| Date | Lecture | Schedule | Programming/ Extra | Homework | | Project |
|---|---|---|---|---|---|---|
| | | | | Assigned | Submission | |
| Tuesday, August 27, 2019 | Lecture 1 | Introduction: Machine Learning & Data Analytics<br>Supervised Learning vs Unsupervised<br>Regression vs Classification | Survey and Installation Instructions | | | |
| Thursday, August 29, 2019 | Lecture 2 | Linear Algebra + Introduction to Probability | Basic Python Tutorial | | | |
| Tuesday, September 3, 2019 | Lecture 3 | **Regression Problem:**<br>Linear Regression (Univariate, Multivariate, Multivariable, Multiple) | Basic Python Tutorial + Linear Regression | | | |
| Thursday, September 5, 2019 | Lecture 4 | **Regression Problem:**<br>Linear Regression (Univariate, Multivariate, Multivariable, Multiple) (Cont'd)<br>Polynomial Regression | Linear Regression (Scikit Learn) | HomeWork 1 | | |
| Tuesday, September 10, 2019 | Lecture 5 | Loss Functions<br>Optimization, Class 1 | Optimization: Gradient Descent | | HomeWork 1 | |
| Thursday, September 12, 2019 | Lecture 6 | Optimization, Class 2 | Optimization: Gradient Descent | HomeWork 2 | | |
| Tuesday, September 17, 2019 | Lecture 7 | Kernel Regression | Kernal Regression | | HomeWork 2 | |
| Thursday, September 19, 2019 | Lecture 8 | Gaussian Process | Gaussian Regression | | | |
| **Tuesday, September 24, 2019** | **Lecture 9** | **Midterm - 1** | | | | **Project Guideline handout** |
| Thursday, September 26, 2019 | Lecture 10 | **Classification Problem:**<br>KNN, Logistic Regression | Logistic, KNN | HomeWork 3 | | |
| Tuesday, October 1, 2019 | Lecture 11 | Support Vector Machine | SVM | | HomeWork 3 | |
| Thursday, October 3, 2019 | Lecture 12 | Decision Tree | DT | | | |
| Tuesday, October 8, 2019 | Lecture 13 | **Ensemble Methods:**<br>Random Forest | | | | |
| Thursday, October 10, 2019 | Lecture 14 | **Ensemble Methods:**<br>Bagging, Boosting | Scikit Learn:<br>Decision Tree<br>+ Others | HomeWork 4 | | **Project Proposal Submission** |
| Tuesday, October 15, 2019 | Lecture 15 | **Clustering Problem**<br>K-means | | | HomeWork 4 | **Project feedback** |
| Thursday, October 17, 2019 | Lecture 16 | **Clustering Problem**<br>Gaussian Mixture Models, EM_Algorithms | Scikit Learn:<br>GM, EM | | | |
| Tuesday, October 22, 2019 | Lecture 17 | **Dimensionality Reduction**<br>Principal Component Analysis (PCA), Kernel PCA | | | | |
| Thursday, October 24, 2019 | Lecture 18 | **Dimensionality Reduction**<br>Kernel PCA, t-SNE | PCA, KPCA, t-SNE | HomeWork 5 | | |
| **Tuesday, October 29, 2019** | **Lecture 19** | **Midterm - 2** | | | HomeWork 5 | |
| Thursday, October 31, 2019 | Lecture 20 | **Mid-Project Progress Presentation** | | | | **Project Presentation** |
| Tuesday, November 5, 2019 | Lecture 21 | Intro to Neural Networks | Intro to Keras/ TF/ PyTorch | | | |
| Thursday, November 7, 2019 | Lecture 22 | Feed Forward Networks, Back Propagation, Loss Function, Class 1 | | HomeWork6 | | |
| Tuesday, November 12, 2019 | Lecture 23 | Feed Forward Networks, Back Propagation, Loss Function, Class 2 | Simple ANN | | HomeWork6 | |
| Thursday, November 14, 2019 | Lecture 24 | Image Classification and Convolutional Neural Network | | | | |
| Tuesday, November 19, 2019 | Lecture 25 | Image Classification and Convolutional Neural Network,<br>Reccurent Neural Networks | Simple CNN | | | |
| Thursday, November 21, 2019 | Lecture 26 | Reccurent Neural Networks (Cont'd) | Simple RNN | HomeWork7 | | |
| Tuesday, November 26, 2019 | Lecture 27 | Markov Decision Process | | | HomeWork7 | |
| Thursday, November 28, 2019 | Lecture 28 | Reinforcement Leanring | | | | |
| Tuesday, December 3, 2019 | Lecture 29 | **Project Poster Presentation and Report Submission** | | | | **Project** |
| Thursday, December 5, 2019 | Lecture 30 | Revisions and Q&A | | | | |
| Tuesday, December 10, 2019 | Lecture 31 | **No Class** | | | | |
| **Wednesday, December 11, 2019** | **Lecture 32** | **Final Exam** | | | | |