

Course Syllabus

[Jump to Today](#)

 [Edit](#)

CSC165 Course Syllabus

Welcome to CSC165! Please read through this course syllabus carefully to familiarize yourself with the content, logistics, and policies of this course. All questions should be directed to

csc165-2023-01@cs.toronto.edu (<mailto:csc165-2023-01@cs.toronto.edu>).

Course description

Introduction to abstraction and rigour. Informal introduction to logical notation and reasoning. Understanding, using and developing precise expressions of mathematical ideas, including definitions and theorems. Structuring proofs to improve presentation and comprehension. General problem-solving techniques. Running time analysis of iterative programs. Formal definition of Big-Oh. Diagonalization, the Halting Problem, and some reductions. Unified approaches to programming and theoretical problems.

Learning outcomes

In this course, you will learn to:

- Express statements and problems using precise mathematical language in new and familiar domains.
- Evaluate the correctness and style of a mathematical proof in new and familiar domains.
- Create a mathematical proof or disproof of a given statement in new and familiar domains, choosing from among different proof techniques to use.

The domains we will study in this course include:

- sets and functions
- number theory
- algorithm running time analysis
- graphs and trees

Logistics

The course instructors are:

- [Tom Fairgrieve](https://www.cs.toronto.edu/~tff) (<https://www.cs.toronto.edu/~tff>) (course coordinator)

- [Gary Baumgartner \(https://www.cs.toronto.edu/~gfb/\)](https://www.cs.toronto.edu/~gfb/)

For personal course-related questions, please do not email your instructor directly; instead, see the section on [getting in touch with the course staff below](#).

	L0101	L0201	L0301	L5101
	MW10-12	MW12-2	MW3-5	MW6-8
	(Fairgrieve)	(Baumgartner)	(Fairgrieve)	(Baumgartner)
Lectures	MP 202	MP 103	MP 203	MP 103
	http://map.utoronto.ca/utsg/building/078	http://map.utoronto.ca/utsg/building/078	http://map.utoronto.ca/utsg/building/078	http://map.utoronto.ca/utsg/building/078
Office hours	Please refer to the Office Hours page.			

Notes:

- All lectures and office hours begin ten minutes past the hour.
- Some lecture recordings will be available on the [OCCS Student App](#) page.
- Students are welcome to attend office hours held by either instructor.
- Instructor office hours start *Wednesday, January 11*.

Co-requisites

The co-requisites for this course are CSC108/CSC120, or equivalent programming experience.

If you have not enrolled in or completed CSC108/CSC120, that's okay --- you will still be allowed to take CSC165. However, in this case it is your responsibility to ensure that you have the equivalent programming experience so that you're prepared to succeed in this course.

Dropping down from CSC240H1

If you recently dropped down from CSC240H1, please send email to csc165-2023-01@cs.toronto.edu (<mailto:csc165-2023-01@cs.toronto.edu>) from your U of T email address to inform us of the date when CSC165H1 was added to your courses. You will automatically receive any necessary accommodation to complete Problem Set 0, but you will also be responsible for submitting Problem Set 1 on time.

Textbook and Recommended Readings

There is no required text. Instead we will be using a set of course notes as our main text for this course. You can find a free electronic copy on the [Course Notes](#) page.

Here is a list of recommended books that you may use as additional references but that are not mandatory.

- Epp, S. *Discrete Mathematics with Applications*. Fifth Edition, Cengage Learning, 2020.
 - Contains many examples and additional practice problems for every topic in this course, and beyond.
 - Available at the [UofT Bookstore \(https://www.uoftbookstore.com/\)](https://www.uoftbookstore.com/)
 - Available from the [publisher \(https://www.cengage.ca/c/discrete-mathematics-with-applications-44-5th-edition-5e-epp/9781337694193/\)](https://www.cengage.ca/c/discrete-mathematics-with-applications-44-5th-edition-5e-epp/9781337694193/)
- Velleman, D. *How to Prove It: A Structured Approach*. Third Edition, Cambridge University Press, 2019.
 - Excellent, more in-depth presentation of all the proof techniques, the logic behind them, and intuition on how to use them.
 - May be available at the [UofT Bookstore \(https://www.uoftbookstore.com/\)](https://www.uoftbookstore.com/)
 - Available from the [publisher \(https://www.cambridge.org/highereducation/books/how-to-prove-it/6D2965D625C6836CD4A785A2C843B3DA#resources\)](https://www.cambridge.org/highereducation/books/how-to-prove-it/6D2965D625C6836CD4A785A2C843B3DA#resources)

Assessments

Item	Date	Weight
9 weekly preps	Due Mondays before 10am	4% (0.5% each, best 8 of 9)
Problem Set 0	Due January 20 before 1pm	1%
Problem Set 1	Due February 3 before 1pm	5%
Term Test 1	February 13	15%
Problem Set 2	Due March 3 before 1pm	5%
Problem Set 3	Due March 17 before 1pm	5%
Term Test 2	March 29	20%
Problem Set 4	Due April 7 before 1pm	5%
Final Exam	April exam period	40%

Notes:

- **You need to score at least 33% on the final exam to pass the course.** If your mark on the final exam is less than 33%, your final mark in the course will be reduced to be below 50.
- Midterms are 75-minutes long and held during regular class time. Please see the [Test and Exam Information](#) page for details.

Lecture preps

Before every week (except week 1 and the term test weeks), you'll complete a prep exercise to learn

new material and prepare for lecture. Each prep exercise consists of a short reading from the Course Notes, and then a series of short-answer comprehension questions hosted in a Quercus quiz.

Prep instructions:

1. You must submit all quiz work individually. However, you may freely discuss all of your answers with your classmates, and with TAs and instructors, on the course discussion board and during office hours.
2. On Quercus, you can make as many attempts as you wish. Your score is shown after each attempt. If you submit multiple attempts, only your **MAXIMUM** score is counted.
3. The comprehension quiz deadline is firm, and no late submissions are accepted.

Problem sets

There are four main problem sets in this course, plus an additional Problem Set 0 that is a short introduction to using [L^AT_EX](#).

Problem sets are an opportunity to practice what you have learned and apply your knowledge and skills to new and more complex problems. They are typically the most challenging part of this course. *Start problem sets early!* At any point in time, you should be able to read any problem set handout to figure out *what* you're supposed to do, even if you have no clue *how* to do it (yet).

Problem set policies

In this section, we state the major policies regarding problem sets in this course.

1. Problem sets must be submitted electronically *before* their deadline using the [MarkUs](#) online system.
2. All problem set submissions must be typeset, not handwritten.
3. Problem sets 1-4 may be completed in groups of up to three students. Problem Set 0 must be completed individually.
4. Each student will receive **20 grace credits** for the term; each grace credit can be used for a **three-hour extension** for a problem set, up to a maximum of **30** hours (i.e., 10 grace credits) per problem set. For example, you may choose to use ten grace credits on the first two problem sets, extending each due date by 30 hours. Or, you may wish to use five grace credits each on four different problem sets, extending each due date by fifteen hours. For group submissions, each member of the group **must** have the required number of grace credits.

Late enrolments

If you enrol in CSC165 after classes begin, you are responsible for reviewing the course syllabus and catching up on the course content you have missed. For any graded work that you missed, you should send an email to the course email address to let us know you have enrolled, and we will re-

weight the assessment so that missing it will not affect your final grade.

Contact: announcements, email, discussion board

All course announcements will be made on Quercus. You are responsible for reading all announcements made by the course staff.

Please post all of your questions about the course material and problem sets on Piazza (our course discussion forum), so that everyone can benefit from your questions. We will monitor the Piazza forum regularly, but please answer questions from other students --- helping someone else learn is one of the most effective ways of truly mastering a subject.

For *personal questions* (making appointments, remarking requests, extensions, missing class, etc.), please email csc165-2023-01@cs.toronto.edu (<mailto:csc165-2023-01@cs.toronto.edu>) from your University of Toronto email address. (Do not email your instructor directly --- we are using a separate email account to ensure that every email is properly recorded and answered as smoothly as possible.) Please include CSC165 in the subject line, and your full name, UTORid, and student number in the body of the email. We will try to respond to email by the end of the next business day. However, it may take longer, especially near due dates. If you do not hear back after a few days, please do not hesitate to send a follow-up email.

Special consideration

Students experiencing illness or other emergencies that prevent them from being able to complete homework on time, or write a term test, can request special consideration. To do so, complete the Special Consideration Request Form and email it to the course account (csc165-2023-01@cs.toronto.edu (<mailto:csc165-2023-01@cs.toronto.edu>)) from your U of T email address. You will receive an email response to your request within 1-2 business days.

IMPORTANT: *Submit your request soon as possible if you find yourself in such a situation. It is easier to resolve situations earlier rather than later.* If your emergency will affect your ability to complete coursework for more than a few days, or in multiple courses, we recommend you also talk to your registrar. You should also complete the absence declaration form on ACORN.

Remark requests

If you believe there was an error in the marking of a problem set or test, you may request that it be remarked. Please complete and submit a Remark Request Form to your course instructor in person or via email to csc165-2023-01@cs.toronto.edu (<mailto:csc165-2023-01@cs.toronto.edu>). You must give a specific reason for the request, referring to a possible error or omission by the marker.

Remark requests must be received within **two weeks** of when the item was returned.

Please note that when we receive a remark request, we regrade the entire submission, not just a specific question. Your mark may go up or down as a result of the remark.

Academic integrity

The work you submit must be your own. It is an academic offence to copy the work of someone else. This includes their files, their words, and even their ideas. Whether you copy or let someone else copy, it is an offence. Academic offences are taken very seriously.



At the same time, we want you to benefit from working with other students. Obviously, work done with a partner is a joint effort. You are also welcome to work appropriately with students other than your partner(s). It is appropriate to discuss course material and technology related to problem sets, and we encourage you to do so. For example, you may work through examples that help you understand course material or a new technology, or help each other configure your system to run a supporting piece of software. You may also discuss problem set requirements.

However, other than between group members, *collaboration on problem set solutions is strictly forbidden*. The most certain way to protect yourself is not to discuss solutions or the ideas behind them with students other than a partner. Certainly you must not let others see your solutions, even in draft form. Please do not cheat. We want you to succeed and are here to help if you are having difficulty.

Accessibility needs

The University of Toronto is committed to accessibility. If you require accommodations or have any accessibility concerns, please visit [Accessibility Services \(https://www.studentlife.utoronto.ca/as\)](https://www.studentlife.utoronto.ca/as) as soon as possible.

Course Summary:

Date	Details	Due
Mon Jan 16, 2023	 Prep for Week 2 Comprehension Quiz (https://q.utoronto.ca/courses/293202/assignments/1018391)	due by 10am
	 Prep for Week 2 Due (https://q.utoronto.ca/calendar?event_id=613839&include_contexts=course_293202)	10am

Date	Details	Due
Fri Jan 20, 2023	 Problem Set 0 Due (https://q.utoronto.ca/calendar?event_id=613832&include_contexts=course_293202)	1pm
Mon Jan 23, 2023	 Prep for Week 3 Due (https://q.utoronto.ca/calendar?event_id=613840&include_contexts=course_293202)	10am
Mon Jan 30, 2023	 Prep for Week 4 Due (https://q.utoronto.ca/calendar?event_id=613841&include_contexts=course_293202)	10am
Fri Feb 3, 2023	 Problem Set 1 Due (https://q.utoronto.ca/calendar?event_id=613833&include_contexts=course_293202)	1pm
Mon Feb 6, 2023	 Prep for Week 5 Due (https://q.utoronto.ca/calendar?event_id=613842&include_contexts=course_293202)	10am
Mon Feb 13, 2023	 Term Test 1 (https://q.utoronto.ca/calendar?event_id=613834&include_contexts=course_293202)	12am
Mon Feb 27, 2023	 Prep for Week 7 Due (https://q.utoronto.ca/calendar?event_id=613843&include_contexts=course_293202)	10am
Fri Mar 3, 2023	 Problem Set 2 Due (https://q.utoronto.ca/calendar?event_id=613835&include_contexts=course_293202)	1pm
Mon Mar 6, 2023	 Prep for Week 8 Due (https://q.utoronto.ca/calendar?event_id=613844&include_contexts=course_293202)	10am

Date	Details	Due
Mon Mar 13, 2023	 Prep for Week 9 Due (https://q.utoronto.ca/calendar?event_id=613845&include_contexts=course_293202)	10am
Fri Mar 17, 2023	 Problem Set 3 Due (https://q.utoronto.ca/calendar?event_id=613836&include_contexts=course_293202)	1pm
Mon Mar 20, 2023	 Prep for Week 10 Due (https://q.utoronto.ca/calendar?event_id=613846&include_contexts=course_293202)	10am
Wed Mar 29, 2023	 Term Test 2 (https://q.utoronto.ca/calendar?event_id=613837&include_contexts=course_293202)	12am
Mon Apr 3, 2023	 Prep for Week 12 Due (https://q.utoronto.ca/calendar?event_id=613847&include_contexts=course_293202)	10am
Fri Apr 7, 2023	 Problem Set 4 Due (https://q.utoronto.ca/calendar?event_id=613838&include_contexts=course_293202)	1pm