Carleton University School of Computer Science

COMP 2401 B -- Introduction to Systems Programming

Course Outline – Fall 2016

Preliminary version, subject to change

Last modified: Monday, August 29, 2016

Class Schedule

<table>
<thead>
<tr>
<th>Classroom</th>
<th>Office</th>
<th>Telephone</th>
<th>Email</th>
<th>Office Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC 231</td>
<td>5376 HP</td>
<td>613-520-2600 x1253</td>
<td><a href="mailto:christine.laurendeau@carleton.ca">christine.laurendeau@carleton.ca</a></td>
<td>posted on cuLearn</td>
</tr>
</tbody>
</table>

Instructor Information

Teaching Assistants: Detailed TA information can be found on cuLearn.

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 to Computing
  - Basics 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
- Concurrent Computing
  - Concurrent systems
  - Processes (signals, sockets) and threads
- Program Structure
  - I/O
  - Procedural program design and organization
  - Using libraries
- Shell scripts

Prerequisites

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

Note: Students who are granted equivalencies or transfer credits in lieu of the prerequisite course(s), and students who performed poorly in the prerequisites, are responsible for learning all missing background material on their own.

Textbook(s)

Evaluation

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Due Date</th>
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</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>35 %</td>
<td>weekly</td>
</tr>
<tr>
<td>Tutorials</td>
<td>8 %</td>
<td>weekly</td>
</tr>
<tr>
<td>Tests</td>
<td>22 %</td>
<td>in-class (Nov. 2 and Nov. 23)</td>
</tr>
<tr>
<td>Final exam</td>
<td>35 %</td>
<td>TBA</td>
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Evaluation Notes

- In order to pass the course, students must obtain a passing grade on the final exam.
- In order to qualify to write a deferred final exam, students must achieve a passing grade in every evaluation component (assignments, tutorials, and midterms-tests). Absences from an evaluation component, including excused and/or documented absences, will not be considered equivalent to a passing grade.
- All marking disputes regarding assignments, midterms/tests and tutorials must be addressed with the individual who graded 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.
- There will be no extra credit available in this course.

Course Material

- All concepts covered in class and during tutorials are part of the course material, including the course notes and annotations, all in-class coding exercises, tutorial exercises, and in-class and forum discussions.
- Lecture recordings may be provided, but exclusively as a supplemental study aid. They are not a substitute for lecture attendance and note taking. Some lectures may not be recorded, and some recordings may not be available, at the sole discretion of the instructor. Students are responsible for learning the material covered during all lectures, whether recordings are available or not.
- All materials created for this course (including, but not limited to, course notes, coding examples, lecture recordings, tutorials, tutorial code, assignments, assignment code bases, marking schemes, tests/midterms, exams, and test/midterm/exam 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.

Assignment

- There will be eight (8) assignments in this course, and the best seven (7) will count towards the final grade.
- Assignment requirements will be posted on cuLearn.
- Additional information and requirement clarifications will be posted in the assignment discussion forums on cuLearn. Students are responsible for following all instructions posted in these forums.
- All assignments must be completed in the programming environment (Virtual Machine) provided for the course.
- All assignment code submitted for credit, with the exception of base code provided by the instructor, must be original, and the student(s) submitting the assignment code must be its sole author(s).
- All assignments must be submitted in cuLearn and will be subject to the following late penalty.
- Late penalty: Late assignments will incur a deduction of 5% of the assignment denominator 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 cuLearn submission link will expire, and no assignment submissions, substitutions or corrections will be accepted for any reason.
- Only assignment files uploaded into cuLearn will be graded for credit. Students are ultimately responsible for the integrity of their assignment submissions. Submissions that contain incorrect, corrupt or missing files may receive a grade of zero, in accordance with the assignment marking scheme. Corrections to submissions will not be accepted after the submission link expires.
- A maximum of one (1) assignment may be waived, for reasons of medical emergency only, supported by a completed Carleton University Medical Certificate form. No alternate documentation will be accepted. No additional assignments will be waived, for any reason. The final assignment will not be waived.
- Assignment marks will be released to students when all the grading is completed.
Collaboration Policy

- Unless otherwise indicated in the assignment description, collaborating on the assignments is strictly disallowed and will be reported to the Dean of Science as an instructional offense. You must complete the work by yourself.
- For assignments where collaboration is allowed, as indicated in the assignment description:
  - collaboration is restricted to members of the same group, which will consist of no more than two (2) students
  - each student in a group must contribute an equal amount of work; grades will be adjusted for students who do not contribute their fair share
  - collaboration between groups is strictly disallowed and will be reported to the Dean of Science as an instructional offense
- Posting assignment solutions online and distributing assignment solutions to other students at any time is strictly prohibited and will be reported to the Dean of Science as an instructional offense.
- If you need help completing an assignment, please see a TA or your instructor.

Tutorials

Tutorial attendance:
- Tutorials begin on Sep. 9. The official schedule with all tutorial dates for the term is posted on cuLearn.
- There will be ten (10) tutorials, and the best eight (8) will count towards your final grade.
- You must attend the tutorial session for which you are registered. Permission to attend an alternate session must be obtained from the instructor in advance and will be granted for reasons of medical emergency only, supported by a completed Carleton University Medical Certificate form. No other reason will be accepted.
- Tutorial work cannot be submitted for credit. To get your grade, you must do the work during a tutorial session.

During your tutorial session:
- You must work on the tutorial provided. Anyone not working on the tutorial will be asked to leave the room.
- Tutorial questions must be completed in sequence.

Tutorial grading:
- 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.

Communications Policy

- Students are expected to check their email on a daily basis. Important course-related announcements will be posted on cuLearn and forwarded to students’ cmail accounts.
- All questions of general interest to the entire class and assignment related questions must be posted on cuLearn.
  Do not email assignment questions to TAs or the instructor.
- 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.
- The TAs are the first point of contact for students requiring help with completing the assignments.
- The instructor is the first contact for students requiring help with the course material or academic advising.
- In case of technical issues with the installation or operation of the provided Virtual Machine, students are required to first read the documentation posted on cuLearn. Additional assistance may be provided by the SCS technical support team (support@scs.carleton.ca), and not by the TAs or the instructor.
- The instructor’s office hours are in effect from Sept. 7 to Dec. 9, excluding the week of the Fall Break.
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). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (if applicable).

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