

COMP 2404A - Fall 2024

Introduction to Software Engineering



People

Instructor	Darryl Hill	HP5167	Office Hours: TBD
TA's	https://brightspace.carleton.ca	TBD	TBD

Course Information

Class Time	Wednesday & Friday 14:35 - 15:55
Class Location	Please see Carleton Central
Virtual Class ¹	Zoom link will be posted on Brightspace
Course Website	https://brightspace.carleton.ca

The delivery of material will consist of the following:

- **Lectures** will be given **live** and **in class**, but also recorded over Zoom and posted to Brightspace.
- **Tutorial Sessions** are weekly workshops where you may work on class work and get TA assistance.
- **Tutorials** are small weekly assignments to be completed on **Gradescope** by the due date indicated.
- **Assignments** will be **programmed using C++** and uploaded to **Gradescope or Brightspace** by the date indicated.
- **TA office hours** will be posted on Brightspace once finalized.
- In addition to office hours, questions pertaining to lectures, quizzes, and general course material can be asked / answered on **Brightspace**.
- The **midterm** will be **in person** and during class on the dates indicated.
- The **final exam** will be an **in-person exam** scheduled by registrar.

Course Description

An introduction to object-oriented software development (in C++).

Basics of C++ development: basic language features, programming conventions, class definitions, constructors and destructors, memory management.

Basics of object-oriented design: object design categories, UML class diagrams.

Essential object-oriented techniques: encapsulation, inheritance, polymorphism, overloading, templates, exception handling, C++ library: STL, files and streams.

¹This is an in-person class, but classes are recorded for your convenience.

Software engineering techniques: Strategies for memory management, program organization, testing and debugging, design patterns.

Prerequisites

COMP 2401 with C- or above. Please note that you require a C- in COMP2404 in order to take COMP3004. or all course prerequisites, see the course calendar here: calendar.carleton.ca/undergrad/

Reference Textbook

There is no official textbook for this course. There are several good C++ reference books that you can use, including: Deitel and Deitel, C++ How to Program, any recent edition, Prentice Hall. Also [Google](#). The lecture slides and class examples will be your main references.

SCS Laptop Requirement

Every student that 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 <https://carleton.ca/scs/scs-laptop-requirement/> and then review the requirements at <https://carleton.ca/scs/scs-laptop-requirement/laptop-specs/>.

Evaluation

Final grades will be determined using the scheme described below, and no extra credit assignments will be provided under any circumstances.

See attached **Calendar** for tentative due dates for assessments.

Tutorials (best 8 out of 10)	(1.25% each)	10%
Assignments (5)	(4 highest, 9% each, lowest 4%)	40%
Assignments Total		50%
Midterm (1)		15%
Final Examination (1)		35%
Tests Total		50%

Grades: Marks will be posted on Brightspace and / or Gradescope.

The midterm will be held **during class**.

Completing tutorials is **mandatory**. No exemptions will be made for missed tutorials.

Assignments are **mandatory** and you will use Brightspace or Gradescope to submit them. The assignment component of your final grade is computed from the score you receive on each assignment; the lowest assignment grade will not be "dropped". You are expected to work on your assignments consistently once they are released (uploading your progress at least daily). As a result, you will

never be granted an exemption from an assignment, even for a legitimate medical reason.

Late assignments are never accepted.

It is **your responsibility** to ensure that your quiz, tutorial, and assignment marks posted to Brightspace and Gradescope are correct within two weeks of the date the marks were released. Concerns or complaints about grading must be communicated (first to the teaching assistant, then, if the result is unsatisfactory, to the instructor) within that time. After those two weeks, all marks are considered final and will not be changed under any circumstances.

Collaboration Policy

★ There is absolutely no collaborating allowed for the tests.

Collaboration on assignments and tutorials is acceptable but only at the level of discussion. When coding your solutions, please work on your own. If you need help, please contact a TA or your instructor. Posting assignment solutions or partial solutions on discussion boards before the due date and time is also prohibited.

Academic Integrity

The exact manner, limit and expectations on AI use will be explicitly stated on the assignments. AI is not permitted for tests or tutorials. Any use of AI outside of what is explicitly stated is considered academic misconduct. This includes, but is not limited to, chatbots (e.g., ChatGPT, Google Bard, Bing Chat), code generators (e.g., CoPilot, Code Llama) research assistants (e.g., Elicit), and image generators (e.g., Stable Diffusion, Dall-E), etc.

It would be wise to keep in mind that 50% of the course mark is in-person tests. Midterm and final exam will be pencil and paper, and you **will** be asked to write code. Those who rely too much on AI are likely to fail.

If you are unsure of the expectations regarding academic integrity (how to use and cite references, if unauthorized collaboration with lab- or classmates is permitted (and, if so, to what degree), then you must ASK your instructor. Sharing assignment or quiz specifications or posting them online (to sites like Chegg, CourseHero, OneClass, etc.) is ALWAYS considered academic misconduct. You are NEVER permitted to post, share, or upload course materials without explicit permission from your instructor. 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 webpage: <https://science.carleton.ca/students/academic-integrity/>

Important Considerations

Late assignments are not accepted. Assignments submissions are handled electronically (i.e., through Brightspace) and there is no "grace period" with respect to a deadline - an assignment submitted even one minute **after the deadline is late** and will **receive a mark of zero**.

Technical problems do not exempt you from this requirement, so if you wait until the last minute and then have issues with your connection, you will still receive the penalty. Consequently,

you are advised to

- periodically upload your progress (i.e., upload your progress at least daily),
- attempt to submit your final submission at least one hour in advance of the due date and time.

Students with an **illness** during the span of time a midterm is offered might be granted an exemption **only if they provide a copy** of the [Carleton University Self Declaration Form](#). The weight of the midterm will then be applied to the final exam mark. Furthermore, because assignments are posted well in advance of their due dates, **illness does not excuse a student from completing an assignment**. No provision is made for missed assignments, and no extra credit assignments will be available.

Additional Notes

In addition to the time spent attending lectures, students can expect to spend **between nine and twelve (9-12) hours per week** on this course. Students are responsible for all course materials, including lecture notes, and all materials discussed in class and on any of the official discussion boards.

Students are asked to pose all questions related to course content using **the official discussion boards on Brightspace**; students should not email the instructor directly unless the question contains **confidential information** or is of a personal nature.

The instructor will attempt to answer every student email received **within three business days** of the time the message was received, unless the email requests information already posted on Brightspace or in the course outline. To ensure that all announcements are received, students are expected to check their email on a daily basis.

All materials created for this course (including, but not limited to, lecture notes, in-class examples, assignments, examinations, and posted solutions) **remain the intellectual property of the instructor**. These materials are intended for the personal and non-transferable use of students registered in the current offering of the course. **Reposting, reproducing, or redistributing any course materials**, in part or in whole, without the written consent of the instructor, **is strictly prohibited**.

SCS Computer Laboratory

SCS students can access one of the designated labs for your course. The lab schedule can be found at: <https://carleton.ca/scs/tech-support/computer-laboratories>. All SCS computer lab and technical support information can be found at: <https://carleton.ca/scs/technical-support>. Technical support is available in room HP5161 Monday to Friday from 9:00 until 17:00 or by emailing SCS.Tech.Support@cunet.carleton.ca.

Undergraduate Academic Advisor

The Undergraduate Advisor for the School of Computer Science is available in Room 5302C HP, by telephone at 520-2600, ext. 4364 or by email at scs.ug.advisor@carleton.ca.

The undergraduate advisor can assist with information about prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisor will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and the Writing Tutorial Services.

University Policies

Full academic regulations are found in the University's calendar (<http://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/>) Some excerpts are below.

Requests for Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

Academic Accommodations for Students with Disabilities

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. Visit the PMC website: <http://carleton.ca/pmc>

Religious Obligations

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit <https://carleton.ca/equity/focus/discrimination-harassment/religious-spiritual-observances/>

Pregnancy Obligation

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: <http://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf>

Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and its survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: <http://carleton.ca/sexual-violence-support>

For more information on academic accommodation, please contact the departmental administrator or visit: <http://students.carleton.ca/course-outline>

SEP-OCT
2024

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	
1	2	3	COMP2404A 4 2:35-3:55 0-Introduction	5	COMP2404A 6 2:35-3:55 1-Basic Language Features	7	
8	9	10	COMP2404A 11 2:35-3:55 2-Programming Conventions	12	COMP2404A 13 2:35-3:55 3-Class Definitions	<i>Tutorial 1 Due</i> 11:59pm	
15	16	17	COMP2404A 18 2:35-3:55 4-Constructors and Destructors	19	COMP2404A 20 2:35-3:55 5-Memory Management	<i>Tutorial 2 Due</i> 11:59pm	
<i>Assignment 1</i> 11:59pm	22	23	24	COMP2404A 25 2:35-3:55 6-Object Oriented Design	26	COMP2404A 27 2:35-3:55 7-Object Design Categories	<i>Tutorial 3 Due</i> 11:59pm
29	30	October 1	COMP2404A 2 2:35-3:55 8-UML Class Diagrams	3	COMP2404A 4 2:35-3:55 9-Encapsulation	<i>Tutorial 4 Due</i> 11:59pm	

OCT-NOV 2024

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
6 <i>Assignment 2</i> 11:59pm	7	8	9 COMP2404A 2:35-3:55 10-Linked Lists	10	11 COMP2404A 2:35-3:55 11-Linked Lists II	12 <i>Tutorial 5 Due</i> 11:59pm
13	14 <i>Thanksgiving</i> <i>Statutory Holiday</i> Enjoy	15	16 COMP2404A 2:35-3:55 <i>Midterm</i>	17	18 COMP2404A 2:35-3:55 12-Inheritance	19
20	21 <i>Reading Week</i> <i>Statutory Holiday</i> Enjoy	22 <i>Reading Week</i> <i>Statutory Holiday</i> Enjoy	23 <i>Reading Week</i> <i>Statutory Holiday</i> Enjoy	24 <i>Reading Week</i> <i>Statutory Holiday</i> Enjoy	25 <i>Reading Week</i> <i>Statutory Holiday</i> Enjoy	26
27	28	29	30 COMP2404A 2:35-3:55 Extra	31	1 <i>November</i> COMP2404A 2:35-3:55 13-Design Patterns	2 <i>Tutorial 6 Due</i> 11:59pm
3 <i>Assignment 3</i> 11:59pm	4	5	6 COMP2404A 2:35-3:55 14-Polymorphism	7	8 COMP2404A 2:35-3:55 15-Polymorphism II	9 <i>Tutorial 7 Due</i> 11:59pm

NOV-DEC 2024

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
10	11	12	COMP2404A 13 2:35-3:55 16-Overloading	14	COMP2404A 15 2:35-3:55 17-Overloading II	16 <i>Tutorial 8 Due</i> 11:59pm
17 <i>Assignment 4</i> 11:59pm	18	19	COMP2404A 20 2:35-3:55 18-Templates	21	COMP2404A 22 2:35-3:55 19-Templates II	23 <i>Tutorial 9 Due</i> 11:59pm
24	25	26	COMP2404A 27 2:35-3:55 20-Exceptions	28	COMP2404A 29 2:35-3:55 21-STL	30 <i>Tutorial 10 Due</i> 11:59pm
<i>December</i> 1 <i>Assignment 5</i> 11:59pm	2	3	COMP2404A 4 2:35-3:55 22-STL II	5	COMP2404A 6 2:35-3:55 23-Files and Streams Extra-Functions as Parameters	7
8	9	10	11	12	13	14