Carleton University School of Computer Science
COMP 2401A -- Introduction to Systems Programming

Class Schedule
Classroom: Online <u>asynchronously</u>
Class Times: Online <u>asynchronously</u>
Tutorials: Online <u>synchronously</u>
- Section A1   - Friday 8:30 – 10:00
- Section A2   - Friday 10:00 – 11:30

Instructor

Name: Dr. Doron Nussbaum

Instructor Office Hours: online during class time Tuesday and Thursday 11:30 - 13:00 or by appointment.

Course Website:
Brightspace

Teaching Assistants:

TA	E-mail	Office hours
Robin Redhu	ROBINREDHU@cmail.carleton.ca	TBA
Ming Lei	minglei@cmail.carleton.ca	TBA
Kaelan Aubin-Dery	jerseyaubindery@cmail.carleton.ca	TBA
Navin Haider	navinhaider@cmail.carleton.ca	TBA

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.

Course Objectives
Gaining knowledge, insight and experience in:
- Programming using the C language
- Low level implementation of data structure
- Memory management and pointers
- Procedural Programming
- Basic system programming (using system operations)
- Using Unix/Linux

Course Topics
The following topics will be covered in this course:
- Introduction to Computing – Overview of computer organization, basics of programming
- Data Representation - primitive data types, compound data types, Pointers
- Memory Management - stack and heap, dynamic memory allocation, linked lists
- Program Building – compiling, linking, make program, debugger
- Concurrent Computing - concurrent systems, processes (signals, sockets), threads
- File I/O
- Program Structure – i/o, procedural program design, program organization
- Graphics (time permit)
- Shell scripting (time permit)

Prerequisites
COMP 1406 or COMP 1006, with a minimum grade of C

Course Notes
The course does not have a course book. The course does have detailed course notes that were created by Professor Lanthier.

Note that all course material created or provided in this course remains the intellectual property of the instructor (see next sentence regarding the course material). The course material includes, but not limited to, course notes, examples, code examples, assignment, marking schemes, solutions, exams, tests, quizzes, tutorials, and tutorials' code.   You can use the material for personal use while taking the course and is non-transferrable to other students or people, it cannot be published either electronically or as a hard copy and it cannot be loaded to any website other than Brightspace course website.

Reproducing, redistributing or publishing the course material in any shape or form without a written consent of the instructor is a copyright violation and is strictly prohibited.

Course Software
In this course you will use the Linux operating system (Linux environment). The Linux OS is Ubuntu and the course will use a virtual machine to run it on VirtualBox. The following website has instruction on how to set it up: https://carleton.ca/scs/tech-support/virtual-machines/

Once you installed VirtualBox you will need to install the Virtual Machine (VM) on it. The VM for the course is COMP2401-F21.ova. Download the file COMP2401-F21.ova start the VirtualBox program and then add VM to it using the "ADD" option. Once done you are can start using it. The login name and password is **student**.

Course Schedule

Date	
Septembers 9	First class
September 10	Tutorials start
October 25-29	Fall break
November 4	Midterm exam (online during class time)
December 10	Last day of classes

Course Evaluation

Component	Weight	Details	Due date
Assignments	25%	5 assignments	TBA
Tutorials	10%	1% each best 10 of 11	Weekly
In class Tests	25%		Nov. 4 during class time (online)
Final Exam	40%	Formal scheduled exam	TBA

Assignments

There will be 5 assignments in this course. Assignments will be announced in class and will be available on Brightspace. Assignments are to be submitted electronically before the due date on Brightspace. Make sure that you submit your assignment ahead of the deadline in case there is a problem with Brightspace. Once you submitted an assigned download it to a new directory and test the code. This will ensure that you uploaded the correct solution to the assignment.

Late Assignments.
You can submit an assignment up to one day late. In this case the grade will be reduced by 20% of the assignment maximum grade (e.g., if the assignment maximum grade is 100 then the grade will be reduced by 20 points). Assignments submitted later than 24 hours after the due day and time will receive a grade of 0.

Tutorials

Tutorials will start on September 10. There will be 10-11 tutorials. The tutorials provide you with a time to gain experience with the material leaned in class (ask questions if you do not understand the material).

Tutorial rules:

- ❖ You are required attend the tutorial session for which you are registered
- ❖ Although no grades will be given for tutorial attendance, attendance will be taken.
- ❖ 1% will be assigned to each tutorial to a maximum of 10
- ❖ In order to receive 1% per tutorial you must:

- Complete the tutorial
- Submit the tutorial (your will have a week to do so)
- Demo the tutorial and correctly answer questions about the tutorial (explaining what you did). It is the **TA's discretion** to award you the 1% for the tutorial.
- If you just show up to the tutorial but do not work on it you will not receive a grade (attendance only will not be rewarded).

In-class Test (midterm test)

There will be one midterm test during the semester. The test will be 90 minutes long. If you miss the test then the weight of the midterm test will be added to the final exam weight (i.e., the final exam weight will be 65%.

The test will take place during class time.

Students must retain all assignments and exams (including grades) in case there is a discrepancy between the grades in Brightspace. The marks will be posted on-line. The students should ensure that the posted marks are correct. Any complaints regarding assignment marks should be brought to the attention of the T.A. who marked it (only if the T.A. does not address the problem to your satisfaction should you bring the matter to the instructor). This should be done no later than one week after the assignment has been marked. After this time no remarking will be done.

Final Exam

The time and place as well as the format of the final exam will be announced later in the term. Do not make travel plans until the dates are known as no special arrangements for earlier exam will be made. The final exam for this course will be graded using the Scantron automatic grading system and where applicable by the instructor or course TAs.

The weight of the final exam may be reduced with respect to the number of quizzes. It is at the discretion of the instructor to determine whether the quizzes weight will be shared with the weight of in-class exams or the final exam.

One must obtain a passing grade in the final exam in order to pass the course.

Attendance

Class attendance is very important because students will be responsible for all topics discussed in class. There is a strong correlation between attendance (class, tutorial) and the final grade and between assignment completion and the final grade

Course notes will be provided. However, the course notes will cover only the main topics. In class tests and final exam will include all material that is covered during class time, tutorials, and assignments. Note that annotated notes during class time will not be posted.

Collaboration Policy

Collaborating on assignments or exams are strictly disallowed. You must complete the work by yourself. If you need help, please see a TA or your instructor. Posting assignment solutions on discussion boards or on the internet before or after the due date and time is also prohibited.

SCS Computer Accounts

Any student taking an SCS course qualifies to have an SCS account. SCS accounts can be created at the following URL: http://www.scs.carleton.ca/newacct. SCS students can access one of the designated labs for your course. The labs are operational 7 days a week 24 hours per day, please be advised that the building will be closed overnight, Mon. - Fri. 23:00 - 8:00 and on weekends from 17:00 - 8:00. Technical support is available in room HP5161 Monday to Friday from 9:00 until 17:00. All SCS account related information is accessible at the following URL: http://www.scs.carleton.ca/nethelp.

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 the Writing Tutorial Services.

University Policies

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. Some examples of offences are: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found in the Undergraduate Calendar.

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.

See university policy regarding Academic Integrity and Plagiarism:
http://carleton.ca/registrar/academic-integrity/
http://carleton.ca/senate/wp-content/uploads/Academic-Integrity-Policy1.pdf

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".

Information on Academic Accommodations

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:

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 EIC's website: http://www2.carleton.ca/equity/

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 the Equity Services website: **carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf**

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. **carleton.ca/pmc**

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 is 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. **https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf**

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