

# COURSE SYLLABUS

\*\*\*\*\*  
**YEAR COURSE OFFERED: 2018**

**SEMESTER COURSE OFFERED: Spring**

**DEPARTMENT: Electrical and Computer Engineering**

**COURSE NUMBER: ECE5397/ECE6397**

**NAME OF COURSE: Introduction to Machine Learning and Computer Vision**

**NAME OF INSTRUCTOR: Hien Van Nguyen**

\*\*\*\*\*  
**The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.**  
\*\*\*\*\*

## **Learning Objectives**

Understand the basic of machine learning concepts such as classification and regression  
Apply one machine learning technique to one real dataset

## **Major Assignments/Exams**

Assignment 1 – Linear Regression (5%)  
Assignment 2 – Multivariate Linear Regression (5%)  
Assignment 3 – Logistic Regression (5%)  
Assignment 4 – Neural Network (5%)  
Assignment 5 – System Design (5%)  
Assignment 6 – Support Vector Machine (5%)  
Assignment 7 – Random Forest (5%)  
Assignment 1 – Dimensionality Reduction (5%)  
Final Exam (50%)

## **Required Reading**

None

## **Recommended Reading**

Machine Learning Lectures of Andrew Ng on Coursera

# COURSE SYLLABUS

The Elements of Statistical Learning, Data Mining, Inference, and Prediction by Jerome H. Friedman, Robert Tibshirani, and Trevor Hastie  
Machine learning: A Probabilistic Perspective by Kevin P. Murphy

## List of discussion/lecture topics

Lecture	Topic	Note
1	Welcome	
2	Linear Regression	
3	Linear Algebra Review	Assignment 1
4	Multivariate Linear Regression I	
5	Multivariate Linear Regression II	Assignment 2
6	Python Tutorial	
7	Logistic Regression I	
8	Logistic Regression II	
9	Regularization	Assignment 3
10	Neural Networks: Representation	
11	Neural Networks: Learning	Assignment 4
12	Good Practice in Machine Learning	
13	Machine Learning System Design	Assignment 5
14	Support Vector Machine	
15	Kernel Support Vector Machine I	
16	Kernel Support Vector Machine II	Assignment 6
17	Decision Tree	
18	Random Forest	Assignment 7
19	Unsupervised Learning	
20	Dimensionality Reduction	
21	Non-Linear Dimensionality Reduction	Assignment 8
22	Anomaly Detection I	
23	Anomaly Detection II	
24	Photo OCR I	
25	Photo OCR II	
26	Final Exam	