

## MTH 994-001: Machine Learning

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**Office:** D301 Wells Hall  
**Office Hours:** Fridays from 4:00pm –5:00pm and by appointment

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**Course Schedule: Lectures** – TueThur from 2:00 – 3:30 PM in C517 Wells Hall

**Course Description:** This is the first of two courses on Machine Learning (ML). ML is a powerful technique widely used in many big data areas such as insurance, economics, bioinformatics, medicine, face recognition etc. In this course, we will not only discuss theoretical framework of ML algorithms and architectures, but also put an emphasis on programming skills so that each student is able to implement ML algorithms for real-world problems. The tentative topics will cover linear regression, logistic regressions, decision trees, k-mean, SVM, KNN, random forests, gradient boosting trees and CNN. If time allows, more methodologies such as ANN, RNN, Boltzmann machine, GAN, etc. will be discussed.

**Prerequisites:** Approval of the department; though helpful courses will be CSE 131 or CSE 231, MTH 234, MTH 235, MTH 340, MTH 309, STT 441 and STT 442.

**Text:** There is no required text for this course.

**Attendance:** Attendance is not required but is STRONGLY encouraged.

**Homework:** There will be 3 homework “assignments” (essentially coding projects) throughout the course. Each coding project will be graded as a percent and the average of these grades will be your total homework grade. Homework will be weighted at 45% of your total course grade.

**Exams:** There are no exams for this course.

**Final Project:** There will be a final project written report, including codes (worth 55% of your total grade). Students will choose their projects from a course project database. The due date of the final project is **December 3**.

**Grading Scale:** Your total grade will be the weighted average of your homework (45%) and the written report (55%). The grade you receive will be no stricter than this scale:

Percentage (P) %	Grade
$90 \leq P$	4.0
$85 \leq P < 90$	3.5
$80 \leq P < 85$	3.0
$75 \leq P < 80$	2.5
$70 \leq P < 75$	2.0
$65 \leq P < 70$	1.5
$60 \leq P < 65$	1.0
$P < 60$	0