

Course Outline :: Final version :: Last modified: September 1, 2021

1. Course Information

Instructor name: Dr. Christine Laurendeau (she/her)
Instructor email: christine.laurendeau@carleton.ca
Office hours: Mon. and Wed. 11:30 am - 1:00 pm (online only)
Lecture hours: Mon. and Wed. 11:30 am - 1:00 pm
Prerequisites: COMP 1406 or COMP 1006, with a minimum grade of C-
Course web site: <https://brightspace.carleton.ca/>

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

2. Course Description

Introduction to system-level programming with fundamental OS concepts, procedures, primitive data types, user-defined types. Topics may include process management, memory management, process coordination and synchronization, inter-process communication, file systems, networking, pointers, heap and stack memory management, and system/library calls.

3. Topics Covered

The course will cover the following topics, although some material may be omitted due to time constraints:

- Introduction to computer systems
- Data representation: primitive data types, compound data types, pointers
- Memory management: stack and heap, dynamic memory allocation, linked lists
- Program building
- Concurrent computing: concurrent systems, process management, IPC, threads
- Input/Output
- Program organization
- Graphics libraries and shell scripts

4. Textbook(s)

M. Lanthier, C. Laurendeau, and D. Nussbaum, *COMP2401 Course Notes*. [Online].
Available: <https://www.scs.carleton.ca/~clarend/Courses/COMP2401/Notes>

5. Course Modality

This course will be delivered as a *mixed modality (blended) course*, as follows:

5.1. Asynchronous course components:

- 5.1.1. Lectures will be pre-recorded and posted in [Brightspace](#) each week on Monday mornings (or Tuesdays for weeks when the Monday is a statutory holiday).
- 5.1.2. Assignments will be completed by students asynchronously. All due dates will be strictly enforced.

5.2. Synchronous course components:

- 5.2.1. The instructor will be available online during each scheduled lecture time, in order to answer questions about the course material. Students are encouraged to view the lecture recordings during those times, and visit the instructor at office hours with any questions.
- 5.2.2. Tutorials will be held during the scheduled tutorial times. Tutorials cannot be completed asynchronously.

5.3. All synchronous components and all due dates are set for **Ottawa, Ontario time**. No timing accommodations can be made for students living in different time zones.

6. Assessment Scheme

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

Component	Weight	Due dates	Modality
Assignments (4)	44%	Various, posted in Brightspace	Asynchronous
Tutorials (8)	16%	Weekly	Synchronous
Individual project	40%	Dec. 10	Asynchronous

- 6.2. All assignments, tutorials, and projects must be completed **individually**. Collaborating on any course work is strictly disallowed and will be reported as an academic integrity offence.
- 6.3. Weighting of assignments: Assignment #1 will be worth 7% of the final grade, Assignment #2 will be worth 10%, Assignment #3 will be worth 12%, and Assignment #4 will be worth 15%.
- 6.4. 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 instructor for resolution.
- 6.5. Technical problems do not exempt students from any submission requirement. If students wait until the last minute and then have issues with their computer or internet connection, their submission will still receive a mark of zero.
- 6.6. There will be no extra credit available in this course.

7. Course Material

- 7.1. All concepts covered during the lectures and during tutorials are part of the course material, including the course notes and annotations, all in-class coding examples, tutorial exercises, and in-class and forum discussions.
- 7.2. All materials created for this course (including, but not limited to, course notes, coding examples, lecture recordings, tutorial specifications, tutorial code bases, assignment specifications, assignment code bases, project specifications, project code bases, marking schemes, midterms, exams, and midterm and exam solutions), except where otherwise noted, remain *the intellectual property of the instructor*. 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 instructor, is a violation of IP rights, and is **strictly prohibited**.

8. Assignments and Projects

- 8.1. There will be four (4) assignments and one (1) individual project in this course. Assignment and project requirements will be posted in [Brightspace](#).
- 8.2. Additional information and requirement clarifications will be posted by the instructor in the assignment and project forums in [Brightspace](#). Students are expected to seek clarifications in these forums when needed, and to follow all instructions posted by the instructor.
- 8.3. All assignments and projects **must** be completed in the programming environment (Virtual Machine) provided for the course.
- 8.4. All assignment and project code submitted for credit, with the exception of base code provided by the instructor, must be *original*, and the student submitting the assignment and project code must be its sole author.
- 8.5. **Expectations for course work:** As a 2nd year course for CS majors, it is expected that all code submitted in this course must be *working code* that (1) is designed and implemented in accordance with the posted assignment and project instructions and constraints, and (2) uses only the design and programming techniques covered in this course. Specifically:
- 8.5.1. **Only working code will earn marks:**
- (a) All assignment and project code submitted for this course must *execute correctly in the course VM*. This means that it must compile into an executable file in the course VM, the executable must be able to be launched from the VM command line, and the program control flow must reach the code during execution in order for the code to earn marks.

- (b) Code that cannot be demonstrated to work correctly will not earn marks. This includes code that does not compile, code that does not execute in the VM, code that is not called, code that is commented out, and code that fails to print data where required.
- 8.5.2. **Only code that is implemented in accordance with the instructions will earn marks:**
- (a) All assignment and project code submitted for this course must be implemented strictly *in accordance with the posted assignment and project instructions and constraints*. The code must not be implemented using programming tools and techniques outside what is used in the course material, including the lecture recordings and the coding examples, as that may result in code that does not meet the learning outcomes. Code that does not follow the provided instructions, code that does not abide by the specified constraints, and code that uses design and programming techniques outside of the scope of this course, including disallowed functions and libraries, will not earn any marks.
 - (b) *Rationale:* The course work is designed for students to get hands-on practice with specific programming techniques. If students use techniques other than the ones indicated in the instructions, they may not achieve the learning outcomes, and therefore may earn a failing grade, even if their code works correctly. While there is high value in students coming up with their own designs, a 2nd year course must focus on teaching basic techniques first. Students will have many opportunities to choose their preferred designs and techniques in later courses.
- 8.5.3. Assignment and project code is expected to *meet the basic qualities of correct software engineering*, as described in the assignment and project requirements, and in the course material.
- 8.5.4. If a submission is incomplete, part marks may be allocated to those portions of the code that are correctly implemented, and that can be demonstrated to execute correctly in the course VM. For best results, **DO NOT** type in the entire assignment code and then compile and test it all at once. You must divide-and-conquer the problem solution into smaller parts, then implement and test each part of the code before moving on to the next part.
- 8.6. All assignments and projects are **mandatory**. No assignment or project will be waived, for any reason.
- 8.7. **Extensions for assignments:** Students may request a 72-hour deadline extension for a maximum of one (1) assignment during the term. Extension requests must be sent by email to the instructor, **before** the original due date for the assignment. No additional extensions will be granted, for any reason. Extension requests received after the assignment deadline will be automatically denied.
- 8.8. **Extensions for projects:** Students may request a 48-hour deadline extension for the project, independently of any assignment extension previously granted. Extension requests must be sent by email to the instructor, **before** the original due date for the project. Blanket extensions that are granted by the instructor to the entire class will nullify this clause. If the instructor grants a class-wide project extension, no additional extensions will be granted, for any reason.
- 8.9. **Late penalty:** Late assignments and projects will incur a deduction of 5 marks (out of 100) for every 30 minutes, or part of 30 minutes, up to a maximum of three (3) hours past the submission deadline. Once this three-hour time window has elapsed, the [Brightspace](#) submission link will expire, and no submissions, substitutions, or corrections will be accepted, for any reason.
- 8.10. Only assignment and project files uploaded into [Brightspace](#) will be graded for credit. Students are responsible for the integrity of their assignment and project 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. **You must verify that your submission is correct and complete** by re-downloading it from [Brightspace](#), uncompressing it into a fresh directory in the VM, and compiling and running the code.
- 8.11. The **only** valid reason to appeal an assignment grade is an error by a TA in applying the grading scheme. Student errors, including but not restricted to submitting a wrong or corrupted file, or submitting code that doesn't compile or doesn't run, are **not** a basis for appealing a grade. All appeals of this nature will be automatically denied.
- 8.12. Assignment and project marks will be released to students when **all** the grading is completed.
- 8.13. **Feedback:** Occasionally, students will be disappointed when they see their grades or feedback. It's important to remember that university courses are part of the professional realm of our lives, and not the personal realm. Getting a low grade is not a judgment of a person's value. It's an assessment of how much they have absorbed and integrated a very small slice of knowledge. Feedback by TAs or by the instructor is never meant to put anyone down. It's meant to bring each student up, increase their knowledge, and prepare them for when that knowledge is required in the next course or in a job interview.

9. Tutorials

9.1. Tutorial attendance:

- 9.1.1. Tutorials begin on Sept. 9. The complete schedule is posted in [Brightspace](#).
- 9.1.2. There will be ten (10) tutorials. Of those 10, the best eight (8) will count towards the final grade.
- 9.1.3. You **must** attend the tutorial session *for which you are registered*. We are unable to accommodate requests to attend alternate sessions.
- 9.1.4. Tutorials will not be posted in advance, for any reason.
- 9.1.5. Tutorials must be completed **individually**. Collaboration between students is strictly disallowed.

9.2. Tutorial grading is at the discretion of the lab coordinator and TAs, and is not negotiable:

- 9.2.1. Tutorial grades are for attendance, working on the tutorial questions for the entire session, and answering TA questions about your work. TAs will assign you a grade at the end of the tutorial session.
- 9.2.2. For each tutorial, you get two points (2% of your final grade) if you work on the tutorial during the entire session, and you complete the majority of the work, and you can answer TA questions about your work in a satisfactory manner.
- 9.2.3. For each tutorial, you get one point (1% of your final grade) if you work on the tutorial during the entire session, and you complete an adequate amount of work, and you can answer TA questions about your work in a satisfactory manner.
- 9.2.4. For each tutorial, you get zero if you are absent for any reason, or you do not complete a sufficient amount of work, or you cannot answer TA questions about your work in a satisfactory manner, or you complete or start the tutorial work before your session.

10. Collaboration Policy

- 10.1. Collaborating on any course work, including but not restricted to assignments, projects, tutorials, mid-terms, 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](#). You must complete all course work by yourself.
- 10.2. Examples of academic integrity offences include: emailing your code to other students; uploading your code to a web site, at any time; copying code from any sources, even cited ones; working with other students; getting help from anyone other than the course TAs or the instructor; submitting code, or portion thereof, written by anyone other than yourself.
- 10.3. Posting course work and/or its solutions online, including assignment work, project work, tutorial 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 an academic integrity offence. This includes work posted on source control sites like GitHub.
- 10.4. 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 2nd year course work. Assignments and projects demonstrate only the instructor's creativity in coming up with original problems, and students' motivation is driven by grades. Coming up with your own creative and original project ideas, and completing these projects on your time is the best recipe for impressing potential employers.

11. Communications Policy

- 11.1. Students are expected to check their email on a **daily** basis. Important course-related announcements will be posted in [Brightspace](#) and forwarded to students' cmail accounts.
- 11.2. Due to a high volume of emails, *the instructor is unable to answer emailed questions*, except for matters of a confidential nature. Course policy requires that students post **all questions** about the course, the assignments, and the projects in the appropriate forum in [Brightspace](#). Please verify whether your question has already been answered. If not, you can post your question in the appropriate forum, and it will be answered there. **DO NOT** email assignment questions to the instructor or the TAs. Assignment help can be obtained **only** by posting solution-free questions in the forums, or by visiting a TA or the instructor during office hours.

- 11.3. **TA office hours** are the first point of contact for students requiring help with completing assignments, specifically with debugging their code. TAs are not experts in the course material, or in the assignment or project requirements. If you have questions about course work requirements, you must post these questions in the appropriate [Brightspace](#) forum, where the instructor will answer and clarify.
- 11.4. The **lab coordinator** is the first point of contact for students requiring help with all matters related to tutorials.
- 11.5. **Instructor office hours** are the first point of contact for students requiring help with the course material, or with understanding assignment or project requirements, or for academic advising.
- 11.6. In case of technical issues with the installation or operation of the provided Virtual Machine, students are required to first **read the documentation** posted in [Brightspace](#). Additional assistance may be provided by the course TAs.
- 11.7. 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](#).

12. 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@cunet.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.

13. 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.

14. University Policies

For information about Carleton's academic year, including registration and withdrawal dates, see Carleton's [Academic Calendar](#).

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 [Equity Services](#).

Religious 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 [Equity Services](#).

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. For more details, visit the [Paul Menton Centre](#) website.

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 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: carleton.ca/sexual-violence-support

Accommodation for Student Activities: Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. 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, see [the policy](#).

Student Academic Integrity Policy: Every student should be familiar with the Carleton University student academic integrity policy. A student found in violation of academic integrity standards may be awarded penalties which range from a reprimand to receiving a grade of F in the course or even being expelled from the program or University. Examples of punishable offences include: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found [here](#).

Plagiarism: As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Such reported offences will be reviewed by the office of the Dean of Science. Standard penalty guidelines can be found [here](#).

Unauthorized Co-operation or Collaboration: Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis". Please refer to the course outline statement or the instructor concerning this issue.

Unauthorized Student Recordings and Use of Instructor Recordings: Unauthorized student recording of classroom or other academic activities (including advising sessions or office hours) is prohibited. Unauthorized recording is unethical and may also be a violation of University policy. Students requesting the use of assistive technology as an accommodation should contact the [Paul Menton Centre](#). Unauthorized use of classroom recordings – including distributing or posting them – is also prohibited. Under the University's [Copyright Policy](#), faculty own the copyright to instructional materials – including those resources created specifically for the purposes of instruction, such as lectures slides, lecture notes, and presentations. Students cannot copy, reproduce, display, or distribute these materials or otherwise circulate these materials without the instructor's written permission. Students who engage in unauthorized recording, unauthorized use of a recording, or unauthorized distribution of instructional materials will be referred to the appropriate University office for follow-up.

15. University COVID-19 Policies

All members of the Carleton community are required to follow COVID-19 prevention measures and all mandatory public health requirements (e.g. wearing a mask, physical distancing, hand hygiene, respiratory and cough etiquette) and [mandatory self-screening](#) prior to coming to campus daily.

If you feel ill or exhibit COVID-19 symptoms while on campus or in class, please leave campus immediately, self-isolate, and complete the mandatory [symptom reporting tool](#). For purposes of contact tracing, attendance will be taken in all classes and labs. Participants can check in using posted QR codes through the cuScreen platform where provided. Students who do not have a smartphone will be required to complete a paper process as indicated on the [COVID-19 website](#).

All members of the Carleton community are required to follow guidelines regarding safe movement and seating on campus (e.g. directional arrows, designated entrances and exits, designated seats that maintain physical distancing). In order to avoid congestion, allow all previous occupants to fully vacate a classroom before entering. No food or drinks are permitted in any classrooms or labs.

For the most recent information about Carleton's COVID-19 response and required measures, please see the [University's COVID-19 webpage](#) and review the [Frequently Asked Questions \(FAQs\)](#). Should you have additional questions after reviewing, please contact covidinfo@carleton.ca

Please note that failure to comply with University policies and mandatory public health requirements, and endangering the safety of others are considered misconduct under the [Student Rights and Responsibilities Policy](#). Failure to comply with Carleton's COVID-19 procedures may lead to supplementary action involving Campus Safety and/or Student Affairs.