

**CS 539: Machine Learning**  
**Syllabus, Worcester Polytechnic Institute, Summer 2025**

1. **Credits:** 3
  - a. Class Meets: **Asynchronous Online except the last class on July 29** – refer to the project section below. Each week’s lecture recording will be uploaded to the Canvas page on Tuesday – refer to the schedule page on Canvas.
2. **Instructor:** Kyumin Lee, kmlee@wpi.edu  
Office Hours: Tuesday **7-8pm** via Zoom: <https://wpi.zoom.us/my/kyumin.lee>
3. **Primary Textbook:**
  - a. Machine Learning: The Art and Science of Algorithms That Make Sense of Data by Peter Flach, Cambridge University Press
4. **Additional Readings will be drawn from the following textbooks:**
  - a. Learning From Data by Y. S. Abu-Mostafa, M. Magdon-Ismael, and H.T. Lin., AML Book
  - b. Machine Learning by Tom Mitchell, McGraw Hill
  - c. Machine Learning Lecture Notes by Andrew Ng
  - d. Reinforcement Learning: An Introduction by Sutton and Barto, MIT Press
  - e. Deep Learning with Python by François Chollet, Manning Publications
  - f. Selected research papers
5. **For a more advanced treatment of machine learning topics, you may read one of the following books:**
  - a. Pattern Recognition and Machine Learning by Bishop, Springer.
  - b. Machine Learning: A Probabilistic Perspective by Kevin P. Murphy, MIT Press.
  - c. Deep Learning by Yoshua Bengio, Ian Goodfellow, and Aaron Courville.
6. **Specific Course Information:**
  - a. Course Description: Machine learning deals with the design and study of computer programs that are able to improve their own performance with experience, or in other words, computer programs that learn. In this course, we investigate different machine learning paradigms including supervised, unsupervised, and reinforcement learning. We study multiple classification, regression, clustering, meta-learning and reinforcement learning techniques. Students gain extensive understanding of and experience with theoretical and practical aspects of machine learning. Students will conduct a team-based project.
  - b. Prerequisites: CS 534 Artificial Intelligence or equivalent, or permission of the instructor. I expect all students to have had some previous exposure to basic probability, statistics, algorithms, and data structures. You should be able to design and develop large programs and learn new software libraries on your own. **The primary programming**

language for assignments is Python. If you are not familiar with it, you should be able to learn it by yourself.

**Communication:**

All course announcements will be posted via the Canvas course mailing list.

**Grading Policy:**

The course grading policy is as follows:

40%	Assignments
30%	Quizzes
30%	Project

The grading scale for graduate students is A:100-90, B:89.9-80, C:79.9-70, D:69.9-60, F:59.9-0

The grading scale for undergraduate students is A:100-90, B:89.9-80, C: 79.9-70, NR:69.9-0

**Assignments:**

There are **four** assignments. Each assignment is proportion to 10% of your grade. We will use **Python 3** as the main programming language for the assignments. We will **NOT accept** your solution after the deadline.

You may discuss an assignment with your colleague, but you should write a program and a report by yourself and should NOT copy and paste your colleague's solution. If you discussed an assignment with your colleague, **explicitly** report the colleague's name and what you discussed in your submission. We will use [Stanford MOSS](#) to measure software similarity.

**Quiz:**

There will be **four** quizzes. Refer to the schedule page for dates.

**Project:**

In the final project, you will apply algorithms, methods and techniques that you learned from this course to your project. The project consists of three major components: 1) proposal, 2) project website development, and 3) final presentation. The detailed information regarding the project will be announced in the second lecture and posted to Canvas. You will present and may demonstrate your project in the end of the semester. **The only class that we will meet is the last class on July 29 at 6pm via Zoom so that we can have project presentation and a live Q&A session.**

**Learning Aids:**

Lecture notes and schedule will be available in the course web page. Your homework solution and project report is supposed to be submitted via Canvas.

**Plagiarism and Cheating:**

Unless explicitly noted, all work you submit must be your own work. You are encouraged to discuss with others about ideas and material in the course, in preparing for exams, in understanding homework problems, project statements, etc. However, all homework solutions, exams are to be written individually, and the solutions should be your own, unless otherwise specified. Projects encourage teamwork, that is, in that case you are expected to work closely with your partner/(s) to solve problems and prepare a common agreed-upon solution.

Note in particular that copying of any material, may it be a single sentence or a figure, from any location (including the internet) without proper acknowledgement of the source constitutes plagiarism. If in doubt, please ask for clarification. Any violation of the WPI's guidelines for academic integrity will result in no credit for the course and referral to the Student Affairs Office for disciplinary action. [You should be familiar with the WPI Policy on Academic Honesty.](#)

### **Students with Disabilities:**

If you need course adaptations or accommodations because of a disability, or if you have medical information to share with me, please make an appointment with me as soon as possible. If you have not already done so, students with disabilities who believe that they may need accommodations in this class are encouraged to contact the [Office of Disability Services \(ODS\)](#) as soon as possible to ensure that such accommodations are implemented in a timely fashion. This office in Daniels Hall has phone (508-831-4908) and can be reached by email at [disabilityservices@wpi.edu](mailto:disabilityservices@wpi.edu).

### **Writing Center:**

The Writing Center offers one-on-one consultations, both in-person (in SL 233) and over Zoom, to help you improve as a writer. Writing Center tutors will read your written work, give you feedback about your document's strengths and weaknesses, and help you chart a path forward as you revise. Consultations are free and open to all WPI students for all classes and projects, and tutors will happily work with you at any stage of the writing process (early brainstorming, revising a draft, polishing sentences in a final draft). To see our appointment options for both in-person and synchronous online meetings, go to the Writing Center homepage: [wpi.edu/+writing](http://wpi.edu/+writing)