

CS 412 Syllabus

Course Overview

Introduction to Machine Learning is a course designed to introduce you to the field of Machine Learning as a research area and as a field in industry. As much as possible, this course will focus on an exposure to a wide range of Machine learning theory as well as good practices in application.

The textbook for this course is *The Elements of Statistical Learning* by Hastie, Tibsirani and Friedman, 2nd edition. The book is strongly encouraged, since there will be accompanying readings for each lecture and when possible, examples from the book will be used in class. You can find the tentative schedule at the end of this document

Staff and Contact Information

I am available after class for brief questions. If you have an in-depth question, please come to my office in SEO 931. I can also meet at other times during the week by appointment. You can email me for this (emccarty@uic).

Office hours:

Evan McCarty (TBA)

Nikolaos Agadakos (TBA)

Piazza is an integral part of communication in this course between students and the course staff. Please check the page for questions, as many students have the same questions and answers can often be found there. Additionally, piazza will be the primary method of course-wide announcements.

Grade Breakdown

Your grade in this course consists of the following parts:

30%	Assignments (5)
20%	Midterm
30%	Final Project
20%	Final Exam (TBA)
(X%)	Extra Credit

During the course, there will be questions that are required for both graduates and undergraduates, questions that are required for graduates and extra credit for undergraduates and some that will be extra credit for both. The final course grade will be curved and there will be a separate curve applied for graduates and undergraduates.

Homework

There will be five homework assignments. They will be equally weighted and will be distributed throughout the semester. Most will have two portions: a theory portion, similar to questions you should expect on exams and an applied portion based on USPS handwriting images of digits '1' and '5'. Homework assignments will be due at 11:30 and will be due on Wednesday nights. See *Late Policy* for additional information. Most HW assignments will have an additional extra credit portion. **All assignments must be typeset, no hand written assignments will be accepted.**

For the coding portions, we strongly recommend use of Python and the scikit package, but this is not strictly required. Please make sure that you reference which packages you use. As course staff, we will only officially support Python and scikit, but other languages and ML packages are allowed.

Final Project

The final project will be a comprehensive machine learning report on a dataset of your choice. No teams will be allowed. There will be 2 checkpoints (for a total of 5%) is assigned to ensure that you have selected a tractable project and are making reasonable progress. The final project will be graded on your ability to produce a full, start-to-end machine learning model and provide thorough statistical analysis of your results. Additionally, graduate students will complete a small literature review of some relevant ML literature as part of their final project and will be expected to apply some principle from outside the course to their final project. More information about this project will come out later in the semester.

Exams

Three exams will make up the remaining 40% of the course. They are closed-book, closed-note. The midterm will be during the lecture section. Additionally, the lecture before each exam is set aside for exam review.

Late Policy

Each student will receive 3 late days that they can use on assignments submitted through Gradescope. **No more than 2 late days may be used on any assignment.** There is no benefit to retaining late days at the end of the quarter and late days are deducted automatically. **No credit will be given for late submissions if the student does not have a late day.** Submissions are due at 11:30, but I am likely to give credit if the submission was soon after. If the submission comes after midnight, you will be late without exception. **Please make sure your submissions are correctly uploaded after you submit to Gradescope.** Each question will be its own submission.

If a situation arises for which late submissions are excusable, please let me know as soon as possible. I am willing to accommodate unforeseeable circumstances if there is a reason you will be late.

Academic Honesty

I take academic honesty very seriously. Cheating not only deprives you of practice and understanding, but it is also unfair to the rest of your class. Any assignment that has copied or paraphrased solutions will receive a zero and the affected students will drop one letter grade. Additionally, the report will be filed with the Dean's office. **No exceptions.**

We do still encourage academic discussion between classmates. University policies clearly delineate acceptable and unacceptable behavior. As a rule-of-thumb, it is always acceptable to discuss clarifications or course material, but discussing or sharing solutions to problems is not allowed.

Students who are found to have copied solutions without proper citation will receive a zero for the selected assignment, a letter grade drop and a report will be filed with the dean's office.

Getting Help

This course has many opportunities to get help if you find a problem challenging. Being productive with your time and work are important collegiate skills. Coming to office hours before starting a problem can be unproductive, but working on a problem after you've become stuck is even less so. If you fail to make any progress on a problem in 15 or 20 minutes, consider the following options.

- Check Piazza to see if other students have the same problem as you.
- Visit office hours to get help and clarification
- Talk with other students about relevant material
- Take a break, and return after your mind has relaxed.

Once you've become frustrated with a problem, it is difficult to make progress. Recognizing that you need help can be a difficult, but important step in your education. These assignments and projects are meant to test your understanding, they are not meant to be completed quickly and easily.