

# CSC311H1S 20241 (All Sections): Introduction to Machine Learning



## CSC 311 H1S Introduction to Machine Learning University of Toronto, St. George Campus, Winter 2024

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### Your Instructor

Hi! I am Professor Alice Gao. I will be your instructor for this course. My pronouns are she/her/hers. Feel free to call me Professor, Professor Gao or Alice. I will answer to all three.

I am an assistant professor, teaching stream in the computer science department. This is my second year at UofT, and I am enjoying it very much! I have been teaching third-year CS courses on Intro to AI (CSC384) and Intro to ML (CSC311). If you enjoy this course, please consider taking another one with me! I would love the chance to get to know you better! Besides teaching, I also work on research projects on computer science education. If you want to learn about research, consider taking a CSC494/495 course with me. We will work on a research project and learn something together!

Take a look at [my website](https://www.cs.toronto.edu/~axgao/)  (<https://www.cs.toronto.edu/~axgao/>) for more information on my past teaching experience, research projects, and instructions on how to request a reference letter from me (read this now if you are interested in pursuing graduate studies!). You can also find my website by googling "alice gao uoft."

## My Contact Information

My email address is [ax.gao@utoronto.ca](mailto:ax.gao@utoronto.ca) (<mailto:ax.gao@utoront>). I strongly advise NOT emailing me regarding this course since I get a lot of emails on various matters (teaching, research, service, etc.). The best way to reach me is to *attend my office hours* (described below) or *send a message to the course email account*. See the "Seeking Help" section below for details.

My office is in [Bahen Center](https://goo.gl/maps/dNEP1wq7vWkDcFi66)  (<https://goo.gl/maps/dNEP1wq7vWkDcFi66>) 4240. If my door is open, feel free to come and chat with me.

## Teaching Assistants

I am fortunate to have nine excellent teaching assistants working with me this term. They will hold office hours, answer Piazza questions, and invigilate and mark your term tests and the final exam. We will post the TA office hour information on Piazza throughout the term. Please talk to the teaching assistants. They are eager to help you.


By the way, your TAs are graduate students in computer science. If you are (even remotely) interested in pursuing graduate studies, you might want to chat with them. They should have excellent insights into what graduate school is all about.

## Seeking Help

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The teaching assistants and I are ready and eager to help you inside and outside of class. Please remember that seeking help is not a sign of weakness. To the contrary, we encourage you to seek help from us early and often so that we can help you succeed in this course. You can get in touch with us through the following channels.

### Help and Support Resources

Platform	Descriptions
<a href="https://piazza.com/utoronto.ca/winter2024/csc3112024winter/home">Piazza</a> 	Piazza is one of the best ways of reaching the course staff. It gives you the flexibility to ask a question anywhere, anytime. Moreover, all the students in the course can benefit

**Platform****Descriptions**

from your conversation with the course staff. We encourage you to post your questions on Piazza publicly. However, please make your post private if your question contains sensitive information (e.g., hints for assignments/tests or personal information).

The teaching assistants and I will aim to respond to your Piazza posts within 48 business hours. Note that if you post a question outside of business hours, we cannot guarantee responding to your question until the next business day.

We will make *important announcements on Piazza* rather than Quercus.

See the [Tips for Success](#) on "Check Announcements Regularly" and "Search Before Post."

**Professor**  
**Office Hours**

I have set aside three weekly hours to meet with you. Feel free to chat with me about this course, my experience, or anything else I can help you with. If there are a lot of students (and there will be when a deadline is near =), I will prioritize answering course-related questions.

Prof Gao Office Hours

Day	Time	Location
Tuesday	4-5 pm	Bahen 4240
Wednesday	3-5 pm	Bahen 4240

**Platform****Descriptions****TA  
Q&A Hours**

The TAs will hold in-person and online office hours to answer your questions. Each TA will specialize in answering questions for one topic so that they can provide the best help for you. The in-person office hours will happen in the Help Centre (BA 2270). The online office hours will occur on Zoom. The TA office hours will not follow a regular schedule. We will announce the TA office hour information on Piazza.

**Course  
email address**

[csc311-2024-01@cs.toronto.edu](mailto:csc311-2024-01@cs.toronto.edu)  
(<mailto:csc311-2024-01@cs.toronto.edu>)

If you have an administrative issue, please message us at the course email address above. However, if you have a remark request or special consideration request, it is sufficient to fill out the respective online form. Please avoid sending us an email unless you must provide information that cannot be included in the form responses.

## Course Description

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In this course, you will learn about the fundamentals of machine learning. I have designed this course to achieve the *course outcomes* below.

This course aims *to combine theory and practice*. You will learn about the theory in lectures and demonstrate your understanding of the theory on the term tests and the final exam. Moreover, you will

apply the theory to solve realistic problems by completing the labs and the project.

## Course Outcomes

By the end of the course, students will be able to apply supervised and unsupervised learning models to solve machine learning problems. Models covered typically include linear regression, logistic regression, probabilistic models (Naive Bayes), decision trees, neural networks, k-means clustering, expectation-maximization, and principal component analysis. In particular, students will:

- Understand and apply the mathematical techniques used in machine learning models, particularly how to turn a learning problem into an optimization problem and solve that optimization problem (e.g., via gradient descent or other methods)
- Use numerical computing libraries (e.g., NumPy) to build and analyze models; analyze and prepare data for modelling.
- Apply hyperparameter tuning and choose models by evaluating model performance considering the bias-variance tradeoff.
- Evaluate model results on real-world data; communicate the performance and limitations of a model.
- Understand and communicate ethical considerations in deploying a model, including the concerns related to algorithmic fairness.

## Recommended Textbook

There is no required textbook. However, specific readings will be recommended from various sources, primarily from "The Elements of Statistical Learning", Second Edition, by Hastie, Tibshirani and Friedman.

## Course Schedule

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I have compiled a course schedule for you below. This schedule outlines all the lectures, labs, assignment due dates, and term test dates for the whole term.

*I highly recommend that you take some time to put all the important dates in your calendar right now.*

See the [Tips for Success](#) for more details.

[CSC311 Winter 2024 Course Schedule \(https://q.utoronto.ca/courses/337286/files/29733452?wrap=1\)](https://q.utoronto.ca/courses/337286/files/29733452?wrap=1) [↓](#)  
([https://q.utoronto.ca/courses/337286/files/29733452/download?download\\_frd=1](https://q.utoronto.ca/courses/337286/files/29733452/download?download_frd=1))

[Minimize File Preview](#)

Gaussian Discriminant Analysis	Lec 8.1		Lec 8.2		@11am E @2pm E
<b>10</b> Week 9 Clustering, EM Algorithm	<b>11</b> Lec 9.1	<b>12</b>	<b>13</b> Lec 9.2	<b>14</b>	<b>15</b> Week 9 I
<b>17</b> Week 10 Principal Component Analysis	<b>18</b> Lec 10.1	<b>19</b> Week 9 Lab Due	<b>20</b> Lec 10.2	<b>21</b>	<b>22</b> Week 10
<b>24</b> Week 11 Embedded Ethics	<b>25</b> Lec 11.1	<b>26</b> Week 10 Lab Due	<b>27</b> Lec 11.2 by Steve Coyne	<b>28</b>	<b>29</b> Good Fr Holiday
<b>31</b>					

## Grading Scheme

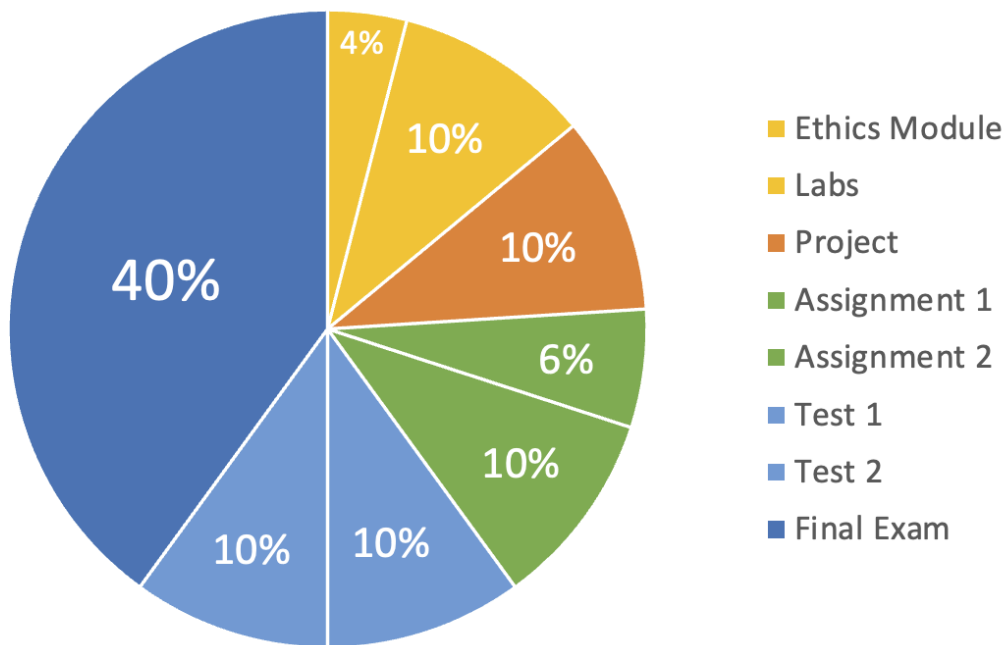
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Please take a careful look at the grading scheme chart below.

Since the final exam covers all the topics in the course, you must obtain a *minimum grade of 40%* on the final exam to *pass* this course. If your final exam grade is less than 40%, the maximum final grade you

can obtain for the course will be 47%.

## Grading Scheme



Let's take a look at the course components individually.

### Scheduled Time Slots

Each section has three scheduled time slots each week, as shown below. For each week, we will have 2 hours of lectures on Monday and Wednesday and 1 hour of lab on Friday.

Scheduled Time Slots and Locations

Section	Time	Monday Lecture	Wednesday Lecture	Friday Lab
<b>101</b>	11 am - 12 pm	MC 252	MC 252	MC 252
<b>201</b>	2 pm - 3 pm	WB 116	WB 116	WB 116

### Lectures

We will roughly cover a different topic in lectures each week. See the course schedule above for the weekly lecture topics.

Lecture recordings will be generated and posted automatically for the 11 am - 12 pm lectures.

*Remember that course videos and materials belong to your instructor and the University and are protected by copyright. You are permitted to download videos and materials for your own personal academic use, but you may not copy, share, or otherwise distribute them without explicit permission from the instructor.*

## Ethics Module


In week 11, we will cover an ethics module. This module is worth 4% of your final grade.

The Monday lecture will discuss recommender systems from the computer science perspective. The Wednesday lecture will discuss recommender systems from the ethics perspective. You will complete a survey before the lectures and a survey after the lectures. In addition, you will write a short reflection based on some readings and the lecture contents. See the grading scheme below.

Grading Scheme for Ethics Module

Component	Weight	Marking Criteria
<b>Pre-Module Survey</b>	1%	Marked for completion only.
<b>Post-Module Survey</b>	1%	Marked for completion only.
<b>Written Reflection</b>	2%	Marked for a good-faith effort.

## Labs

As part of this course, you will complete roughly six programming labs. These labs are opportunities to implement machine learning models with help from your TAs. You may work with a partner for the labs. The lab exercises are intended to be completed during the lab sessions. However, to account for unforeseeable issues, the lab deadlines are set to NOON (12:00 p.m.) ET on Tuesdays. You will submit the labs on [MarkUs](https://markus.teach.cs.toronto.edu/2024-01)  (<https://markus.teach.cs.toronto.edu/2024-01>). Note that the due time is NOON, not midnight. =)


## Project

For the project, you will attempt to solve a Netflix-competition-style matrix completion problem. The goal is to predict, in the context of a personalized education platform, whether a student will correctly answer a diagnostic question. In groups of 2-4, you will implement and evaluate several algorithms from the course and then propose and evaluate an extension to one of these algorithms.

We will post detailed instructions at the beginning of March. You will have roughly the last four weeks of the course to work on the project.

## Assignments

There will be two written assignments. The first assignment covers the topics in weeks 1-2. The second assignment covers the topics in weeks 3-6. The main purpose of these assignments is to help you prepare for the tests and the final exam. The assignments contain theoretical questions only.

The assignments will be posted on Quercus and will be due at NOON on Thursdays on [MarkUs](https://markus.teach.cs.toronto.edu/2024-01)  (<https://markus.teach.cs.toronto.edu/2024-01>). Each assignment is due during the week before the week



of the test. See the course schedule above for the assignment due dates. You can request a free 2-day extension until NOON on Sundays. (See the special consideration policy below for details.) We aim to post the assignment solutions on Monday so that you can use them to prepare for the tests.

## Tests

There will be two tests. Each test is 50 minutes long. You can think of the two tests as roughly equivalent to one midterm worth 20%.

The tests will occur *on Fridays during lecture time slots*. See the course schedule above for the test dates.

You can bring one aid sheet (one-sided 8.5" by 11") to each test.

*Why two tests instead of one midterm?* The main purpose of having two tests instead of one midterm is *to motivate you to study regularly!* See "Study Regularly" in the [Tips for Success](#) section below.

*How do I prepare for tests?* The tests contain *theoretical* questions only. There will not be programming questions. You can expect two types of questions on the test. The conceptual questions test your understanding of the properties of the algorithms. The execution questions ask you to show the steps of executing an algorithm to solve a problem. Education research has shown that *the best way to prepare for tests is to solve practice problems (ideally under time pressure)*. See "Solve Practice Problems" in the [Tips for Success](#) section below.

## Final Exam

The final exam will cover all the topics in the course. For any topics already covered in the two tests, the final exam will likely include more challenging questions. I encourage you to use the past exams in the [Old Exam Repository \(https://login.library.utoronto.ca/index.php?url=https://exams.library.utoronto.ca\)](https://login.library.utoronto.ca/index.php?url=https://exams.library.utoronto.ca) since doing practice questions is one of the best ways of preparing for an exam.

You can bring one aid sheet (two-sided 8.5" by 11") to the final exam.

The final exam schedules will be available at the end of February on [the A&S page \(https://www.artsci.utoronto.ca/current/faculty-registrar/exams-assessments/exam-assessment-schedule\)](https://www.artsci.utoronto.ca/current/faculty-registrar/exams-assessments/exam-assessment-schedule).

## Research Surveys

Throughout this course, we will be conducting five surveys to better understand your experience in this course. There will be a 1% bonus credit for completing these surveys (0.2% for each survey). We will be seeking your consent to use these surveys for research purposes.

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## Course Policies

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### Test Attendance Policy

You must *attend each test in your registered section*. If you must attend the test in another section due to extenuating circumstances, please email us at the course email account.

## Special Consideration Policies

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If you need an assignment deadline extension, cannot complete an assignment, or cannot write a test due to extraordinary circumstances beyond your control, please submit a special consideration request as soon as possible. Special consideration will be evaluated on a case-by-case basis and is not granted automatically. Sometimes, we cannot grant you exactly the special consideration you seek.

### Special Consideration Policies for Labs:

- We created the labs as low-stakes opportunities for you to apply the machine learning theory in practice. Because the labs occur weekly, it would be challenging to process special consideration requests in time. Therefore, we will not accept late submissions for labs. Instead, we will drop the lowest lab from your final lab grade.

### Special Consideration Policies for Tests:

- If you *miss a test* for approved reasons, we will shift the test's weight to the final exam.

### Special Consideration Policies on Assignments:

- *Minor Deadline Extension*: If you require a minor (2-day) deadline extension for any assignment, simply fill out the special consideration request form, and we will grant the request. You may use this policy on as many assignments as you require. We created this policy because we recognize that unexpected problems, illness, and disability-related barriers sometimes make it difficult to submit assignments on time.
- *Major Deadline Extension*: If you require a *major (7-day) deadline extension*, we will grant your request as long as you provide reasonable supporting documentation.
- *Cannot Complete an Assignment*: If you cannot complete an assignment by the deadline and provide reasonable supporting documentation, we will shift the assignment's weight to the final exam.

### Special Consideration Policies for Missing Multiple Major Assessments (Tests and Assignments):



- After missing two major assessments (including tests and assignments), you have missed valuable opportunities to get feedback and are possibly in danger of failing the course. Therefore, we will require you to make an appointment with your [College Registrar \(https://registrar.utoronto.ca/list-of-faculty-colleges-and-campus-registrar-offices/\)](https://registrar.utoronto.ca/list-of-faculty-colleges-and-campus-registrar-offices/) to create a concrete plan for the rest of the term. We *will require confirmation from your College Registrar* that you have met with them and that your plan for the rest of the term is realistic *before* we approve special consideration requests for any major assessments.

### Special Consideration Policies if you are registered with Accessibility Services:

- Your accommodation letter will allow for an extension of up to 7 full days. However, due to the incremental nature of CS courses, granting such a long extension from the onset may cause you to fall behind and be disadvantaged. As such, we will start by suggesting an initial 3-day extension. We will grant the 7-day extension later if necessary.

Please complete and submit the appropriate special consideration request form below. We will aim to respond to you within 48 business hours.

### Special Consideration Request Forms

Course Component	Form Link
Test	<a href="https://forms.office.com/r/GxCUF8ND5U">special consideration request form for term tests</a>  ( <a href="https://forms.office.com/r/GxCUF8ND5U">https://forms.office.com/r/GxCUF8ND5U</a> )
Assignment	<a href="https://forms.office.com/r/yHdJTkeeMe">special consideration request form for assignments</a>  ( <a href="https://forms.office.com/r/yHdJTkeeMe">https://forms.office.com/r/yHdJTkeeMe</a> )

Make sure to include supporting documentation with your request. Please read the new [Student Absences](https://www.artsci.utoronto.ca/current/academics/student-absences) (<https://www.artsci.utoronto.ca/current/academics/student-absences>) page from the Faculty of Arts & Science carefully. It contains detailed information on the recognized forms of documentation and the circumstances under which you should use the Absence Declaration tool.

Below are some **invalid** reasons to apply for a special consideration request. These reasons are invalid because the circumstances are **neither unexpected nor outside of your control**.

- Heavy course load
- Multiple assignments are due in the same week.
- Multiple tests are scheduled in the same week.
- I need to catch up on missed work.

If you have difficulty managing stress and time, don't hesitate to contact your College Registrar, who can suggest wellness counselling, academic advising, and/or learning strategist services.

### Remark Requests

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If you believe there was an error in the marking of an assignment or a test, or if you simply have questions about how we marked your work, you may submit a remark request. We do **NOT accept remark requests in the first 24 hours after the grades are released**. The reason is that you should spend this time reading and understanding your assessment results, the sample solutions and the marking scheme.



Below are some examples of *valid* reasons for requesting a remark.

- My answer was marked incorrectly based on the marking scheme.

- There was an error in adding up the marks.
- I should get more marks based on the marking scheme.
- I interpreted the question differently, which caused my answer to differ from the sample solutions.

After 24 hours, you will have **one week** to submit a remark request by filling out the appropriate form below. Please provide a detailed justification --- this will help us process your request efficiently.

### Remark Request Forms

Course Component	Form Link
Test	<a href="https://forms.office.com/r/ejwxuR9KwG">remark request form for tests</a>  ( <a href="https://forms.office.com/r/ejwxuR9KwG">https://forms.office.com/r/ejwxuR9KwG</a> )
Assignment	<a href="https://forms.office.com/r/x8iKBXZf7H">remark request form for assignments</a>  ( <a href="https://forms.office.com/r/x8iKBXZf7H">https://forms.office.com/r/x8iKBXZf7H</a> )

We will process all the remark requests after the one week is over.

## Academic Integrity

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**All work you submit must be your own.** It is an academic offence to copy the work of someone else *unless you explicitly and clearly attribute the work to its source*. This includes words, sentences, entire documents, and even ideas. Whether you copy or let someone else copy, it is an offence. Academic offences are taken very seriously and can have correspondingly serious consequences.

At the same time, we want you to benefit from working with other students. For the programming assignments in this course, you cannot submit the same code as another student. However, you can discuss how to solve the problems with anyone you wish. The purpose of the assignments is to allow you to practice implementing an algorithm to solve a real problem. Even if you did not figure out all the implementation yourself, you could still receive full credit for writing up a program *with a list of ALL sources you consulted*: textbooks, web pages, students with whom you discussed the problem, etc. Include all the citations in the Python files that you submit.

You are also welcome to discuss course material and technology related to assignments with each other, and we encourage you to do so. For example, you may work through examples that help you understand course material or new technology or help each other configure your system to run a supporting piece of software.

Please take a few minutes to consult the [Academic Integrity at U of T](https://www.academicintegrity.utoronto.ca/) (<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.

## Generative AI Policies

In this course, you may use generative artificial intelligence (AI) tools (like ChatGPT and GitHub Copilot) as learning aids and to help complete the programming assignments. *You will NOT be permitted to use generative AI on the term tests or final exam.* While some generative AI tools are currently available for free in Canada, these tools have not been vetted by the University of Toronto. They may not meet University guidelines or requirements for privacy, intellectual property, security, accessibility, and records retention. Generative AI may produce content that is incorrect, misleading, or inconsistent with the expectations of this course. They may even provide citations to sources that don't exist — and submitting work with false citations is an academic offence. These tools may be subject to service interruptions, software modifications, and pricing changes during the semester.

**Generative AI is NOT required to complete any aspect of this course**, and we caution you not to rely on these tools to complete your coursework. Instead, we recommend treating generative AI as a supplementary tool only for exploration or drafting content — **always remembering to cite any resource you used to generate your answers**. Ultimately, you (and not any AI tool) are responsible for your learning in this course and for all the work you submit for credit. It is your responsibility to evaluate the content generated critically and to assess your learning independent of generative AI tools regularly. Overreliance on generative AI may give you a false sense of how much you have learned, which can lead to poor performance in this course, later courses, or your future career.

## Tips for Student Success

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### Tips for Student Success

Title	Details
<b><i>Put Important Dates In Your Calendar at the Beginning of the Term</i></b>	I highly recommend that you take a few minutes to record the important dates (such as test dates and assignment due dates) in your calendar. Also, I recommend you do so for all the courses you are taking this term. Once you have completed this, take a careful look at your calendar. Do you have any test times or assignment due dates that are conflicting or close to each other? I suggest planning for these times in advance so you can complete these assessments to the best of your abilities without leaving the work to the last minute.
<b><i>Check Announcements Regularly</i></b>	We will make important announcements on Piazza. I prefer Piazza to Quercus for announcements since Piazza provides a way for you to respond to the announcement immediately. I strongly suggest you check Piazza a few times each week to ensure you know the important announcements.

Title	Details
<b>Search Before Post</b>	Before posting a question on Piazza, please search to see if other students have asked similar questions. Doing this is especially important when the number of questions skyrockets near an assignment deadline. If a student has asked a similar question already, we would prefer that you post a follow-up question rather than creating a new post.
<b>Study Regularly</b>	I recommend viewing the tests as learning opportunities rather than considering them exams. The purpose of having one test every 2-3 weeks is to <i>motivate you to study regularly</i> . The tests are designed to be <i>low-stakes</i> and <i>low-stress</i> opportunities to <i>get feedback</i> on your learning.
<b>Solve Practice Problems</b>	The tests contain <i>theoretical</i> questions only. You can expect two types of questions: conceptual and execution. The conceptual questions will mostly test you on the properties of the algorithms, whereas the execution questions will ask you to solve a problem by executing an algorithm. For conceptual questions, I recommend summarizing the algorithm properties in your own words using flashcards or concept maps. For execution questions, I recommend practising executing an algorithm. Education research has shown that the best way to prepare for a test is to solve practice problems. I recommend practising under time pressure. Doing this will ensure that you can solve the problems correctly and reasonably quickly.

## Student Support Resources

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### [UofT Mental Health Portal \(https://mentalhealth.utoronto.ca/\)](https://mentalhealth.utoronto.ca/)

If you go into Explore Our Care Model, One-On-One Sessions, View Services and Resources, you will get to [Mental Health Clinical Services \(https://studentlife.utoronto.ca/service/mental-health-clinical-services/\)](https://studentlife.utoronto.ca/service/mental-health-clinical-services/). The first option allows you to book [same-day counselling appointments \(https://studentlife.utoronto.ca/service/same-day-counselling-appointment/\)](https://studentlife.utoronto.ca/service/same-day-counselling-appointment/). Book an appointment by calling Health & Wellness at 416-978-8030 (select option 5).

If you are in a crisis, UofT Telus Health Student Support (formerly U of T My SSP) provides *real-time, confidential, 24-hour* support for any school, health, or general life concern at no cost to you. Call 1-844-451-9700 or 001-416-380-6578 (if outside of North America).

You can also contact the Good2Talk Student Helpline (Call 1-866-925-5454 or text GOOD2TALKON to 686868).

## [Accessibility Services \(https://studentlife.utoronto.ca/service/accessibility-services-registration-and-documentation-requirements/\)](https://studentlife.utoronto.ca/service/accessibility-services-registration-and-documentation-requirements/)

Check out the [Accessibility Services registration & documentation requirements – St. George Campus \(https://studentlife.utoronto.ca/service/accessibility-services-registration-and-documentation-requirements/\)](https://studentlife.utoronto.ca/service/accessibility-services-registration-and-documentation-requirements/). Register with Accessibility Services before 5 p.m. on Friday, October 13, 2023, for final assessment accommodations.

## [Student Life Portal \(https://studentlife.utoronto.ca/\)](https://studentlife.utoronto.ca/)

Check under [Health and Wellness \(https://studentlife.utoronto.ca/department/health-wellness/\)](https://studentlife.utoronto.ca/department/health-wellness/) for a range of programs and services.

Take a look at the [Academic Success \(https://studentlife.utoronto.ca/task\\_levels/academic-success/\)](https://studentlife.utoronto.ca/task_levels/academic-success/) section. There are many resources on topics such as [Better note-taking \(https://studentlife.utoronto.ca/task/better-note-taking/\)](https://studentlife.utoronto.ca/task/better-note-taking/), [Studying, concentration and memory \(https://studentlife.utoronto.ca/task/studying-concentration-and-memory/\)](https://studentlife.utoronto.ca/task/studying-concentration-and-memory/), [Goal setting and motivation \(https://studentlife.utoronto.ca/task/goal-setting-and-motivation/\)](https://studentlife.utoronto.ca/task/goal-setting-and-motivation/), [Reboot after an academic setback \(https://studentlife.utoronto.ca/task/reboot-after-an-academic-setback/\)](https://studentlife.utoronto.ca/task/reboot-after-an-academic-setback/), etc. They also offer a free online course on [5 Keys to Succeed at UofT \(https://studentlife.utoronto.ca/program/5-keys-to-succeed-at-u-of-t-online-course/\)](https://studentlife.utoronto.ca/program/5-keys-to-succeed-at-u-of-t-online-course/).

## [Recognized Study Groups \(https://sidneysmithcommons.artsci.utoronto.ca/recognized-study-groups/\)](https://sidneysmithcommons.artsci.utoronto.ca/recognized-study-groups/)

Recognized Study Groups (RSG) are student-led study groups of up to eight classmates enrolled in the same Faculty of Arts & Science course. RSGs can meet online or in person on the St. George Campus. You can apply to lead or join an RSG at the start of each academic term.