

CSC165H1S 20261 (All Lectures): Mathematical Expression and Reasoning for Computer Science

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Under Construction! Some content will be finalized and/or adjusted during the first week of classes.

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Course Overview

Questions? Concerns?

- Please read the [announcements \(https://q.utoronto.ca/courses/418976/announcements\)](https://q.utoronto.ca/courses/418976/announcements), this syllabus, and [Ed Discussion](#) [↪ \(https://edstem.org/us/join/hhSxjP\)](https://edstem.org/us/join/hhSxjP) — the answer is likely already here.
You are responsible for reading all announcements and for being familiar with the entire content of this Syllabus.
- Ask any instructor or TA during [Office Hours](#) (click on the link for schedule and rooms), or
- ask on [Ed Discussion](#) [↪ \(https://edstem.org/us/join/hhSxjP\)](https://edstem.org/us/join/hhSxjP) (if the answer could be useful to other students), or
- send email from your U of T email address, to csc165-2026-01@cs.toronto.edu (<mailto:csc165-2026-01@cs.toronto.edu>) (if your question contains confidential information).
Please include your UTORid in the body of your message.
- Note: the course email is monitored by the course instructors, our instructional support staff member (Cindy Tran), and perhaps our Lead TA (Amir Reza Peimani).
- Do not use Quercus messaging. Do not send email directly to your instructor or TA.
- It may take up to 48 business hours (not counting weekends and holidays) for us to respond, or longer near important dates. If you do not hear back after five days, please send a follow-up email, or visit office hours.

Lectures

- Active learning with worksheets (available in the [Course Documents](#) table).
- Rooms & schedule: check [ACORN \(http://acorn.utoronto.ca/\)](http://acorn.utoronto.ca/).
- You must enrol in a section that you are available to attend in-person, because term tests will take place during your regular lecture time.

Term Tests

- Four term tests worth 50% of your course mark.
- Your lowest test mark will be worth 5%, your second-lowest 10%, your second-highest 15%, and your highest test mark will be worth 20%.
- Term Tests take place during your regular lecture time, but possibly in a different room.
- Test dates and rooms can be found in the [Course Documents](#) table.

- Test coverage and documents can be found in the [Tests & Exam Information](#) table.

Final Exam

- Worth 50% of your course mark.
- In order to pass the course, you must earn at least 25% on the final exam.
In other words, if your final exam mark is strictly less than 25%, your course mark will be reduced (if necessary) to no more than 45.
- Exam date and room will be posted on [ACORN \(http://acorn.utoronto.ca/\)](http://acorn.utoronto.ca/).
- Exam coverage and documents can be found in the [Tests & Exam Information](#) table.

[Course Policies and References \(Course%20Policies%20&%20References\)](#)

[Course Summary \(Course%20Summary\)](#) (TBA)

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Course Documents and Important Dates

Week	Important Dates	Documents
(1) Jan 05 – Jan 09		<p>Mon-WS (https://q.utoronto.ca/courses/418976/files/41374327?wrap=1) ↓ (https://q.utoronto.ca/courses/418976/files/41374327/download?download_frd=1) [-Soln (https://q.utoronto.ca/courses/418976/files/41374326?wrap=1) ↓ (https://q.utoronto.ca/courses/418976/files/41374326/download?download_frd=1)]</p> <p>Wed-Prep (https://q.utoronto.ca/courses/418976/files/41375066?wrap=1) ↓ (https://q.utoronto.ca/courses/418976/files/41375066/download?download_frd=1) [-Soln (https://q.utoronto.ca/courses/418976/files/41375079?wrap=1) ↓ (https://q.utoronto.ca/courses/418976/files/41375079/download?download_frd=1)]</p> <p>Mon-Add [-Soln] Wed-WS [-Soln]</p>
(2) Jan 12 – Jan 16	Jan 18: last day to enrol	
(3) Jan 19 – Jan 23		
(4) Jan 26 – Jan 30	Jan 26: Term Test 1 (during your lecture time, – room TBA)	

Week	Important Dates	Documents
(5)		
Feb 02		
–		
Feb 06		
(6)	Feb 11: Term Test 2	
Feb 09	(during your lecture time,	
–	room TBA)	
Feb 13		
Feb 16	Reading Week (no	
–	lectures)	
Feb 20		
(7)		
Feb 23		
–		
Feb 27		
(8)		
Mar 02		
–		
Mar 06		
(9)	Mar 09: Term Test 3	
Mar 09	(during your lecture time,	
–	room TBA)	
Mar 13		
(10)	Mar 16: last day to drop	
Mar 16		
–		
Mar 20		
(11)	Mar 25: Term Test 4	
Mar 23	(during your lecture time,	
–	room TBA)	
Mar 27		
(12)	Apr 3: U of T closed	
Mar 30	(Good Friday)	
–		
Apr 02		
Apr 09	Final Exam	
–	(schedule and rooms on	
Apr 29	ACORN (http://acorn.utoronto.ca/))	

Tests & Exam Information


Assessment	Coverage	Documents
Term Test 1	TBA	TBA
Term Test 2	TBA	TBA
Term Test 3	TBA	TBA
Term Test 4	TBA	TBA
Final Exam	<ul style="list-style-type: none"> Comprehensive: you must be familiar with all the material covered in the course. Old Exams Collection (https://myaccess.library.utoronto.ca/login?url=https://exams.library.utoronto.ca) from the U of T Libraries 	<ul style="list-style-type: none"> Exam Cover Page (TBA) Exam Reference Sheet (TBA)

Remark Requests

- If you believe there was an error in the marking of your work — or if you just have questions about how your work was marked — please complete and submit a Remark Request directly on MarkUs (no separate form or email message is required).
- Remark requests must refer to possible errors or omissions by the marker, or ask specific questions about the feedback (or lack of feedback) you received.
- Remark requests must be received within two weeks of when the item was returned.

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Office Hours (Jan 05 – Apr 10)

Who? (Role)	Where?	When?
François Pitt (Instructor & Coordinator)	BA 3289	Tue 13:00–15:00
		Thu 13:00–15:00
	Zoom Link  (https://utoronto.zoom.us/j/89840227200) Meeting ID: 898 4022 7200 Passcode: 165165	Fri 09:30–11:30
Gary Baumgartner (Instructor)	TBA	TBA

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Course Policies and References

- [Logistics & Legalities](#)
- [Special Consideration](#)
- [Lecture Schedule](#)
- [Learning Outcomes](#)
- [Optional Related References](#)

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Logistics & Legalities

- This is an in-person course: you must be available for in-person activities (lectures and most office hours) and assessments (term tests and final exam).
- However, some office hours are held online. To join online office hours, you must be signed in to your U of T Zoom account. Log in to the [U of T Zoom portal](https://utoronto.zoom.us/) [\(https://utoronto.zoom.us/\)](https://utoronto.zoom.us/) to claim your free Zoom education license.
- Recordings will be generated automatically for all lecture sections, and can be accessed through the OCCS Student App. Recordings may not be available for all lectures (due to technical issues) and will be provided as-is. In particular, recordings will usually contain mostly silence (while the class is working on problems); this is normal. Because the ratio of students to instructors (and TAs) is very high in this course, you are strongly encouraged to attend all lectures. Make good use of this opportunity to access our support!
- Course videos and documents belong to your instructor and the University, and are protected by copyright. You are permitted to download videos and documents for your own personal academic use, but you may not copy, share, or otherwise distribute them without explicit permission from the instructor.
- Before you can access the Ed Discussion board (from the navigation menu), you must [sign up for Ed](https://edstem.org/us/join/hhSxjP) [\(https://edstem.org/us/join/hhSxjP\)](https://edstem.org/us/join/hhSxjP), using your UTOR email address (ending in @utoronto.ca or @mail.utoronto.ca). Ed Discussion does not share (or harvest) data for any third parties (for full details, see [Ed's Privacy Policy](https://edstem.org/privacy) [\(https://edstem.org/privacy\)](https://edstem.org/privacy)).
- The University of Toronto is committed to accessibility. If you require accommodations for an ongoing disability or an acute issue such as an injury, please register with [Accessibility Services](https://studentlife.utoronto.ca/service/accessibility-services-registration-and-documentation-requirements) [\(https://studentlife.utoronto.ca/service/accessibility-services-registration-and-documentation-requirements\)](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://ism.utoronto.ca/ats) [\(https://ism.utoronto.ca/ats\)](https://ism.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.
- 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](https://governingcouncil.utoronto.ca/secretariat/policies/code-student-conduct-december-13-2019) [\(https://governingcouncil.utoronto.ca/secretariat/policies/code-student-conduct-december-13-2019\)](https://governingcouncil.utoronto.ca/secretariat/policies/code-student-conduct-december-13-2019). 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.

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Special Consideration

We support two types of requests: special consideration for missed term tests, and special consideration for one-time (temporary) section changes in order to write the test. Here are examples of the situations where each request type is most appropriate.

- You should submit a request for [Missed Term Test](#) when (for example) ...
 - you get sick a few days before the test and are not feeling well enough to sit for 90 minutes and write the test;
 - you are struggling through a personal or family situation (for which you can get documentation) and are not feeling well enough to sit for 90 minutes and write the test;
 - you get sick on the morning of the test, even if you feel ready to write at a later time on the same day
 - (it is safer to submit a Missed Term Test request because we may not be able to confirm a change of lecture section in time);
 - you encounter any other emergency situation (must be unexpected and outside your control).
- You should submit a request for [One-Time Section Change](#) when (for example) ...
 - you have a work shift during your enrolled lecture time, but you are available earlier (or later) the same day;
 - you have a timetable conflict and you have requested a change of section for CSC165, but it has not been processed yet;
 - you face any other temporary, one-time situation that makes you unavailable during your enrolled lecture time, and that you can report at least five business days in advance.
- You are not eligible for special consideration when (for example) ...
 - you have a timetable conflict during your enrolled lecture time, but you have not done anything to adjust your enrolment
 - (you must change your lecture enrolment as soon as possible, please discuss your situation ASAP with an advisor in the [CS Undergraduate Office \(mailto:cs.undergrad@utoronto.ca\)](mailto:cs.undergrad@utoronto.ca));
 - you have a test in another course at the same time as your enrolled lecture time
 - (tests scheduled during regular class time have precedence, so it is the responsibility of the other course to provide accommodation);
 - you don't feel completely ready for the test (but you are not sick and have no conflict with your lecture time)
 - (this is not an unexpected situation outside your control);
 - you have a test in another course immediately before (or after) your enrolled lecture time
 - (this is not considered an actual conflict).

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Missed Term Test

- Fill out and submit the Missed Term Test Request Form (TBA), including supporting documentation.
- Accepted forms of documentation include Absence Declaration (via ACORN), or the University's Verification of Student Illness or Injury (VOI) form, or letters from your College Registrar or Accessibility Services. Please read all the details carefully on the [Student Absences \(https://www.artsci.utoronto.ca/absence\)](https://www.artsci.utoronto.ca/absence) page from the Faculty of Arts & Science.
- If you face a situation that is particularly disruptive (especially if it is likely to affect more than one course), please also contact your [College Registrar \(https://future.utoronto.ca/current-students/registrars\)](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. They can also help you document your situation and contact each of your course instructors on your behalf, to simplify the process of requesting accommodations.
- (TBA: Information about how we handle missed tests.)

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One-Time (Temporary) Section Change

- Fill out and submit the Term Test Section Change Request Form (TBA).
- You do not have to submit any documentation, but you must provide the contact information (name and email or phone number) of someone who can verify that you have a conflict with your enrolled lecture time on the day of the test.
- IMPORTANT: You CANNOT use this form to request a lecture section change for EVERY test! If you have an ongoing timetable conflict, you must work with advisors in the [CS Undergraduate Office](https://web.cs.toronto.edu/undergraduate/academic-advising) [↗ \(https://web.cs.toronto.edu/undergraduate/academic-advising\)](https://web.cs.toronto.edu/undergraduate/academic-advising) to change your enrolment.

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Lecture Schedule

What? (Section)	Who? (Instructor)	Where? (Room)	When? (Day & Time)
LEC 0101	François Pitt	EM 001	Mon 09:00–11:00
			Wed 09:00–11:00
LEC 0201	Gary Baumgartner	ES 1050	Mon 11:00–13:00
		SS 2135	Wed 11:00–13:00
LEC 0301	François Pitt	FE 114	Mon 13:00–15:00
		PB B250	Wed 13:00–15:00
LEC 0401	Gary Baumgartner	AH 400	Mon 15:00–17:00
		AH 100	Wed 15:00–17:00
LEC 5101	Gary Baumgartner	MP 203	Mon 18:00–20:00
			Wed 18:00–20:00

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Learning Outcomes

By the end of this course, you will be able to ...

- Express statements and problems using precise mathematical language.
- Evaluate the correctness and style of mathematical proofs.
- Create a mathematical proof or disproof of a given statement, choosing from among different proof techniques.
- Compare functions asymptotically.
- Determine, and prove, asymptotic bounds on the time complexity of non-recursive algorithms.

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Optional Related References

There is NO required textbook for the course. All necessary documents are provided in the [Course Documents](#) table

- This course assumes preparation similar to that provided by the [Ontario Grade 12 “Advanced Functions” curriculum](#) [↗ \(https://www.edu.gov.on.ca/eng/curriculum/secondary/math1112currb.pdf#page=87\)](https://www.edu.gov.on.ca/eng/curriculum/secondary/math1112currb.pdf#page=87) (and its prerequisites). You can find an overview of some of the common notation and results in pages 13–17 of [older notes by Prof. David Liu](#) [↗ \(https://q.utoronto.ca/courses/418976/files/41291548?wrap=1\)](https://q.utoronto.ca/courses/418976/files/41291548?wrap=1) [↓ \(https://q.utoronto.ca/courses/418976/files/41291548/download?download_frd=1\)](https://q.utoronto.ca/courses/418976/files/41291548/download?download_frd=1) .
- [CSC110H1 Course Notes](#) [↗ \(https://www.teach.cs.toronto.edu/~csc110y/fall/notes/\)](https://www.teach.cs.toronto.edu/~csc110y/fall/notes/), for reference.
- Susanna Epp, *Discrete Mathematics with Applications*. Fifth Edition, Cengage Learning, 2020. (Contains examples and additional practice problems about each topic in the course, and beyond.)
 - Borrow the book from the [U of T Library](#) [↗ \(https://librarysearch.library.utoronto.ca/permalink/01UTORONTO_INST/14bjeso/alma991107278006806196\)](https://librarysearch.library.utoronto.ca/permalink/01UTORONTO_INST/14bjeso/alma991107278006806196) .
 - Purchase the book from the [U of T Bookstore](#) [↗ \(https://www.uoftbookstore.com/adoption-search-results?ccid=8746854&itemid=38792\)](https://www.uoftbookstore.com/adoption-search-results?ccid=8746854&itemid=38792) . You can also get an eBook version.
 - [Discrete Mathematics on Cengage.ca](#) [↗ \(https://www.cengage.ca/c/discrete-mathematics-with-applications-5e-epp/9781337694193\)](https://www.cengage.ca/c/discrete-mathematics-with-applications-5e-epp/9781337694193) — use coupon code CengageW22592 for 10% off when you order directly from Cengage (the code is entered on the shipping and payment details page when you complete your order).

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(TBA: details of test times in the Course Summary.)

Course Summary:

Date	Details	Due
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