

CIS*3760 Software Engineering

instructor

Dr. Judi McCuaig
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teaching assistants

Keerthana Madhavan
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land acknowledgment

The Dish With One Spoon Covenant speaks to our collective responsibility to steward and sustain the land and environment in which we live and work, so that all peoples, present and future, may benefit from the sustenance it provides. As we continue to strive to strengthen our relationships with and continue to learn from our Indigenous neighbours, we recognize the partnerships and knowledge that have guided the learning and research conducted in and for this class. We acknowledge that the University of Guelph resides in the ancestral and treaty lands of several Indigenous peoples, including the Attawandaron people and the Mississaugas of the Credit, and we recognize and honour our Anishinaabe, Haudenosaunee, and Métis neighbours. We acknowledge that the work we do here occurs on their traditional lands so that we might work to build lasting partnerships that respect, honour, and value the culture, traditions, and wisdom of those who have lived here since time immemorial.

course description

CIS*3760 is a .75 credit course.

This course is an examination of the software engineering process, the production of reliable systems and techniques for the design and development of complex software. Topics include object-oriented analysis, design and modeling, software architectures, software reviews, software quality, software engineering, ethics, maintenance and formal specifications.

The [Academic Calendars](#) are the source of information about the University of Guelph's procedures, policies, and regulations which apply to undergraduate, graduate, and diploma programs.

learning outcomes

By the end of this course, you should be able to:

- **Explain** and **Use** the procedures involved in software design and development;
- **Select** and **Use** suitable modeling techniques for planning and designing a software project;
- **Analyze** problem specifications and Integrate into suitable software requirements and design models;
- **Select** and **Use** suitable software architectures and design patterns for common software problems;
- **Select** and **Use** suitable testing methods for verifying and validating a software project;
- **Identify** sources of risk in software projects, and Select and Use mitigation strategies in solution designs;
- **Describe** effective project management and team behaviours and **Evaluate** your contributions.

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prerequisites & restrictions

CIS*3750

System Analysis and Design in Applications

3760 is taught with the assumption that you understand requirements, user stories and UML

CIS*2750

System Programming

times

Lecture

T/Th 8:30 am - 9:50 am

Sprint Planning 8:30-9:15

Book Study 9:15-9:50

Labs

Labs are free time for project work

no instruction during labs

communication

- Grades will be posted in the gradebook on moodle.
- Announcements will be made via MS Teams and email. Set up Teams notifications appropriately so you don't miss things. **You are responsible for checking your email at least twice per day.**
- [Make appointments with instructor using Outlook.](#)
- Personal appointments with instructional team members will take place virtually using Teams.

textbooks

There are no required textbooks for this course. You must have a copy of the book that you are assigned for book study sessions.

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assessments

50%	Project (P) $P = S1 + S2 + S3 + S4 + S5 + S6 + S7 + S8 + FP$
25%	Contribution Reports (R) $R = R1 + R2 + R3 + R4 + R5 + R6 + R7 + R8$
25%	Book Study Group (SG) $SG = B1 + B2 + B3 + B4 + B5$
	Course Grade Course Grade = P + R + SG + Bonus Marks - Penalties

book study due dates Book study reflections are due at 11:59 pm on the Sunday after your study group meets.

5%	Session One (B1) Jan 21/28	
5%	Session Two (B2) Feb 4/11	
5%	Session Three (B3) Feb 18/Mar 3	
5%	Session Four (B4) Mar 10/17	
5%	Session Five (B5) Mar 24/31	March 31 is Easter Sunday.

project sprint due dates Sprints end on either Monday or Wednesday at 11:59 p.m. depending on whether your project team does sprint planning on Tuesday or Thursday.

5% *	Sprint One (S1) Jan 29/31	
5% *	Sprint Two (S2) Feb 5/7	
5% *	Sprint Three (S3) Feb 12/14	
5% *	Sprint Four (S4) Feb 26/28	
5% *	Sprint Five (S5) Mar 4/6	
5% *	Sprint Six (S6) Mar 11/13	
5% *	Sprint Seven (S7) Mar 18/20	
5% *	Sprint Eight (S8) Mar 25/27	
10%	Sprint Nine (FP) Apr 1/2/4	Final Project Presentation. Failure to attend results in 0 grade

* Individual sprint grades are a composition of the group sprint grade (GSn) and a peer sprint review assessment (PA).
Individual sprint grade calculation calculation: $Sn = GS_n \cdot 0.8 + PA_n \cdot 0.2$.

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contribution report due dates Individual contribution reports are due at the end of each sprint, either Monday or Wednesday at 11:59 p.m. depending on whether your project team does sprint planning on Tuesday or Thursday. The final contribution report is due April 1.

3%	Report One (R1) Jan 29/31
3%	Report Two (R2) Feb 5/7
3%	Report Three (R3) Feb 12/14
3%	Report Four (R4) Feb 26/28
3%	Report Five (R5) Mar 4/6
3%	Report Six (R6) Mar 11/13
3%	Report Seven (R7) Mar 18/20
4%	Report Eight (R8) Apr 1

grade penalties CIS*3760 is a heavily experiential course. Failure to participate in the in-person activities will result in grade penalties.

- 3 point grade penalty for each missed sprint planning meeting
- 5 point penalty for each missed book study session
- 2 point penalty for each missed final presentation peer evaluation. (you will be assigned at least 3)

missed assessments and activities

In general, late submissions are not accepted and will be given a grade of zero. Each student is allocated 10 bonus marks at the beginning of the semester. Those bonus marks will be used to offset deductions for missed assessments or activities. Any further accommodations will require documentation.

If you are unable to meet an in-course requirement due to medical, psychological, or compassionate reasons, please contact the Instructor and explain the situation. Include any evidence you have to support your case. Please [consult the undergraduate calendar](#) for information about Academic Consideration. Alternate assessments will be assigned in cases where academic consideration is warranted.

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Course Topics

The schedule shown may change as the semester progresses. Consult the course website for updates.

Week	Dates	Topics
1	Jan. 8 - Jan. 14	Course Introduction Project Introduction and Organization Communication Project Setup Software Engineering Scrum Scrum Board
2	Jan. 15 - Jan. 21	Epics Setting up Gitlab Git best Practices Docker Build Tools Task Decomposition User Stories
3	Jan. 22 - Jan. 28	Story Points Product Backlog Items Coding Standards Linters Code Review Tech Stories
4	Jan. 29 -Feb. 4	Containerization Scrum Member Roles Unit Testing Testing Frameworks Distributed Systems
5	Feb. 5 - Feb. 11	Architectures Sprint Meetings Object Oriented Design RESTful API
6	Feb. 12 - Feb. 18	Integration Testing Mocks for testing Visualization Continuous Integration
7	Feb. 26 - Mar. 3	Code Quality Static Code Analysis Dev Ops
8	Mar. 4 - Mar. 10	Design Patterns Deployment Code Smells/Antipatterns
9	Mar. 11 - Mar. 17	Refactoring Continuous Deployment Kubernetes
10	Mar. 18 - Mar. 24	Software Development Life Cycles
11/12	Mar. 25 - Apr. 7	no new topics

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policies

- **Regrades:** If errors were made in the grading of your work, you must, in writing, present your case to the instructor within 5 days of receiving your grade. Be specific about what you believe was graded incorrectly. Your submission will be completely regraded. This could result in your grade being reduced. It is not a grading error if you simply got a lower grade than you were expecting.
- **Communication & Email Policy** Major announcements will be emailed to you. Regular announcements will be made in class and posted on the MS Teams group for the course. As per university regulations, all students are required to check their mail.uoguelph.ca e-mail account regularly: e-mail is the official route of communication between the University and its students.
- **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, whether the instructor, classmate, or guest lecturer. Material recorded with permission is restricted to use for that course and may not be posted on any public space unless further permission is granted.
- **Use of AI for coursework:** **All course work must be primarily created by you, the student. You and your project team are welcome to augment your own learning and improve your work by using AI plugins and tools. Any work that appears to be primarily created by AI will not be graded. You will be asked to attend a 1-1 meeting to discuss your personal understanding of the content and will be graded based on the results of that meeting.**
- **Accommodation of Religious Obligations:** if you are unable to meet an in-course requirement due to religious obligations, please email the instructor **within two weeks of the start of the semester** to make alternate arrangements. See [the academic calendar](#) for information on regulations and procedures for Academic Accommodation of Religious Obligations.
- **Instructor's Role and Responsibility to Students** The instructor's role is to develop and deliver course material in ways that facilitate learning for a variety of students. A variety of materials, including notes and recorded lectures, will be made available on the course website.
- **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 inform the instructor about their situation as early as possible. This will allow the instructor to recommend extra resources in a timely manner and/or provide consideration if warranted.
- **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.

For more information, contact SAS at 1.519.824.4120 ext 56208 or accessibility@uoguelph.ca or wellness.uoguelph.ca/accessibility.

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computing requirements

The course project requirements are specified in the project overview document. As a minimum, you will be required to use the following resources:

- gitlab.socs.uoguelph.ca for project code and management
- docker for containerizing your project
- an IDE for development (VS-Code is fine)
- MS Teams for real-time communication
- moodle.socs.uoguelph.ca for course website

You must have access to a computing device and internet connection that allows you to share your screen and do demos of your work while having a voice conversation via Slack.

A video feed is nice for online meetings but is not required. Screen sharing is required.

academic integrity

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. All students who take a SOCS course must pass the Academic Integrity Self Test.

For educational purposes, instructors impose conditions on assignments that may limit students' permission to collaborate with others or to utilize external sources (including, but not limited to, software, data, images, text, etc.). Any permitted utilization must be done with proper references. Aiding and abetting is a punishable offence; students must be careful not to help others commit offences by giving out solutions or providing to access computer accounts. Instructors may use automated tools to detect possible cases of academic misconduct.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member.

- The Academic Misconduct Policy is detailed in the Undergraduate Calendar [here](#).
- The SOCS Academic Integrity Unit is [here](#). Login with your central login credentials.

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code of conduct

Our learning environment must be a safe, and welcoming environment for all, regardless of ethnicity, gender, sexual orientation, ability, socioeconomic status, and/or religion (or lack thereof). This code of conduct outlines the expectations for all participants ¹.

- **Expected Behaviour:** Members of our learning community are expected to:
 - participate in an authentic and active way, and in doing so, contribute to the health and value of our community,
 - exercise consideration and respect in their speech and actions,
 - attempt collaboration before conflict,
 - refrain from demeaning, discriminatory, or harassing behaviour and speech,
 - be mindful of your surroundings and your fellow participants, and alert community leaders (e.g. your instructor) if you notice a dangerous situation, someone in distress, or violation of this Code of Conduct, even if it seems inconsequential.
- **Citizenship & 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 [here](#).
- **If You Witness or Are Subject to 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 ([click here to email](#)),
 - Director of the School ([click here to email](#)),
 - Associate Dean, Academic ([click here to email](#)),
 - Office of Diversity and Human Rights ([click here to email](#), or ext 53000),
 - Campus Community Police (ext 52245).

¹Based on [citizen code of conduct](#), distributed under a [Creative Commons Attribution-ShareAlike](#) license

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health & wellness

All members of campus play a role in fostering and promoting a safe, supportive environment, as well as good physical, emotional, spiritual, cultural, and mental health and wellness.

COVID-19 has required all of us to adjust our work habits and our expectations of ourselves. I cannot change the expectations for you, but if you are struggling because of challenges related to COVID-19, please contact me and I will try to help you identify a path to success.

"If you are sick, heartbroken, or exhausted, go home. Work is not more important than your health." -Dr. Max Liboiron

If you are experiencing any challenges, please do not hesitate to contact the instructor, and know that there are resources on campus set up to help you out.

Medical concerns? Student Health Services at x52131

Threats of violence, personal safety? Campus police at x2000

Psychological or emotional concerns? Counselling services at x53244

Accessibility concerns? SAS at x56208

Sexual assault? Campus police at x2000, or counselling services at x53244

Mental Health concerns? Please see the Mental Health Resources page [here](#).

Parents Students who are also parents often face the barrier of exhaustion in the evening once children have finally gone to sleep. While I maintain the high expectations for all students in my classes regardless of parenting status, I am happy to problem-solve with you in a way that makes you feel supported as you strive for school-parenting balance. Your littles are welcome in our classroom if you have a childcare emergency.

Other sources of help can be found at the following links:

- [Student Health Services](#), Monday to Friday, 8:30am-4:30pm, x52131, J.T. Powell Building
- [Counselling Services](#), Monday to Friday, 8:15am-4:15pm, x53244, Level 3, University Centre
- [Wellness Education Centre](#), Monday to Friday, 8:30am-4:30pm, x53327, J.T. Powell Building
- [Student Support Network](#), Monday to Friday, 12:00pm-10:00pm, Raithby House
- [Campus Community Police](#), 24/7, x2000, Trent Building
- Good2Talk, 1.866.925.5454
- Here 24/7, 1.844.437.3427