

# COMP 5116: Machine Learning

**TITLE:** Machine Learning

**LECTURES:** Monday 2:35pm-5:25pm, Location: please see public class schedule

**INSTRUCTOR:** Yuhong Guo, YuhongGuo(at)cunet.carleton.ca

**OFFICE HOURS:** Tuesday 2pm-3pm, via zoom; or by email appointment

**COURSE SCHEDULE:** [http://people.scs.carleton.ca/~yuhongguo/teach/2022\\_fall/COMP5116.html](http://people.scs.carleton.ca/~yuhongguo/teach/2022_fall/COMP5116.html)

## PREREQUISITES

Familiarity with probability and statistics; familiarity with linear algebra and calculus; programming skills at a level sufficient to write a reasonably non-trivial computer program.

## TEXTBOOKS

- [Machine Learning: A Probabilistic Perspective](#), by Kevin Murphy. MIT Press, 2012.
- [The Elements of Statistical Learning](#), by Trevor Hastie, Robert Tibshirani, Jerome Friedman. Second edition, Springer-Verlag New York, 2009.
- [Pattern Recognition and Machine Learning](#), by Christopher M. Bishop. Springer-Verlag New York, 2006

## DESCRIPTION

Machine learning is the science that gives computers the ability to learn without being explicitly programmed. Machine learning is pervasive today in the world. This course provides a broad introduction to the fundamental concepts, techniques and algorithms in machine learning, including supervised learning methods, unsupervised learning methods, and semi-supervised learning methods.

## GRADING

- Assignments: 28%                      Exam: 12%
- Participation: 4%                      Paper Presentation and Review: 8%
- Project Proposal: 5%                      Project Presentation: 10%                      Final Project: 33%

## POLICIES and RULES

- Attendance to all lectures and presentations is required except in special situations with emergencies or with prior agreement.
- Late submission of assignments and project: 10% deduction for each day beyond the due time.
- Exam and presentation: late delivery will not be accepted.
- All submissions are through brightspace.
- All the Carleton's standard rules on Equity, Students with special needs, Plagiarism, Academic Integrity, etc. hold for this course. All these matters will be handled by appropriate authorities. You should look into the relevant university publications. If you have questions regarding any such issues, you can ask the Administrative Staff at the School of Computer Sciences.

## **Information on Academic Accommodations**

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

### ***Pregnancy obligation***

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: <https://carleton.ca/womensstudies/resources-and-links/equity-services/> .

### ***Religious obligation***

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit <https://carleton.ca/equity/focus/discrimination-harassment/religious-spiritual-observances/>.

### ***Academic Accommodations for Students with Disabilities***

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. For more details, visit the Paul Menton Centre website: [carleton.ca/pmc](http://carleton.ca/pmc) .

### ***Survivors of Sexual Violence***

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and its survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: [carleton.ca/sexual-violence-support](http://carleton.ca/sexual-violence-support)

### ***Accommodation for Student Activities***

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. See <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

**Student Academic Integrity Policy.** Every student should be familiar with the Carleton University student academic integrity policy. A student found in violation of academic integrity standards may be awarded penalties which range from a reprimand to receiving a grade of *F* in the course or even being expelled from the program or University. Examples of punishable offences include: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found here: <https://carleton.ca/registrar/academic-integrity/> .

**Plagiarism.** As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Such reported offences will be reviewed by the office of the Dean of Science. Standard penalty guidelines can be found here: <https://science.carleton.ca/academic-integrity/> .

**Unauthorized Co-operation or Collaboration.** Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis". Please refer to the course outline statement or the instructor concerning this issue.

## Special Information

It is important to remember that COVID is still present in Ottawa. The situation can change at any time and the risks of new variants and outbreaks are very real. There are [a number of actions you can take](#) to lower your risk and the risk you pose to those around you including being vaccinated, wearing a mask, staying home when you're sick, washing your hands and maintaining proper respiratory and cough etiquette.

**Feeling sick?** Remaining vigilant and not attending work or school when sick or with symptoms is critically important. If you feel ill or exhibit COVID-19 symptoms do not come to class or campus. If you feel ill or exhibit symptoms while on campus or in class, please leave campus immediately. In all situations, you must follow Carleton's [symptom reporting protocols](#).

**Masks:** Carleton has paused the [COVID-19 Mask Policy](#), but continues to strongly recommend masking when indoors, particularly if physical distancing cannot be maintained. It may become necessary to quickly reinstate the mask requirement if pandemic circumstances were to change.

**Vaccines:** Further, while proof of vaccination is no longer required as of May 1 to attend campus or in-person activity, it may become necessary for the University to bring back proof of vaccination requirements on short notice if the situation and public health advice changes. Students are strongly encouraged to get a full course of vaccination, including booster doses as soon as they are eligible, and submit their booster dose information in [cuScreen](#) as soon as possible. Please note that Carleton cannot guarantee that it will be able to offer virtual or hybrid learning options for those who are unable to attend the campus.

All members of the Carleton community are required to follow requirements and guidelines regarding health and safety which may change from time to time. For the most recent information about Carleton's COVID-19 response and health and safety requirements please see the [University's COVID-19 website](#) and review the [Frequently Asked Questions \(FAQs\)](#). Should you have additional questions after reviewing, please contact [covidinfo@carleton.ca](mailto:covidinfo@carleton.ca).