

The University of Western Ontario
London, Ontario, Canada
Department of Computer Science

CS 2211a - Software Tools and Systems Programming
Course Outline - Fall (September--December) 2017

This course uses the Online Western's Learning (OWL) system (<https://owl.uwo.ca>)

A: Instructor

- Ali Hamou
Middlesex College, Room 385
Phone: 661-2111 x86894
Email: ahamou2 <at> uwo.ca
Office hours: Tuesday/Thursday from 9:30 am to 10:15 am (**before lecture**)

B: Teaching Assistants

- Almahamid, Fadi
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C: Lectures

- Time & Place: Tuesday 10:30 am to 11:30 am at AHB-1R40
- Time & Place: Thursday 10:30 am to 12:30 pm at AHB-1R40

D: Course Description

This course provides an introduction to software tools and systems level programming. Topics include: an introduction to the Unix operating system, scripting languages, understanding how programs run (compilation, linking, and loading), and the C programming language.

E: Topics To Be Covered During The Course

The course will address as many of the following topics as time will allow:

- **Unix Fundamentals:** Unix vs. Windows; logging on; files and directories; pathnames, and directory and file structure; editors; shells; I/O redirection; Unix concurrency (processes); file permissions and security; shell programming.
- **C programming:** compiling, linking and loading; data types and operators; control structures; formatted I/O; file I/O; connections between I/O and the underlying operating system; function calls; structs; enumerations; arrays; pointers (pointer arithmetics, pointers and arrays, arrays of pointers); memory management; linked lists and other dynamically allocated data structures; strings; general libraries; standard libraries and headers; the C preprocessor; C program organization.
- **Unix Tools:** building and managing multi-component programs; the *make* utility; debuggers; code performance and profiling.

F: Prerequisites

- Computer Science 1027a/b (or 2101a/b) with a grade of at least 65% or
- Computer Science 1037a/b with a grade of at least 60%

Unless you have either the prerequisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

G: Antirequisites

- Software Engineering 2250a/b

H: Textbook

- Das, *Your UNIX/LINUX: The Ultimate Guide*. McGraw Hill, 3rd edition. 2013
- King, *C Programming: A Modern Approach*. Norton, 2nd edition. 2008

I: Course Website

The CS 2211a course uses the Online Western's Learning (OWL) system (<https://owl.uwo.ca>)

Lecture notes, assignments, labs, and class information will be posted on this website. You are responsible for reading this information frequently.

Possessing (and even reading) lecture notes is not a suitable substitute for attending lectures.

J: Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x82147 for any specific question regarding an accommodation.

K: Computing Facilities

Each student will be given an account on the Computer Science Department undergraduate computing facility, GAUL. In accepting the GAUL account, a student agrees to abide by the department's [Rules of Ethical Conduct](#).

Note that: After-hours access to certain Computer Science lab rooms is by student card. If a student card is lost, a

replacement card will not automatically open these lab rooms. In this case, the student must bring the new card to a member of the Systems Group in Middlesex College Room 346 to activate it.

L: Email Contact

We occasionally need to send email messages to the class or to students individually. Such emails are sent to the UWO email address as assigned to you by Information Technology Services (ITS), i.e. your email address @uwo.ca. It is your responsibility to read your email account on a frequent and regular basis, or to have it forwarded to an alternative email address if preferred. See the ITS website for directions on forwarding email.

However, note that the email at ITS (your UWO account) and other email providers may have quotas or limits on the amount of space they dedicate to each account. Unchecked emails may accumulate beyond those limits and you may be unable to retrieve important messages from your instructors. Losing emails is not an acceptable excuse for not knowing about the information that was sent.

M: Assignment Conduct

- There will be 5 assignments.
- Tentative Assignment Schedule

Assignment no.	To be posted on	Due in	Due on	Weight
1	Tuesday September 19	7 days	Tuesday September 26	4%
2	Tuesday October 3	7 days	Tuesday October 10	4%
3	Tuesday October 17	7 days	Tuesday October 24	4%
4	Tuesday November 7	7 days	Tuesday November 14	4%
5	Thursday November 23	7 days	Thursday November 30	6%

- Assignments are due 5 minutes before the midnight (23:55) of the due date.
- All submissions will be submitted electronically. Details will be given in the assignment descriptions. We reserve the right to use similarity detection software to detect possible cheating cases.
- Late assignments are strongly discouraged.
 - 10% will be deducted from a late assignment (up to 24 hours after the due date/time)
 - After 24 hours from the due date/time, late assignments will receive a zero grade.
- Assignments may involve the use of Unix operating system utilities, shell scripts programming, C programming, and concept questions (non-programming) related to the course material.
- Assignment descriptions will be posted on the course website by the dates listed above.
- Any changes, updates, and clarifications to assignments will also be posted on the website. It is your responsibility to monitor these pages closely.
- A program that produces the correct output is not necessarily a "working" program; it must also satisfy the specifications given in the assignment description. Other criteria in terms of which an assignment will be evaluated include coding style, efficiency, comments and documentation.
- To be eligible for full marks, individual shell scripts and C programs must run under Unix on the departmental computing equipment. You may develop assignments on your home computer, but you must

allow for an amount of time to get the final product working on Computer Science's machines.

- Your assignment solutions are expected to be your own individual work, not the products of group effort.
- It is your responsibility to keep up-to-date backups of assignment disk files in case of system crashes or inadvertently erased files. Retain disk copies of all material handed in, as well as the actual graded assignment, to guard against the possibility of lost assignments or errors in recording marks. You should keep these materials at least until you are satisfied that your final mark for the course has been computed properly.
- Assignments will be marked by the Teaching Assistant(s), who follow marking schemes provided by instructors.
- Every effort will be made to have assignments marked and handed back within 3 weeks after the hand-in date, preferably sooner.
- When assignment marking has been completed, you will be informed via the course website and/or email.
- You should direct any questions about marking in the first instance to your TA. If your discussion with the TA is not satisfactory, you may want to further discuss the issue with the course instructor.
- A request for an adjustment in an assignment mark must be made within 2 weeks following the first handed-back day. All assignment marks are considered to be final after that date.

N: Lab. Conduct

- There will be 10 equally weighted one-hour labs.
- Seven possible lab sections are scheduled each week.
- Tentative labs Schedule

Lab no.	Tuesday Section 2 (11:30 am--12:30 pm), Section 3 (03:30 pm--04:30 pm), and Section 4 (05:30 pm--06:30 pm).	Wednesday Section 6 (12:30 pm--01:30 pm), Section 7 (01:30 pm--02:30 pm), and Section 8 (04:30 pm--05:30 pm).	Thursday Section 5 (12:30 pm--01:30 pm), and Section 9 (03:30 pm--04:30 pm).
1	Tuesday September 19	Wednesday September 20	Thursday September 21
2	Tuesday September 26	Wednesday September 27	Thursday September 28
3	Tuesday October 3	Wednesday October 4	Thursday October 5
4	Tuesday October 17	Wednesday October 18	Thursday October 19
5	Tuesday October 24	Wednesday October 25	Thursday October 26
6	Tuesday October 31	Wednesday November 1	Thursday November 2
7	Tuesday November 7	Wednesday November 8	Thursday November 9
8	Tuesday November 14	Wednesday November 15	Thursday November 16
9	Tuesday November 21	Wednesday November 22	Thursday November 23

- All lab sessions will be held in room MC244.
- Lab descriptions will be posted on the course website before the dates listed above.
- Any changes, updates, and clarifications to labs will also be posted on the website. It is your responsibility to monitor these pages closely.
- Labs act as practice/tutorial sessions where you can solve a problem and interact with the TAs and other students.
- To be eligible for full marks, you must participate and complete at least 9 out of 10 labs (participating and completing all 10 labs is recommended).

O: Ethical Conduct

Scholastic offences are taken seriously and students are strongly encouraged to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence.

All assignments are individual assignments. You may discuss approaches to problems among yourselves; however, the actual details of the work (assignment coding, answers to concept questions, etc.) must be an individual effort.

Assignments that are judged to be the result of academic dishonesty will, for the student's first offence, be given a mark of zero with an additional penalty equal to the weight of the assignment also being applied.

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Students are responsible for reading and respecting the Computer Science Department's policy on [Scholastic Offences](#) and [Rules of Ethical Conduct](#).

P: Tutoring

The role of tutoring is to help students understand course material. Tutors should **not** write assignments or tests for the students who hire them. Submitting an assignment that contains material written by a tutor is an academic offense.

Having employed the same tutor as another student is not a legitimate defense against an accusation of collusion, should two students hand in assignments judged similar beyond the possibility of coincidence.

Q: Exam Schedule

- First midterm exam (Introduction to Unix Operating System)
 - Date: Saturday October ??
 - Time: 10:00 am to 12:00 pm

- Location: ???
- Second midterm exam (C Programming)
 - Date: Saturday November ??
 - Time: 10:00 am to 12:00 pm
 - Location: ???

The marks of midterm exams will be available within 2 weeks of each exam at the latest.

- Final exam (advanced C Programming)
 - Date: During December final exam period (from December ?? to ?? 2017)
 - Time: TBA (tentatively--three hours long)
 - Location: TBA

R: Academic Accommodation for Medical Illness

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to your Dean's office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's office immediately. For further information, please see:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's office) for visits to Student Health Services. The form can be found here:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

S: Support Services

Learning-skills counsellors at the Student Development Centre (<http://www.sdc.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Students who are in emotional/mental distress should refer to Mental Health at Western (<http://www.uwo.ca/uwocom/mentalhealth>) for a complete list of options about how to obtain help.

Students may refer to <http://westernusc.ca/services> for services provided by the USC.

Students may refer to <http://www.registrar.uwo.ca> for the Registrarial Services.

T: Student Evaluation

- Grades will be based on
 - Assignments worth a total of 22%
 - Labs worth a total of 9%
 - First midterm exam worth 15%
 - Second midterm exam worth 15%
 - Final exam worth 39%

- If an assignment has to be cancelled for any reason, the remaining assignment weights will be prorated (scaled) to add up to 22%.
 - If a lab has to be cancelled for any reason, the remaining lab weights will be prorated (scaled) to add up to 9%.
 - To be eligible to receive a passing grade in the course, your total marks on the two midterms and the final exams must be at least 50%.
 - To be eligible to receive a grade of C (60%) or higher (i.e., to be eligible for Honours Programs), your total marks on the two midterms and the final exams must be at least 60%.
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