# Western University
## Faculty of Science
## Department of Computer Science

# General Course Information

## Course Information:

Computer Science 2211b
Software Tools and System Programming
Course Outline – **Winter Term 2020**

## 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.

### 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 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:

**L. Magguilli**
**Office:** Middlesex College 386
**Office Hours:** By Appointment Only (arranged at least one day prior)
**E-Mail:**  lmagguil@uwo.ca

## Required Material:

### Textbook:

- *System Programming with C and Unix.*
  by Adam Hoover
  ISBN-13: 978-0136067122 ISBN-10: 0136067123

**Recommended Text(s):**
- McGrath, *C Programming*. In Easy Steps. 2nd Edition
- Prata, *C Primer Plus*. Sams, 5th Edition
- Ray and Ray, Unix – Visual Quick Start Guide, 4th Edition

## 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.

## Course Web Page:

The course website is located within OWL (powered by Sakai). To access the website, navigate to http://owl.uwo.ca and login with your university personal computer account (user id and password). Lecture notes, assignments and class information will be posted at this site. You are responsible for checking the course site regularly.

## Course Schedule:

**CS2211b  Section 001**
**Lecture Times:**

Tuesday      9:30 am – 10:30 am
Thursday    8:30 am – 10:30 am
**Location:** Social Science Centre  (SSC) - Room 2032

## Lab Schedule:

| Section | Time | Location |
|---------|------|----------|
| 002 | Tuesday : 3:30 PM – 4:30 PM | Middlesex College.  Room 244 |
| 003 | Thursday : 5:30 PM – 6:30 PM | Middlesex College.  Room 244 |
| 004 | Thursday : 3:30 PM – 4:30 PM | Middlesex College.  Room 244 |
| 005 | Tuesday : 1:30 PM – 2:30 PM | Middlesex College.  Room 244 |

## Scheduled Lectures:

The scheduled lectures for the course use presentation software and appropriate applications software to present the course content.  The required course materials supply portions of the course content.  Readings and practice exercises will be assigned.  Students are expected to come to class prepared, by completing the readings and exercises before class.

Limited lecture materials will be available on the course website. These materials are intended to aid in note-taking and provide review of course content.  They are not complete course notes and are not a substitute for attending lectures. All class work will be presented as Board work during each lecture. The classes will follow the textbook explicitly removing the requirement of an extra set of notes.

## Classroom Conduct:

Students are expected to arrive promptly and remain in class until the end of the lecture, so as to not disturb others in the class. The use of laptops, tablet computers, or smart phones *only* to access the course OWL site during lectures and tutorials. No other electronic devices may be used at any time during lectures or tutorials. Any behaviour or activity that may impede the ability of you or other students to learn will not be tolerated and if the behaviour persists the individual(s) involved will be invited to leave the classroom.

Due to the proprietary nature of some of the materials used in the lectures, **no audio recording** will be allowed during any of the class sessions.

## Email Contact:

Occasionally email messages may be sent to the entire class or to students individually. Email will be sent to your UWO email address as assigned to you by Information Technology Services (ITS).  It is your responsibility to read this email on a frequent and regular basis.

Email contact with the course instructor is encouraged, by sending brief and appropriate message regarding lecture material or assignments.  However, please first check the Forums section in OWL to see if the information has already been posted.  If you contact the instructor via email or post a question in OWL, you can expect a response in a timely fashion, but not necessarily an instantaneous response.  Please use proper, appropriate and respectful English when sending an email message or posting on the course web site.

**NOTE**:  Email messages **must** be sent from your university account and **MUST** include:
"**CS 2211 W20**" in the subject line.  (spaces/case do not matter:  ex: cs2211w20 works)
Email messages without **CS 2211 W20** in the subject line will automatically be trapped
and deleted by the instructor's SPAM filter and will **NOT** be available, read or responded to.

**Do not use 'respond to' for any email originating from OWL (announcements, etc.) – ensure the professor's email is the in the destination and NOT to:    postmaster@owl.uwo.ca**

[ this is very important – please make sure your understand and follow the standards above. ]

**NOTE: Please also include a title or topic description of the contents of the email in the subject line.**

## Student Evaluation (tentative dates):

If for any reason the assignment schedule given below cannot be adhered to, the assignment marks will be pro-rated. (The 5 assignments are worth 40% of the overall mark for the course. If an assignment has to be cancelled for any reason, the remaining assignment weights will be scaled to add up to 40%.)

| Element | Weight | Due |
|---|---|---|
| Assignment 1 | 5% | Fri. January 31 |
| Assignment 2 | 5% | Thur. February 13 |
| Assignment 3 | 10% | Mon. March 02 |
| Assignment 4 | 10% | Mon. March 16 |
| Assignment 5 | 10% | Wed. April 01 |
| On-Line Quiz One | 10% | Wed. February 12 |
| On-Line Quiz Two | 10% | Wed. March 18 |
| Final | 40% | TBA |

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.

It is the student's responsibility to ensure that the correct version is submitted to OWL. No excuses will be accepted if an incorrect version is submitted instead. Students can resubmit their assignments until the due date. In this case, only the last version will be marked.

Assignments will not be accepted if submitted to the professor's email instead of OWL and will be deleted immediately and deemed un-submitted.

Your assignments may be prepared on a computing system other than the ones provided by the Computer Science department. However, students must ensure that their submitted programs run correctly on the equipment of the Computer Science department.

## Important:

To be eligible to obtain a passing mark in the course, the student's final exam grade must be **49%** or higher. There will be **no exceptions** or waiving of this requirement for any reason or circumstance.

Every effort will be made to have assignments marked and handed back within 2 weeks of the hand in date.

**Policies for Assignments:**

- Assignments will be due at 11:55pm on the specified date(s).
- Assignment will be accepted up to one (1) day late.
- Assignments submitted after 11:55 PM on the due date but before 12:00 Noon on the day after the posted due date will be deducted 10% of the total grade.
- Assignments submitted after 12:01 pm on the day after the due date but before 11:55 PM on the day after the due date will be deducted 25% of the total grade.
- Assignments submission will be closed at 11:55 PM on the day after the posted assignment due date.
- No assignments can be submitted to OWL after 11:55 PM on the day after the posted assignment due date.
- An assignment that is more than one (1) day late will not be accepted.
- Requests for mark adjustments will only be considered when they are for adjustments of **5 marks or greater**.
- Requests for mark adjustments will only be considered if they are made within **1 week** of receiving the assignment mark.  Assignment marks will be final after that date.
- 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 above. If an academic accommodation is approved, a deferred due date will be provided by the instructor.


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, if it was submitted three hours late the student would receive 80%, if it was submitted twenty hours late the student would receive 65%


# Final Exam:

No electronic devices are allowed during exams (no iPods, laptops, etc)
**Cell Phones** are **NOT** permitted to be visible or accessible during any part of the examination period.

The use of a calculator is not allowed.

Reference notes or Dictionaries of any kind are not allowed.

**Note:** Computer-marked multiple-choice exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

- The date, time and location of final exam will be announced by the Registrar's Office.  The final exam will be held during the university final examination period.
- Students requesting a deferred final exam prior to the final exam must supply their Dean's Office with written documentation at **least 2 weeks prior** to the Final Exam.
- In the event of serious medical or compassionate grounds, a student must follow the procedure for Academic Accommodation for Medical Illness as given above.
- A "Recommendation of Special Examination" form must be obtained from the Dean's office, to be eligible to write the deferred final exam.

## Support Services:

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 Accessibility Services (SAS) at 661-2147 if you have any questions regarding accommodations.

The policy on Accommodation for Students with Disabilities can be found here:
https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_disabilities.pdf

The policy on Accommodation for Religious Holidays can be found here:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

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@Western (http://www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC, http://westernusc.ca/services.

Students who are in emotional/mental distress should refer to Mental Health@Western http://www.health.uwo.ca/mental_health/ for a complete list of options about how to obtain help.

## Academic Accommodation for Medical Illness

If you are unable to meet the course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation as soon as possible and contact the instructor immediately. It is the student's responsibility to make alternative arrangements with the instructor once the accommodation has been approved.

For further information please see:

**Link to policy on Accommodation Consideration for Student Absences**
(https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf )

**(which includes a link to the Student Medical Certificate)**
( https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf )

## Accessibility

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 x 82147 for any specific question regarding an accommodation.

## UWO Contact Information:

Link to the website for Registrarial Services: http://www.registrar.uwo.ca

Link to services provided by the University Students' Council: http://westernusc.ca/services/

## Ethical Conduct

Scholastic offences are taken <u>seriously</u> and students are directed 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

**Plagiarism**: Students must complete their 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 (see Scholastic Offence Policy in the Western Academic Calendar). The University of Western Ontario uses software for plagiarism checking. Students will be required to submit their programs in electronic form for plagiarism checking.

All assignments are individual assignments. You may discuss approaches to problems among yourselves; however, the actual details of the work must be an individual effort.

The role of tutoring is to help students understand course material.  Tutors should not write part or all of an assignment for the students who hire them.  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.

**Academic dishonesty** in assignments and quizzes includes (but is not limited to):

- unacceptable collaboration
    - What is unacceptable? There is a difference between discussing assignments and solutions with fellow students, and working together on the solutions to the point where the work submitted is clearly not individual work. <u>If in doubt, ask your instructor</u>.
- **copying** of another student's assignment
- **allowing** another student to copy your work  ← this is also an **Academic Offense**
- using code from an external source (text, instructor, course website) where a student's own code is expected ( if in doubt, ask your instructor )

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

**You are responsible for reading and respecting the Computer Science Department's policy on:**
Scholastic Offences
   **(http://www.csd.uwo.ca/current_students/undergraduate_students/scholastic_offences.html)**
   **and**
Rules of Ethical Conduct
   **(http://www.csd.uwo.ca/UnderGrad/ethical.shtml**

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).

All software assignments will be subject to submission for review using MOSS or similar product(s) for detection of plagiarism.