

Carleton University School of Computer Science
COMP 2401 -- Introduction to Systems Programming
Course Outline -- Fall 2013
Final version
Wednesday, September-04-13

Class Schedule

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|------------------|--|
| Classroom: | TBD |
| Class times: | Tues. and Thurs. 11:30 – 13:00 |
| Course web site: | www.scs.carleton.ca/~clarend/Courses/COMP2401/F13/ |

Instructor Information

| Instructor | Office | Telephone | Email | Office Hours |
|--------------------------|---------|--------------------|--|-----------------------------------|
| Dr. Christine Laurendeau | 5376 HP | 613-520-2600 x1253 | clarend@scs.carleton.ca | Tues. and Thurs. 13:30 – 15:00 |

Teaching Assistants

| Name | Email | Office Hours | Room Number |
|-------------------|--|-----------------------|-------------|
| Fraser MacQuarrie | fraser.macquarrie@carleton.ca | CSTAC | 1170 HP |
| Sina Ariyan | Sina.arian@yahoo.com | CSTAC | 1170 HP |
| Troy Hildebrandt | TroyHildebrandt@cmail.carleton.ca | CSTAC | 1170 HP |
| David Robillard | david.robillard@carleton.ca | TBD | 1170 HP |
| Adam Skillen | askillen@ccsl.carleton.ca | TBD | 1170 HP |
| Chris Cowan | ChrisCowan@cmail.carleton.ca | CSTAC | 1170 HP |
| Michelle Burrows | MichelleBurrows@cmail.carleton.ca | CSTAC | 1170 HP |

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.

Topics Covered

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

- Introduction
 - Basics of computer organization
 - Basics of operating systems
 - Basics of C programming
- Data Representation
 - Primitive data types
 - Compound data types
 - Pointers
- Memory Management
 - Stack and heap
 - Dynamic memory allocation
 - Linked lists
- Program Structure
 - Program building
 - Using libraries
 - Procedural program design
 - Program organization
 - I/O
- Concurrent Computing
 - Concurrent systems
 - Processes (signals, sockets)

- Threads
- Shell scripts
 - Scripting languages
 - Writing shell scripts

Prerequisites

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

Textbook(s)

Main textbook:

- Adam Hoover, *System Programming with C and Unix*, Addison-Wesley, 2010.

Other references:

- Randal E. Bryant and David R. O'Hallaron, *Computer Systems: A Programmer's Perspective*, Prentice-Hall, 2011.
- Brian W. Kernighan and Dennis Ritchie, *The C Programming Language*, 2nd edition, Prentice Hall, 1988.
- Scott Granneman, *Linux Phrasebook*, Sams Publishing, 2006.

Evaluation

Students will be evaluated in this course according to the following measures:

| Component | Weight | Due Date |
|-------------|--------|--------------------------------|
| Assignments | 30 % | bi-weekly |
| Tutorials | 10 % | weekly |
| Tests | 25 % | in-class (Oct. 17 and Nov. 14) |
| Final exam | 35 % | TBD |

Evaluation Note

In order to pass the course, students must obtain a passing grade on the final exam.

Tutorials

The Rules:

- Tutorials begin during the week of Sept. 16. There will be no tutorials during the week of Oct. 14.
- Tutorial attendance is **mandatory** and will be counted towards your final grade. You must attend the tutorial session for which you are registered.
- During your tutorial session, you **must** work on the assigned tutorial provided. Anyone not working on the tutorial will be asked to leave the room.
- Tutorial TAs will assign you a grade at the end of the tutorial.
- For each tutorial, you get one point (1% of your final grade) if:
 - you work on the tutorial during the entire session
 - you complete at least 50% of the tutorial work
- For each tutorial, you get zero if:
 - you are absent for any reason
 - you do other work during the session
 - you do not complete at least 50% of the tutorial work
 - you complete or even start the tutorial before the session
- Tutorial grading is at the discretion of the TA and is not negotiable.

Assignments

There will be five (5) assignments in this course, and they will be accessible from the course web page. Assignments must be submitted on Carleton's [cuLearn](#) before the due date and time. **NO LATE ASSIGNMENTS WILL BE ACCEPTED.**

Attendance

Course notes will be made available, but these will only contain the outlines for the lectures. The mid-term and final exams will cover all the material presented during the lectures, the in-class coding exercises, and in the class discussions. Students are expected to attend all lectures in order to pass the course.

Collaboration Policy

Collaborating on assignments is **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 before the due date and time is also prohibited.

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.

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.

Academic Accommodations for Students with Disabilities

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and 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 me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable) at <http://www2.carleton.ca/pmc/new-and-current-students/datesand-deadlines/>

Religious Obligation

Write to the 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://www2.carleton.ca/equity/>

Pregnancy Obligation

Write to the 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://www2.carleton.ca/equity/>

Medical Certificate

The following is a link to the official medical certificate accepted by Carleton University for the deferral of final examinations or assignments in undergraduate courses. To access the form, please go to <http://www.carleton.ca/registrar/forms>