Course Outline

COMP 2401A for Summer 2021
Introduction to Systems Programming

Course Information
Instructor: Dr. Mikhail Genkin
Contact: michael.genkin@carleton.ca
Classroom: Virtual classrooms will be set up on Brightspace and Discord.
Lectures: Wednesdays from 5:35 p.m. to 8:25 p.m. EST, delivered via Zoom (the link to the Zoom meeting will be posted on Brightspace). Most lectures will be synchronous, but some may be pre-recorded. If the technology cooperates, recordings of all lectures will be made available for viewing as well.
Tutorials: Check your schedule on Carleton Central.
Assignments: Assignments will be posted on Brightspace.
Midterm and Final Exam: on-line examinations delivered via tool TBD.
Office Hours: Arranged by request.

Teaching Assistants
A list of teaching assistants and their contact/office hours information will be posted on Brightspace once the course starts.

Course Description

One main objective of this course is to teach you the C programming language. The code that you write may be lower-level code than you are used to.   Many students struggle with pointers and understanding what goes on behind the scenes when you create variables and call functions. This course will give you a thorough understanding of how variables and stored and accessed and how the computer memory can be managed carefully and correctly.   These are concepts that you did not need to worry about in JAVA or Python as it was all handled for you. This course also has the objective of giving you some familiarity with using the Linux operating system. You will use a Virtual Machine and issue direct low-level commands with the underlying operating system.

Required Textbook(s) and Other Resources

There is no textbook assigned to this course. Instead, there is an in-depth set of course notes and coding examples available on Brightspace. All materials created for this course (i.e., course notes, coding examples, lecture recordings, tutorials, tutorial code, assignments, assignment code bases, marking schemes, tests, exams, and test solutions) 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 **copyright violation** and is **strictly prohibited**.

Topics Covered
This course will cover the following topics:

Week Of	Topics/Activities	Comments
May. 10	Course introduction Systems Programming and C Basics	Course introduction topic will cover: - Course objectives - Delivery model - Setting up your development environment - Collaboration tools and communication channels - On-line behaviour - Expectations - Student survey – time zones.
May. 17	Data representations	
May. 24	Pointers and memory management	Assignment 1 issued.
May. 31	Pointers and memory management	Assignment 1 due.
June 7	Builds and makefiles	Assignment 2 issued.
June 14	Concurrent programming	Assignment 2 due.
June 21	Summer break	No classes. The midterm will be held either at the beginning or the end of this week.

June 28	Concurrent programming	Assignment 3 issued.
July 5	Streams and file I/O	Assignment 3 due.
July 12	Streams and file I/O	Assignment 4 issued.
July 19	Program organisation	Assignment 4 due.
July 26	Graphics	Assignment 5 issued.
Aug. 2	Graphics	Assignment 5 due.
Aug. 9	Shell scripting Exam prep	
Aug. 19-25	Final exam	Exact timing TBD.

Please note that this schedule is tentative, and adjustments may be made as required.

Assessment Scheme

The following marking scheme will be used for this course:

Activity	Weight(%)	Comments
Tutorials	10	Successful completion of each tutorial is needed to get the grade for the tutorial. Tutorials are graded on effort, not on correctness. To get the full grade the student needs to attend the tutorial session on Discord and demo his or her work to the assigned TA.
Assignments	25	There will be 5 assignments, each worth 5% of the final grade. Assignments will be posted on Brightspace.
Midterm	20	This will be an on-line examination. Due to the on-line format, and the potential of students being in multiple time-zones, the exact timing will be determined after the course is started.
Final exam	30	This will be an on-line examination held during the examination period. Timing is TBD.
Class participation	15	To get full marks for class participation students are expected to: • Attend lectures and Q&A time

		- Keep video on during lecture and Q&A, when asking questions, to encourage a sense of community with peers - Participate in on-line discussions on Discord, Zoom and other collaboration tools as required - Completing all of the assigned tutorials - Polite, professional and courteous on-line interactions with the instructor, TAs and other students.

NOTE:

- To take this course, a grade of **C-** or above MUST have been earned in **COMP1406**.
- You MUST **earn a C- or better in this course** to take some required 2nd/3rd year courses starting Fall 2021 !!

This course will be delivered on-line, using the blended delivery model. The course will be organised in modules. The modules may be pre-recorded or may be recorded during the class lecture time. In either case the class lecture time will be used for interactive question and answer.

It is important to note that although 15% of the grade is awarded for class participation, each student is expected to complete the assigned tutorials, assignments, midterm, and final exam individually. Students should feel free to ask questions pertaining to course material on-line via established communication channels for the course but should not share solutions to assignments and tests.

If you are unsure of the expectations regarding academic integrity (how to use and cite references, how much collaboration with lab- or classmates is appropriate), ASK your instructor. Sharing assignment or quiz specifications or posting them online (to sites like Chegg, CourseHero, OneClass, etc.) is 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. Penalties for such offences can be found on the ODS webpage: https://science.carleton.ca/academic-integrity/.

Important Considerations

Late assignments are never accepted for any reason. 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 a mark of zero. Consequently, you are advised to:

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

For each assignment, you will be submitting one or more files that contain source code, and these files must be given the correct filename and be provided in the specified format. Assignments that are incorrectly named or in the incorrect format will be penalized and may receive a mark of zero.

If any of the source code files you submit does not run, it will receive a mark of zero. Consequently, after you upload your submission to Brightspace you should re-download it immediately and ensure that:
- your submission is the correct file type and has the correct filename
- each of your source code files can be run from the terminal on our official virtual machine
- each of your source code files can be viewed in a text editor (for marking purposes)

You are expected to demonstrate good programming practices at all times and your code may be penalized if it is poorly written. You are also expected to do the necessary preparatory work (i.e., devising an algorithm) before you start coding. You may be asked to present either pseudocode or a flowchart before you will receive any assistance from the instructor or a teaching assistant.

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 undergraduate_advisor@scs.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 Writing Tutorial Services.

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 by emailing support@scs.carleton.ca.

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-violencesupport

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.

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.