Faculty of Arts and Sciences - Computer Science

CSC490H1 S
Capstone Design Project
Winter 2024 Syllabus

Course Meetings

CSC490H1 S

Section	Day & Time	Delivery Mode & Location
LEC0101	Tuesday, 3:00 PM - 6:00 PM	In Person: To Be Announced

Refer to ACORN for the most up-to-date information about the location of the course meetings.

Class will be supplemented by open lab times in the IO Lab, rm 519, The Banting Institute, 100 College St. Times will vary week to week, so look for announcements.

Course Contacts

Instructor: Dr. Paul Dietz
Email: paul.dietz@utoronto.ca
Office Hours and Location: In the IO Lab, by appointment.

Course Overview

This half-course gives students experience solving a substantial problem that may span several areas of Computer Science. Students will define the scope of the problem, develop a solution plan, produce a working implementation, and present their work using written, oral, and (if suitable) video reports. Class time will focus on the project, but may include some lectures. The class will be small and highly interactive. Project themes change each year. Contact the Computer Science Undergraduate Office for information about this year's topic themes, required preparation, and course enrolment procedures. Not eligible for CR/NCR option.

Students must submit an application to the course describing relevant interests, experience, and skills and general academic history. Application questions are set and assessed by the instructor. Applications are due in summer for the Fall term, and late fall for the Winter term.

Please visit https://q.utoronto.ca/courses/221753/pages/400-level-course-balloting-and-applications for application deadlines and details. A decision on your application will be confirmed approximately 2-3 weeks after the application deadline, so students should enrol in an alternate course until the results of their application are confirmed.

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Course Learning Outcomes

At the end of this course, students will be able to:

- Will understand ways to make a compelling project-based learning experience
- Create projects using microcontrollers, rapid prototyping of physical objects, and other techniques
- Demonstrate their novel contribution of a tech-based, storytelling experience that supports curricular goals

Prerequisites: 1.5 credits of 300+ level CSC courses.
Corequisites: None
Exclusions: NOTE: Students not enrolled in the Computer Science Major or Specialist program at A&S, UTM, or UTSC, or the Data Science Specialist at A&S, are limited to a maximum of 1.5 credits in 300-/400-level CSC/ECE courses.
Recommended Preparation: None
Credit Value: 0.5

Course Materials

Appropriate readings will be distributed as needed throughout the semester.

Marking Scheme

Assessment	Percent	Details	Due Date
Final Project	100%	Public Demonstration: Students will demonstrate their final projects at a public event, to be arranged. Documentation: Final projects should include full documentation on public github including step by step instructions, all code, physical designs and demonstration video.	2024-04-02

As a capstone experience, this course is about making a compelling final project. As such, grades will be based on the quality of the effort, including:

Creativity

Applicability and accessibility for use in K12 classrooms

Will students find the experience enjoyable/satisfying?

Can it be used in different subject areas?

There is a recognition that some promising projects may prove unworkable. We want to encourage pushing the limits and will give credit to the unsuccessful pursuit of groundbreaking ideas. But you will have to show a serious attempt at getting things to work.

Late Assessment Submissions Policy

Policies & Statements

Religious Accommodations

As a student at the University of Toronto, you are part of a diverse community that welcomes and includes students and faculty from a wide range of cultural and religious traditions. For my part, I will make every reasonable effort to avoid scheduling tests, examinations, or other compulsory activities on religious holy days not captured by statutory holidays. Further to University Policy, if you anticipate being absent from class or missing a major course activity (such as a test or in-class assignment) due to a religious observance, please let me know as early in the course as possible, and with sufficient notice (at least two to three weeks), so that we can work together to make alternate arrangements.

Students with Disabilities or Accommodation Requirements

Students with diverse learning styles and needs are welcome in this course. If you have an acute or ongoing disability issue or accommodation need, you should register with Accessibility

Services (AS) at the beginning of the academic year by visiting https://studentlife.utoronto.ca/department/accessibility-services/. Without registration, you will not be able to verify your situation with your instructors, and instructors will not be advised about your accommodation needs. AS will assess your situation, develop an accommodation plan with you, and support you in requesting accommodation for your course work. Remember that the process of accommodation is private: AS will not share details of your needs or condition with any instructor, and your instructors will not reveal that you are registered with AS.

Academic Integrity

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters (https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019). If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, please reach out to me. Note that you are expected to seek out additional information on academic integrity from me or from other institutional resources. For example, to learn more about how to cite and use source material appropriately and for other writing support, see the U of T writing support website at http://www.writing.utoronto.ca. Consult the Code of Behaviour on Academic Matters for a complete outline of the University's policy and expectations. For more information, please see A&S Student Academic Integrity (https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity) and the University of Toronto Website on Academic Integrity (https://www.academicintegrity.utoronto.ca).

Specific Medical Circumstances

If you become ill and it affects your ability to do your academic work, consult me right away. Normally, I will ask you for documentation in support of your specific medical circumstances. This documentation can be an Absence Declaration (via ACORN) or the University's Verification of Student Illness or Injury (VOI) form. The VOI indicates the impact and severity of the illness, while protecting your privacy about the details of the nature of the illness. If you cannot submit a VOI due to limits on terms of use, you can submit a different form (like a letter from a doctor), as long as it is an original document, and it contains the same information as the VOI (including dates, academic impact, practitioner's signature, phone and registration number). For more information on the VOI, please see http://www.illnessverification.utoronto.ca. For information on Absence Declaration Tool for A&S students, please see https://www.artsci.utoronto.ca/absence. If you get a concussion, break your hand, or suffer some other acute injury, you should register with Accessibility Services as soon as possible.

Accommodation for Personal Reasons

There may be times when you are unable to complete course work on time due to non-medical reasons. If you have concerns, speak to me or to an advisor in your College Registrar's office; they can help you to decide if you want to request an extension or other forms of academic consideration. They may be able to email your instructors directly to provide a College Registrar's letter of support and connect you with other helpful resources on campus.

Quercus Info (if using)

This Course uses the University's learning management system, Quercus, to post information about the course. This includes posting readings and other materials required to complete class activities and course assignments, as well as sharing important announcements and updates. New information and resources will be posted regularly as we move through the term. To access the course website, go to the U of T Quercus log-in page at https://q.utoronto.ca. SPECIAL NOTE ABOUT GRADES POSTED ONLINE: Please also note that any grades posted are for your information only, so you can view and track your progress through the course. No grades are considered official, including any posted in Quercus at any point in the term, until they have been formally approved and posted on ACORN at the end of the course. Please contact me as soon as possible if you think there is an error in any grade posted on Quercus.

Mental Health and Well-being

As a student, you may experience challenges that can interfere with learning, such as strained relationships, increased anxiety, substance use, feeling down, difficulty concentrating and/or lack of motivation, financial concerns, family worries and so forth. These factors may affect your academic performance and/or reduce your ability to participate fully in daily activities. Everyone feels stressed now and then – it is a normal part of university life. Some days are better than others, and there is no wrong time to reach out. There are resources for every situation and every level of stress.
There are many helpful resources available through your College Registrar or through Student Life (http://studentlife.utoronto.ca and http://www.studentlife.utoronto.ca/feeling-distressed). An important part of the University experience is learning how and when to ask for help. Please take the time to inform yourself of available resources.

Equity, Diversity and Inclusion

The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

Participation + Conduct in Class

Many instructors find it helpful to state in their syllabi their goals for norms and practices of listening, conversation, and debate in the classroom. If you are using online tools for class discussion or have group work, you should consider including text that speaks to norms and expectation for those contexts as well. We have not provided sample text here, as this is best crafted by each instructor, in conversation with colleagues. You may find two documents particularly helpful: The Code of Student Conduct and The Code of Behaviour on Academic Matters, which begins with a compelling call for faculty and students to collectively uphold the "integrity of the teaching and learning relationship." Both Codes can be found at the Governing Council website.

Harassment/Discrimination

Some instructors choose to include syllabus statements directly addressing policies regarding harassment and discrimination, including sexual harassment. We have not provided sample text here, as this is best crafted by each instructor, in conversation with colleagues. Helpful documents to consider when thinking through this question include the "Conflict of Interest and Close Personal Relations" guideline and the policies and guidelines on Workplace Conduct collected at the Human Resources and Equity website.

Online Communication

Instructors are strongly advised to require students use their mail.utoronto.ca email addresses for all course-related communications, and to flag for students that they are expected to check this address regularly. University of Toronto email accounts are more secure, and are also governed by the institution's codes of conduct, meaning that the University has recourse to address any inappropriate communications (e.g., racist, aggressive, threatening, harassing, etc.) between students and other students as well as with the instructor. Also, if a student claims to have emailed you an assignment, this can be verified by IT staff if needed. For these reasons, instructors can state that they will only respond to emails received from a mail.utoronto.ca account. Note that Quercus has a built-in communication tool, called "Inbox". This is not the same as email. Instructors are advised to review its functions and limitations. If you prefer students to use email instead, you should clearly specify this expectation. You may also wish to remind students not to include attachments in replies to any Quercus system notifications they receive through email; messages with attachments included in replies to these system notification messages are not sent to the instructor.

Additional Content

Course Materials:

Each student will be lent:

- An Arduino Mega kit
- Paper animatronics supplies
- M5Stack Atom Motion

Additionally, other materials will be made available as required by final projects.

All materials must be returned at the end of the semester.

Lab Safety:

It is up to you to ensure the safety of yourself and others working around you in the lab. Please speak with Paul or Sarah before using any tools so that we can point out hazards and demonstrate safe usage. This is particularly true of power tools, but also applies to hand tools. Use appropriate safety equipment (e.g. eye and ear protection) and verify that others near you are similarly protected before proceeding. Even something as basic as a wire cutter can send shards flying!