

## CIS 3250 – Software Design III (Fall 2023), 0.5 credits

**Lectures (in person):** T/Th 11:30-12:50pm, MACN 113

**Laboratories (in person):** **Section 1:** Fri 8:30am-11:20pm, THRN 2420

**Section 2:** Mon 8:30-11:20pm, THRN 2420

**Section 3:** Mon 2:30-5:20pm, THRN 2420

**Instructor:** Prof. Stacey D. Scott (she/her), Professor, School of Computer Science

Office: Reynolds 3308; Email: [stacey.scott@uoguelph.ca](mailto:stacey.scott@uoguelph.ca); Phone: 519-824-4120 ext. 54153

**Office Hours:** TBD (format and time will be based on a poll of student preferences)

**Teaching Assistants:** Akshay Chadha, Kristina Kacmorova, Hedyeh Nazari

Email: [cis3250@socs.uoguelph.ca](mailto:cis3250@socs.uoguelph.ca)

**Contact:** Use [cis3250@socs.uoguelph.ca](mailto:cis3250@socs.uoguelph.ca) email for all course-related concerns. Use course discussion boards for assignment or lecture content questions. For emergency issues, email Prof. Scott directly.

**Course Delivery:** **This course is designed as an IN-PERSON course.**

**Lectures** will be conducted in-person. We will use **Zoom polls** during Lectures; please bring a device that you can login to Zoom with.

**Lecture materials** (slide decks, handouts, etc.) will be archived on CourseLink after each Lecture. **Instructor audio feed and lecture slides** will be captured via Zoom during Lectures. Lecture Recordings will be made available on CourseLink **for 1 week following the Lecture** to accommodate student illness or other *temporary* personal issue. Lectures will NOT be livestreamed, nor will chat be available. Posted Lecture Notes and Lecture Recordings are provided as study aids only. They are not meant to replace IN PERSON class participation.

**Labs** will be conducted in-person. **Lab participation is mandatory.** Labs provide a shared time and space for individuals and groups to meet with the instructional team and work on course deliverables.

### Midterms/Tests and Final Exam delivery format:

This course has two (2) scheduled midterms and one scheduled final exam; all will be conducted **IN PERSON**.

- Midterms will be held **in person, in class** in our regular classroom (MACN 113).
  - o **Midterm Test I: In class Thursday, October 5<sup>th</sup>**
  - o **Midterm Test II: In class Tuesday, November, 7<sup>th</sup>**
- Final Exam will be held **in person** on **Friday, December 15<sup>th</sup>, 11:30am - 1:30pm**, Location TBD (check WebAdvisor)

If you require **accommodation** to help you succeed in this course, you are encouraged to register with **Student Accessibility Services (SAS)** as early as possible (there are deadlines for midterms and exam).

**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., videos, lecture notes, assignment handouts, course updates)
- **electronic drop boxes** for non-programming course deliverable submissions
- **course discussion boards** for asking questions and discussing issues related to course material

**Required Text:** Steve McConnell (2004). *Code Complete, 2nd ed.*, Microsoft Press.

### Course Communications:

1. For **lecture, assignment, or general course questions**, post to the “CIS 3250 Course Questions” Discussion board on the course website. Or talk to Prof. Scott or your TAs during lectures or labs.
2. For **personal issues**, email Prof. Scott or visit her during office hours.

### 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**. Achieving this goal requires learning *modern tools to manage team-based software projects and group communications*. 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:

- *Describe* past and present software design methodologies commonly used in the software industry
- *Select and Use* effective practices and tools for managing software projects
- *Select and Use* appropriate methods and tools for tracking and controlling changes in software engineering projects (i.e. configuration management)
- *Describe* effective team behaviours and dynamics, and mitigation strategies for team breakdowns
- *Explain and Use* effective strategies for team communication and coordination in software projects
- *Explain and Use* effective strategies for programming in a team context
- *Explain and Use* effective strategies for generating and evaluating alternative design solutions at different stages of the software engineering process

### Course Topics (tentative, subject to change, check CourseLink for updates):

- Course Introduction
- **Module I – Working in Software Teams**
  - Teamwork Basics
  - Communication Skills and Managing Conflict
  - Team Diversity and Mutual Respect
  - Collaborative Construction
- **Module II – Project Management in Software Engineering**
  - Managing Shared Software using Version Control
  - Software Project Management Basics
  - Managing Software Construction & Configuration Management
  - Project Scheduling and Management Tools
- **Module III – Managing Quality and Complexity in Software Design**
  - Software Quality – Software Testing Basics
  - Complexity in Software Design
  - Alternatives & Trends in Programming Languages

## Grading Scheme:

- **Theory (60% in total):**
  - Tests (2): 30% (15% each)
  - Final Exam: 30%
- **Practical (40% in total):**
  - Assignments (individual and team components): 35%
  - Peer Assessments: 5%

## Assignments & Peer Assessments

There will be **five (5) assignments** in this course, worth 35% of the term grade, including team and individual components. Individual accountability reports are included in this grading component.

1. Project management and configuration management (2%) – due in lab week 2
2. Working with a large, shared code base in C: Part I – code review (5%) – due in lab week 4
3. Working with a large, shared code base in C: Part II – pair programming and team consolidation (5%) – due in lab week 8
4. Case Study of Software Disaster (this will involve using ChatGPT!), including peer critiquing (10%) – team component due in lab week 11; indiv. component due outside of lab week 12
5. Unit testing (8%) – due outside of lab week 13

\*Individual Accountability Reports (5% in total) – due with each team-based deliverable

**Three (3) peer assessments** will also be completed by groups throughout the term, worth a total grade of 5%.

Peer Assessments (5% in total) – due Oct 13, Nov 17, and Dec 1

*\*Note, for all team-based deliverables, each team member must submit an **individual accountability report** to describe their individual learning and contribution to the deliverable. The instructor reserves the right to apply a fraction of the team grade to an individual team member without sufficient evidence of contribution to the team effort. See Policies on Required Coursework below.*

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

- 3 hours lectures
- 3-4 hours independent study (e.g. readings, academic tasks)
- 3 hours labs
- 1-2 independent lab preparation (video tutorials, readings, reviewing assignment instructions)

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 mini-tutorials, reviewing assignments, TA-mentored time to help individuals and groups complete assignment work. Thus, **LABS ARE MANDATORY. Individual accountability marks** will be given to assess **individual reflection, learning, and contribution to group deliverables**.

## Policies on Required Coursework:

### Accommodation: When You Cannot Meet a Course Requirement

- When you find yourself unable to meet a course requirement because of illness or compassionate reasons, please advise Prof. Scott (or the TAs) in writing, with your name, id#, and e-mail contact. **See the undergraduate calendar for information on regulations and procedures for Academic Consideration.**

### Late or Missed Assignments/Deliverables:

- **0%** will be given for any late or missed 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 (see “Accommodation” policy above), the midterm mark allocation (15%) will be redistributed to the final exam (i.e. the final exam will then be worth 45% instead of its original 30%).
- If you miss the **final exam**, you must talk with your academic counsellor and follow University of Guelph policies on this matter. Prof. Scot cannot do anything in this situation.

### 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 a 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 component.

### Accommodation:

- If you are unable to meet a course requirement due to medical, psychological, or compassionate reasons, please make an appointment to meet with 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:

You must achieve a passing grade (**50% or more**) in each of the **Theory** and **Practical** sections to pass this course. A failing total in either of the above two sections will result in a final grade in the course equal to that failing total, to a maximum of 45%. Otherwise, your final grade is the weighted sum of all marked coursework as shown in the **Grading Scheme** section of this document.

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

**if (you fail the Practical section of the course)**

**then** final grade = (weighted sum of Practical components in Grading Scheme) \* / 40 \* 100, to maximum of 45%

**else if (you fail the Theory section of the course)**

**then** final grade = (weighted sum of Theory components in Grading Scheme) \* / 60 \* 100, to maximum of 45%

**else //** (you passed Practical AND Theory sections of the course)

**then** final grade = weighted sum of all components in Grading Scheme

### Communications Policy:

All course communications should follow the following guidelines:

- As per university regulations, all students are **required to check their <uoguelph.ca> e-mail account regularly**. E-mail is the official route of communication between the University and its students.
- **Always use your uoguelph.ca account** when emailing Prof. Scott or the TAs (i.e. when emailing [cis3250@socs.uoguelph.ca](mailto:cis3250@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 / Hillary / Brandon ...")
- 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, respectful language**. Email containing crude or coarse language will not be answered.
- Allow 24-48 hours for a response to your email or questions posted to the course Discussion Boards.
- Email should be used for brief questions that can be answered quickly. Please use office hours, or a scheduled appointment with Prof. Scott or a TA for detailed discussions.

## Roles, Responsibilities, and Expected Behaviour

### Recording and sharing of course 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); see below for implicit permission given for recording of voluntary discussion participation.** Material recorded with permission is restricted to use for that course unless further permission is granted.

Do not redistribute recorded interactive discussions that involve any member of our course (instructor, your TAs, your classmates). This includes advising times and question and answer sessions with the instructor/TAs.

Online activities such as advising times, question and answer sessions, and interactive lectures may be recorded by the instructor or TAs and posted to CourseLink. **By taking this course you are agreeing that your participation in these activities can be used in this manner. If you do not wish to have your image or voice recorded as part of these activities, then either do not take this course OR do not ask questions during these activities. Note, the recordings of lectures will show the instructor's presentation slides only.**

### 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. The instructional team is also responsible for providing a safe and inclusive learning environment. See Code of Conduct below.

### Students' Learning Responsibilities

Students are expected to take advantage of the learning opportunities provided during lectures, labs, and advising times. 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.

Students are expected to keep copies of all course deliverables they have submitted. Students may be asked to resubmit deliverables at a later time.

### 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 a short-term disability should contact Student Accessibility Services (SAS) as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or visit the [SAS website](#).

## Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

- Undergraduate Calendar - [Dropping Courses](#)

## Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

## Resources

The Undergraduate Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.

### Ethical Behaviour<sup>1</sup>

Ethical conduct in the (physical or virtual) 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 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.

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<sup>1</sup> 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/>).



### *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](mailto:ugraddir@socs.uoguelph.ca)>
- Director of the School <[director@socs.uoguelph.ca](mailto:director@socs.uoguelph.ca)>
- Associate Dean (Academic) <[kgordon@uoguelph.ca](mailto:kgordon@uoguelph.ca)>
- Office of Diversity and Human Rights <[dhinfo@uoguelph.ca](mailto:dhinfo@uoguelph.ca)> or extension 53000
- Campus Community Police at extension 52245

### *Academic Integrity & Academic Misconduct*

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. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

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: <https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures>. 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.

### ***Turnitin (Plagiarism detection software)***

In this course, your instructor may be using Turnitin, integrated with the CourseLink Dropbox tool, to detect possible plagiarism, unauthorized collaboration or copying as part of the ongoing efforts to maintain academic integrity at the University of Guelph. All submitted assignments will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site.

### ***Use of Artificial Intelligence (e.g., ChatGPT) in this course***

The development of increasingly sophisticated AI systems such as ChatGPT poses potential threats to academic integrity. Unauthorized student use of AI systems undermines student learning, the achievement of learning outcomes and violates the University's academic misconduct policies.

The University is committed to ensuring that the use of AI in teaching and learning complies with existing policies and regulations that govern academic and scholarly integrity. We affirm the following:

- ***Students' work must reflect their unique intellectual capacity and demonstrate the application of critical thinking and problem solving.*** Unauthorized use of AI to complete assessments violates the fundamental intellectual purposes of the University and does not demonstrate student achievement of course learning outcomes.
- Submission of materials completed by AI, without permission of the instructor, ***constitutes an offence under the University's academic misconduct policies***, either as a form of plagiarism or the use of unauthorized aids.
- Acceptable use of AI should be determined by the course instructor and may vary across disciplines, programs and types of assessments. In setting out course requirements and assessment criteria, the instructor should specify allowable uses of AI, if any, through the course outline and/or the learning management system (e.g., CourseLink).

**IN THIS COURSE, CIS\*3250, students will use the AI ChatGPT in the Software Disaster Case Study (Assignment #5) ONLY.** In that assignment, students are only allowed to use AI as per the assignment instructions. Use of AI in any other assigned coursework (group or individual assignments or exams) is **prohibited**.

***Read the University of Guelph's full Statement on Artificial Intelligence Systems, ChatGPT, Academic Integrity here:*** <https://guides.uoguelph.ca/2023/03/university-of-guelph-statement-on-artificial-intelligence-systems-chatgpt-academic-integrity>