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THE UNIVERSITY OF WESTERN ONTARIO

DEPARTMENT OF COMPUTER SCIENCE
LONDON   CANADA

Computer Science 2211a (Section 1)
Software Tools and System Programming
Course Outline – September 2023

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Course Information

Course Information

Course Name:	Computer Science 2211a, Section 1
Class Meetings:	Tuesday 11:30am-12:30pm, Thursday 10:30am-12:30pm
Location:	Tuesday: WSC-55, Thursday NSC-1

Lab Schedule

Section	Day	Time	Location
003	Friday	12:30-1:30pm	MC-244
004	Thursday	1:30-2:30pm	MC-244
005	Thursday	4:30-5:30pm	MC-244
006	Wednesday	12:30-1:30pm	MC-244
007	Wednesday	1:30-2:30pm	MC-244
008	Friday	1:30-2:30pm	MC-244
009	Thursday	3:30-4:30pm	MC-244
010	Wednesday	5:30-6:30pm	MC-244
011	Thursday	5:30-6:30pm	MC-244
012	Wednesday	2:30-3:30pm	MC-244
013	Wednesday	3:30-4:30pm	MC-244
014	Thursday	12:30-1:30pm	MC-244
015	Wednesday	4:30-5:30pm	MC-244
016	Thursday	2:30-3:30pm	MC-244
017	Tuesday	5:30-6:30pm	MC-244
018	Friday	2:30-3:30pm	MC-244
019	Thursday	11:30am-12:30pm	MC-244
020	Friday	3:30-4:30pm	MC-244

Prerequisites

- Either: Computer Science 1027a/b, 1037a/b, or 2101a/b with a grade of at least 65%.
- Or: Integrated Science 1001X with a grade of at least 60%.

Unless you have either the requisites for this course or written special permission from your Dean's Designate (Department/Program Counsellors and Science Academic Counselling) to enroll in it, you may 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.

Antirequisites

Software Engineering 2250a/b and the former Software Engineering 201a/b

Instructor Information

Instructor

Dr. Kaizhong Zhang

372 Middlesex College
Tel: 661-3826, ext. 83826
Course Email: cs2211<at>uwo.ca
Office Hours: TBA
Office Hours format: Zoom: by appointment only (arranged at least one day prior)

Course Description

Calendar Description:

This course provides an introduction to software tools and systems level programming. Topics include: understanding how programs run (compilation, linking, and loading), an introduction to a complex operating system (UNIX), scripting languages, and the C programming language. As time permits, other topics will be chosen from: system calls, memory management, libraries, multi-component program organization and builds, version control, debuggers and profilers.

Course Topics

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

- **UNIX Fundamentals:** UNIX vs. Windows; logging on; files and directories; path names, and directory and file structure; editors; shells; I/O redirection; UNIX concurrency (processes); utilities; file permissions and security; regular expressions; 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, pointers to functions); memory management; linked lists and other dynamically allocated data structures; strings; calling C from UNIX; general libraries; standard libraries and headers; the C preprocessor; C program organization.

- **UNIX Tools:** building and managing multi-component programs; the make utility; version control and configuration management; debuggers; code performance and profiling.

Delivery Mode

Lectures will be delivered in person.

Key Sessional Dates

Class Begin:	Thursday, September 7, 2023
Fall Reading Week:	October 30 – November 5, 2023
Class End:	Friday, December 8, 2023
Exam Period:	December 10 – 22, 2023

Contingency Plan

Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will not change. Any assessments affected will be conducted online as determined by the course instructor.

Course Materials

Required Textbooks

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

Course Website

The CS2211a website is accessible through OWL: **http://owl.uwo.ca**. Lecture notes, assignments, and class information will be posted on this website. You are responsible for reading this information frequently.

Students are responsible for checking the course OWL site (http://owl.uwo.ca) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class.

All course material will be posted to OWL: http://owl.uwo.ca.

If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. The help desk can be contacted by phone at 519-661-3800 or ext. 83800.

Lecture Notes

Most of the course notes will be available online through the course OWL web site. Students are cautioned, however, that getting course notes is not a sufficient substitute for attending lectures.

Technical Requirements

Completion of this course will require you to have a reliable internet connection and a device that meets the system requirements for Zoom. Information about the system requirements are available at the following link: https://support.zoom.us/hc/en-us.

Teaching Assistant Consulting:

Questions regarding assignments or lecture materials can be directed to a Teaching Assistant (TA) or through the Assignment Discussions in the OWL Forums section on OWL. Questions requiring further information can be dealt with by contacting the course instructor through his office hour appointments or send to the course email. A list of teaching assistants and their contact information will be posted to OWL once available.

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. If students need assistance with their GAUL accounts, they can contact, the Science Technology Services.

Email Contact

Emails related to the course should be directed to the course email account at cs2211@uwo.ca which will be attended by the designated TAs and the instructor. Students could ask questions via email, however if there are any large, somewhat complicated issues, it is recommended to discuss them during office hours. Moreover, students must use their UWO (@uwo.ca) email account in order to write to the course email account.

Online Conduct:

All of the remote learning sessions for this course may be recorded. The data captured during these recordings may include your image, voice recordings, chat logs and personal identifiers (name displayed on the screen). The recordings will be used for educational purposes related to this course, including evaluations. The recordings may be disclosed to other individuals participating in the course for their private or group study purposes. Please contact the instructor if you have any concerns related to session recordings.

All Zoom contact will require that your video is turned on and that you can be seen by the instructor. Not only is this a simple curtsey and the standard of Zoom classes, but it allows for a positive interaction.

Methods of Evaluation

There are three components, labs, assignments, and exams, that will be used for the evaluation.

Element	Weight
10 (out of 12) Labs	10%
5 Assignments	30%
Midterm Exam	25%
Final Exam	35%

To obtain a passing mark in the course, the weighted average of the Midterm and Final exam marks must be at least 45%, and weighted average on the assignment marks must be at least 45%. There will be no exceptions or waiving of this requirement for any reason or circumstance.

By the end of the term, no accommodation will be granted for either of the following cases:

- Missed more than two of the last four assignments for any reason.

    - e.g. if for any reason, three of the last four assignments are missed, then the student should retake the course.

- Missed all the exams for any reason.

    - e.g. if for any reason, the midterm exam, the final exam, and the makeup final exam are all missed, then the student should retake the course.

Labs

- There will be 12 equal weight labs (1 per week).
- Labs begin the second week of classes.
- Lab descriptions will be posted on the course website. It will be available the beginning Sunday.
- You are encouraged to work on the labs ahead of time. Normally the content required by the lab should be already covered by the in-class lectures.
- However, in the event that the required content have not been covered by the lecture yet, these lecture notes will be posted and students should try to self-teach first using the posted notes.
- To be eligible for full marks, you must participate and complete at least 10 out of 12 labs, however participating and completing all 12 labs is recommended.
- The labs don't need to be handed in and reviewed because they are not an assessment of your ability to apply the subject matter, that is what the assignments are for. Labs act as practice/tutorial sessions where you can solve problems and interact with the TA and other students. You may also consider to collaborate and assist others.
- You will need to demonstrate your work to the TA. The TA will mark your lab participation as complete or incomplete in OWL.
- In the event that the University requires delivery to be online, all labs will be managed over Zoom sessions.

Examinations

There will be a Midterm exam and a Final exam. Midterm weights **25%** and final weights about **35%**.

The Midterm exam will be (**tentative**) on Thursday November 9 at 10:30AM-12:20PM. (location: TBA). The Final exam will be in December (date and time: TBA).

Both exams are closed book; however, students will be allowed to bring in one double-sided 8.5 x 11 sheet of handwritten notes. No electronic devices of any kind are allowed.

Every effort will be made to have midterm exam marked within two weeks of the exam date, preferably sooner.

- There will be no makeup Midterm exam. If you miss the Midterm Exam for any reason, follow the procedure for Academic Considerations given in this website. If accommodation is approved by your Dean's office, your Final Exam mark will be reweighed to include the weight of the Midterm Exam. You must notify the course instructor within a week of the missed Midterm exam, and documentation must be received by your Dean's office within 2 weeks of the missed exam.

- If you miss final exam, please check university policy at "Student Absences" section.

- If you miss final exam and special exam, but not the midterm exam, you may get approval to take the final exam when the course is offered next time.

Assignments

Students are expected to view the lecture materials and complete the lab exercises to prepare for the assignments. Once the assignment is completed, all parts of the assignment must be submitted on the OWL site. It is the **student's responsibility** to ensure that all parts of each assignment are correctly uploaded and submitted in OWL, to ensure that the assignment can be marked accordingly.

Note: Assignments emailed to the instructor or teaching assistant **will not** be accepted, unless there are extenuating circumstances and prior approval from the instructor.

The following is the tentative assignment schedule (subject to change):

Assignment	Weight	Due Date (by 11:55pm)
1	1%	Friday, September 22
2	7%	Friday, October 6
3	7%	Friday, October 20
4	7%	Tuesday, November 14
5	8%	Tuesday, December 5

The due dates of the assignments are shown in the table above. Please note that all these dates are tentative. The due dates will be confirmed when the assignments are posted on OWL. The dates will coincide with the class progression on subsequent topics.

Where possible, the instructions for each assignment will be posted on the course website at least 1 week in advance of the due date.

If for any reason the assignment schedule given above cannot be adhered to, the assignment marks will be pro-rated. The five (5) assignments are worth 30% of the overall mark for the course. If an assignment must be cancelled for any reason, the remaining assignment weights will be prorated to add up to 30%.

About Assignments:

All assignment are individual assignments. Students may discuss approaches to assignment problems. However, actual work (answering assignment questions, coding assignment questions, etc.) must be the student's individual effort.

The assignments have to be typed. We do not accept handwritten assignment. However, you can include handwritten figures if needed, but not text and formula, in your assignment.

Programming parts of the assignments must be able to run on Computer Science Department undergraduate computing facility, GAUL. In particular, programming parts of the assignments must be able to run on compute.gaul.csd.uwo.ca. This is the only platform we will test your programs.

The standard departmental penalty for assignments that are judged to be the result of academic dishonesty is described in this website.

You are also responsible for reading and respecting the Computer Science Department's policy on Scholastic Offences and Rules of Ethical Conduct.

Assignment Submission Policies

All assignments are submitted electronically through OWL course website. Instructions for the submission of assignments will be posted on the course website. It is each student's responsibility to read and follow the instructions.

All assignments are due by 11:55PM of the due date. Late assignments will be accepted, **with penalty**, for up to two days after the due date. After that the late work is no longer accepted regardless if the OWL assignment submission is open or not. The late penalty in percentage of the total mark of the assignment is 10% for one day late and 25% for two days late. Lateness is based on the time the assignment is **received through OWL**, not on the time it was created on student's own computer or his/her gaul account.

If you have submitted an academic consideration for an assignment, you must provide documentation in the **CS2211 Assignment Academic Consideration Form** when you submit your assignment for penalty reduction, please check **Exceptions to the deadline and late policy** in this document.

By submitting an assignment, you declare that:

- You have read and understood the Departmental policies on Scholastic Offences.

- The assignment is exclusively your own work

- You have complied with the Departmental Rules of Ethical Conduct.

- You have taken all reasonable precautions to ensure that your work has not been copied by other students, including the protection of your files from access by other students.

Assignment Marking:

- Assignments will be marked by a TA within 2 weeks of the assignment due date where possible.

- Individual marks and a detailed marking scheme will be posted on the OWL site once marks are returned.

- Questions regarding the marking of assignments should first be directed to the teaching assistant that graded your assignment. If your discussion with the teaching assistant was not satisfactory then the TA will discuss the situation with the instructor.

- Requests for mark adjustments will only be considered if they are made within **1 week** of receiving the assignment mark and have been first discussed with the teaching assistant who marked the assignment. **Assignment marks will be final after that date**.

- Requests for mark adjustments will only be considered when they are for adjustments of **5 marks or greater**.

Late Policy for Assignments:

It is expected that students budget enough time to properly submit their assignments via OWL and allow for any unforeseen technological issues. **11:55 PM is a hard deadline** and no extensions or relief will be given for assignments that just miss this deadline or miss the deadline due to technological issues. Students are expected to regularly backup their assignments and submit well before any deadline.

The late penalty for assignments:

- Assignments will be accepted only up to two (2) days late.

- Assignments submitted after 11:55 PM on the due date but before 11:55 PM on the day after the posted due date will be **deducted 10% of the total grade**.

- Assignments submitted after 11:55 PM on the day after the due date but before 11:55 PM on the next day will be **deducted 25% of the total grade**.

- Assignments submitted after 11:55 PM two days after the posted assignment due date will receive a grade of zero (0).

- Late assignments will have a penalty of **10% or 25% of the maximum mark** for the assignment deducted based on time of submission as listed in OWL. Thus, if a student would have received 90% on an assignment based on 100%, then if it was submitted three hours late the student would receive 80%, if it was submitted twenty five hours late the student would receive 65%.

Exceptions to the deadline and late policy

No extensions will be given for assignments except for in the event of serious medical or compassionate grounds. A student must follow the procedure for Academic Accommodation for Medical Illness as given in this document.
- If your submitted academic consideration for an assignment is approved, we acknowledge the university policy and extension will be given according to the **number of days approved** by academic counsellors.

- The arrangement of the course is that you must provide documentation in the **CS2211 Assignment Academic Consideration Form**, downloadable from the course website, when you submit your assignment for penalty reduction.

- The documentation will be either the document or email from student services allowing the extension. The teaching assistant grading the assignment will then apply the supplied extension to the grade.

- If the extension is within five days, you do not need to contact the instructor and we will not reply any such inquiry.

- If the extension is more than five days, contact the instructor through his office hours to arrange an appropriate deferred due date.

Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

Assessments worth less than 10% of the overall course grade:

- For labs, since we only require 10 out 12 lab marks, there is no accommodation for the first two missed labs.

  After the first two, follow the same procedure for the assessments worth 10% or more.

  In this case, you should complete the missed lab by yourself in written form and then present it with the accommodation document to your lab TA in the first lab after the approved days of accommodation.

- For all assignments, follow the same procedure for the assessments worth 10% or more.

Assessments worth 10% or more of the overall course grade:

By policy, academic considerations for work totalling 10% or more of the final course grade can be granted only by the student's Faculty of Registration (typically by their academic counsellors).

For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the University's medical illness policy at this website. The Student Medical Certificate is available at this website.

Absences from Final Examinations

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under Special Examinations).

Accommodation and Accessibility

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at this website.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at: this website.

Academic Policies

The website for Registrarial Services is http://www.registrar.uwo.ca.

In accordance with policy, see this website, the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following website: see this link.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Tests and examinations in this course may be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide personal information (including some biometric data) and the session will be recorded. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: https://remoteproctoring.uwo.ca.

Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on add/drop courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: https://www.uwo.ca/sci/counselling/.

Students who are in emotional/mental distress should refer to Mental Health@Western (at this website) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at this website.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Student Accessible Education at this website if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre 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.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being.

Additional student-run support services are offered by the USC, see this website.