CSC 236: Introduction to Theory of Computation

Syllabus: Welcome to CSC 236! In this course, you will learn about mathematical induction, a powerful proof technique in mathematics and computer science. You will then apply this technique to analyse programs in two different ways: measuring the running time of recursive algorithms, and formally proving algorithm correctness via preconditions, postconditions, and loop invariants. Finally, you will learn about the theory of finite automata, a simple model of computation, and regular languages, both of which have several applications in diverse fields of computer science, from computational biology to natural language processing.

Webpage: http://www.cs.toronto.edu/~liudavid/csc236/home.html

Instructor: David Liu [liudavid at cs dot toronto dot edu]

Office Hours: TBD

Prerequisites: CSC148, CSC165. (Exclusion: CSC240)

Textbook: There is no required text. My own Lecture Notes are available for free on the course webpage. These are an excellent resource, but are not a substitute for going to lecture.

Logistics: The course runs 13 weeks, from January 6 to April 3. There is no lecture or office hours the week of February 16, which is the university Reading Week.

Lecture Info: (L0101) Thursdays 4-6 in LM 159; (L0201) Thursday 11-12, 1-2 in GB 120. Note: There will be an **extra introductory, administrative lecture** on the first week of class: Tuesday, January 7 at 4-5 and 1-2, in the regular lecture rooms.

Assessment: Term work will consist of 11 weekly problem sets and two midterms. Each problem set will be divided into two parts, described in the following table:

	Preliminaries	**Challenges**
Goal	Review week's material; understand basic concepts; see how much you know	Apply knowledge to unfamiliar settings; use your brain!
Due	8 p.m. Tuesdays* (5 days after lecture)	12 *noon* Saturdays (9 days after lecture)*
Grading	3-point holistic rubric	Standard marks; detailed
Complete...	individually	in groups of up to *three* students
Submit...	MarkUs	MarkUs
Late Policy	No late submissions accepted	TBD
Remark Policy	No remarks	Request must be submitted within a week of receiving grade; see course webpage

*The two midterm weeks, the Preliminaries will be due on Thursday, instead of Tuesday. The final set of Challenge questions will be due on Friday, April 4.

Your lowest Preliminary mark and Challenge mark will be dropped; these will be independent of each other (i.e., the two dropped components can be from different weeks).

There are two possible grading schemes. Your final mark will be the *greater* of the two. However, if you score below 40% on the final exam, your final mark will be be adjusted to below 50%.

Item	**Date**	**Scheme 1**	**Scheme 2**
Preliminaries	Tuesdays weekly	10% (1% ea.)	5% (0.5% ea.)
Challenges	Saturdays weekly	30% (3% ea.)	20% (2% ea.)
Midterm 1 (50 min.)	February 4	10%	7.5%
Midterm 2 (50 min.)	March 11	10%	7.5%
Final Exam (3 hrs.)	April (TBD)	40%	60%

The Midterms and Final Exam will be closed book, but you will be allowed an aid sheet. The midterms will be held during the regularly scheduled tutorial hour; you must, of course, attend your section. See the course webpage for details.

Forum: I'll be using Piazza to host the course forum. This will be my main mode of communicating with you – check here at least once every two days for important announcements. Please also post all of your questions about the course material and problem sets there so that everyone can benefit from your questions. I will monitor the forum regularly, but please answer other students' questions too! Helping someone else learn is one of the most effective ways of truly mastering a subject.

Email: Please use email only for personal issues (making appointments, remarking requests, extensions, missing class, etc.). For all questions related to the course material, either come see me in person, or post them to the forum so that everyone can benefit from your questions.

Integrity: I take academic honesty very seriously, and so should you! Even the best of intentions can get you into trouble if you aren't careful. You should always feel free to seek help from your professor, TAs, and classmates when doing your assignments or understanding the course material in general. Collaboration is an important skill to have regardless of your intended career, which is why we encourage you to work on assignments and tutorial exercises in groups. However, as the instructor, I need to be able to accurately determine how much you've learned in this course – and to do that, I need to see work that you yourself have honestly done! So collaborate, but please follow these guidelines to protect yourself from any accusations of wrong-doing.

(a) When posting about an assignment on the course forum, don't reveal entire or even partial solutions.

(b) When discussing assignments with your friends in person (which is encouraged!), don't bring in previously written notes, and don't leave the meeting with any written notes. If you can go away, let what you talked about marinate in your head, and then write down a complete solution, you've learnt it. Otherwise it's just memorization (and plagiarism).

(c) **Never show your written work to anyone else.** This is the hardest to avoid, but also the most likely to get both parties into trouble. Resist the temptation.

Petitions: The dates of all assessments in this course are posted on the Course Schedule. If you know you will be unable to complete an assignment or miss a quiz or the midterm due to major illness or other circumstances completely outside of your control, please contact your instructor immediately for special consideration. Each request will be considered on an individual basis. In the case of illness, medical documentation must be supplied on the standard University of Toronto form. A simple "note" from your doctor is unfortunately not acceptable.