

Machine Learning Course Calendar

CSCE 4205/5215: Machine Learning, Fall 2019 at University of North Texas

Links: [Syllabus](#), [Canvas](#), [Trello board](#) (sign up with the link from Canvas)

All future topics will always be tentative. Consult the [UNT Academic Calendar](#) for relevant registration, add/drop, and withdrawal dates.

DATE	TOPIC	EXAMS AND QUIZZES	ASSIGNMENTS AND PROJECTS	READINGS AND TUTORIALS
Aug 27,29, Sep 3	Introduction to Machine Learning [gSlides] [recorded lecture]	Quiz 1: Intro to Machine Learning [Canvas]	HW1: Ad assignment [gDoc] [due Sep 5]	Python environment basics [mini-course intro link]
Sep 3, 5	Supervised learning, part 1: Naive Bayes, k-NN, [gSlides]	Quiz 2: supervised learning, kNN and Naive Bayes [Canvas]	HW2: Naive Bayes or k-NN implementation for digit recognition [gDoc] [due Sep 12]	k-NN [wiki] . Naive Bayes [wiki] . Supervised learning docs for sklearn (skim [link]). (optional: naive bayes colab notebook based on lecture)
Sep 10, 12, 17	Linear regression [gSlides] , Model validation and selection [gSlides]	Quiz 3: linear regression [Canvas] Quiz 4: model validation and selection [Canvas]	HW3: Project Brainstorming [Trello] , due Sep 17]	skim sklearn linear regression sections 1.1.1-1.1.3 [link] , skim sklearn model selection docs 3.1 & 3.3 [link]
Sep 19	Supervised learning, part 2: random forest, SVM, neural networks [gSlides]	Quiz 5: supervised learning, advanced [Canvas]	HW4: Model selection and validation [gDoc] , due Sep 26]	See lecture slides and related section in the scikit-learn documentation for use (optional: wiki entries on random forest , neural networks , and SVMs - lead in with decision trees and perceptron) text classification
Sep 24,26	Feature selection and feature engineering [gSlides] Presentation and Project Selection [Thursday]	Quiz 6: feature engineering [Canvas]	HW 5: Short presentation selection [gDoc]	ML mastery feature selection [html] and feature engineering [html] articles. (optional: sklearn data transform docs 4.2 and 4.3 [link])

Oct 1	Ensemble methods: Bagging, Boosting [gSlides]	Quiz 7: ensemble methods [Canvas]	HW 6: Project proposals [gDoc] , due Oct 8th]	Bagging [wiki] and Boosting [wiki] . sklearn docs on ensemble methods [html] - focus on bagging and boosting.
Oct 3	Dimensionality reduction: PCA [gSlides] [updated slides for 2021] [recorded lecture]	Quiz 8: dimensionality reduction (with optional ICA questions) [Canvas]	Previous Exam I for study prep [gDoc]	Intro to PCA [link] (optional: sklearn decomposition docs [link])
Oct 8	(optional lecture) ICA factor analysis [gSlides] . Exam prep Q&A			(Optional: Intro to ICA [pdf])
Oct 10	EXAM I (no dimensionality reduction) In class, on the computer through CANVAS. BRING YOUR LAPTOP (feedback: mean: 8.8, std dev: 0.9, min: 6.6, max: 10)			
Oct 15	Clustering: K-means and DBSCAN [gSlides] and semi-supervised learning via label spreading	Quiz 9: clustering [Canvas]	HW7: PCA on digit recognition data set [gDoc] (due Oct 31)	K-means simulations and intro [link] , skim sklearn clustering docs [link] . (optional: semi-supervised learning [wiki] and [sklearn docs])
Oct 17	Optional presentation preparation day (or project group work if presentations are finished) Note: Short presentation slides must be finished and uploaded before class on the first day of presentations (access will be read-only then)			
Oct 22, 24	Short Presentations week [gDoc] (feedback: mean: 9.4, min: 9.0, max: 9.8) Your group and presentation day is given in the assignment. Slides must be prepared before the first day of presentations.			
Oct 29, 31	Reinforcement learning [gSlides] [updated slides 2021] [recorded lecture 2021]	Quiz 10: reinforcement learning [Canvas]	HW 8: Tic-Tac-Toe with reinforcement learning [gDoc] (due Nov 7)	Reinforcement learning [wiki] , Flappy birds RL [link] (optional: Section 1 of [pdf] or Sutton and Barto [link])
Nov 5	Bayesian networks and markov models [gSlides]	Quiz 11: Bayes nets [Canvas]	HW 9: Project update and consultations [gDoc] (oral updates required next class, trello group posts and individual consults due Nov 12)	Skim Bayes Nets [pdf] and [wiki] . (optional: the prediction example from Pomegranate [link])
Nov 7	Project updates (graded, informal oral update required in class from one team member).	In-class interview quiz next week [gDoc]	EXAM II practice test (from earlier class) [pdf] .	Note for HW 9: Time will be available after presentations for required consultations.

Nov 12	Interview Quiz - [questions and short answers posted] Attendance Required HW 10A&B: Final project report [gDoc] and presentation [gDoc] expectations - due Nov 21 at the start of class.			
Nov 14	EXAM II In class, on the computer through CANVAS. BRING YOUR LAPTOP (feedback, out of 15.6 possible: mean: 9.8, std dev: 2.0, min: 5.0, max: 13.9)			
Nov 19	Project work Kaggle class competition assigned and discussed	Post-exam II discussion	HW 11: Class ML prediction competition [instructions] [Kaggle competition link] [invite link] (deadline Tuesday, Dec 3 at midnight)	Please turn in all homeworks (except HW11, of course) and online quizzes before Nov 21.
Nov 21, 26	Project Presentations (presentation order given in HW10B) HW 10a feedback: high: 14.9, mean: 13.3, low: 6) HW 10b feedback: high: 4.8, mean: 4.6, low: 3)	All assignments, including HW10A&B are due on Nov 21 before presentations begin - <u>NO EXCEPTIONS</u> Individual project evals will also be administered in class		Please turn in all homeworks (except HW11, of course) and online quizzes before Nov 21.
Nov 28	Happy Thanksgiving Break!			
Dec 3	ML Concepts slides from Job Ads [gSlides] (optional Deep Learning lecture: [gSlides])	Prediction competition ongoing (last time to submit is midnight Dec 3). Final exam practice test (Exam III from an earlier class) [gDoc]		Flyer for the Deep Learning course next semester
Dec 5	Prediction competition results and discussion ML interview approach [set 1] [set 2] [Interview Quiz is cancelled] Final comments, evals			
Dec 10	FINAL EXAM (note, 1 hour earlier start!) 10:30am - 12:30pm In class, on the computer through CANVAS. BRING YOUR LAPTOP (feedback: out of 20 points, mean: 15.6, std dev: 3.1, min: 7.6, max: 20)			