CIS*3110 Operating Systems
Winter 2024

UNIVERSITY of GUELPH

School of Computer Science

1 INSTRUCTIONAL SUPPORT

Section 01

Instructor: See WebAdvisor

Instructor contact information: cis3110@socs.uoguelph.ca

Instructor office hours:
By appointment only. Details will be posted on the course website. Note: weekly instructor hours may vary during the semester to better accommodate student demand and instructor availability.

Pre-requisites: CIS*2520, (CIS*2030 or ENGG*2410)
Credit Weight: 0.5

Teaching Assistants:

Email: cis3110@socs.uoguelph.ca
Office Hours: See lab times on WebAdvisor. Any changes to the TA office hours will be announced on the course website.

Timetable

Lectures:
See WebAdvisor

Lab times:
See WebAdvisor (virtual)

The lab times will be used for advising and consulting with the Teaching Assistants, which will be done online. Students will be able to schedule one-on-one online meetings with the Teaching Assistants.

Please note that, if necessary, the lab times may also be used for additional tutorials. These tutorials will be announced in advance.

2 LEARNING RESOURCES

2.2 Course Website
Course material, news, announcements, and grades will be regularly posted to the CIS*3110 website which can be found at https://moodle.socs.uoguelph.ca. You are responsible for checking the site regularly.
- Lecture Information: Selected notes will be posted on the course website as instructors have time to make them available. You are expected to take your own notes during lecture.
- Assignments: Assignment descriptions will be posted on the course website. Assignments are submitted via the course website.
- Labs and Tutorials: Selected tutorial and lab materials will be available on the course website.

2.3 Required Textbook
"Operating System Concepts", 10th edition, by A. Silberschatz, P. B. Galvin, and G. Gagne (ISBN: 978-1-119-32091-3). A 150-day e-copy rental is available from the publisher (Wiley) and is the recommended version for this course.

2.4 Calendar Description
This course covers operating systems in theory and practice by focusing on the components in a system: scheduling, resource allocation, process management, multi-programming, multi-tasking, I/O control, file systems, and mechanisms for client-server computing using examples from contemporary operating systems.

The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs: http://www.uoguelph.ca/registrar/calendars/index.cfm?index

3 ASSESSMENT

3.1 Dates and Distribution

Assessments

Assignments (30%: 2 @ 15% each)
- Assignment 1: Friday, February 16
- Assignment 2: Wednesday, March 27
 	
Midterm tests (40%, 2 @ 20% each)
- Midterm 1: Friday, February 9
  - Alternative date for midterm 1: Friday, February 16
- Midterm 2: Friday, March 22
  - Alternative date for midterm 2: Monday, April 1
 	
All midterms will be held during the regular class hours in the regular classroom on the dates specified above. There will be no lectures on the alternative test dates.
 	
NOTE: the alternative dates above apply only if the midterm was missed due to legitimate extenuating circumstances. Accommodations for missed midterms may be granted **only if** they were discussed with the course instructor **prior** to the date of the midterm - i.e. before February 9 for Midterm 1 and before March 22 for Midterm 2.
 	
Please see Section 3.2 for details on accommodations and missed assessments
 	
Final exam (30%):
- Date: Friday, April 19, 2:30 PM - 4:30 PM
- Room: TBA - See WebAdvisor

3.1.1 Final grade calculation

The final grade is the weighted sum of all assessments shown above, using the weights indicated in the list above.

3.2 Course Grading Policies

Late assignments: All assignments are due at the time/date indicated in the assignment description. Late assignments will be accepted for **24 hours** after the deadline and penalized at **2% per hour**. Assignments that are more than 24 hours late will **not** be accepted and will automatically receive the grade of **zero** (0). See below for compassionate exceptions.

Compiler errors/warnings: Program code which does not compile will not be accepted for marking and a grade of **zero** (0) will be assigned. Code that does not compile "clean" will lose marks for compiler warnings. Code **must** compile and run on the platform specified in the assignment description.

Submission errors: Failure to submit assignments correctly (e.g., incorrect file names, faulty/missing build scripts, etc.) will result in a mark penalty.

Regrades: Students may request a regrade of an assignment if the marker has made an error in grading. The original submission will be entirely regraded and a new mark will be assigned. It is possible for a mark to go down, go up, or remain unchanged as a result of a regrade. Students must request a regrade via the Regrade dropbox on the course website within 5 calendar days of receiving the assignment grade. No other regrade requests will be accepted. If an assignment has been regraded, it will not be regraded again.

Accommodation: When You Cannot Meet a Course Requirement: If you are unable to meet an in-course requirement due to medical, psychological, or compassionate reasons, contact the instructor. Please note that work commitments will not constitute grounds for academic consideration. Academic consideration will not be granted for reasons related to deliverables in other courses.

Please note that **all** requests for academic consideration - including those made by students registered with SAS - **must** be made prior to the assessment (assignment/test/project/homework/etc.) due date and time. **No** academic consideration requests will be accepted once the assessment due date and time have passed. This means that no requests will be accepted during the grace period (if the assessment has one) - they must be made prior to the assessment deadline.

Please see below for specific details and consult the undergraduate calendar for information on regulations and procedures for Academic Consideration: http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Missed Assessments: If you are unable to meet an in-course requirement due to medical, psychological, or compassionate reasons, please make an appointment with your course instructor to discuss this matter. This must be done at least 24 hours prior to the assessment (assignment/test/project) due date and time. Please see below for specific details and consult the undergraduate calendar for information on regulations and procedures for Academic Consideration: http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

COVID-19 and Safety: For information on current safety protocols, follow these links:
https://news.uoguelph.ca/return-to-campuses/how-u-of-g-is-preparing-for-your-safe-return/
https://news.uoguelph.ca/return-to-campuses/spaces/#ClassroomSpaces

Accommodation of Religious Obligations: If you are unable to meet an in-course requirement due to religious obligations, please email the course email address within two weeks of the start of the semester to make alternate arrangements. See the undergraduate calendar for information on regulations and procedures for Academic Accommodation of Religious Obligations:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-accomrelig.shtml

3.3   Course Learning Outcomes

1. Discuss and evaluate synchronization and control techniques.
2. Identify and discuss the function of major operating system components.
3. Evaluate tradeoffs in virtual memory management algorithms.
4. Evaluate the function and calculate efficiencies in virtual memory implementation strategies.
5. Compare and evaluate filesystem design.
6. Review performance of scheduling strategies.
7. Analyze kernel level security concerns and permission strategies.

4 TEACHING AND LEARNING ACTIVITIES

4.1 Lecture Schedule

Please note that the list and schedule of topics below is approximate and may be revised and updated as necessary to better fit the flow of the course and assessments.

Lectures	Lecture topics	Assessments
Week 1 (Jan 8 - 14)	Introduction	
Week 2 (Jan 15 - 21)	Overview of operating systems	
Week 3 (Jan 22 - 28	Processes	
Week 4 (Jan 29 - Feb 4)	Processes / Interprocess communication	
Week 5 (Feb 5 - Feb 11)	Interprocess communication	Midterm 1
Week 6 (Feb 12 - 18)	Threads and Synchronization	Assignment 1 due
	Reading week	
Week 7 (Feb 26 - Mar 3)	Scheduling	
Week 8 (Mar 4 - 10)	File systems	
Week 9 (Mar 11 - 17)	Memory management	
Week 10 (Mar 18 - 24)	Virtual memory	Midterm 2
Week 11 (Mar 25 - 31)	Security, protection	Assignment 2 due
Week 12 (April 1 - 7)	Advanced topics, review	
Examination period		Final exam

4.4 Important Dates

Monday, January 8: First day of class
Monday, February 19 - Sunday, February 25 - NO CLASS
Friday, March 29: No Classes Scheduled -- classes rescheduled to Monday, April 8.
Monday, April 8: Last day to drop classes, last day of CIS*3110. Friday schedule in effect.

5 ROLES AND RESPONSIBILITIES

5.1 Communication & Email Policy
Please use lectures, lab sessions, and the website discussion forum as your main opportunities to ask questions about the course. Questions that are specific to your particular situation may be emailed to cis3110@socs.uoguelph.ca and will be answered by one of the instructional team. Technical questions related to the programming assignments should be sent to the discussion forum on the course website. Extremely private communication should be conducted by making an appointment with the course instructor.

Please note that the in-class discussions, course email, course forums, and the instructor / TA office hours are the only means of communications for this course. Any other attempts at communication will not get a response.

Major announcements will be posted to the course website and the discussion forums. It is your responsibility to check the course website regularly. As per university regulations, all students are required to check their <mail.uoguelph.ca> e- mail account regularly: e-mail is the official route of communication between the University and its students.

5.2 Recording of materials
Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, classmate or guest lecturer. Material recorded with permission is restricted to use for that course and may not be posted on any public space unless further permission is granted.

5.3 Instructor's Role and Responsibility to Students
The instructor's role is to develop and deliver course material in ways that facilitate learning for a variety of students. Selected notes will be made available to students on the course website but are not intended to be stand-alone. During lectures, the instructor will expand and explain the content of notes and provide example problems that supplement posted notes. Scheduled classes will be the principal venue to provide information and feedback for exams and assignments.

5.4 Students' Learning Responsibilities
Students are expected to take advantage of the learning opportunities provided during lectures, labs and help sessions. Students, especially those having difficulty with the course content, should also make use of other resources recommended by the instructor. Students who fall behind due to illness, work, or extra-curricular activities are advised to keep the instructor informed as early as possible. This will allow the instructor to recommend extra resources in a timely manner and/or provide consideration if appropriate.

5.5 General course policies
Do not redistribute recorded interactive discussions that involve your classmates. This includes advising times and question and answer sessions with the instructor.

Online activities such as advising times, question and answer sessions, and interactive lectures may be recorded by the instructor or TAs and posted to the course website. By taking this course you are agreeing that your participation in these activities can be used in this manner. If you do not wish to have your image or voice recorded as part of these activities then either do not take this course or do not ask verbal questions during these activities.

A reliable internet connection that is sufficient for online learning is necessary for this course. If you do not have a sufficiently fast and reliable internet connection, then you may not be able to view or download lectures or other course material. It may also not be possible to attend online advising with teaching assistants or the instructor.

This course is offered in the eastern standard time zone (EST). While taking this course then you may be required to attend online activities such as interactive lecture components, advising times, labs, and assignment evaluation sessions between 8:30am and 5:00pm EST. The lectures and labs are an integral par of the corse, and you are expected to be available during the scheduled lecture times and lab times for consultation with the

instructor and TAs.

Keep copies of assignments which you have submitted. You may be asked to resubmit assignments at a later time.

6 ACADEMIC INTEGRITY

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. All students who take a SOCS course must pass the **Academic Integrity Self Test.**

Please note: whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

The SOCS Academic Integrity Unit:
http://moodle.socs.uoguelph.ca/course/view.php?id=2   Login with your central login credentials.   The key to use is "imhonest".

6.1 Including the work of others
For educational purposes, instructors impose conditions on assignments that may limit students' permission to collaborate with others or to utilize external sources (including, but not limited to, software, data, images, text, etc.). Any permitted utilization must be done with proper references. Aiding and abetting is a punishable offence; students must be careful not to help others commit offences by giving out solutions or providing to access computer accounts. Instructors may use automated tools to detect possible cases of academic misconduct.

6.2 Requesting grades based on personal circumstances
Grades are given based on demonstrated proficiency in the course material. Personal circumstances may interfere with opportunities to demonstrate this proficiency. Course accommodations in terms of adjusted or alternate methods to demonstrate proficiency may be arranged with SAS or the course instructor **well in advance of the due dates of the relevant assessment**. Please see the accommodation policy discussed in Section 3.2.

Personal circumstances **never** result in a change of grading after the fact, under any conditions whatsoever. In fact, requesting a change to a grade based on personal circumstances is a type of academic fraud. It will be referred for discipline under academic misconduct.
Note the difference here:
• accommodation for personal circumstances to allow proficiency to be demonstrated is supported, as stated in Section 3.2
• requests for direct grade accommodation when the proficiency has not been demonstrated is fraud.

7 ACCESSIBILITY

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services

(SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their midterm and final examinations in advance. More information: www.uoguelph.ca/sas