ECE620: Pattern Recognition & Machine Intelligence
(3 Credits; Prerequisites EE420 and Engineering Probability)

Description: Fundamentals of Statistical, Structural, and Neural Pattern Recognition Approaches: Parametric and Nonparametric Classification, Feature Extraction, Clustering, Self-organizing Nets for Pattern Recognition, and Formal Languages Representation. Current medical and industrial applications.

Grading: Homeworks (20%), Projects (40 %), and three Exams (40%). Total grade will be normalized to 100 points and the final grade will be assigned such that: $85 \leq A \leq 100$, $70 \leq B < 85$, and $60 \leq C < 70$.

Text Book: R. O. Duda, P. E. Hart and Stork, *Pattern Classification and Scene Analysis,* Wiley, New York, 2nd Edition 2001.

Course Learning Objectives:
By the end of this class, students would:
1. Derive and implement Bayes Decision Theory.
2. Perform Parametric and Non Parametric Density Estimation.
3. Design Linear Classifiers for separable and non-separable patterns.
4. Implement classifiers using neural networks.

COURSE OUTLINE

III.3 Learning the Mean of Gaussian Density Function