CIS*2520 - Data Structures

Fall 2024 Course Outline
Section: 01
Credits: 0.50

Land Acknowledgement: Guelph

The University of Guelph resides on the ancestral lands of the Attawandaron people and the treaty lands and territory of the Mississaugas of the Credit. We recognize the significance of the Dish with One Spoon Covenant to this land and offer respect to our Anishinaabe, Haudenosaunee and Métis neighbours. Today, this gathering place is home to many First Nations, Inuit, and Métis peoples and acknowledging them reminds us of our important connection to this land where we work and learn**.**

Calendar Description

This course is a study of basic data structures, such as lists, stacks, queues, trees, and tables. Topics which will be examined include abstract data types, sequential and linked representations, and an introduction to algorithm analysis; various traversal, search, insertion, removal, and sorting algorithms.
Prerequisite(s): (CIS*2500 or ENGG*1420), (1 of CIS*1910, ENGG*1500, MATH*2000)
Department(s): School of Computer Science

Lecture Schedule

MonWedFri 1:30pm-2:20pm in ALEX*200 (9/5 to 12/13)

Lab / Seminar Schedule

The following info is the lab time of each section.

The first lab starts in the week of Sept. 16-20., and the last lab will be in the week of Nov. 18-22.

Day	Time	Location	Sections
Monday	7:00 PM - 8:50 PM	ANNU, 204	01
Tuesday	11:30 AM - 1:20 PM	MCKN, 234	02
Monday	9:30 AM - 11:20 AM	MCKN, 233	03
Thursday	11:30 AM - 1:20 PM	MCKN, 235	04
Tuesday	7:00 PM - 8:50 PM	MCKN, 234	05
Thursday	3:30 PM - 5:20 PM	MCKN, 233	06
Wednesday	8:30 AM - 10:20 AM	MCKN, 234	07
Tuesday	8:30 AM - 10:20 AM	MCKN, 238	08
Friday	8:30 AM - 10:20 AM	MCKN, 234	09
Tuesday	3:30 PM - 5:20 PM	MCKN, 233	10

Instructor Information

Yan Yan
Email: cis2520@socs.uoguelph.ca
All questions related to the course shall be sent to the above email, not the instructor's personal email address.

Additional Support

Teaching Assistants:

Przemyslaw Pawluk, Adhyayan Bhandari, Jake Goode, Pranay Harpalani Dubey, Ali Riayde Jawad, Ishnoor Kaur, Aasim Khan, Mrudini Patel, Jashanjot Panjrath.

Textbooks

Group	Title	Author	ISBN
Recommended	ZyBooks, Data Structures Essentials.	Roman Lysecky, Frank Vahid, Evan Olds	https://www.zybooks.com/catalog/data-structures-essentials/

Course Learning Outcomes

1. Describe and implement common data structures for solving complex programming problems including algorithms for the creation, insertion, deletion, searching, and sorting of each data structure.
2. Analyse the space and time efficiency of algorithms including algorithms for the creation, insertion, deletion, searching, and sorting of data structures discussed.
3. Select and correctly use the appropriate abstract data type for programming problems.

Schedule of Topics and Assignments

Week of	Topic	Activities	Due
9/6	Course Intro and Overview		
9/9	C review Pointers		
9/16	C review Complexity and Big-O		
9/23	Linked List		Assignment 1
9/30	Stacks Queue		
10/7	Search		
10/14		Thanksgiving Holiday	
10/16	Hashing		Assignment 2
10/21	Midterm Review	Midterm Exam Oct. 23	
10/28	Tree		
11/4	Heap		
11/11	Graph		Assignment 3
11/18	Graph		
11/25	Review		Assignment 4 Practice Questions
12/2		Final Exam on Dec. 6	

Assessment Breakdown

Assessment weights:

Description	Weighting (%)	Due Date
Assignment 1	7%	Sept. 27
Assignment 2	10%	Oct. 18
Assignment 3	10%	Nov. 15
Assignment 4	10%	Nov. 29
Practice Questions	1% * 3	Nov. 29
Midterm Exam	20%	Oct. 23
Final Exam	40%	Dec. 6

The midterm exam is on Oct. 23 during the class time. It is a **closed-book** *written exam.*

The final exam is a **closed-book** *written exam.*

Practice questions are course prerequisite knowledge, midterm practice, and final exam practice questions. There are 3 online quizzes on CourseLink, and each is weighted 1%.

Final Exam

Date: Dec 6

Time: Fri 2:30pm-4:30pm

Location: TBA *Please see Web Advisor closer to the date of scheduled final for location.*

To understand rules and regulations regarding Examinations students are encouraged to read Student's Responsibilities (https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/examinations/)

If the student is unable to meet the final exam requirements due to medical, psychological or compassionate circumstances they are encouraged to review Student's Responsibilities in the Academic Consideration, Appeals and Petitions (https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-consideration-appeals-petitions/) section of the Academic Calendar.

Last Day to Drop Course

The final day to drop Fall 2024 courses without academic penalty is the last day of classes: November 29

After this date, a mark will be recorded, whether course work is completed or not (a zero is assigned for missed tests/assignments). This mark will show on the student's transcript and will be calculated into their average.

Course Grading Policies

Late Assignment
NO late assignment will be accepted.

Course Standard Statements

This course focuses on **individual work** designed to support your growth as a programmer and program designer.

All submitted coursework **must be your own efforts**, based on the supplied tools and examples.

Using Generative AI (such as ChatGPT) in submitted assignments and exams is **prohibited** in this course.

Anti-plagiarism Tools
Note that all materials submitted for grading will be evaluated using "MOSS" (Measure of Software Similarity) and "TurnItIn" tools, which detect plagiarism, illicit collaboration, and reuse of materials, all of which constitute academic misconduct.

If you are unsure whether some activity is academic misconduct just ask!

University of Guelph Statement on Artificial Intelligence Systems, ChatGPT, Academic Integrity
(source: https://news.uoguelph.ca/2023/03/university-of-guelph-statement-on-artificial-intelligence-systems-chatgpt-academic-integrity/)

The University is committed to ensuring that the use of AI in teaching and learning complies with existing policies and regulations that govern academic and scholarly integrity. We continue to engage the University community, including students, as we work to refine academic integrity policies and their intersection with AI tools. We affirm the following:

1. Students' work **must reflect their unique intellectual capacity** and demonstrate the application of **critical thinking and problem solving.** Unauthorized use of AI to complete assessments violates the fundamental intellectual purposes of the University and does not demonstrate student achievement of course learning outcomes.
2. Submission of materials completed by AI, without permission of the instructor, constitutes an offence under the University's academic misconduct policies, either as a form of plagiarism or the use of unauthorized aids.

Standard Statements for Undergraduate Courses

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. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

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 or faculty advisor.

The Academic Misconduct Policy (https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-misconduct/) is outlined in the Undergraduate Calendar.

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 make a booking at least 10 days in advance, and no later than the first business day in November, March or July as appropriate for the semester. Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time. For students at the Guelph campus, information can be found on the SAS website. (https://www.uoguelph.ca/sas/)

Accommodation of Religious Obligations

If you are unable to meet an in-course requirement due to religious obligations, please email the course instructor within two weeks of the start of the semester to make alternate arrangements.

See the Academic calendar for information on regulations and procedures for Academic Accommodations of Religious Obligations (https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-accommodation-religious-obligations/).

Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all undergraduate students except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in the Undergraduate Calendar - Dropping Courses (https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/dropping-courses/).

Email Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

Health and Wellbeing

The University of Guelph provides a wide range of health and wellbeing services at the Vaccarino Centre for Student Wellness (https://wellness.uoguelph.ca/). If you are concerned about your mental health and not sure where to start, connect with a Student Wellness Navigator (https://wellness.uoguelph.ca/navigators/) who can help develop a plan to manage and support your mental health or check out our mental wellbeing resources (https://wellness.uoguelph.ca/shine-this-year/). The Student Wellness team are here to help and welcome the opportunity to connect with you.

Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g., final exam or major assignment).

Recording of Materials

Presentations that are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources

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

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the Undergraduate Calendar for information on regulations and procedures for Academic Consideration. (https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-consideration-appeals-petitions/)