CS2212A - Introduction to Software Engineering Outline

The University of Western Ontario
London, Canada

Department of Computer Science

CS 2212A - Introduction to Software Engineering
Course Outline - Fall 2019

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. We will also cover the practicalities of software engineering, covering a number of the key tools and technologies leveraged in successful endeavours. A large group project, completed by teams of students, will serve to reinforce concepts learned and give students practical experience developing software in a realistic work environment. Programming for this course will be done in Java.

Lecture Hours
10:30 - 12:30pm, Tuesdays, FNB-1220
11:30 - 12:30pm, Thursdays, PAB-106

Prerequisites: Computer Science 2210A/B and Computer Science 2211A/B

Antirequisites: Software Engineering 2203A/B

Note: Unless you have either the prerequisites for this course or written special permission from your Dean to enroll in it, you may 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 Information

Instructor: Michael Katchabaw

Office: MC 28H

Office Hours: 1:30pm - 2:30pm, Tuesdays

                   9:30am - 10:30am, Thursdays

E-Mail: katchab@csd.uwo.ca

Phone: Western extension 84059

Course Texts

There is one required book for the course, and it is available for purchase from the University Bookstore or other sources, such as the Used Book Store:

- Software Engineering: A Practitioner's Approach, 8th Edition by Roger Pressman and Bruce Maxim, published by McGraw Hill, 2015.

Please note that a 9th Edition is in press, but will not be available in time for the start of this course, unfortunately. In addition, the following book is recommended as a reference for this course:

- UML Distilled: A Brief Guide to the Standard Object Modeling Language, Third Edition by Martin Fowler, published by Addison-Wesley Professional, 2004.

Just so you know, this recommended text is also frequently used in our follow-up course, Computer Science 3307A/B/Y: Object-Oriented Design and Analysis. Additional references and suggested readings may be provided throughout the course as the project requires them. Please check back to the course website for updates and more information.

Course Topics

The course will address as many of the following topics as time will allow:

- Overview of software engineering
- Software processes and workflows
- Agile software development
- Software requirements gathering and modeling

- Software design concepts
- Implementation of software
- Testing and software quality management
- Managing software projects
- Enterprise-scale software and collaboration tools (Jira, Confluence, Git, Bitbucket, Javadoc, JUnit...)

Lecture Notes

Course lecture notes will be made available in PowerPoint and PDF formats on the course website on a weekly basis, as they are developed. They are provided as a courtesy by the course instructor. Possessing (and even reading) these notes is not a suitable substitute for attending lectures.

Course Website

The CS2212A website is accessible through OWL at http://owl.uwo.ca. Class and project information will be posted on this website on a fairly regular basis. You are responsible for reading this information frequently.

Computing Facilities

Each student will have access to computing facilities administered by the Department of Computer Science and/or Western University. In accepting their accounts, students agree to abide by the Department's Rules of Ethical Conduct. During this course, we may also make use of cloud infrastructure provided either by Western or by Amazon; details on this will be discussed in class.

Note: *After-hours access to Computer Science lab rooms is by student card. If a student card is lost, you will need to visit the Student Services Building to obtain a replacement. As of 2019, the cost for a replacement card is $32. More information is available at* *https://registrar.uwo.ca/services/western_onecard_and_photo_standards.html* *. Students enrolled in Computer Science courses will be granted access to the labs within 7 days of enrolment. If you do not have access to the labs after 7 days, please open a ticket with Science Technology Services at* *https://helpdesk.sci.uwo.ca* *.*

E-Mail Contact

We will occasionally need to send e-mail messages to the whole class, or to students individually. E-Mail will be sent to the Western e-mail address assigned to students by Information Technology Services (ITS), i.e. your e-mail address @uwo.ca. It is each student's responsibility to read this e-mail on a frequent and regular basis, or to have it forwarded to an alternative e-mail address if preferred. See the ITS website for directions on forwarding e-mail.

However, you should note that e-mail at ITS (your Western account) and other e-mail providers may have quotas or limits on the amount of space they can use. If you let your e-mail accumulate there, your mailbox may fill up and you may lose important e-mail from your instructors. Losing e-mail that you have forwarded to an alternative e-mail address is not an excuse for not knowing about the information that was sent.

Wherever you receive e-mail, be sure to configure your spam filter to allow e-mail from the instructor's e-mail address given above. Otherwise, important messages could get trapped by your spam filter and missed. This is also not an excuse for not knowing about information that has been sent.

Student Evaluation

Grades will be based on assignment and project work worth 60% and a final exam worth 40%. The group project is split into separate deliverables including requirements documentation (worth 5%), design documentation (worth 10%), implementation and delivery of the project (worth 25%), testing documentation (worth 10%), on-going project management (worth 5%), and peer review (worth 5%).

To be eligible to receive a passing grade in the course, your mark on the final exam must be at least 40%, and your average on the assignment and project components must be at least 40%. Otherwise, the maximum overall mark you can receive is 45%. To be eligible to receive a grade of C or higher, your mark on the final exam must be at least 50%, and your weighted average on the assignment and project components must be at least 50%. Otherwise, the maximum overall mark you can receive is 58%.

Assignment, Project, and Test Feedback

Every effort will be made to have assignments and project components marked and handed back within 3 weeks of the handin date, preferably sooner. If we are unable to comply with our intended return dates, revised dates will be posted on the course website.

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 the Academic Counselling office of your home Faculty as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. For further information please see: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or an Accommodation Certificate from Student Health Services. The Student Medical Certificate form can be found

here: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

For further information, please consult the university's policy on academic consideration for student absences: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf.

Test and Exams

Final: 3 hours during the December exam period

As an important note, computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating. Furthermore, there will be no cheat sheets, books, or other reference materials allowed for the exam. No calculators, cell phones, or other electronic devices will be permitted either.

Assignment and Project Components

Due Dates (tentative)

Requirements Documentation:	5% (light)	Assigned September 12, 2019	Due October 3, 2019
Project Management:	5% (light)	Assigned September 12, 2019	Ongoing, With Final Submission Due December 5, 2019
Peer Review:	5% (light)	Assigned September 12, 2019	Ongoing, With Final Submission Due December 5, 2019
Design Documentation:	10% (medium)	Assigned October 3, 2019	Due October 31, 2019
Implementation and Delivery:	25% (heavy)	Assigned October 3, 2019	Due November 28, 2019
Testing Documentation:	10% (medium)	Assigned October 3, 2019	Due November 28, 2019

If, for any reason, the project schedule given above cannot be adhered to, the project marks will be pro-rated. (The assignment and project components are worth 60% of the overall mark for the course. If a component has to be cancelled for any reason, the remaining project component weights will be prorated to add up to 60%.)

About the Assignment and Project Components

- Component descriptions will be posted on the course website by the dates listed above.

- Any changes, updates, and clarifications to these descriptions will also be posted on the website. It is your responsibility to monitor these pages closely.
- As mentioned earlier, the assignment and project components will involve specification, design, and implementation of a reasonably large-scale software system, implemented using Java.
- While the project is a group project, grades will be assigned to each student based on both group and individual performance for each component. Individual performance will be based on a number of factors, some of which may include peer evaluations, contributions made during class, repository logs, individual reports of work completed, and so on.

Submission

- All components must be type-written for legibility and to facilitate electronic submission. If components require the creation of diagrams or illustrations, these too must be done electronically. Appropriate tools will be discussed in class and in the descriptions of the components.
- You are required to submit each component electronically through OWL. (If final submissions are too large for OWL submission, alternate arrangements will be made.) Details will be given in the descriptions. We reserve the right to use similarity detection software to detect possible plagiarism cases.
- Components are expected to be individual efforts (where individual could also mean designated group in the case of a group project component). Any code that is borrowed from an existing source or book must be clearly identified as such in the appropriate documentation; otherwise, this may constitute a plagiarism offence.

Late Policy

- Late components will be accepted for up to two days after the due date, with weekends counting as a single day; the late penalty is 20% of the available marks per day. Lateness is based on the time the assignment or project component is submitted.
- Extensions will be granted only by your course instructor. If you have serious medical or compassionate grounds for an extension, you **must**take supporting documentation to the Academic Counselling unit of your faculty, who will contact the instructor.

Marking

- Assignment and project components are marked by the instructor and/or a teaching assistant assigned to the course. We will attempt to include some information about the marking criteria in the appropriate descriptions.
- When marking has been completed, you will be informed via the course website and/or e-mail.
- A request for adjustment in a mark must be made within 2 weeks of the date on which it was first available for pickup. (Beyond that date, regrading will not be considered.) Such a request must be submitted in writing, and must include specific reasons why you believe you deserve more marks. The request must be accompanied by all materials that were originally handed in, as well as the original marker's grade summary sheet. Regrading requests will take a minimum of 24 to 48 hours to process; you will be informed when it is complete.

- Component marks may be posted periodically throughout the term through OWL. It is your responsibility to check that your marks have been recorded correctly.

Backups

It is your responsibility to keep up-to-date backups of all assignment and project files in case of system crashes or inadvertently erased files. Retain copies of all material handed in, as well as the actual graded version, to guard against the possibility of lost components or errors in recording marks. It is not safe to discard these materials until you are satisfied that your final mark for the course has been computed properly.

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 Web site: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Plagiarism: 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 major academic offence. Please note, however, that students are not allowed to make use of the work of others unless explicitly instructed to do so in the description of an assignment.

All projects are to be exclusively your own work. While project work requires you to work in teams, each team is expected to act individually. You may discuss approaches to problems among yourselves; however, the actual details of the work (coding, documentation, etc.) must be an individual effort. Incidents that are judged to be the result of academic dishonesty will be reported to the Undergraduate Chair. The selection of penalty to be applied is up to the Chair, with consultation of the instructor.

The standard departmental penalty for assignments that are judged to be the result of academic dishonesty is, for the student's first offence, a mark of zero for the assignment, with an additional penalty equal to the weight of the assignment also being applied. You are responsible for reading and respecting the Department of Computer Science's policy on Scholastic Offenses. and Rules of Ethical Conduct.

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

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com/).

Accessibility Statement

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Student Accessibility Services (SAS) at 661-2147 if you have any questions regarding accommodations.

The policy on Accommodation for Students with Disabilities can be found here: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_disabilities.pdf.

Support Services

Learning-skills counsellors at the Student Development Centre (http://www.sdc.uwo.ca) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counseling.

Students who are in emotional/mental distress should refer to Health and Wellness (https://www.uwo.ca/health) for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC, http://westernusc.ca/your-services.

The website for Registrarial Services is http://www.registrar.uwo.ca.

The policy on Accommodation for Religious Holidays can be found here: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf.

Tutoring

The role of tutoring is to help students understand course material. Tutors should not write assignments, projects, or take-home tests 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 work judged similar beyond the possibility of coincidence.