Course Outline :: *Final version :: Last modified: August 21, 2026*

1. Course Information

Instructors:	Dr. Christine Laurendeau (she/her)	ChristineLaurendeau@cunet.carleton.ca	HP 5378
	Sean Benjamin (he/him)	SeanBenjamin@cunet.carleton.ca	HP 5372
Lectures-A:	Tue / Thu 11:35 am - 12:55 pm		
Lectures-B:	Tue / Thu 2:35 pm - 3:55 pm		
Office hours:	posted in Brightspace	Classrooms:	posted in Carleton Central
Teaching team:	posted in Brightspace	Web site:	Brightspace

Land acknowledgement: Carleton University acknowledges the location of its campus on the traditional, unceded territories of the Algonquin nation.

Important dates and deadlines can be found at this link, including class suspension for fall, winter breaks, and statutory holidays.

2. Course Description

Development of object-oriented software systems: theory and practice. Topics include: Computer ethics, software development processes, requirement specification, class and scenario modelling, state modelling, UML, design patterns, traceability. Students are to complete a team project. Precludes additional credit for SYSC 3020, SYSC 3120, SYSC 4120.
Prerequisite(s): COMP 2401 with a minimum grade of C-, (COMP 2404 or SYSC 3010 or SYSC 3110) with a minimum grade of C-, and (COMP 2406 or SYSC 4504).

3. Topics Covered and Learning Outcomes

3.1. The course will cover the following topics (some material may be omitted due to time constraints): Software and software engineering; requirements analysis; software design (architectural design, sub-system design, design patterns, detailed object design); software management (development process, configuration management, DevOps); implementation; quality control; and professional ethics.

3.2. *Estimated schedule*

Week	Dates	Course work	Topics
Wk01	Sep.10		Section 1: Software and software engineering
Wk02	Sep.15		
	Sep.17		
Wk03	Sep.22		Section 2: Requirements analysis
	Sep.24	A1 posted	
Wk04	Sep.29		
	Oct.01		
Wk05	Oct.06		
	Oct.08	A1 due	Section 3: Software design
Wk06	Oct.13		
	Oct.15		
Wk07	Oct.20		Workshop: GitHub
	Oct.22	A2 due	Section 3: Software design
Wk08	Nov.03		Workshop: Qt
	Nov.05		MIDTERM
Wk09	Nov.10		Section 4: Software management
	Nov.12	D1 due	
Wk10	Nov.17		
	Nov.19		Workshop: SQLite
Wk11	Nov.24		Section 4: Software management
	Nov.26		Section 5: Implementation
Wk12	Dec.01		Section 6: Software quality control
	Dec.03	D2 due	
Wk13	Dec.08		Section 7: Professional ethics
	Dec.10		Final exam review

4. Textbook(s) and Learning Material(s)

Required: Students are not required to purchase textbooks or other learning materials for this course.

Recommended: Bernd Bruegge and Allen H. Dutoit, *Object-Oriented Software Engineering: Using UML, Patterns, and Java*, 3rd edition, Pearson, 2009. [eBook: ≈$70]

Additional resources (optional):

- Roger S. Pressman and Bruce R. Maxim, *Software Engineering: A Practitioner's Approach*, 9th edition, McGraw Hill, 2020. [eBook: ≈$99]
- David C. Kung, *Software Engineering*, 2nd edition, McGraw Hill, 2024. [eBook: ≈$99]
- Christine Laurendeau, *Introduction to Software Engineering and C++*, 2025. Online textbook. [$0]

5. Assessment Scheme

5.1. Students will be assessed in this course according to the following measures:

Component	Weight	Due dates
Assignments (2)	10%	Oct. 8, Oct. 22
Group project (2 deliverables)	25%	Nov. 12, Dec. 3
Midterm	20%	Nov. 5 (in class)
Final exam	45%	Formally scheduled

5.2. All assignments and project deliverables are **mandatory**. No assignment or deliverable will be waived, for any reason.

5.3. In order to pass the course, students must earn a minimum grade of 40% on the final exam.

5.4. To maintain academic integrity, students are required to write the midterm exam in the section in which they are registered. Writing in the other section will earn a grade of zero.

5.5. If a student is absent for the midterm exam, their midterm grade will be replaced with their final exam grade. No other grade substitutions will be made, for any reason.

5.6. The deferred final exam may differ from the original exam in both content and format, at the discretion of the instructor.

5.7. There will be *no extra credit* available in this course.

5.8. The School of Computer Science strictly enforces calendar prerequisites, including for students writing deferred final exams. For details, please see the SCS Prerequisite Policy at this link.

6. Assessment Notes

6.1. *Assignments and project deliverables:*

6.1.1. There will be two (2) individual assignments and two (2) group project deliverables in this course. Assignment and project deliverable requirements will be posted in Brightspace.

6.1.2. Students are expected to seek assignment and deliverable requirement clarifications by reviewing the existing posts and posting new questions in the Brightspace forums or during instructor office hours.

6.1.3. Prior to each assignment and deliverable due date, the instructors will hold a 20-30 minute in-class workshop to discuss the requirements and to answer student questions. The workshops dates will be posted in Brightspace.

6.1.4. In addition to attending lectures, students can expect to spend *at least nine (9) hours per week* on this course.

6.2. *Collaboration:*

6.2.1. All *assignments* must be completed **individually**. Collaborating on assignments is strictly disallowed and will be reported as an academic integrity offence.

6.2.2. All *project deliverables* must be completed by *registered teams*. Instructions for team registration will be provided in class. Inter-team collaboration on project deliverables is strictly disallowed and will be reported as an academic integrity offence.

6.2.3. Assignment and project deliverable work submitted for credit must be *original*, and the student(s) submitting the work must be its sole author(s).

6.2.4. The use of any generative artificial intelligence (AI) tool, including but not limited to ChatGPT, Copilot, etc., is **strictly prohibited** and will be reported as an academic integrity offence.

6.3. *Submission:*

6.3.1. Only assignment and deliverable files uploaded into Brightspace, using the correct submission link, will be graded for credit. Students are responsible for the integrity of their submissions. Submissions that contain incorrect, corrupt, or missing files may receive a grade of zero, in accordance with the marking scheme. Corrections to submissions will not be accepted after the submission link expires.

6.3.2. Technical problems, including issues with computers or internet connection, do not exempt students from any submission requirement.

6.4. *Teamwork:*

6.4.1. All project deliverables are team-based. Teams will consist of no more than four (4) students. Every team will be assigned the same project, regardless of team size.

6.4.2. The configuration and membership of all teams must be approved by the instructors, and so must all changes to the teams. Deliverables submitted by unauthorized teams will earn a grade of zero.

6.4.3. The instructors retain the exclusive right to dissolve teams and/or reorganize team membership at their discretion and without prior notice.

6.4.4. Students who fail to contribute an equitable share to a deliverable will be removed from their team.

6.4.5. The instructors will assist in the formation of initial teams. However, students who are removed from a team are responsible for finding a new team to join, subject to instructor approval. Failure to join a team will result in the student becoming a one-person team.

6.4.6. Each team member must contribute an *equal amount* of work to every project deliverable. Students who contribute less than their equal share will have their individual mark reduced based on their contribution to the submitted work. Students who experience medical issues and/or family emergencies will be required to make up the missed work before the deliverable due date and time.

6.4.7. Peer reviews will be submitted in confidence by individual students, using a dedicated submission link in Brightspace, at the same time as each project deliverable. Peer reviews will be used to adjust each team member's individual grade for a deliverable, based on the team member's contribution to the submitted work. Students who contribute less than their equal share will have their grade reduced correspondingly.

6.4.8. Failure by a student to submit a peer review will result in the student losing the right to argue against a reduction of their grade based on insufficient contribution.

6.5. *Programming deliverables:*

6.5.1. Programming deliverables must be completed in the programming environment (Virtual Machine or OpenStack image) provided for the course, using only the tools and libraries already installed. The provided VM and corresponding OpenStack image are the *only* programming environment in which project deliverables will be graded. Submissions must compile and execute in the provided programming environment to earn marks.

6.5.2. Students are expected to make regular backups of their work, to a file system outside the course VM and/or image, *at least once for every hour of work*. No accommodations can be made if course work files get overwritten or corrupted, or if the VM and/or image stops working.

6.6. *Grading:*

6.6.1. Assignment and deliverable marks will be released to students when **all** the grading is completed.

6.6.2. It is the student's responsibility to ensure that their midterm, project deliverable, and assignment marks posted in Brightspace are correct. All marking disputes must be addressed with the individual responsible for marking the work (TA or instructor), **within one week** of the marks being posted. In cases where a student and a TA cannot agree, the matter will be referred to the instructors for resolution. For course work that is due close to the end of the term, the dispute period may be shortened to allow for the timely submission of final grades.

6.6.3. The **only** valid reason to appeal a grade is an error by a TA in applying the grading scheme. Student errors, including but not restricted to failure to follow course work instructions and/or submitting a wrong or corrupted file, are **not** a basis for appealing a grade. All appeals of this nature will be automatically denied.

7. Late and Missed Work Policies

7.1. **Late penalty**: Late assignments and project deliverables will incur a deduction of 5% of denominator marks for every hour late, or part of an hour late, up to a maximum of 10 hours past the submission deadline. Once this 10-hour time window has elapsed, the Brightspace submission link will expire, and no submissions, substitutions, or corrections will be accepted, for any reason.

7.2. **Extension**:

7.2.1. Students may request a 72-hour deadline extension for a maximum of one (1) assignment during the entire term. In addition, project teams may request a 72-hour deadline extension for a maximum of one (1) deliverable.

7.2.2. Extension requests must be submitted **before** the original due date for the assignment or project deliverable, using the online form provided in Brightspace, which will be enabled 48 hours before each due date. Emailed requests will *not* be accepted.

7.2.3. *No additional extensions will be granted*, for any reason, including in cases of short-term absence or incapacitation, as stated in paragraph 7.3.

7.2.4. Extension requests received after the original due date will be automatically denied.

7.2.5. Once granted, an extension **cannot** be cancelled or deferred, *even if a student does not use the granted extension*.

7.3. **Academic consideration for short-term absence:** Short-term student absence or incapacitation will be accommodated through *the existing flexibility provisions stated in this course outline* in paragraphs 5.5, 7.1, and 7.2.

7.4. **Academic consideration for long-term absence:** Students who experience absence or incapacitation for longer than an accumulated total of five (5) days during the entire term **cannot** be accommodated, as they will be unable to achieve learning outcomes of the course.

8. Course Material

8.1. All concepts covered during the lectures are part of the course material, including the course notes and related details discussed during lectures, all in-class examples, and in-class and forum discussions. **Students are expected to attend lectures and take their own notes**.

8.2. All materials created for this course (including, but not limited to, course notes, example materials, assignment specifications, project specifications, marking schemes, midterms, exams, and midterm and exam solutions), except where otherwise noted, remain *the intellectual property of the instructors*. They are intended for the personal and non-transferable use of students registered in the course. Reproducing, reposting, and/or redistributing any course materials, in part or in whole, without the written consent of the instructors, is a violation of IP rights, and is **strictly prohibited**.

9. Collaboration Policy

9.1. Collaborating on assignments, midterms, and final exams is **strictly disallowed** and will be reported to the Dean of Science as an academic integrity offence. Penalties for such offences can be found on the ODS web page. Students must complete all assignment and examination work by themself.

9.2. Collaboration on the project is restricted to members of the same officially registered team, which will consist of no more than four (4) students. Inter-team collaboration on the project is **strictly disallowed** and will be reported to the Dean of Science as an academic integrity offence.

9.3. Assignment and examination work in this course are designed to be completed by an individual working alone, and deliverables are designed to be completed by members of the same registered team. The use of any generative artificial intelligence (AI) tool is **strictly prohibited** and will be reported as an academic integrity offence. This includes, but is not limited to, ChatGPT, Copilot, etc.

9.4. Students are expected to familiarize themselves with and abide by Carleton University's Academic Integrity Policy.

9.5. If students are unsure of the expectations regarding academic integrity, they must ask the course instructors. Sharing course work or examination specifications or posting them online (to sites like Chegg, CourseHero, OneClass, etc.) is **always** considered academic misconduct. Students are **never** permitted

to post, share, or upload course materials without explicit permission from the instructors. Academic integrity offences are reported to the office of the Dean of Science. Information, process and penalties for such offences can be found on the ODS web page.

9.6. All quizzes, tests, and exams (hereby referred to collectively as *examinations*) are expected to be completed individually and without electronic aid. The usage and/or possession on a student's person of electronic devices, both before and during an examination, will be considered cheating. This includes cellphones, Smart Glasses, or any other assistive technologies. Prescription glasses with assistive technologies will not be allowed during an examination. A proctor has the right to ask to inspect a student's glasses before or during an examination. In addition, unless authorized with PMC accommodations, a student is NOT allowed to use headphones nor earbuds during an examination. Baseball caps, sunglasses, or anything that could prevent a proctor from monitoring where a student's eyes are focused during an examination are also prohibited. In order to be graded, an examination paper must be submitted before a student leaves the examination room, otherwise it will not be accepted.

9.7. Posting course work and/or its solutions online, including assignment work, project work, midterm work, and final exam work, and distributing course work and/or solutions to other students **at any time** is strictly prohibited and will be reported to the Dean of Science as academic misconduct. This includes work publicly posted on source control sites like GitHub.

9.8. Posting course work after the conclusion of the course is also strongly discouraged, as it is of no benefit to anyone other than future students looking to cheat. Employers want to see evidence of candidates' creativity and initiative, neither of which is demonstrated in course work. Coming up with your own creative and original project ideas, and completing these projects on your own time is the best recipe for impressing potential employers.

10. Communications Policy

10.1. Important course-related announcements will be posted in Brightspace. Students are expected to subscribe to announcement notifications in Brightspace and check their email on a **daily** basis.

10.2. Due to a high volume of emails, the instructors will respond to student emails within 2 to 3 university business days. This timeframe excludes weekends, statutory holidays, and periods of university closure. Emailed questions that request information already available in a discussion forum, or in an assignment specification, or in the course outline may take longer.

10.3. Students are expected to ask the vast majority of their assignment and project questions *during the lectures, during the assignment and deliverable workshops, and during the instructor office hours*. The time immediately preceding and following the lectures cannot be used as a substitute for attending office hours. Individual questions asked at those times will be strictly limited.

10.4. The Brightspace forums are to be used for *occasional, short and simple* questions **only**, since complex concepts and explanations cannot be adequately conveyed in online forums. Forum posts that violate this policy and/or contain multiple and/or last minute questions before a deadline may not be answered.

10.5. Questions in Brightspace must be posted in the appropriate forum, using a professional tone, and in a solution-free manner.

10.6. The instructors will endeavour to respond to discussion forum posts in Brightspace within 12 university business hours. Before posting, students are expected to check the forums to see if their question has already been asked, as duplicate questions may not be answered.

10.7. **TA office hours** are the first point of contact for students requiring help with debugging their code. Please note that TAs are not experts in the course material or in the assignment and deliverable requirements. For questions about course work requirements, please see the instructors during office hours or post the questions in the appropriate Brightspace forum.

10.8. **Instructor office hours** are the first point of contact for students requiring help with the course material, or with understanding assignment or deliverable requirements, or for academic advising.

10.9. In case of technical issues with the installation or operation of the provided VM, students are required to first **read the documentation** provided by the SCS technical staff. Additional assistance may be provided by the course TAs, and not by the instructors.

10.10. Student emails to the TAs, the lab coordinator, and/or the instructors **must** indicate the course code and section in the subject line.

10.11. Students are expected to behave and communicate in a **courteous** and **professional** manner at all times. Any communications, either in person, or online in forum posts and email, that do not follow the basic precepts of common courtesy and professionalism will not be answered, and in extreme cases will be reported to university authorities. Carleton University's expectations of student behaviour online can be found at this link.

11. SCS Laptop Requirement

Every student who has been enrolled in a 1000-level (i.e. first year) course offered by the School of Computer Science after the 2020/2021 school year is required to have a laptop. This includes COMP1001, COMP1005, and COMP1006. For more information, please visit this link and then review the requirements here.

12. Undergraduate Academic Advisors

The Undergraduate Advisors for the School of Computer Science are available in Room 5302 HP; or by email at scs.ug.advisor@cunet.carleton.ca. The undergraduate advisors can assist with information about prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisors will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and the Writing Tutorial Services.

13. SCS Computer Laboratory

Students taking a COMP course can access the SCS computer labs. The lab schedule and locations can be found at this link. All SCS computer lab and technical support information can be found at this link. Technical support staff may be contacted in-person or virtually (see this link for details).

14. Academic Accommodations and Regulations

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes are outlined on the Academic Accommodations website.

ChatGPT/Generative AI usage: The use of AI tools is strictly prohibited in this course and will be considered academic misconduct. As our understanding of the uses of AI and its relationship to student work and academic integrity continue to evolve, students are required to discuss their use of AI in any circumstance not described here with the course instructor to ensure it supports the learning goals for the course.

Academic integrity: Students are expected to uphold the values of academic integrity, which include fairness, honesty, trust, and responsibility. Examples of actions that that compromise these values include but are not limited to plagiarism, accessing unauthorized sites for assignments or tests, unauthorized collaboration on assignments or exams, and using artificial intelligence tools such as ChatGPT when your assessment instructions say it is not permitted. Misconduct in scholarly activity will not be tolerated and will result in consequences as outlined in Carleton University's Academic Integrity Policy. A list of standard sanctions in the Faculty of Science can be found here. Additional details about this process can be found on the Faculty of Science Academic Integrity website. Students are expected to familiarize themselves with and abide by Carleton University's Academic Integrity Policy. Claiming ignorance of or confusion about the academic integrity standards as described in the Policy does not excuse a student from responsibility for violations of those standards.

Student rights and responsibilities: Students are expected to act responsibly and engage respectfully with other students and members of the Carleton and the broader community. The Rights and Responsibilities Policy details the expectations of non-academic behaviour of students. Those who participate with another student in the commission of an infraction of this Policy will also be held liable for their actions.

Student concerns: If you have any concerns regarding this course, your first point of contact is your instructors. Please email or visit during office hours, and we will do our best to address your concerns. If we cannot resolve the issue, the next point of contact is the School of Computer Science at studentconcerns@scs.carleton.ca. If the concern remains unresolved, the final point of contact is the Office of the Dean of Science at ODScience@carleton.ca. Please follow this order of contact. Note: You can also bring your concerns to Ombuds services.