Copies of lecture notes will be available on the course web site. They are not a substitute for attending lectures.

Student Evaluation

	Weight	2016 Due Dates (Tentative)
Individual		
--- Midterm	25%	Scheduled by Registrar
--- Final Exam	40%	Scheduled by Registrar
Team Project		
--- Stage 1	5%	
--- Requirements Specifications		February 5
--- Stage 2	10%	
--- Architecture Design		March 5
--- Low level Design		March 19
--- Stage 3 (Includes Final Product)	15%	
--- Acceptance Testing, Report, Documentation		April 6
--- Tool use (Jira use, code commits), Meetings & Minutes	5% (Ongoing)	
--- Project presentation	April 9-11 (schedule to be posted)	

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 65%. If any individual components must be cancelled, the remaining individual deliverable weights will be prorated to add up to 35%.
- The project components are worth a total of 35%. If any project components must be cancelled, the remaining project deliverable weights will be prorated to add up to 35%.

Each student will receive a mark for the project, which makes up 35% 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 project participation, project presentation, 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% (14 out of 35) 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

- There will be a number of tutorials which will be held in class for the use of specific tools and technology (e.g. Eclipse, Slack, BitBucket).

Exams

- There will be a midterm exam 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 in order to be given a passing grade in the course.
- Students must bring their UWO identification to the exam.
- The exams are 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.

Conduct

We will be working with several class---wide collaborative tools. The teaching staff reserve the right to deduct marks from the students course grade based on misuse or inappropriate conduct. The tools and the forums are for collaboration only. Personal or judgmental statements targeting individuals will not be acceptable. It is your responsibility to protect any private information of yours in these collaborative environments.

Team Project

- Students are required to work cooperatively in teams to design and implement their project.
- The instructors will decide on the composition of the teams. The instructors' decisions are final. The instructors will attempt to make sure that each team has 4 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 23rd, 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 keep in contact and collaborate closely with their teammates.
- The project must run on the specified environment for acceptance testing, but team members can develop it on their own systems. It must be programmed in the Java programming language.
- Acceptance testing of the software will take place the week of April 9. 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. All team members must be present for the acceptance testing.
- **No late submissions will be accepted for project deliverables**.

Meetings and Minutes

- During the course of the project, teams are required to have weekly meetings to discuss progress and plan for the future.
- The TA assigned to each team will evaluate project progress and meeting preparedness at each meeting. Teams that are on track and prepared for meetings will receive full marks.
- Each team is required to write minutes of each meeting, listing the attendance, what the topics of discussion in the meeting were, any decisions that were made, and which team members were assigned which tasks. These minutes must be submitted via BitBucket.

- To receive full marks for minutes, teams must consistently (every week) submit minutes of any of their meetings. The minutes must be submitted within 72 hours of the meeting. The minutes must be helpful (i.e. enough detail without being a transcript) to the instructor, TA, and team members.

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/sci/counselling/pdf/Submission-of-Medical-Documentation-for-Course-Appeal.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:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

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 Slack platform on the #theforum channel. 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 can 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://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.