THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Introduction to Machine Learning for ECE

ECE 5307

Credit Hours:
4.00

Course Levels:
Undergraduate (1000-5000 level)
Graduate (5000-8000 level)

Course Components:
Lecture
Lab

Course Description:
Introduction to Machine Learning. Coverage includes linear regression, linear classification, model and feature selection, neural networks, clustering, and principle components analysis. Python will be used for implementation examples.

Prerequisites and Co-requisites:
Prereq: CSE 1222 or Engr 1281.xx, and Math 2568 and Stat 3470, and enrollment in ECE major; or Grad standing.

Course Goals / Objectives:
- Learn how to formulate and solve linear regression problems, linear classification problems, and clustering problems.
- Learn how to implement basic machine-learning tasks in Python.
- Gain familiarity with model-order selection, feature selection, neural networks, and PCA.
- Gain experience applying concepts from linear algebra and probability to engineering tasks.

Course Topics:

- Introduction to Machine Learning
- Linear Regression
- Model-order Selection and Feature Selection
- Linear Classification, Logistic Regression, and Support Vector Machine
- Optimization
- Neural Networks and Deep Learning
- Principal Components Analysis and Clustering

Designation:

Elective