

## Syllabus – Fall 2023

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:**

TuTh 12:30PM - 1:45PM, in-person, BUSN 106

**Email:** Please contact me using my UConn email [suining.he@uconn.edu](mailto:suining.he@uconn.edu)

**Instructor Office Hours/Availability:** Tu/Th: 1:50pm – 2:30pm

**Instructor Office Hour Webex Link:** <https://uconn-cmr.webex.com/meet/suh19005>

**TAs:** Rigel Mahmood ([rigel.mahmood@uconn.edu](mailto:rigel.mahmood@uconn.edu)); Wassay Qureshi ([abdul.qureshi@uconn.edu](mailto:abdul.qureshi@uconn.edu))

**TA Office Hours/Availability and WebEx Link:**

Rigel: Mon 10-11AM, TBD

Wassay: Tue: 11-12AM, TBD

### 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**, 2<sup>nd</sup> Edition.
- Francois Chollet, **Deep Learning with Python**, 1<sup>st</sup> 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 (depending on the course progress) 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; CSE 5820 Proposal Presentation
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; CSE 5820 Mid-Term Progress Report
Week 12	Convolution Neural Network
Week 13	Thanksgiving Recess
Week 14	Recurrent Neural Network; Advanced Topics
Week 15	CSE 5820 Final Presentation; Recap Exam 3

### **Note:**

*Last day of all Fall Semester Classes: Dec 8*

*Thanksgiving Recess: Nov 19 – Nov 25:*

*Reading Days: Dec 9 – Dec 10, Dec 15*

*Final Exam Week: Dec 11 – Dec 17*

*Semester Grades Due: 4pm, Dec 20*

**Summary of Course Grading:**

**CSE 4820:** Course performance: 100%

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

**CSE 5819:** Course performance: 100%

- 20% for 3 written/programming assignments
- 30% for 2 exams (1<sup>st</sup> and 2<sup>nd</sup> Exams)
- 50% for group project (~2 students per team)
  - Project proposal report and presentation (15%)
  - Project mid-term report (10%)
  - Project final report and presentation (25%)

**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