CS241E: Foundations of Sequential Programs (Enriched)

Fall 2021

This outline is tentative and is subject to change up until the start of term.

Logistics

Instructor: Edward Lee (DC3548 B, e45lee@uwaterloo.ca)
Instructional Support Assistants: TBA (cs241e@uwaterloo.ca)
Teaching Assistants: TBA
Instructional Support Coordinator: Caroline Kierstead (ctkierst@uwaterloo.ca)
Course Website: https://www.student.cs.uwaterloo.ca/~cs241e. Assignments, notes, and updates will be posted here as well as on Piazza.

Lectures and Tutorials: Tuesdays and Thursdays, 2:30 to 3:50. Lectures and tutorials will be livestreamed on Twitch and will be recorded on the course website. The lecture will be used to cover course material, while the tutorial will be used to enable live discussion of the lecture material and of the assignment questions. If conditions allow and if there is sufficient demand, the tutorial will be delivered in a hybrid manner to allow for both in-person and online participation.

Office Hours: TBA, held online in Microsoft Teams.

Discussion Forum: Piazza, TBA. As course updates will be posted on Piazza, please make sure you check the discussion forum on a regular basis.

Course Description

This course studies the relationship between high-level languages and the computer architecture that underlies their implementation, including basic machine architecture, assemblers, specification and translation of programming languages, linkers and loaders, block-structured languages, parameter passing mechanisms, and comparison of programming languages.

At the end of this course, students should be able describe this relationship and to implement a compiler for a simple, high-level language into binary machine code.

Prerequisites: 85% in one of CS 136, 138, or 146; Computer Science students only.
Antirequisites: CS 230, GENE 344.
Switching sections: This enriched offering follows different material compared to the standard offering of CS 241. As such, students may only switch to the standard section of CS
241 during the first two weeks of the term. Please contact the undergraduate advisors to do so.

**Student Support**

We understand that students may experience difficulty dealing with academic stress, difficult life events, or feelings of isolation, anxiety, or depression; doubly so in light of present circumstances. We encourage you to seek support, and if you need accomodation in this course to contact the instructor or the instructional support coordinator to arrange any necessary accommodations.

If you are on or near campus, the following services are provided to you by the University and by the Waterloo Undergraduate Student Association:

- Campus Wellness, [https://uwaterloo.ca/campus-wellness/](https://uwaterloo.ca/campus-wellness/).
- Counselling Services: counseling.services@uwaterloo.ca +1-519-888-4567 ext 32655. Needles Hall North 2nd floor, (NH 2401).
- MATES: one-to-one peer support program offered by WUSA and Counselling Services: mates@uwaterloo.ca
- Health Services: located across the creek from Student Life Centre, +1-519-888-4096.

In addition, the following off campus services are provided by the local community:

- Here 24/7: Mental Health and Crisis Service Team. Phone: +1-844-437-3247.
- OK2BME: set of support services for lesbian, gay, bisexual, transgender or questioning teens in Waterloo. Phone: +1-519-884-0000 extension 213.

Finally, it is our intent that students from all diverse backgrounds and perspectives be well served by this course, and that your learning needs be addressed both in and out of class. We recognize the immense value of the diversity in identities, perspectives, and contributions that each and every student brings, and the benefit it has on our educational environment. Your suggestions are encouraged and appreciated. Please let us know ways to improve the effectiveness of the course for you personally or for other students or student groups. In particular:
• We will gladly honour your request to address you by an alternate/preferred name or gender pronoun. Please advise us of this preference early in the semester so we may make appropriate changes to our records.

• We will honour your religious holidays and celebrations. Please inform of us these at the start of the course.

• We will follow AccessAbility Services guidelines and protocols on how to best support students with different learning needs.

Note for students with specific learning needs: AccessAbility Services, located in Needles Hall, Room 1401, and available by phone at +1-519-888-4567 ext. 45231, collaborates with all academic departments to arrange appropriate accommodations for students with specific learning needs without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your specific learning needs, please register with AccessAbility Services at the beginning of each academic term.

Evaluation

Grading scheme: 75% assignments, equally weighted, and 25% written final assessment. Students must pass the final assessment component to pass the course.

Assignments: There will be approximately twelve programming assignments, approximately one assignment a week. Assignments will be submitted to Marmoset, [https://marmoset.student.cs.uwaterloo.ca](https://marmoset.student.cs.uwaterloo.ca). We recommend you start on your assignment early and that you test before submission. While Marmoset does provide real-time feedback for each submission, it is not a replacement for your own tests.

Final assessment: There will be an open-book, written, final assessment at the end of the term.

Late policy: To receive full credit, an assignment submission must be received before the due date of that assignment. In light of current circumstances, any submission received before 10PM on the last day of the lecture period will receive partial credit. Partial credit will be calculated as 75% of the grade of the best submission plus 25% of the grade of the best on-time submission. Caution! Even though assignments can be submitted late, each assignment builds on the previous assignment, and solutions are not provided. Deferring assignments to the last day will prove to be an unwise decision. Please contact the instructor if you have any issues completing the assignments on time, for any reason.

Due to time constraints, no late submissions for the final assessment can be accepted.

Collaboration: Assignment solutions must be written individually, with your own code and your own tests. While you are allowed to discuss the assignments verbally with each
other, you are **not allowed** to share code with each other and you are **not allowed** to take any **written notes** during such discussions. In light of the current circumstances we understand that you will probably set up study groups on IM platforms such as Discord, Slack, Facebook, etc. We recommend that you only discuss assignments over video or audio call and refrain from substantive assignment discussion over text on these IM platforms. Please don’t screen-share your code either!

Violations of the collaboration policy will incur the standard penalty under Policy 71 for **all parties involved**; that is, a 5% penalty on the final course grade and a 0% on the assignment in question.

Naturally, no collaboration is permitted on the final assessment, and violations will incur the standard penalty under Policy 71. As you must pass the final assessment to pass the course, if you are caught cheating on the final assessment you will **not** pass the course. Please note that the final assessment has been **designed** so that collaboration will not help at all.

We will be using MOSS (Measure of Software Similarity) to detect excessive collaboration cases in this course.

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**Policies**

**Intellectual property:** Students should be aware that this course contains the intellectual property of their instructor, course staff, and the University of Waterloo. Intellectual property includes items such as:

- Lecture content, spoken and written (and any audio/video recording thereof);
- Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides, PDF documents);
- Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and
- Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner).

Course materials and the intellectual property contained therein, are used to enhance a student’s educational experience. However, sharing this intellectual property without the intellectual property owner’s permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor, course staff, and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository).
Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).

**Academic integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check the Office of Academic Integrity for more information.]

**Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4. When in doubt, please be certain to contact the department’s administrative assistant who will provide further assistance.

**Discipline:** A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. [Check the Office of Academic Integrity for more information.] A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate associate dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline. For typical penalties, check Guidelines for the Assessment of Penalties.

**Appeals:** A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72, Student Appeals.