CSC165H1 S 20221 (All Sections): Mathematical Expression and Reasoning for Computer Science

Jump to Today   ✎ **Edit**

Just joined the course? Read this first!

- *Please sent a message to the course email address* (see the next section for details) to let us know when you enrolled, so that we can document your situation.
- The Overview table (first section below the Table of Contents when you scroll down) contains links to everything you need to get caught up: readings from the course notes, lecture slides and recordings, links to the worksheets, weekly prep quizzes and problem sets.
- **If you added the course BEFORE 26 January**: start by completing and submitting Problem Set 0 (it is meant to be short).
- **If you added the course ON OR AFTER 26 January**: *do not submit* Problem Set 0; its weight will be shifted to the other problem sets for you (each of them will be worth 0.25 more). You should still complete PS0 for yourself, and check your work against the sample solutions, to make sure you are familiar with the basics of using LaTeX.
- Next, do the readings and complete the prep quizzes for Week 2 and Week 3 — complete the "Practice Copy" of each quiz if you no longer have access to the graded one.
- *There is no accommodation planned for missed Prep quizzes*, but this should have no negative impact on your marks: you can get full marks on the weekly prep quizzes even if you miss five of them, and you are expected to complete ALL of them for your learning anyway.
- Read over the lecture slides and, if you have time, watch the lecture recordings for the classes you missed. (The slides are the most important component, so it's okay to watch the recordings only if something in the slides doesn't quite make sense.)
- Finally, complete every worksheet you missed and check your answers against the sample solutions posted. For maximum benefit, you really should attempt to solve each problem on your own before you read the solutions.
- At any point, if you encounter something you are unsure about, drop by office hours to ask, or post your questions on Piazza, or reach out to the course email (see the next section).
- Good luck! You have some work to do to get caught up, but if you take it one step at a time, you should be able to pull it off with less than one day of focused work for every week you missed.

Got A Question?

Please do **NOT** use Quercus messaging! Follow these directions instead.

1. **Before** you ask your question, please *take a few minutes to see if it might already be answered* on this website (or sites linked from it). You will get an answer faster (no need to wait), and it will make the course better for everyone by leaving us more time to answer other questions.

2. If your question is not already answered within this document or other parts of the Quercus site, then either:

   - start a new topic on Piazza, for all questions of *general interest* (whose answer is likely to be useful to other students) that do **not** reveal any idea or part of a solution to an assessment (Quercus quiz, problem set, or term test) — sign up for Piazza at **https://piazza.com/utoronto.ca/winter2022/csc165h1** **(https://piazza.com/utoronto.ca/winter2022/csc165h1)** ; OR

   - send email **from your U of T email address** to **csc165-2022-01@cs.toronto.edu (mailto:csc165-2022-01@cs.toronto.edu)** , for all questions that are *personal* (whose answer is useful only to you) or that you cannot ask without revealing part of your solution to a course assessment.

Table of Contents

This page contains LOTS of information, all in one place (to make it easier to search)! The following links may help you find what you are looking for a little faster — but **we strongly recommend that you read this entire syllabus at least once** (during the first week of term would be ideal), to make yourself familiar with the course organization and expectations.

- ○ **Video Recording and Sharing**
- **LATEX help**

Overview

All readings are taken from the **course notes**.
The **Worksheets Page** contains links to every worksheet and its sample solutions.
Use the links in the table below to access the Prep Quizzes, Problem Sets, or Term Tests and Final Exam pages.

Week-by-week overview of course activities

Dates	Readings & Materials (Slides and Recordings)	Assessments
Jan 10 – Jan 14	- Read pages 9–20 **Week 1 Materials**	(*No prep* this week)
Jan 17 – Jan 21 **Jan 23:** *last day to enrol in S courses*	- Read pages 20–33 **Week 2 Materials**	**Week 2 prep** (0.5%)[*] **Problem Set 0** (1%)
Jan 24 – Jan 28	- Read pages 33–48 **Week 3 Materials**	**Week 3 prep** (0.5%)[*]
Jan 31 – Feb 4	- Read pages 48–62 **Week 4 Materials**	**Week 4 prep** (0.5%)[*] **Problem Set 1** (≈7%)[†]
Feb 7 – Feb 11	- Read pages 65–75 - Week 5 Materials (TBA)	**Week 5 prep** (0.5%)[*]
Feb 14 – Feb 18	- Read pages 75–83 - Week 6 Materials (TBA)	*Due 15 Feb:* **Week 6 prep** (0.5%)[*] **Term Test 1** (17%)
Feb 21 – Feb 25	**Reading Week:** No lectures, but there will be regular instructor office hours.	

Dates	Readings & Materials (Slides and Recordings)	Assessments
Feb 28 – Mar 4	• Read pages 85–95 • Week 7 Materials (TBA)	• **Week 7 prep** (0.5%)[*] • **Problem Set 2** (≈7%)[†]
Mar 7 – Mar 11	• Read pages 95–100 • Week 8 Materials (TBA)	• **Week 8 prep** (0.5%)[*]
Mar 14 – Mar 18 **Mar 14:** *last day to cancel S courses*	• Read pages 101–110 • Week 9 Materials (TBA)	• **Week 9 prep** (0.5%)[*] • **Problem Set 3** (≈7%)[†]
Mar 21 – Mar 25	• Read pages 110–117 • Week 10 Materials (TBA)	• **Week 10 prep** (0.5%)[*]
Mar 28 – Apr 1	• Read pages 118–121 • Week 11 Materials (TBA)	• *Due 29 Mar:* **Week 11 prep** (0.5%)[*] • **Term Test 2** (17%)
Apr 4 – Apr 8	• Read pages 121–131 • Week 12 Materials (TBA)	• **Week 12 prep** (0.5%)[*] • **Problem Set 4** (≈7%)[†]
Apr 11 – Apr 29	**Exam Period**	• **Final Exam** (34%)[‡]

[*] You can earn a maximum of 3% across all prep quizzes

[†] After Problem Set 0, your best problem set will be worth 8% and your worst will be worth 6%; the other two will each be worth 7%.

[‡] In order to pass the course, you must earn at least 33% on the final exam.

Creating a Positive Learning Environment

We are committed to creating a respectful learning environment in computer science courses for all students and expect that you will adhere to the University of Toronto's **Code of Student Conduct (http://www.viceprovoststudents.utoronto.ca/publicationsandpolicies/codeofstudentconduct.htm)** . Please be mindful of how your behaviour influences the atmosphere in our learning community, not just in classes, but also in computer labs, in online forums, and anywhere that you interact with other students and members of

the department.

Accessibility Needs

The University of Toronto is committed to accessibility. If you require accommodations for an ongoing disability or an acute issue such as an injury, you should register with **Accessibility Services (https://studentlife.utoronto.ca/service/accessibility-services-registration-and-documentation-requirements/)** (AS). The process of accommodation is both confidential and private. AS provides the information necessary to implement an accommodation and no more, e.g., what is listed in a Letter of Accommodation. Your instructors and other university staff will not reveal that you are registered with AS.

Students who require accommodations for term tests (or the final exam) must register with **Accommodated Testing Services (https://lsm.utoronto.ca/ats/)** (ATS). We will only be providing test accommodations sent to us through that official channel. This helps to guarantee that accommodations are provided in a fair and consistent manner for everyone.

Calendar Information

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-O. Diagonalization, the Halting Problem, and some reductions. Unified approaches to programming and theoretical problems.

Learning Outcomes

By the end of this course, students will be able to:

- Express statement 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.
- Construct mathematical proofs of given statements in new and familiar domains.

The domains we will study include:

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

Corequisites

The corequisites for this course are CSC108H1, CSC120H1, or equivalent programming experience.

If you have not enrolled in or completed CSC108H1 or CSC120H1, that's okay — you will still be allowed to

take CSC165H1. However, *it is your responsibility* to ensure that you have the equivalent programming experience (in the Python programming language) 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 **csc165-2022-01@cs.toronto.edu (mailto:csc165-2022-01@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. There is no accommodation planned for missed Prep quizzes, but this should have no negative impact on your marks: you can get full marks on the weekly prep quizzes even if you miss five of them, and you are expected to complete ALL of them for your learning anyway.

Textbook

There is no required text. Instead we will be using a set of course notes as our main text for this course. A free electronic copy is available here: **csc165_notes.pdf** ⤓ **(https://q.utoronto.ca/courses/249939/files /18451614/download?download_frd=1)** .

Errata for CSC165 Course Notes

This section will be updated to list errata as they are discovered.

Recommended Readings

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.)*
- 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.)*

Contact

All course announcements will be posted on Quercus. You are responsible for reading all postings made by the instructor or the TAs, and for being familiar with the entire content of this Syllabus — *please take a few minutes at the beginning of the term to read through the entire Syllabus*.

For all questions of *general interest* (whose answers are likely to be useful to other students, e.g., about the course material, problem sets, general questions about course logistics and administration), where you can ask the question while respecting the academic integrity of the course (without revealing any idea or part of a solution to a course assessment), please start a new topic directly on the Piazza discussion forum, so that everyone can benefit from reading your questions and the associated answers. We will monitor the forum regularly, but feel free to answer questions from other students too! Helping someone else learn is one of

the most effective ways of truly mastering a subject. (You can register yourself on Piazza using your U ofT email address, by visiting **https://piazza.com/utoronto.ca/winter2022/csc165h1** **(https://piazza.com/utoronto.ca/winter2022/csc165h1)** .)

For *personal questions* (making appointments, remarking requests, extensions, missing class, etc.), please email **csc165-2022-01@cs.toronto.edu** **(mailto:csc165-2022-01@cs.toronto.edu)** from your University of Toronto email address. **Do not email your instructor directly or use Quercus messaging** — 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 and UTORid in the body of the email. Otherwise, your message might be marked as spam!

We aim to respond to all email and forum postings by the end of the next business day (not counting weekends and holidays). However, it may take longer, especially near due dates. If you do not hear back after four days, please do not hesitate to send a follow-up email, or come in person during office hours.

Course Staff

Who? (Role)	Where? (Office)	How? (Email)
François Pitt (Instructor and Coordinator)	BA 4264	Please use the course email address: **csc165-2022-01@cs.toronto.edu** **(mailto:csc165-2022-01@cs.toronto.edu)**
Gary Baumgartner (Instructor)	BA 4232	
Benjamin Butler (Support Staff)	BA 4207	

Logistics

This is an in-person course, meaning that you must be available for in-person activities (lectures and office hours) and assessments (term tests and final exam). However, due to the ongoing COVID-19 pandemic, *the course will be delivered online through the month of January*.

Most 2-hour "lectures" will consist of one hour of traditional lecture followed by one hour of active learning through a worksheet, with support from your instructor and some TAs. Exceptions are indicated in the **Overview** above.

All lectures and office hours begin *ten minutes past the hour*. This is true for both in-person and online lectures.

Lecture Schedule

What? (Section)	Who? (Instructor)	When? (Day & Time)	Where? (Zoom or Room)
LEC 0101	François Pitt	Mon, Thu	*Until 31 Jan:*

What? (Section)	Who? (Instructor)	When? (Day & Time)	Where? (Zoom or Room)

		09:10–11:00	**https://utoronto.zoom.us/j/83993252219** **(https://utoronto.zoom.us/j/83993252219)**
			   Meeting ID: 839 9325 2219
			   Passcode: 1650101
			After 31 Jan: MP 102

LEC 0201	François Pitt	Mon, Wed 12:10–14:00	*Until 31 Jan:*
			   https://utoronto.zoom.us/j/83227601178 **(https://utoronto.zoom.us/j/83227601178)**
			   Meeting ID: 832 2760 1178
			   Passcode: 1650201
			After 31 Jan: MP 103

LEC 0301	Gary Baumgartner	Mon, Thu 15:10–17:00	*Until 31 Jan:*
			   https://utoronto.zoom.us/j/84664062756 **(https://utoronto.zoom.us/j/84664062756)**
			   Meeting ID: 846 6406 2756
			   Passcode: 1650301
			After 31 Jan: MP 203

LEC 5101	Gary Baumgartner	Mon, Wed 18:10–20:00	*Until 31 Jan:*
			   https://utoronto.zoom.us/j/84244217341 **(https://utoronto.zoom.us/j/84244217341)**
			   Meeting ID: 842 4421 7341
			   Passcode: 1655101
			After 31 Jan: MP 103

Instructor Office Hours

Instructor	Office Hours	Location

François Pitt	Mon, Thu 14:10–15:30 Wed, Fri 09:30–11:00	*Until 31 Jan:*
		   https://utoronto.zoom.us/j/85921930324 **(https://utoronto.zoom.us/j/85921930324)**
		   Meeting ID: 859 2193 0324
		   Passcode: 165165
		After 31 Jan: TBA

Gary Baumgartner	Wed 15:10–17:00 Thu 18:10–20:00	*Until 31 Jan:*
		   https://utoronto.zoom.us/j/85921930324 **(https://utoronto.zoom.us/j/85921930324)**
		   Meeting ID: 831 8687 0173
		   Passcode: 165165
		After 31 Jan: TBA

You are welcome to attend office hours held by any instructor.

About online lectures and office hours

- To join the Zoom lecture sessions, you must be signed in to your U of T Zoom account.
- "*What U of T Zoom account?*" Glad you asked: simply log on to `utoronto.zoom.us` **(https://utoronto.zoom.us/)** with your UTORid and password to activate your free U of T Zoom account.
- *Already have a Zoom account?* You can use it, but you may not have access to all the same functionality. Also, you will have a better experience if you use the most recent version of the desktop client for Zoom (instead of accessing it through a web browser).
- See further below on this page for additional **technical requirements** and advice.

Assessments

Summary of course assessments

Item	Date(s)	Weight
11 weekly preps	Due every week (except week 1) on Monday before 21:00 Prep 6 and Prep 11 are due on *Tuesday* before 21:00 (because of term tests)	3% (0.5% each, total capped at 3%)
Problem Set 0	Due Jan 21 before 17:00	1%
Problem Set 1	Due Feb 4 before 17:00	6%–8%
Term Test 1	**During regular class time for your section** on Feb 14	17%
Problem Set 2	Due Mar 4 before 17:00	6%–8%
Problem Set 3	Due Mar 18 before 17:00	6%–8%
Term Test 2	**During regular class time for your section** on Mar 28	17%
Problem Set 4	Due Apr 8 before 17:00	6%–8%
Final Exam	Exam Period April 11–29 (exact date and time to be determined by the Faculty of Arts & Science)	34%

Except for Problem Set 0, Problem Set weights will be determined by your performance on each one: your best mark will be worth 8%, your worst mark 6%, and the other two 7%.

In order to pass the course, you must earn a mark of at least 33% on the final examination. In other words, if your mark on the final exam is less than 33%, your final mark in the course will be reduced below 50.

Lecture preps

Every week (except week 1), you'll complete a prep exercise to learn new material and prepare for lecture. These *should* be completed before your lecture, for maximum learning benefit, but they *must* be completed

before Monday at 21:00 (to provide some flexibility for situations when you might be unable to complete them before your lecture). Each prep consists of completing 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 prep 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 **LAST** on-time score is used.
3. The prep 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 LaTeX.

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).

Please read the following general problem set requirements *carefully*. Failure to follow these instructions may result in a grade of **ZERO** for a problem set.

- Your problem sets are graded on both correctness and clarity of communication. Solutions which are technically correct but poorly written will not receive full marks. Please proofread your work carefully before your final submission.
- Each problem set may be completed in groups of up to **three** students. See the **Group work** sub-section below for details. **Exception**: *Problem Set 0 must be completed individually.*
- Solutions must be typeset electronically, and submitted in PDF with the correct file name. We encourage you to use LaTeX. **Handwritten submissions will receive a grade of ZERO.**
- Problem sets must be submitted online through MarkUs *before* the due date. *[A link to MarkUs will be added soon.]* If you haven't used MarkUs before, give yourself plenty of time to figure it out, and ask for help if you need it! If you are working with a group, you must form a group on MarkUs **before the submission deadline**, and make one submission per group. "I didn't know how to use MarkUs" is not a valid excuse for submitting late work.
- Your submitted file should not be larger than 19MB. This may happen if you are using a word processing software like Microsoft Word; if it does, you should use a PDF compression tool to make your PDF smaller, although please make sure that your PDF is still legible before submitting it. (**PDFSAM (https://pdfsam.org/)** is a good tool for this; it is free, open source, and runs on multiple platforms.)
- MarkUs is known to be slow when many students try to submit right before a deadline. **Aim to submit your work at least an hour before the deadline. It is your responsibility to submit your work ahead of time to meet the deadline.** You can submit your work more than once — and are encouraged to do so! — the most recent version submitted within the deadline is the version marked.

- All problem sets are due by 17:00:00 on their due date. We recognize that unexpected problems sometimes make it difficult to submit problem sets on time, *including* technical issues. For this reason, problem set submissions will be accepted with the following penalties for lateness: −5% per hour for the first 8 hours late, then −15% per hour for the next 4 hours late. To determine lateness, we round **down** the number of hours; this translates to the following penalties:
  - *Before 17:00:00*: on time, no penalty
  - *17:00:00–17:59:59*: under 1 hour late, NO PENALTY (even though the submission is technically late)
  - *18:00:00–18:59:59*: −5% of the total value of the problem set
  - *19:00:00–19:59:59*: −10% of the total value of the problem set
  - *20:00:00–20:59:59*: −15% of the total value of the problem set
  - *21:00:00–21:59:59*: −20% of the total value of the problem set
  - *22:00:00–22:59:59*: −25% of the total value of the problem set
  - *23:00:00–23:59:59*: −30% of the total value of the problem set
  - *00:00:00–00:59:59*: −35% of the total value of the problem set
  - *01:00:00–01:59:59*: −40% of the total value of the problem set
  - *02:00:00–02:59:59*: −55% of the total value of the problem set
  - *03:00:00–03:59:59*: −70% of the total value of the problem set
  - *04:00:00–04:59:59*: −85% of the total value of the problem set
  - *05:00:00 or later*: −100% of the total value of the problem set

Group work

*You must create a submission group on MarkUs **before** the deadline, even if you are working alone*. If you are creating a group for the first time, please consult **these instructions (https://github.com/MarkUsProject /Markus/wiki/Student-Guide)** . Note that *only one* team member should create the group, and invite your partners (if any) by using their UTORids.

Your partners may be from any section of this course, and need not be the same people for each problem set. Once you have declared a group on MarkUs, you may not dissolve your group without the permission of your instructor.

Only one member of a group needs to submit your work. All partners will receive the same mark for their submission.

Advice for group work

Remember that the main goal of the problem sets is to ensure **everyone** understands how to solve **every** problem. We recommend that you work together to generate and write up every solution, as pedagogical research has shown that you will learn much more from discussing how to solve each problem with your teammates, than from simply reading someone else's solution. However, we also realize that this course is not your only obligation, and that it is not always possible to do what is best in life — just like you cannot always eat lots of vegetables, or get plenty of sleep and exercise… If you are not able to set aside the time to really work together to generate all the answers, here are a few approaches that you may find easier to adopt:

1. Everyone writes answers to every question individually, then the group meets to discuss all the solutions and agree on a final version for each question. This is also an excellent way for everyone to learn the most from the problem sets.
2. Everyone writes an answer to one question (or two, depending on the number of questions and the size of your group). The group meets to discuss the answers and agree on them. This is still a good way to ensure that everyone understands how to solve each question, and it has the advantage of requiring less time from each group member. But the time you save comes at a cost: not every group member will have the experience of trying to solve each problem for themselves, so the learning experience may not be quite as good.
3. If it is difficult for your group to meet, you could still use the preceding method by having each group member review *every* answer they did not write, and propose changes or ask questions about it. This diminishes the learning experience a little more (because you lose the opportunity to have a deep discussion) but it still allows everyone to understand how to answer every question. In this scenario, make sure that you leave plenty of time for review and discussion.
4. In the preceding method, the learning experience is diminished significantly if some group members do not review every answer they did not write, because this would mean there are some types of problems that they would not understand how to solve. An extreme form of this is the "divide and conquer method", where everyone writes an answer for one question (or two) and the answers are just lumped together by one group member without any review. *This is a terrible way to work as a group!* It's true that it requires the least time from individual group members. But the time it "saves" is an illusion, since each group member will still need to understand how to solve each question for the term test and final exam — and working on the problem set question is one of the best ways to study and understand the material.

We understand that with all the obligations you face, it may not always be possible for you to take the time to write up your own answers to every question. We hope the methods we have described above provide you with ideas you can use to manage your group work so that you still derive a strong learning experience from working as a group.

Please take a minute to also read the section below on **Academic Integrity** (it's very short), for more details.

Challenges

To conclude, here are some common challenges you may face with your group.

- Unequal participation
- Miscommunication
- Cultural challenges
- Difficulties scheduling
- Differences in grade expectations

Most of these can be minimized or avoided by setting clear expectations right from the start. In particular, make sure you find out from your group members about their scheduling constraints. Write an agreement before you begin your work, to ensure everyone has the same expectations on the quality and quantity of

work each member will produce. Discuss early when you expect answers and reviews to be completed — some students prefer to complete work as early as possible, and others prefer to wait until closer to the due date. If you never discuss this before forming your group, you could end up working with students who do not share your preferences.

Suggestion: Google "student group work contract" to find many examples that can help you set expectations and manage your group in a positive and constructive manner.

Important warning! we cannot make exceptions for groups whose members do not agree on how to work together. If you realize *very early in your work* that your group will not be able to work together, please notify us immediately. We *may* be willing to consider dissolving your group, if all the members agree. But this can only be done if your group has not discussed or shared answers to any of the questions! Once a group has started discussing or sharing answers, they have to complete the problem set together. This is part of the risk/benefit trade-off of group work that you implicitly accept by forming a group: you benefit by getting credit for work completed by someone else (in a manner that is allowed by the course), but you must also accept the risk that your mark may suffer if your group does not perform as you expected. This is why it's very important to discuss your expectations **before** you start to work together, to make sure you will form a compatible group.

Term Tests and Final Exam

There are two term tests and one final exam in this course. For now, all are planned to take place **in-person**. The term tests are scheduled to take place during regular lecture time for your section, on the day of the test; the exact time for the final exam will be announced by the Faculty of Arts & Science partway through the term.

Academic Integrity

All work you submit must be your own. It is an academic offence to copy the work of someone else — even if the other person is not a student — unless you explicitly and clearly attribute the work to its original source. This includes files, words, and even 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 your group members is a joint effort. You are also welcome to work *appropriately* with students other than those in your group. It is appropriate to discuss course material and technology related to assignments, 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* (in other words, understanding what a question is asking), but not how to solve the questions: that part of the work must be completed entirely within your group, or on your own for individual work.

However, *collaboration on problem set and on term test solutions is strictly forbidden*, other than between group members on problem sets. The most certain way to protect yourself is **not** to discuss solutions or the ideas behind them with students other than your group members, or with anyone who is not a student, other

than TAs or instructors for this offering of the course. 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.

Please take a few minutes to consult the **Academic Integrity at U of T (https://www.academicintegrity.utoronto.ca/)** website: it contains good information and concrete strategies to help support your learning in ways that follow the principles of academic integrity, in addition to references to formal policies and procedures.

Special Consideration

If you are unable to complete course work or if you miss a test due to major illness or other circumstances outside of your control, please get in touch with us **immediately**. Special consideration will be evaluated on a case-by-case basis and is not given automatically — we may be unable to grant you exactly the special consideration you seek, so please ensure we have time to discuss your situation.

In order to receive special consideration, you must fill out a Request for Special Consideration Form **[link to be added soon]**. Submit the form as soon as you can, together with your supporting documentation, **to the course email address**.

For illness or injury, including cold or flu-like symptoms and self-isolation, please *self-declare your absence through the Absence Declaration tool on ACORN* (the tool can be found in the Profile and Settings menu). You should record each day of your absence as soon as it begins, up until the day before you return to classes or other academic activities. For this term, you are **NOT** required to complete the U of T's Verification of Student Illness or Injury ("VOI") form as supporting documentation. To learn more, you may access relevant information **here (http://www.illnessverification.utoronto.ca/)** .

IMPORTANT: Notify us as soon as possible if you find yourself in such a situation. You can contact us (by email using **csc165-2022-01@cs.toronto.edu (mailto:csc165-2022-01@cs.toronto.edu)**) even before you have your documentation ready to submit; we won't be able to tell you at that point what accommodation you may receive, but can answer other questions and offer advice. It is always easier to resolve situations earlier rather than later.

If you face a situation that is particularly disruptive and likely to have an impact on more than one course, please contact your **College Registrar (https://future.utoronto.ca/current-students/registrars/)** — they are best equipped to provide you with general advice and support that goes beyond a single course.

Remark Requests

If you believe there was an error in the marking of an assignment or test, you may request that it be remarked. Please complete and submit a Remark Request Form *[link to be added soon]* **to the course email address**. 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. *This is not meant to discourage you from submitting remarking requests!* Just to acknowledge the reality that errors can be made in both directions in the initial marking: it's possible that TAs misunderstand your solution and penalize it more than appropriate, but it's also possible that TAs forget or miss some mistakes in your solution and do not apply appropriate penalties. When we remark, we correct both types of marking errors.

Technical Requirements

To participate in this course on Zoom, for the period during which online instruction will be used…

- You require reliable access to a **full computer** (*not just a smartphone*) on which you can browse web pages, read lecture slides, and type and submit problem sets and online tests.
- This computer must have a **microphone**, optionally a webcam, as well as a **reliable, high-speed internet connection** for attending the lectures and office hours.
- You need to be able to use **Quercus** and **Zoom**.
- You need to be available, by computer, **during the scheduled class times**. This is particularly important for the second half of each lecture, which will not be recorded.
- You need access to a quiet space with as few distractions as possible. We realize this may be difficult for some, but please do your best: you know how easy it is to get distracted even during an on-campus lecture; imagine how much easier it is if you are surrounded by distractions. At the very least, make sure to turn off all notifications and non-essential software: give yourself a chance to be fully engaged with the material for the best learning experience.

See also the following resources:

- **Getting Ready for Online (https://onlinelearning.utoronto.ca/getting-ready-for-online/)** , from the U of T's Online Learning website.
- **What you need to know if you are taking courses from a location outside the greater Toronto area (https://studentlife.utoronto.ca/news/what-you-need-to-know-if-you-are-taking-courses-from-a-location-outside-the-greater-toronto-area-gta/)** , from Student Life.
- If you have trouble with your connection and are in China, you can use the Alibaba CEN to help you access U of T resources, such as the `utoronto.zoom.us` site. Instructions to set up the CEN are here: `https://onesearch.library.utoronto.ca/ic-faq-categories/alibaba-cloud-enterprise-network-cen-service` **(https://onesearch.library.utoronto.ca/ic-faq-categories/alibaba-cloud-enterprise-network-cen-service)** .

Video Recording and Sharing

Please note that this section is valid for the period of Jan 10–31. The University of Toronto has mandated online instruction for this time period. The period is subject to change, in keeping with the decisions made by the University of Toronto.

Lectures will be recorded on video and will be available to students in the course for viewing remotely and

after each session. Your participation in the lecture may be included in these recordings if you ask a question by unmuting yourself; however, the contents of the chat will NOT be included in the recordings.

Course videos and materials belong to your instructor, the University, and/or other source depending on the specific facts of each situation, and are protected by copyright. In this course, you are permitted to download session videos and materials for your own academic use, but you should not copy, share, or use them for any other purpose without the explicit permission of the instructor. For questions about recording and use of videos in which you may appear please contact course staff at the course email address (**csc165-2022-01@cs.toronto.edu (mailto:csc165-2022-01@cs.toronto.edu)**).

You may have some questions about how to use Zoom appropriately. Here are some insights into what is okay and not okay in CSC165H1 (thanks to Mario Badr, who wrote these originally for CSC108H1).

What's OK?

- It's OK to participate in class meetings however and wherever is comfortable to you. Yes, that includes participating from bed in your pajamas, if that works for you!
- It's OK to feel some nervousness and/or discomfort about participating in an online class.
- It's OK to keep your audio and video off some or all of the time. We think that using audio in small group discussions such as breakout groups or office hours can be helpful and enhance your learning, but you are welcome to participate by text chat only if you prefer.
- It's OK to screenshot or take photos of course content when shared in class meetings or office hours, *for your own personal academic use only*. (Note that we will post all our electronic materials after class, including annotated slides, so there is really no need for you to take separate screenshots.)
- It's OK to set your display name in Zoom to just your first name or your preferred name.
- It's OK to use (classroom appropriate!) virtual backgrounds if you want to.

What's not OK?

- It's **not** OK to disrupt the class and other students' learning by showing inappropriate or distracting things in your video or profile picture, by turning on audio when others are trying to speak and listen, or by posting disruptive things in the chat.
- It's **not** OK to screenshot or record parts of class meetings or office hours for *anything* other than personal academic use.
- It's **not** OK to share images or video from class meetings or office hours on social media.
- It's **not** OK to capture or record any personal information about your classmates or course staff without their consent.

LATEX help

LATEX is the standard typesetting program used in computer science, and we encourage you to learn how to use LATEX as part of your work in this course. The first problem set is really an exercise in learning the basics of LATEX; however, for all problem sets after the first one, you may choose to use a different typesetting software (e.g., Microsoft Word) as long as you remember to export (or print) to PDF before you submit. In this section, we provide some resources to help you get started with LATEX.

Overleaf (https://www.overleaf.com/) is an online application that allows you to edit and compile LaTeX files right in your browser, and even collaborate with others. It also provides some **tutorials (https://www.overleaf.com/learn)** on the basics of using LaTeX.

Here is a sample LaTeX source file (`sample_latex.tex` ⤓ **(https://q.utoronto.ca/courses/249939/files /18566903/download?download_frd=1)**) that also serves as a mini-tutorial on getting started writing LaTeX documents. We highly recommend going through it before working on Problem Set 0! We also provide a LaTeX package (`csc.sty` ⤓ **(https://q.utoronto.ca/courses/249939/files/18566902/download?download_frd=1)**) that we use to typeset the problem sets and course notes; this is optional, and you may or may not wish to use it. If you do, this file must be placed in the same directory as your .tex files (or uploaded to the correct place in Overleaf) to use it. Please don't hesitate to ask any questions about LaTeX, either on the course forum or during office hours.

You may also find the following links helpful.

- An alternate LaTeX online application: `https://www.latex-tutorial.com/` **(https://www.latex-tutorial.com/)** .
- Download LaTeX on the official LaTeX webpage: `https://latex-project.org/` **(https://latex-project.org/)** (click on "Get" in the top menubar and select an appropriate distribution to download).
- A relatively comprehensive introduction to LaTeX **(highly recommended)**: `http://ctan.mirror.rafal.ca/info/lshort/english/lshort.pdf` **(http://ctan.mirror.rafal.ca/info/lshort/english/lshort.pdf)** .
- A LaTeX wiki (most Google searches lead here): `https://en.wikibooks.org/wiki/LaTeX` **(https://en.wikibooks.org/wiki/LaTeX)** .
- An amazing application of machine learning; use it to find LaTeX commands based on the symbol: `http://detexify.kirelabs.org` **(http://detexify.kirelabs.org)** .
- A graphical LaTeX editor (requires downloading and installing the software): `https://www.lyx.org/` **(https://www.lyx.org/)** .
- A forum for asking LaTeX-related questions: `https://tex.stackexchange.com/` **(https://tex.stackexchange.com/)** .

Course Summary:

Date	Details	Due
Mon Jan 17, 2022	📝 **Prep 2 quiz (https://q.utoronto.ca /courses/249939/assignments/764208)**	due by 9pm
Fri Jan 21, 2022	🗓 **PS0 Due (https://q.utoronto.ca /calendar?event_id=493715& include_contexts=course_249939)**	5pm

Date	Details	Due
Mon Jan 24, 2022	📝 **Prep 3 quiz** (https://q.utoronto.ca/courses/249939/assignments/764220)	due by 9pm
Mon Jan 31, 2022	📝 **Prep 4 quiz** (https://q.utoronto.ca/courses/249939/assignments/764209)	due by 9pm
Fri Feb 4, 2022	🗓 **PS1 Due** (https://q.utoronto.ca/calendar?event_id=493716&include_contexts=course_249939)	5pm
Mon Feb 7, 2022	📝 **Prep 5 quiz** (https://q.utoronto.ca/courses/249939/assignments/764212)	due by 9pm
Mon Feb 14, 2022	🗓 **Test 1 (LEC0101)** (https://q.utoronto.ca/calendar?event_id=493723&include_contexts=course_249939)	9:10am to 11am
	🗓 **Test 1 (LEC0201** (https://q.utoronto.ca/calendar?event_id=493728&include_contexts=course_249939)	12:10pm to 2pm
	🗓 **Test 1 (LEC0301)** (https://q.utoronto.ca/calendar?event_id=493729&include_contexts=course_249939)	3:10pm to 5pm
	🗓 **Test 1 (LEC5101)** (https://q.utoronto.ca/calendar?event_id=493730&include_contexts=course_249939)	6:10pm to 8pm
Tue Feb 15, 2022	📝 **Prep 6 Quiz** (https://q.utoronto.ca/courses/249939/assignments/764210)	due by 9pm
Mon Feb 28, 2022	📝 **Prep 7 Quiz** (https://q.utoronto.ca/courses/249939/assignments/764217)	due by 9pm
Fri Mar 4, 2022	🗓 **PS2 Due** (https://q.utoronto.ca/calendar?event_id=493717&include_contexts=course_249939)	5pm

Date	Details	Due
Mon Mar 7, 2022	📝 **Prep 8 Quiz (https://q.utoronto.ca /courses/249939/assignments/764221)**	due by 9pm
Mon Mar 14, 2022	📝 **Prep 9 Quiz (https://q.utoronto.ca /courses/249939/assignments/764219)**	due by 9pm
Fri Mar 18, 2022	📅 **PS3 Due (https://q.utoronto.ca /calendar?event_id=493718& include_contexts=course_249939)**	5pm
Mon Mar 21, 2022	📝 **Prep 10 Quiz (https://q.utoronto.ca/courses/249939 /assignments/764218)**	due by 9pm
Mon Mar 28, 2022	📅 **Test 2 (LEC0101) (https://q.utoronto.ca /calendar?event_id=493722& include_contexts=course_249939)**	9:10am to 11am
	📅 **Test 2 (LEC0201) (https://q.utoronto.ca /calendar?event_id=493720& include_contexts=course_249939)**	12:10pm to 2pm
	📅 **Test 2 (LEC0301) (https://q.utoronto.ca /calendar?event_id=493721& include_contexts=course_249939)**	3:10pm to 5pm
	📅 **Test 2 (LEC5101) (https://q.utoronto.ca /calendar?event_id=493726& include_contexts=course_249939)**	6:10pm to 8pm
Tue Mar 29, 2022	📝 **Prep 11 Quiz (https://q.utoronto.ca /courses/249939/assignments/764211)**	due by 9pm
Mon Apr 4, 2022	📝 **Prep 12 Quiz (https://q.utoronto.ca/courses/249939 /assignments/764216)**	due by 9pm
Fri Apr 8, 2022	📅 **PS4 Due (https://q.utoronto.ca /calendar?event_id=493719& include_contexts=course_249939)**	5pm