CIS*3050 Systems Programming
Fall 2022

School of Computer Science

1 INSTRUCTIONAL SUPPORT

Section 01

Instructor:	Dr. Denis Nikitenko
Office:	See below
Email:	cis3050@socs.uoguelph.ca
Office hours:	By appointment only. Details will be posted on the course website. Note: Weekly hours may vary during the semester to better accommodate student demand and instructor availability.

Pre-requisites:	(CIS*2030 or ENGG*3640), CIS*3110
Credit Weight:	0.5

Teaching Assistants:
Farhan Chowdhury
Zhentao Huang
Kevin Sullivan

Email:
cis3050@socs.uoguelph.ca

Office Hours: See lab times below

Timetable

Lectures:
Mon, Wed, Fri, 3:30PM - 4:20PM, MCKN (MacKinnon Building), Room 121

Lab times:
Mon 2:30PM - 3:20PM, MCKN (MacKinnon Building) 029 / virtual

The lab 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. Additional TA office hours may be scheduled based on the demand. Details will be announced in class.

Please note that, if necessary, the lab time may also be used for additional tutorials. These tutorials will be announced in advance and done in person in the assigned classroom.

Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via Courselink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (https://news.uoguelph.ca/2019-novel-coronavirus-information/) and circulated by email.

2 LEARNING RESOURCES

2.2 Course Website

Course material, news, announcements, and grades will be regularly posted to the CIS*3050 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.
- Labs and Tutorials: Selected tutorial and lab materials will be available on the course website.
- Assignments: Assignment descriptions are found on the course website. Assignments are submitted via the course website.

2.3 Recommended Textbook

Systems Programming in Unix/Linux , by K.C. Wang , Springer.
ISBN: 978-3-319-92428-1

2.4 Calendar Description

This course will familiarize students with system level interface tools and their common applications. The purpose, function, design and use of these tools will be explored, allowing students to determine where and when these tools are useful in software development projects. Tools examined in the course include loadable libraries, file system locking, signals, pipes, asynchronous reading/writing to files and memory, file system sockets, shared memory models, and hardware device properties and control.

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 (48%): • Assignment 1 (A1) Wednesday October 5 9:00 pm - 16% • Assignment 2 (A2) Wednesday October 26 9:00 pm - 16% • Assignment 3 (A3) Wednesday November 23 9:00 pm - 16% Quizzes (4, 5% each, 20%).: Sept 23, Oct. 7, Nov 4, Dec 2 Midterm tests (32%: 2 @ 16% each): October 21 and November 18

3.1.1 Final grade calculation

Each assignment is worth 25% by default. However, once all four assignments have been graded, the weights of two of them will be adjusted as follows: the assignment with the highest grade will be given the weight of 30%, and the assignment with the lowest grade - 20%. The final course grade will be the sum of the four assignment grades with the weights as described 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 **36 hours** after the deadline and penalized at **2% per hour**. Assignments that are more than 36 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 assessment grade. No other regrade requests will be accepted.

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 **all** extension requests for course deliverables - including those made by students registered with SAS - **must** be made prior to the assignment deadline. No extension requests will be accepted once the assignment deadline has passed.

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 to meet your course instructor. 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. Identify the purpose and use of each of the studied system tools
2. For each tool, assess whether and to what extent it may help in the construction of a given software solution
3. Evaluate the efficiencies of competing software solutions to a given problem when each is based on a different software system tool
4. Design and implement solutions for some common problems using these tools
5. Identify and evaluate the opportunities and trade offs realized through the choice of a given system tool
6. Build software systems composed of multiple cooperating programs and processes
7. Build complete programs based on linking modules constructed using different technologies

4 TEACHING AND LEARNING ACTIVITIES

4.1 Lecture topics

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

Lectures	Lecture Topics	Tests	Assignments
Week 1 (Sept 12, 14, 16)	Course Introduction Processes		
Week 2 (Sept 19, 21, 23)	Processes and inter-process communication	Quiz 1	
Week 3 (Sept 26, 28, 30)	More on IPC		
Week 4 (Oct 3, 5, 7)	Shell programming	Quiz 2	A1
Week 5 (Oct 12, 14)	Library development		
Week 6 (Oct 17, 19, 21)	Portability issues	Midterm 1	
Week 7 (Oct 24, 26, 28)	Low-level programming techniques		A2
Week 8 (Oct 31, Nov 2, 4)	Working with files	Quiz 3	
Week 9 (Nov 7, 9, 11)	Integrating multiple languages		
Week 10 (Nov 14, 16, 18)	Device drivers	Midterm 2	
Week 11 (Nov 21, 23, 25)	Virtualization		A3
Week 12 (Nov 28, 30, Dec 2)	Special/advanced topics	Quiz 4	

4.2 Important Dates

Thursday, September 8: First day of class
Monday, October 10 and Tuesday, October 11 - NO CLASS
Friday, December 2: Last day of class, last day of CIS*3050
NOTE: December 2 is also the last day to drop classes

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 cis3050@socs.uoguelph.ca and will be answered by one of the instructional team. Extremely private communication should be conducted by making an appointment with the course instructor.

Major announcements will be posted to the course website. 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.**

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.

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".

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 exams at least 7 days in advance, and not later than the 40th Class Day.

More information: www.uoguelph.ca/sas