CIS 3250 – Software Design III (Fall 2018), 0.5 credits

Lectures: MWF 11:30am-12:20pm, Room ANNU 156
Laboratories: Section 1: Tue 11:30am-2:20pm, Room THRN 2420
Section 2: Fri 2:30-5:20pm, Room THRN 2420
Section 3: Mon 8:30-11:20am, Room THRN 2420

Instructor: Prof. Stacey D. Scott, Associate Professor, School of Computer Science
Office: Reynolds 3306; Email: stacey.scott@uoguelph.ca; Phone: 519-824-4120 ext. 54153

Teaching Assistants: Akshay Chadha and Jaspinder Kaur
Email: ta3250@socs.uoguelph.ca

Contact: Use email ta3250@socs.uoguelph.ca email for all course-related concerns. Use course discussion boards for general project or content questions. Make an appointment to meet with Prof. Scott or TAs outside of class time. (For emergency issues, email, call, or contact Prof. Scott in person)

Course Website: http://courselink.uoguelph.ca (Login with Central login ID and password)
The course website will be used to provide:

- ***informational materials*** (e.g., course notes, assignment handouts, course updates, course contacts)
- ***electronic drop boxes*** for non-programming course deliverable submissions
- ***course discussion boards*** for asking questions and discussing issues related to course material

Course Communications:
To facilitate timely and accurate communication between people with busy schedules (you, professor, TAs) we will use both electronic and face-to-face communication:

1. For ***lecture, project, or general course questions***, post to the *"CIS 3250 Course Questions" Discussion board* on the course website. This will be monitored by your TAs and Prof. Scott. Or talk to Prof. Scott or your TAs in person before/after lectures, or during laboratories.
2. For ***personal issues***, email or talk in person to Prof. Scott. The best time to chat with her is immediately before/after class.

When communicating with fellow students, TAs or the professor, **you are expected to use professional practices, including respectful, clear messages, especially via email**. See "Email Policy" section below.

Required Texts (available from the UofG Bookstore, and on reserve at the UofG library):

1. Steve McConnell (2004). *Code Complete, 2nd ed.*, Microsoft Press.
2. Karl A. Smith (2014). *Teamwork and Project Management, 4th ed.*, McGraw Hill Education.

Recommended Texts:
Bruegg, B. and Dutoit, A.H. (2010). *Objected-Oriented Software Engineering: Using UML, Patterns, and Java, 3rd edition*. Toronto: Prentice Hall.

Calendar Description:
This course will examine the historical development of design methodologies and working with legacy systems. It will include an examination of programming paradigms and trends in software design from the past and present. The course has an applied focus and will involve software design and development experiences in teams, a literacy component, and the use of software development tools.
Prerequisites: CIS 2250, CIS 2500

Course Objectives:

CIS 3250 aims to provide students a strong foundation in **project management**, **teamwork**, and **essential design theory**, as well as **software engineering tools**. These are core skills and knowledge that will be needed and built upon in your future software engineering courses, and needed as a modern software professional. Achieving this goal requires learning how to use *modern tools* to *manage project and team work*, *communication and coordinate team-based project work*, and *generate and evaluate design alternatives at each stage of the software design process*. You will gain experience with these concepts by working with **legacy software** in a **large team context**. By the end of the course, you should be able to:

a. *Explain* and *Use* effective practices for managing software projects, and *Select* and *Use* appropriate project management and software tools to support effective software project work.
b. *Select and Use* appropriate methods and tools for tracking and controlling changes in software engineering projects (documents, codes, etc.), also called configuration management.
c. *Describe* effective team behaviours and dynamics, and mitigation strategies for team breakdowns, and *Evaluate* contributions to team efforts.
d. *Explain* and *Use* effective strategies for team communication and coordination in software projects.
e. *Explain and Use* effective strategies for programming for a team context, including collaborative code construction, and writing human "usable" code.
f. *Explain* and *Use* effective strategies for generating and evaluating alternative design solutions at different stages of the software engineering process.

Teamwork and project work is a significant aspect of modern software engineering, and a significant source of complexity and challenge. Whether you intend to be a software developer, software engineer, or project manager in the software field, this course will supply you with practical skills and knowledge for conducting team-based software engineering projects, and applying appropriate design methods to software problems.

Grading Scheme:

The following table describes the grading scheme, and the corresponding learning objective.

			Learning Objectives					
	Marking Scheme		**a**	**b**	**c**	**d**	**e**	**f**
Evaluated through:	**Indiv.**	**Team**	Project Mgmt and SE Tools	Config. Mgmt	Team Dynamics	Team Coord.	Sharing Code	Alternatives in Software Design
Theory:	**65%**							
Midterm Exam #1	*15%*		x	x				
Midterm Exam #2	*15%*				x	x	x	
Final Exam	*35%*		x	x	x	x	x	x
Team Assignments	**15%**	**20%***						
Assignment #1		*2%*	x	x	x	x		
Assignment #2		*5%*	x	x	x	x	x	
Assignment #3		*5%*	x	x	x	x	x	
Assignment #4		*8%*	x	x	x	x	x	x
Indiv. Accountability	*6%*		x	x	x	x	x	x
Peer Assessments (3)	*9%***				x	x		
Course Total	**80%**	**20%***						

NOTES: *Due to significant group work required for team deliverables, the instructor reserves the right to apply a fraction of the grade to an individual group member without sufficient evident of contribution to the group effort. See Required Coursework Policies below for more detail.

****Peer Assessment marks will consist of a two-part mark: one part for the quality of submitted peer assessments (as assessed by the instructors) and one part for assessed teamwork contributions (as assess by one's teammates).**

Estimated Weekly Course Commitment (10-12 hours per week for this 0.5 credit course):

- 3 hours lectures
- 3-4 hours course preparation (e.g. readings, academic tasks)
- 3 + 1-2 hours labs + lab preparation (lab activities will typically support your assignment work)

University of Guelph expects students to spend 10-12 hours per week on a 0.5 credit course. This time commitment represents student workload rather than contact hours. In CIS 3250, a key learning vehicle are the course assignments, and related lab activities. The weekly lab times will be primarily used for delivery of tutorials intended to provide students the skills and knowledge needed to complete the course assignments, as well as provide TA-mentored in-lab time to complete assignment work. Thus, **LABS ARE MANDATORY,** and **individual accountability marks** will be given to assess **individual reflection and learning** during labs, as well as **individual accountability** for team-based assignment submissions.

Policies on Required Coursework:

Late or Missed Assignments/Deliverables:

- **0%** will be given for any late or missed team-based assignments or deliverables. **No extensions** will be given after a submission date.

Missed Exam:

- **0%** will be given for a missed **midterm exam**. If accommodation is warranted under the "Accommodation" policy below, the midterm mark allocation (15%) will be redistributed to the final exam (i.e. the final exam will then be worth 50% instead of its original 35% for one missed midterm, or worth 65% for two missed midterms).
- If you miss the **final exam**, you must talk with your academic counsellor and follow University of Guelph policies on this matter. Prof. Scott is not allowed to handle this situation directly.

Marking of Team-Based Deliverables:

- By default, marks for all team-based deliverables will be applied to all group members. However, the **instructor reserves the right to assign individual students a fraction of the total group mark** on any team-based deliverable without sufficient evidence of that student's contribution to the group effort. The **onus is on each individual student** to provide evidence of their individual contribution to the team effort. The instructor reserves the right to apply fractional grading **retroactively at the end of the term** to one or more team deliverables if **individual accountability reports**, **peer assessments**, or **team deliverables** lack sufficient evidence of contribution to team-based deliverables.
- If a team feels that lack of effort by one or more group members is negatively impacting the group's ability to meet the expected outcomes for the course, the situation **MUST be identified to the course instructor or TAs PRIOR to any impacted deliverable** to be considered for accommodation in deliverable grading. Otherwise, default grading criteria will be applied (e.g., the submitted deliverable will be assessed on the basis of a full team effort). Group members must submit a written request for accommodation, PRIOR to the deliverable deadline, detailing the situation. Note that submission of an accommodation request is not in and of itself approval.
- **It is the responsibility of ALL team members to ensure the accuracy and quality of all aspects of submitted team-based deliverables**. Therefore, any academic integrity offences arising from a team-based deliverable will impact ALL group members.

Re-grading of Marked Components:

- Any request for re-grading of a marked course component must be **submitted in writing no later than 1 week** following return of the marked component. A detailed rationale for the request must be included in the written request. The instructor reserves the right to re-grade the entire deliverable component, not just the requested aspect.

Accommodation:

- If you are unable to meet a course requirement due to medical, psychological, or compassionate reasons, please make an appointment to meet Prof. Scott. Please see below for specific details and consult the undergraduate calendar for information on regulations and procedures for Academic Consideration: http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml
- If you are unable to meet a course requirement due to religious obligations, please email Prof. Scott **within two weeks of the start of term** to make alternative arrangements. See the undergraduate calendar for information on regulations and procedures for Academic Accommodation of Religious Obligations: http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-accomrelig.shtml

Calculation of Final Grade / Failed Final Exam or Individual Portion of the Course:
My must obtain a final grade of **50% or more** to pass this course. Your final grade is the weighted sum of all marked coursework as shown in the Grading Scheme table on page 2, unless: a) you **fail the final exam** (i.e. obtain less than 50%), in which case your final grade will be your final exam grade, to a maximum of 45%, b) you obtain **less than 50% on the combined average of the five individual coursework components** (Midterm 1, Midterm 2, Final Exam, Individual Accountability Reports, Peer Assessments), in which case your final grade will be your combined mark for these five individual course components.

In summary, your final grade will be calculated as follows:

if (you fail the final exam)
then final grade **=** final exam grade, to a maximum of 45%

else if (you fail the individual portion of the course)
then final grade = (weighted sum of individual components in Grading Scheme) * 100/80
// note individual components = Midterm 1, Midterm 2, Final Exam, Individual Accountability
// Reports, and Peer Assessments

else //(you passed the final exam and the individual portion of the course)
then final grade = weighted sum of all components in Grading Scheme

Use of Laptops / Personal Computing Devices during Lectures:
Use of laptops, tablets, and other personal computing devices during lectures will be at the instructor's discretion. These devices can be highly distracting to both the student using the device and other students in the class. Use of these devices must be **restricted to course related activities** (note taking, viewing course materials, etc.). Distractions resulting from use of these devices may result in a student being asked to leave the classroom.

Email Policy:
All course email should follow the following guidelines:

- **Always use your uoguelph.ca email account** when emailing Prof. Scott or the TAs (i.e. when emailing ta3250@socs.uoguelph.ca). This provides an authentic email address. Also, always **include the course number (CIS 3250)** along with a relevant topic in the subject line.
- Address your email appropriately (i.e. "Dear Prof. Scott / Professor / Akshay / Ross / Jingjing ...")
- Sign your email with your first and last name, and your student number. If you have a nickname, include that also, e.g., Yu-Ling (Betty) Chang.
- Use **professional and respectful language**. Email containing crude or coarse language will not be answered.
- Allow 24-48 hours for a response to your email. Emailing the ta3250@uoguelph.ca will give you the fastest response, as multiple members of the instructional team monitor this account.
- Email should be used for brief questions that can be answered quickly. Please make an appointment to see Prof. Scott or a TA, or talk to them before/after lecture or during the lab, for detailed discussions.

Roles, Responsibilities, and Expected Behaviour

Recording of materials
Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter (instructor, classmate, or guest lecturer). Permitted recorded material is restricted to use for this course and may not be posted on any public space unless further permission is granted.

Instructional Team's Role and Responsibility to Students
The instructional team's (instructor and TAs) role is to develop and deliver course material in ways that facilitate learning for a variety of students. Selected notes will be made available to students on the course website but are not intended to be stand-alone. During lectures and labs, the instructional team will expand and explain the content of notes and provide example problems that supplement posted notes. Scheduled classes and labs will be the principal venue to provide information and feedback for exams and assignments.

Students' Learning Responsibilities
Students are expected to take advantage of the learning opportunities provided during lectures, labs, and help sessions. Students, especially those having difficulty with the course content, should also make use of other resources recommended by the instructor. Students who fall behind due to illness, work, or extra-curricular activities are advised to keep the instructor informed as early as possible. This will allow the instructor to recommend extra resources in a timely manner and/or provide consideration if appropriate.

Ethical Behaviour[1]
Ethical conduct in the classroom and in academic work are critical to a healthy learning environment. Ethical conduct in all areas of University work is taken very seriously at the University of Guelph.

Code of Conduct
Our learning environment must be a friendly, safe and welcoming environment for all, regardless of ethnicity, gender, sexual orientation, ability, socioeconomic status, and religion (or lack thereof). As we wish to facilitate

[1] This "Ethical Behaviour" section is based on content developed by SoCS's professor Dr. A. Hamilton-Wright, which was in turn developed based on the citizen code of conduct available via http://citizencodeofconduct.org, and is distributed under a Creative Commons Attribution-ShareAlike license (http://creativecommons.org/licenses/by-sa/3.0/).

and encourage the fullest participation from everyone, this code of conduct outlines the expectations for all participants (including the instructor and other staff). This code of conduct is aligned with the University of Guelph's policy on Non-Academic Misconduct (https://www.uoguelph.ca/secretariat/office-services/student-judicial-services/non-academic-misconduct/policy-non-academic-misconduct).

Expected Behaviour

- Participate in an authentic and active way. In doing so, you contribute to the health and value of this community.
- Exercise consideration and respect in your speech and actions.
- Attempt collaboration before conflict.
- Refrain from demeaning, discriminatory, or harassing behaviour and speech.
- Be mindful of your surroundings and of your fellow participants. Alert community leaders (for example, your instructor) if you notice a dangerous situation, someone in distress, or violations of this Code of Conduct, even if they seem inconsequential.

Citizenship and Participation

Communities mirror the societies in which they exist and positive action is essential to counteract the many forms of inequality and abuses of power that exist in society. If you see someone who is making an extra effort to ensure our community is welcoming, friendly, and encourages all participants to contribute to the fullest extent, we want to know.

Unacceptable Behaviour

Unacceptable behaviours include: intimidating, harassing, abusive, discriminatory, derogatory or demeaning speech or actions by any participant in our community, either in person, online, at any related events, or in one-on-one communications carried out in the context of community business. **Harassment includes**: harmful or prejudicial verbal or written comments related to race, religion, disability, gender, sexual orientation; inappropriate use of nudity and/or sexual images in public spaces (including computer labs and presentation slides); deliberate intimidation, stalking or following; harassing photography or recording; sustained disruption of talks or other events; inappropriate physical contact, and unwelcome sexual attention.

Consequences of Unacceptable Behaviour

Unacceptable behaviour from any community member, including the course instructor and those members with decision-making authority, will not be tolerated. **Anyone asked to stop unacceptable behaviour is expected to comply immediately.** If a community member engages in unacceptable behaviour, action will be taken to ensure that such behaviour ends, beginning with action on the part of the course instructor, and escalating if necessary. Additional information on University policy regarding harassment, conduct and human rights is available at the following web page: https://www.uoguelph.ca/diversity-human-rights/

If You Witness or Are Subject to Unacceptable Behaviour

If you are subject to or witness unacceptable behaviour, or have any other concerns, **please notify the course instructor as soon as possible**. If you feel that the course instructor cannot or will not provide remedy for the situation, please contact any of these alternate resources:

- Associate Director (Undergraduate) <ugraddir@socs.uoguelph.ca>
- Director of the School <director@socs.uoguelph.ca>
- Associate Dean (Academic) <cpesada@uoguelph.ca>

- Office of Diversity and Human Rights <dhrinfo@uoguelph.ca> or extension 53000
- Campus Community Police at extension 52245

Academic Integrity

Just as ethical and inclusive behaviour is required in inter-personal communications for course-based activity, the university community requires ethical behaviour in the performance of all academic activity. All forms of academic misconduct are dealt with quite seriously at University of Guelph. Plagiarism and other forms of academic fraud are offensive activities pursued vigorously by the University.

It is **your responsibility to read and be familiar with the academic regulations** of the University as presented in the Calendar. Ensure you have a complete understanding of the concepts as described in the "Academic Misconduct" subsection within Section VIII "Undergraduate Degree Regulations and Procedures" in the Calendar: http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml. It is your responsibility to accurately and clearly indicate the work of **any and all contributing people**, including yourself, in all presented and submitted materials. By handing in any work for this course, unless you have specifically identified any other authorship, **you are claiming that the sole authorship is your own**.

Please note: Whether or not you intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse you from responsibility for verifying the academic integrity of your work before submitting it – this includes submitted team-based deliverables. If you are in any doubt as to whether an action on your / your team's part could be construed as an academic offence you should consult with your course instructor.

Mental Health

University of Guelph course instructors and student services cooperate to assist in helping students manage course and life stressors. Help is also available through counselling services. Please see the Mental Health Resources page for details: https://wellness.uoguelph.ca/counselling/mental-health-resources.

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability, or for a short-term disability should contact Student Accessibility Services (SAS) as soon as possible. SAS may be contacted at: phone: 519-824-4120 ext. 56208, email: csd@uoguelph.ca, or see their website: http://www.uoguelph.ca/csd.

Course Timetable/Content Schedule (tentative; check CourseLink for updates)

Wk – Dates	**Topic(s)** *[more details available on CourseLink]*	**Deliverables / Exams** **NOTE: Labs will occur most weeks** (refer to CourseLink / announcements in class for cancelled Lab dates). **At the end of each lab,** all individual team members must submit a "Individual Accountability Report" to CourseLink (see CourseLink for details)
1–(short wk) Sep 7	Introduction to Course, **Module I Begins**: Project Management in Software Engineering	
2–Sep 10, 12, 14	Project Management and PM tools	Sep 13: Background Survey due
3–Sep 17, 19, 21	Configuration Management and CM tools	Assign #1 due – in lab
4–Sep 24, 26, 28	Managing Joint Software Construction	
5–Oct 1, 3, 5	**Module II Begins**: Working in Software Teams	Oct 4: **Midterm Exam #1**
6–Oct ~~8~~, 10, 12	Oct 8 (Thanksgiving holiday), Oct 9: Fall Study Break **NO CLASSES or LABS these days**. Lectures resume Oct 10 and 12 Writing Code for Sharing, Using Conventions, and Producing "Readable/Usable" Code	
7–Oct 15, 17, 19	Collaborative Construction and Software Integration	Assign #2 due – in lab Peer Assessment #1 due – in lab
8–Oct 22, 24, 26	Bias, Social Dynamics, and Effective Team Behaviours	
9–Oct 29, 31, Nov 2	Team Communication, Coordination, and Comm. Tools	Assign #3 due – in lab
10–Nov 5, 7, 9	**Module III Begins**: Software Engineering as a Design Discipline; Key Design Concepts & Challenges	Nov 8: **Midterm Exam #2**
11–Nov 12, 14, 16	Importance of Design Alternatives during the SE Process; Alternatives in Software Testing	Peer Assessment #2 – in lab
12–Nov 19, 21, 23	Alternatives in Software Design & Construction	
13–Nov 26, 28, 30	Note, Nov 30 is running a Monday schedule (due to Thanksgiving holiday) Alternatives in Programming Languages; Course Wrap-up	Assign #4 due – in-lab
Final Exam Period		**Final Exam:** Wed, Dec 5 Check **WebAdvisor** for any changes closer to the exam date, and for the exam time and location.