

# INF1339: Introduction to Computational Thinking (Fall 2022)

Monday: 6:30 pm - 8:30 pm. Room: WW126  
Wednesday: 6:30 pm - 8:30 pm. Room: BL205

## Instructor

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Tutorial 1: Monday 8:30 pm - 9:30 pm.  
Tutorial 2: Wednesday 8:30 pm - 9:30 pm.

## Overview

This course will examine the basic ideas of computational thinking. In particular, it will focus on principled thought processes, approaches, and principles that guide computational analyses, from problem formulation all the way to effective and efficient problem-solving. It will contain an introduction to algorithm building and its complexity, basic data structures used in computational solutions, as well as the use of necessary tools to tackle large-scale problems in a variety of domains. The course will also discuss the application of computational thinking in different areas such as the humanities, social sciences, and the arts, potentially looking into the impact it may have on them. Finally, it will serve as a necessary preamble for students who will follow a more technical career, especially in the area of Information Systems and Applied Data Science.

## Recommended Texts

- Riley, D & K Hunt. 2014. Computational Thinking for the Modern Problem Solver. CRC Press.
- Filho, W. 2017. Computer Science Distilled
- Guzdial, M., & Ericson, B. (2016). Introduction to computing and programming in python. New York, NY: Pearson.

## Evaluation Schemes

Topic	Percentage	Description
Tutorial Problem Set	18%	<ul style="list-style-type: none"><li>• Students will solve a set of problems during the tutorial</li><li>• TAs will coordinate with them and grade their tutorials</li></ul>
Assignment	48%	<p>After each module, the students are required to submit an assignment based on that module. There are 4 modules in this course. So, the students will be submitting four assignments.</p> <ul style="list-style-type: none"><li>• There will be 4 assignments in total</li><li>• Each response will be graded on a scale from 1 to 12</li><li>• Detailed rubrics will be provided with the questions.</li><li>• The grade of each assignment is expected to be published over Quercus within 10 days from the submission deadline. There might be a delay for unavoidable circumstances.</li></ul>
Final Assessment	34%	<ul style="list-style-type: none"><li>○ The final assessment will happen in person</li><li>○ The details of the Final Assessment questions and grading rubrics will be provided in the class at least 1 month before the exam.</li></ul>

## Detailed Deadlines:

Date	Module	Topic	Comment
Sept 19		Introduction	No Tutorial
Sept 26	Module 1	Making computers work: information and data	Tutorial 1
Oct 03	Module 1	Logic, reasoning, decomposition, and abstraction	Tutorial 2
Oct 10	Module 1	Thanksgiving - Self Reading	Tutorial 3
		Assignment 1 due: Oct 19, 8:00 PM ET	
Oct 17	Module 2	Basic concepts about algorithm	Tutorial 4
Oct 24	Module 2	Processing data	Tutorial 5
		Assignment 2 due: Nov 11 at 5:00 PM	
Oct 31	Module 3	Security	Tutorial 6
Nov 7		Reading Week	
Nov 14	Module 3	Data and Privacy	Tutorial 7
		Assignment 3 due: Nov 30, 2022	
Nov 21	Module 4	Computation in the modern world: International Development	Tutorial 8
Nov 28	Module 4	Computation in the Modern World: Limitations, Ethics, and Fairness	Tutorial 9
Dec 5		Review	Tutorial 10
		Assignment 4 due: Dec 10, 2022 at 9:00PM	
Dec 14		Final Exam Wednesday, Dec 14 from 6:30PM to 8:30 PM	

## Teaching Assistants:

Name	Email
Dory Abelman	dor.abelman@mail.utoronto.ca
Nabila Chowdhury	nabila.chowdhury@mail.utoronto.ca
Alaa Hamid	al.hamid@mail.utoronto.ca
Ramaravind Kommiya Mothilal	ram.mothilal@mail.utoronto.ca

## TA Office Hours: (Details will be posted on Quercus)

Office hours take place on Mondays at 5:00 PM and Wednesdays at 5:00 PM.

### Important:

Please note that the teaching team is trying their best to accommodate all the requests from all our students in this large class. We highly encourage our students to get most of their questions asked on Quercus and get the answers from there by us and other students.

- If you have more questions that you want to get answers to privately, please shoot your email to your TA and ask those questions. Please start the title of your email [INF1339] to ask the questions.
- Please also use the office hour times to have your questions answered by TAs. Students will be let into the Zoom room one at a time to have their questions asked and answered privately.

If your problem cannot be solved by the TAs, only then send an email to Mohammad Rashidujjaman Rifat (rifat@cs.toronto.edu). Please start the title of your email [INF1339] to ask the questions.

- To book a meeting with Mr. Rifat, please send an email to [rifat@cs.toronto.edu](mailto:rifat@cs.toronto.edu) with the subject starting with [INF1339: OH] **at least 24 hours before the office hour**. If you get a confirmation email in reply, exact time, and link, only then the meeting will happen.
- OH of Mr. Rifat: Fridays from 1:00 - 2:00 PM

Due to the abnormal nature of this term, we are maintaining a strict schedule and priority. So, please respect the time and effort of the teaching team. Also, it is not unlikely that you may not get a meeting spot in the Office Hour. If such cases, please send another email

## Course Learning Outcomes

Upon successful completion of this course you will have enhanced your capacity to

- Have enhanced general purpose critical thinking skills
- Break large and complex problems into cognitively/computationally/organizationally manageable subproblems
- Recognize, describe, and exploit patterns
- Defer detail and move between levels of abstraction
- Build complex, robust, and legible systems from cognitively manageable and reusable parts
- Think about data and information structurally
- Understand technical and usable privacy and security of computational systems
- Explore ethics in AI systems and findings solutions for ethical issues
- Formulate problems and solutions using computational thinking in different fields of endeavor
- Deploy a set of mental categories, intellectual reflexes, conceptual tools, and practical skills necessary for a participatory role in contemporary information technologies

The relationship of these course outcomes to the program outcomes is summarized in the table below:

Module	INFO	VALUES	CONTRIBUTE	SOCIETY	THEORY	LIFE
Module 1	x		x			
Module 2	x		x		x	
Module 3	x	x	x	x		x
Module 4	x	x	x	x		x

## Slides:

- Slides will be shared over Quercus before the lecture.

## Academic Integrity:

We expect that all students will abide by the Code of Behaviour on Academic Matters. To learn more about Academic Integrity, visit: <https://www.academicintegrity.utoronto.ca/> To learn more about Academic Misconduct, visit:

<https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity/academic-misconduct>.

## Penalty for Late Submissions

Late submissions will be graded according to the following rules

- 20% reduction if submitted within 24 hours after the deadline.
- 50% reduction if submitted within 24-48 hours after the deadline.
- No submission after 48 hours after the deadline will be accepted.

However, if a student misses a deadline for an unavoidable reason, physical emergency, or other unexpected incidents of significant magnitude, they can submit their assignment at a later date. In such cases, you have to send an email to your tutorial section TA with necessary documents and explanations.

Please note that there is no deadline for publishing the grades of late submissions. This depends on the availability of the teaching team.

## **Re-grading:**

Errors in marking must be brought to the attention of the instructors using the course email address within 1 week (7 days including weekends, holidays, etc.) of the coursework being returned. All the regrading requests should be made to your section TA.

## **Discussions:**

Students are encouraged to use Quercus to discuss course-related topics with the teaching team and their classmates. Students can ask questions there and other students are encouraged to answer those questions if they can. The TAs will also join the discussion where and when needed.

## **Sickness and Accessibility:**

This course is guided by the University of Toronto's goal to create a community that is inclusive of all persons and treats all members of the community in an equitable manner. In creating such a community, the University aims to foster a climate of understanding and mutual respect for the dignity and worth of all persons. Please find details here: <https://www.utoronto.ca/accessibility>

If you need to talk about any accessibility issue, please contact your section TA.

Additional resources for accessibility services:

- <https://clockwork.studentlife.utoronto.ca/custom/misc/home.aspx>
- <https://studentlife.utoronto.ca/department/accessibility-services/>

## **Additional Resources**

1. For improving your writing
  - [Writing at the University of Toronto](#)
  - [Dartmouth Institute of Writing and Rhetoric](#)
2. To know more about Ethics:
  - [UofT Center for Ethics](#)
3. [Recognized Study Groups \(RSG\)](#) are voluntary, peer-led study groups of 3 – 6 students enrolled in the same course. They're available for all A&S courses and are now fully online. In addition to supporting students' study habits and academic success, RSGs also encourage student participants to be socially connected with their peers. Last year, over 2,000 A&S students participated in RSGs for courses spanning all streams and class sizes.
4. [Meet to Complete](#) are online drop-in study sessions held exclusively for A&S undergrads. Offered multiple times per business day and led by trained A&S student-staff, these study sessions help students to stay motivated and productive by offering daily goal-setting and the opportunity to study alongside their A&S peers.
5. UofT Library: <https://onsearch.library.utoronto.ca/>
6. Mental Healthcare: <http://mentalhealth.utoronto.ca/>