

CSC488H1 S

Compilers and Interpreters

Winter 2024 Syllabus

Course Meetings

CSC488H1 S

Section	Day & Time	Delivery Mode & Location
LEC0101	Tuesday, 1:00 PM - 2:00 PM	In Person: SU B120
	Thursday, 1:00 PM - 3:00 PM	In Person: SS 1087

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

Tutorials use the Tuesday slot and start on the second week. Tutorials may take the form of zoom online meeting instead of in person depending on the content.

Course Contacts

Course Website: <https://q.utoronto.ca/courses/337655>

Instructor: Fan Long

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Course Overview

The structure of compilers, Programming language processing. Scanning based on regular expressions, Parsing using context free grammars, Semantic analysis (type and usage checking), Compiler dictionaries and tables. Runtime organization and storage allocation, code generation, optimization. Use of modern compiler building tools. Course project involves building a complete compiler.

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Course Learning Outcomes

Prerequisites: CSC258H1/ CSC258H5/ CSCB58H3, CSC324H1/ CSC324H5/ CSCC24H3, CSC263H1/ CSC265H1/ CSC263H5/ CSCB63H3

Corequisites: None

Exclusions: CSC488H5, CSCD70H3. 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

The following materials are optional but very useful.

Charles Fischer, Ron Cytron and Richard LeBlanc Jr. , Crafting a Compiler, Addison-Wesley 2009

LLVM Infrastructure websites <https://llvm.org>

Marking Scheme

Assessment	Percent	Details	Due Date
Assignment 1	5%		2024-01-24
Assignment 2	10%		2024-01-31
Assignment 3	11%		2024-02-14
Assignment 4	12%		2024-02-26
Assignment 5	20%		2024-03-15
Assignment 6	11%		2024-04-01
Assignment 7	6%		2024-04-05
In-Person Final Exam	25%		Final Exam Period

- Design and implement a small compiler for MiniC (a toy language)
- The compiler will be based on LLVM and therefore be written in C++
- Project has 7 phases/assignments
- Code templates will be given for each assignment except the last one
- Work individually and independently to finish the project
- Roughly 1k-2k lines of code in total for all assignments

- A student may attempt a second submission within 10 days after the initial deadline to fix bugs based on the released hidden cases. Fixed cases will allow the student to retain 75% of marks lost on the cases.
- The second submission must be modifications on the student own code base (not copying sample solutions) and contain descriptions on the root cause of the bugs.
- There is no second submission for assignment 1 and 7.
- The assignments are incremental, i.e., future assignments depend on previous ones.
- The student has the freedom to choose continue future assignments based on its own code base or the released sample code.

Late Assessment Submissions Policy

•Everyone has a grace period of 96 hours for late for the semester. •For late beyond the grace period, 1% penalty is applied per hour •Sample solutions and test cases will be posted 4 days after the submission deadline so no late submission is allowed after this point. •If an exception is indeed required, we may approve to shift the mark of the missed submission to future assignments and the final exam. We will calculate your mark based on your average scores on other assignments. •However, the maximum you can obtain in this way is 75% of the missed assignment. The only exception for this rule is student who add this course and request to shift weights for early assignments. •You must complete at least 2 out of assignments 3-6 to receive score in this course.

Policies & Statements

Late/Missed Assignments

- Everyone has a grace period of 96 hours for late for the semester.
- For late beyond the grace period, 1% penalty is applied per hour
- Sample solutions and test cases will be posted 4 days after the submission deadline so no late submission is allowed after this point.
- If an exception is indeed required, we may approve to shift the mark of the missed submission to future assignments and the final exam. We will calculate your mark based on your average scores on other assignments.
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