# CSC311H1S 20251 (All Sections): Introduction to Machine Learning

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# CSC311H1S Introduction to Machine Learning

# University of Toronto, St. George Campus, Winter 2025

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## Your Instructor

Hi! I am Professor Alice Gao (she/her). I will be your instructor for this course. Feel free to call me Professor, Professor Gao or Alice.

I am an assistant professor, teaching stream in the computer science department. This is my third year at UofT, and I am enjoying it very much! I have been regularly teaching Intro to AI (CSC384) and Intro to ML (CSC311). I am teaching Deep Learning (CSC413) for the first time this term. If you enjoy this course, please consider taking another one with me. I'd love to get to know you better. If you're interested in research, consider taking CSC494/495 with me. We'll work on a research project and learn

together. For more information on my teaching experience, research projects, and how to request a reference letter, visit **my website (https://www.cs.toronto.edu/~axgao/)** .

Please do not email me regarding this course. Instead, attend my office hours or send a message to the course email account (see the "Seeking Help" section below for details). My office is in Bahen 4240. If you want to chat, I recommend making an appointment beforehand.

## 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.

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## 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 |
|---|---|

| Platform | Descriptions |
|---|---|
| **Piazza** | 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 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).<br><br>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.<br><br>We will make *important announcements on Piazza* rather than Quercus.<br><br>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.<br><br>Prof Gao Office Hours<br><br>**Day** / **Time** / **Location**<br>Wednesdays / 3:30 - 5 pm / Bahen 7172<br>Thursdays / 1:30 - 3 pm / Bahen 3201<br><br>These will be combined office hours for CSC311 and CSC413. |
| **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. |

| Platform | Descriptions |
| --- | --- |
| **Course email address** | csc311-2025-01@cs.toronto.edu (mailto:csc311-2025-01@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.

Course Schedule

| Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|
| Mon, Jan 6<br>Week 1:<br>ML Fundamentals | | Wed, Jan 8 | | Fri, Jan 10<br>Lab 01<br>Nearest Neighbours |
| Mon, Jan 13<br>Week 2:<br>Decision Trees<br>**Lab 01 due 1pm** | | Wed, Jan 15 | | Fri, Jan 17<br>Lab 02<br>Decision Trees |
| Mon, Jan 20<br>Week 3:<br>Linear Regression<br>**Lab 02 due 1pm** | | Wed, Jan 22 | Thu, Jan 23<br>**Project Data Collection due 1pm**<br>**Ethics Pre-Module Survey due 1pm** | Fri, Jan 24<br>Lab 03<br>Linear Regression |
| Mon, Jan 27<br>Week 4:<br>Logistic Regression<br>**Lab 03 due 1pm** | | Wed, Jan 29 | | Fri, Jan 31<br>Lab 04<br>Logistic Regression |
| Mon, Feb 3 | | Wed, Feb 5 | | Fri, Feb 7 |

| | | | | |
|---|---|---|---|---|
| Week 5:<br>Multi-layer Perceptrons<br>**Lab 04 due 1pm** | | | | **Test 1 (Weeks 1-4)**<br>**11am HA 401/403**<br>**2pm BA 1170/1200/1220** |
| Mon, Feb 10<br>Week 6: Backpropagation | | Wed, Feb 12 | Thu, Feb 13<br>**Project Team due 1pm** | Fri, Feb 14<br>Lab 06<br>Multi-layer Perceptrons |
| Mon, Feb 17<br>**Family Day** | **Reading Week** | Wed, Feb 19<br>**Reading Week** | **Reading Week** | Fri, Feb 21<br>**Reading Week** |
| Mon, Feb 24<br>Week 7:<br>Naive Bayes<br>**Lab 06 due 1pm** | | Wed, Feb 26 | | Fri, Feb 28<br>Lab 07<br>Bias-Variance Decomposition |
| Mon, Mar 3<br>Week 8:<br>Gaussian Discriminant Analysis<br>**Lab 07 due 1pm** | | Wed, Mar 5 | | Fri, Mar 7<br>Lab 08<br>Naive Bayes |
| Mon, Mar 10<br>Week 9:<br>Clustering, K-Means<br>**Lab 08 due 1pm** | | Wed, Mar 12<br>Gaussian Mixture Model | | Fri, Mar 14<br>Lab 09<br>Clustering |

| | | | |
|---|---|---|---|
| Mon, Mar 17<br>Week 10:<br>Principal Component Analysis<br>**Lab 09 due 1pm** | | Wed, Mar 19 | Fri, Mar 21<br>**Test 2 (Weeks 5-9)**<br>**11am WI 1016/1017**<br>**2pm EX 100** |
| Mon, Mar 24<br>Week 11:<br>Ethics Module | | Wed, Mar 26 | Fri, Mar 28<br>No Lab<br>**Ethics Written Reflection due at 1pm**<br>**Ethics Post-Module Survey due 1pm** |
| Mon, Mar 31<br>Week 12:<br>Reinforcement Learning | Tue, Apr 1<br>**Project Prediction Script and Report due at 1pm** | Wed, Apr 2<br>Conclusion | Fri, Apr 4 |

## 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

| Component | Weight |
|---|---|
| Ethics Module | 4% |
| Labs | 11% |

| | |
|---|---|
| Project | 15% |
| Test 1 | 15% |
| Test 2 | 15% |
| Final Exam | 40% |

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. 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 |
|---|---|---|---|---|
| **101** | 11 am - 12 pm | BA 1180 | MC 252 | KP (Koffler House) 108 |
| **201** | 2 pm - 3 pm | MC 102 | BA 1170 | BA 1130<br>Fri, Jan 24 in MP 102 |

## 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 all the 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 | Due Date | Marking Criteria |
|---|---|---|---|

| | | | |
|---|---|---|---|
| **Pre-Module Survey** | 1% | 11:59pm ET<br>TBD, 2025 | Marked for completion only. |
| **Post-Module Survey** | 1% | 11:59pm ET<br>TBD, 2025 | Marked for completion only. |
| **Written Reflection** | 2% | 11:59pm ET<br>TBD, 2025 | Marked for a good-faith effort. |

## Math Prepare Quizzes and Videos

In the Quizzes section, we have made several "Math Prepare" quizzes available. The math prepare quiz includes 2-4 multiple choice questions on key mathematical concepts that you need to be able to fully understand the lecture. Most of this content will be a review of pre-requisite concepts. Each multiple-choice question will be accompanied by a video to help you review the concept.

These quizzes are **not worth any marks**. Rather, they are additional **resources to help you prepare for the upcoming lectures**. We strongly encourage you to attempt these quizzes and watch the corresponding videos before the Monday lecture. You can attempt each quiz as many times as you like.

## Practice Problems

Each week, we will provide practice problems that resemble the types of questions you might encounter on tests and the final exam. You are welcome to submit **the solutions to two problems** for feedback every week. These submissions **will receive feedback only** and **will not be graded**. We will aim to return your work with feedback promptly so that they can help you prepare for the tests and the final exam.

## Labs

Throughout this course, you will complete approximately **8 programming labs**. These labs are a great opportunity to implement machine learning models with the support of your TAs. You have the option to **work with a partner**, who can be from a different section. The exercises are designed to be completed during the lab sessions, but **attendance is optional**. One TA will supervise both sections for the same lab, and you are encouraged to attend the lab sessions to receive help from the TA. Feel free to attend either lab section as long as space is available.

To accommodate any unforeseen issues, lab deadlines are set for **1 PM ET on Mondays**, and you will submit your work on **MarkUs** (The new link to MarkUs is given below).

**MarkUs: https://markus.teach.cs.toronto.edu/markus/courses**

We will **drop your 2 lowest lab grades**, so your final lab grade will be based on your best 6 out of the 8 **labs.**

## Project (ML Challenge)

As part of the CSC311 Machine Learning Challenge, you will work in **teams of 3-4 students** to develop a classifier that predicts which food item a student refers to based on their responses. You will receive a dataset containing student responses about several popular food items. Your objective is to create a model that performs well on an unseen test set, which will be compiled from responses by TAs and instructors. This project will provide practical experience in data collection, model building, and performance evaluation.

The project consists of several components with specific deadlines (see the course schedule table above). Your final grade for the project will be based on the quality of your model and the thoroughness of your report. We encourage you to start early and communicate regularly with your team to ensure a successful project.

We will aim to post detailed instructions around reading week. You can expect to dedicate the last four weeks of the course to the project.

## 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 30%.

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)** 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)** .

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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 (https://forms.office.com/Pages/ResponsePage.aspx?id=JsKqeAMvTUuQN7RtVsVSEH66rj2flYRAr4YaXlSQ_8JUM1JGSzAzVVI2WVI3RzVNVkVYQTNMTkUyUi4u)** 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, processing special consideration requests in time would be challenging. Therefore, we will not accept late submissions for labs. Instead, we will drop the two lowest lab grades 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 for Missing Multiple Major Assessments (Tests and Project):

- After missing two major assessments (including tests and the project), 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/)** 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 form (https://forms.office.com/Pages/ResponsePage.aspx?id=JsKqeAMvTUuQN7RtVsVSEH66rj2fIYRAr4YaXlSQ_8JUM1JGSzAzVVI2WVI3RzVNVkVYQTNMTkUyUi4u)**

Make sure to include supporting documentation with your request. Please read the new **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 for applying 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 a test, or if you 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**. 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 when 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 form for tests (https://forms.office.com/r/PnGeEkKrTN)**

We will process the remark requests after one week.

## 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/)** 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.

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## Tips for Student Success

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Tips for Student Success

| Title | Details |
|---|---|
| ***Put Important Dates In Your Calendar at the Beginning of the Term*** | 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. |
| ***Check Announcements Regularly*** | 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. |
| ***Search Before Post*** | 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. |
| ***Study Regularly*** | 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 *motivate you to study regularly.* The tests are designed to be *low-stakes* and *low-stress* opportunities to *get feedback* on your learning. |
| ***Solve Practice Problems*** | The tests contain *theoretical* 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 |

| Title | Details |
| --- | --- |
| | 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/)

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/)** . The first option allows you to book **same-day counselling appointments (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/)

Check out the **Accessibility Services registration & documentation requirements – St. George Campus (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/)

Check under **Health and 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/)** section. There are many resources on topics such as **Better note-taking (https://studentlife.utoronto.ca/task/better-note-taking/)** , **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/)** , **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/) .

### 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.

# Course Summary:

| Date | Details | Due |
|---|---|---|
| Thu Jan 23, 2025 | ML Challenge: Data Collection (https://q.utoronto.ca/courses/380054/assignments/1450776) | due by 11:59pm |