

CSCE 5063 – 001 Machine Learning

Fall 2021 Course Syllabus

JBHT Rm 0236, MoWeFr 15:05 - 15:55

[Schedule](#) [Projects](#)

Instructor Dr. Lu Zhang

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Office Hours MoWe 16:00 – 17:00 or by appointment

Course Material

The Elements of Statistical Learning, by Trevor Hastie, et. al. (2009). Available online:

<https://web.stanford.edu/~hastie/ElemStatLearn/>

Machine Learning: A Probabilistic Perspective, by Kevin Murphy (2012)

Understanding Machine Learning: From Theory to Algorithms, by Shai Shalev-Shwartz and Shai Ben-David (2014). Available online:

<https://www.cse.huji.ac.il/~shais/UnderstandingMachineLearning/>

Dive into Deep Learning, by Aston Zhang and Zachary C. Lipton and Mu Li and Alexander J. Smola (2020). Available online:

<https://d2l.ai/>

Grading

Homework 30%, mid-term 15%, group project 30%, final 25%.

Face to Face Delivery Plan

- According to the university policy, all classes in this semester will be in-person. Students are expected to attend face-to-face lectures under normal conditions.

- Meanwhile, all lectures will be recorded within Blackboard for students who need to isolate or need to quarantine due to Covid-19 exposure to view.
- As the COVID-19 delta variant is increasing in our area, students can request in writing (i.e., email) not to attend a face-to-face lecture but view a recorded lecture, and I will decide whether to accommodate the request. If you would like to do so, please send an email directly to me for making this request. Please remember that I reserve the right to stop the viewing of recorded lectures and require face-to-face attendance at any time.
- According to the new policy, masks will be required in the classroom when at least 6-feet of social distancing can't be maintained.

Topic Outline

1	Introduction	Preliminaries
2	Linear regression	Decision tree
3	Bayes classifier	Instance based learning
4	Logistic regression	Perceptron
5	Support vector machine	Kernel methods
6	Neural networks	PAC learning theorem
7	Clustering	EM algorithm
8	Principle component analysis	Recommender systems
9	Multi-armed bandit	Causal modeling and inference
10	Fairness-aware machine learning	Introduction to deep learning
11	Large-scale machine learning	Software and packages for machine learning