

Syllabus – Fall 2021

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

Course and Instructor Information

Course Title: Introduction to Machine Learning

Credits: 3

Instructor: Suining He, PhD

Lecture Time/Location:

Tu/Th 5:00PM-6:15PM, in-person, MCHU 202

Email: Please contact me using my UConn email suining.he@uconn.edu

Office Hours/Availability:

Wed/Fri: 13:45pm – 15:00pm

<https://uconn-cmr.webex.com/meet/suh19005>

TAs: Aaron Palmer (aaron.palmer@uconn.edu);

Office Hours/Availability:

Mon/Wed: 3:00-4:00pm

<https://uconn-cmr.webex.com/meet/ajp06003>

Course Materials & Prerequisites

Recommended Reading Materials:

- Christopher M. Bishop. **Pattern Recognition and Machine Learning**.
- Aurélien Géron, **Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems**, 2nd Edition.
- Francois Chollet, **Deep Learning with Python**, 1st Edition.
- Boyd, Stephen, Stephen P. Boyd, and Lieven Vandenbergh. **Convex Optimization**.

Prerequisites:

1. MATH 2210Q; STAT 3025Q or 3345Q or 3375Q or MATH 3160; open only to Computer Science and Engineering majors; juniors or higher. Recommended preparation: CSE 3500.
2. Basic Programming Skills are required (**Python** is preferred);

Grading Basis: Graded

Additional course readings and media are available within HuskyCT, through either an Internet link or Library Resources

Course Description

An introduction to the basic tools and techniques of machine learning, including models for both supervised and unsupervised learning, related optimization techniques, and methods for model validation. Topics include linear and logistic regression and regression, regularization, and clustering.

Course Objectives

By the end of the semester, students should be able to describe the basic principles and designs of basic machine learning (ML) algorithms and models, evaluate the related studies and works on ML applications, leverage the basic software tools for relevant studies, design basic ML applications based on real-world data sets,

and present in group setting to peers and respond to feedbacks.

Tentative Course Outline (and Calendar if Applicable)

Detailed schedules may change and will be notified.

Dates	Modules
Week 1	Introduction
Week 2	Basic linear algebra and statistics
Week 3	Introduction to optimization
Week 4	Linear regression
Week 5	Logistic regression
Week 6	Recap, Exam 1
Week 7	Support Vector Machine
Week 8	Machine learning evaluation, Clustering
Week 9	Clustering
Week 10	Neural Network
Week 11	Recap Exam 2
Week 12	Convolutional Neural Network
Week 13	Thanksgiving Recess
Week 14	Recurrent Neural Network
Week 15	Advanced Topic; Recap Exam 3

Note:

Reading Days: Dec 11 – Dec 12, Dec 16

Final Exam Week: Dec 13 – Dec 19

Semester Grades Due: 4pm, Dec 22

Course Requirements and Grading

Summary of Course Grading:

CSE 4820/5819: Course performance: 100%

- 40% for 4 written/programming assignments
- 60% for 3 exams (1st, 2nd and Final Exams)

Bonus: (total up to 5% for CSE4820/5819)

- In-class/take-home quizzes/programming assignments (practice exams)
- Total 8~10 trials (depends on course progress) sums up to 5% extra; equal weight for each

Final grade:

A	100 - 93
A-	92 - 90
B+	89 - 87
B	86 - 83
B-	82 - 80
C+	79 - 77
C	76 - 73
C-	72 - 70
D+	69 - 67
D	66 - 63
D-	62 - 60
F	59 or less

Due Dates and Late Policy

All course due dates are identified in the modules. Deadlines are based on Eastern Standard Time; if you are in a different time zone, please adjust your submittal times accordingly. The instructor reserves the right to change dates accordingly as the semester progresses. All changes will be communicated in an appropriate manner. Paper review and project report assignments must be completed according to the schedule in each module.

Each student will have a total of **5 free late (calendar) days** to use for homework (if applicable). Each 24 hours or part thereof that an assignment is late uses up one full late day. **Please note: once these late days are exhausted, no late assignments will be accepted for any reason.** Students are highly encouraged to reserve your late days for unavoidable emergencies, planned travel, etc.

If you miss an examination because of sickness or similar reasons, visit a physician and obtain a note detailing the period during which you were medically incapable of taking the exam. Notify your instructor immediately via email if you are going to miss an exam before the exam takes place, unless medically impossible. Contact your instructor as soon as you return to class.

Feedback and Grades

I will make every effort to provide feedback and grades no later than a week after the end of each module roughly on a weekly basis. To keep track of your performance in the course, refer to My Grades in HuskyCT.

Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. Review these important [standards, policies and resources](#), which include:

- The Student Code
 - ✧ Academic Integrity
 - ✧ Resources on Avoiding Cheating and Plagiarism
- Copyrighted Materials
- Netiquette and Communication
- Adding or Dropping a Course
- Academic Calendar
- Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
- Sexual Assault Reporting Policy