
ENME808E Machine Learning: Theory and Applications

Instructor: Dr. Nikhil Chopra (nchopra@umd.edu) GLM 2149

Lecture Hours/Location: Tu/Th 11am-12:15pm, EGR 2154

Office Hours: Tue 1-2:30 pm and at other times by Appointment.

Text: Learning from Data: A Short Course
 Authors: Yaser S. Abu-Mostafa, Malik Magdon-Ismael, Hsuan-Tien Lin

Web Page: ELMS will be the official medium for posting class material such homework, homework solutions, and additional lecture notes. ELMS will also be used to send email to the class. It is your responsibility to make sure that your email address on Canvas is correct.

Course Objectives: This is an introductory course on the theoretical foundations of machine learning and its applications. The primary focus of the course will be to gain a fundamental understanding of the basic principles underlying learning theory and the various algorithms. The prerequisites are introductory courses in linear algebra and probability.

Prerequisites: Basic courses in linear algebra and probability

Grade Distribution:	Homework	20%
	Mid Term (Take Home)	30%
	Final Project	50%

Homework: Homework assignments will be posted on ELMS and completed assignments will be due via online submission in ELMS. Late submissions will not be accepted (no exception).

Academic Integrity: You are encouraged to discuss homework assignments. However, you must turn in your own work. It is considered cheating if a student turns in other than their own work (this includes but not limited to homework, exams. If a student is caught cheating or facilitating cheating, they will be referred to the Office of Student Conduct.

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation,

and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.shc.umd.edu>.

Tentative Schedule

Week	Date	Topics
1	1/28	Learning Problem
2	2/4	Is Learning Feasible?
3	2/11	The Linear Model-I
4	2/18	Error and Noise
5	2/25	Training vs Testing
6	3/4	Theory of Generalization
7	3/11	VC Dimension
8	3/18	Spring Break
9	3/25	Bias-Variance Tradeoff
10	4/1	Linear Model-II
11	4/8	Neural Networks
12	4/15	Overfitting and Regularization
13	4/22	Validation and Support Vector Machines
14	4/29	Kernel Methods and Radial Basis Functions
15	5/6	Three Learning Principles
16	5/13	Final Project Presentations and Submission (Date and Time: TBD)