CSC320: Foundations of Computer Science

Course Dates

CRN(s):	Section A01 CRN: 20768 Section A02 CRN: 20769
Term:	2024
Course Start:	2024-01-08
Course End:	2024-04-26
Withdrawal with 100% reduction of tuition fees:	2024-01-21
Withdrawal with 50% reduction of tuition fees:	2024-02-11
Last day for withdrawal (no fees returned):	2024-02-29

Scheduled Meeting Times (M=Mon, T=Tue, W=Wed, R=Thu, F=Fri)

Section:	Location:	Classes Start:	Classes End:	Days of week:	Hours of day:	Instructor:
A01	HHB 105	2024-01-08	2024-04-08	MR	11:30-12:50	Quinton Yong
A02	HHB 105	2024-01-08	2024-04-08	MR	11:30-12:50	Quinton Yong
T01	ECS 104	2024-01-15	2024-04-08	T	12:30-13:20	
T02	COR A121	2024-01-15	2024-04-08	T	13:30-14:20	
T03	ELL 162	2024-01-15	2024-04-08	W	13:30-14:20	

Instructor(s)

Name: **Quinton Yong**
Office: ECS 621
Phone: (250) 472-5726
Email: quintonyong at uvic dot ca

Office Hours:	Comments
Mon 01:00pm-02:30pm	
Thu 01:00pm-02:30pm	

Course Overview

We will use formal models to investigate the nature and limits of computation.

Course Topics

- Formal definitions of computation, languages and computability
- Models of Computation: finite state automata, pushdown automata, grammars and Turing machines; deterministic and non-deterministic machines
- The Halting Problem, reductions, and NP-completeness
- Dealing with intractability (if time permits)

Course Objectives And Learning Outcomes

After successfuly taking this course you will be able to:

- understand and analyze when it is possible to solve a problem computationally
- understand and prove when a problem is undecidable
- understand and illustrate how limitations on computational resources limit the class of problems that can be solved
- understand and apply models of computation for different problems in the Chomsky hierarchy
- characterize and analyze computational problems that are tractable
- characterize and prove computational problems that are intractable
- characterize the class of problems solvable in a model
- understand what it means for models of computation to be equivalent
- understand and apply reductions to prove intractability and undedicability of problems
- transform an automaton into a different equivalent representation, and vice versa

Textbooks

Required:	Introduction to the Theory of Computation, 3rd edition, 2013
	by Michael Sipser

Assignments

- There will be **six** assignments, worth 30% in total (5% each). Typically, answers to assignments have to be submitted within one or two weeks of the date the assignment was posted.
- It is to your advantage to start assignments early so that you have time to seek help if you encounter difficulties.
- Students are encouraged to work in study groups. However, final assignment submissions must be generated independently. You are expected to solve the problems yourself. Copying solutions from others, the web, or any other source will be considered a serious academic offense and may result in failure of the course.

Exams

There will be two midterms (worth 20% each) and one final exam (worth 30%).

The date of the midterms are **February 12** and **March 11**. The date of the final exam is scheduled by the University.

For courses that have final exams, students are strongly advised not to make final plans for travel or employment during the exam period since special arrangements will not be made for examinations that may conflict with such plans.

Term Schedule

This schedule is subject to change.

Item	Weight	Due Date
Assignment 1	5%	Jan 22
Assignment 2	5%	Feb 4
Midterm 1	20%	Feb 12
Assignment 3	5%	Feb 24
Assignment 4	5%	Mar 7
Midterm 2	20%	Mar 11
Assignment 5	5%	Mar 28
Assignment 6	5%	Apr 8
Final Exam	30%	TBA

Grading

Coursework	Weight (out of 100%)
Assignments	30%
Midterms	40%
Final Exam	30%

In order to pass the course, **students must obtain a passing grade on the final exam**.

Grading System

The University of Victoria follows a percentage grading system in which the instructor will submit grades in percentages. The University will use the following Senate approved standardized grading scale to assign letter grades. Both the percentage mark and the letter grade will be recorded on the academic record and transcripts.

F	D	C	C+	B-	B	B+	A-	A	A+
0-49	50-59	60-64	65-69	70-72	73-76	77-79	80-84	85-89	90-100

Grades	Description
A+, A, A-	**Exceptional**, **outstanding** or **excellent** performance. Normally achieved by a minority of students. These grades indicate a student who is *self-initiating*, *exceeds expectation* and has an *insightful* grasp of the subject matter.
B+, B, B-	**Very good**, **good** or **solid** performance. Normally achieved by the largest number of students. These grades indicate a *good* grasp of the subject matter or *excellent grasp in one area balanced with satisfactory grasp in the other areas*.
C+, C	**Satisfactory**, or **minimally satisfactory**. These grades indicate a *satisfactory performance and knowledge* of the subject matter.

Grades	Description
D	**Marginal Performance**. A student receiving this grade demonstrated a *superficial grasp* of the subject matter.
F	**Unsatisfactory performance**. Wrote final examination and completed course requirements; no supplemental.

Posting of Grades

Typically marks for assignments, examinations, and provisional final grades, are made available through a Learning Management System (LMS) like Brightspace, where each student will be able to view only their own grades. Sometimes numerical marks/grades may be posted publicly to the entire class. In that case, full student numbers or names will not be included with the posted information.

Course Experience Survey (CES)

I value your feedback on this course. Towards the end of term you will have the opportunity to complete a confidential course experience survey (CES) regarding your learning experience. The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to the CES site

You will need to use your UVic NetLink ID to access the survey, which can be done on your laptop, tablet or mobile device. I will remind you closer to the time, but please be thinking about this important activity, especially the following three questions, during the course.

- What strengths did your instructor demonstrate that helped you learn in this course?
- Please provide specific suggestions as to how the instructor could have helped you learn more effectively.
- Please provide specific suggestions as to how this course could be improved.

Csc Student Groups

The Engineering & Computer Science Students' Society (ECSS) serves all students registered in an Engineering and Computer Science degree program, including Software Engineering (BSEng). For information on ECSS activities, events and services navigate to https://onlineacademiccommunity.uvic.ca/ess/.

Course Policies And Guidelines

Late Assignments: No late assignments will be accepted unless prior arrangements have been made with the instructor **at least 48 hours before** the assignment due date. *Coursework Mark Appeals:* All marks must be appealed **within 7 days** of the mark being posted. *Attendance:* We expect students attend all lectures and labs. It is entirely the students' responsibility to recover any information or announcements presented in lectures from which they were absent. *Electronic devices in labs and lectures:* No unauthorized *audio* or *video* recording of lectures is permitted. *Electronic devices in midterms and exams:* Calculators are only permitted for examinations and tests if explicitly authorized and the type of calculator permitted may be restricted. No other electronic devices (e.g. cell phones, pagers, PDA, etc.) may be used during examinations or tests *unless explicitly authorized. Plagiarism:* Submitted work may be checked using plagiarism detection

software. Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the link given below for the UVic policy on academic integrity. Note that the university policy includes the statement that "A largely or fully plagiarized assignment should result in a grade of F for the course."

The Faculty of Engineering and Computer Science Standards for Professional Behaviour are at https://www.uvic.ca/ecs/_assets/docs/student-forms/professional-behaviour.pdf U.Vic guidelines and policy concerning fraud and academic integrity are at http://web.uvic.ca/calendar/undergrad/info/regulations/academic-integrity.html *U. Vic Privacy Policy:* If any student has concerns about their private information being stored or accessed outside of Canada, they are required to inform the course instructor about their concerns before the end of second week of classes.

Equality

This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Centre for Accessible Learning located in the Campus Services Building.

The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

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