

1.	Title of the course	Pattern Recognition and Machine learning
2.	Course number	EE506L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To EE5106/2
6.	To be offered by	Department of Electrical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	CoT
9.	<p><b>Course Objective(s):</b> Student will understand the concepts, theory and computational algorithms needed for several real world recognition tasks such as text, speech, characters, objects etc. Simulate and understand how machine will have power to accomplish these tasks and can aim at developing several examples based learning tasks in several domains ranging from medical, economical, engineering to industrial needs.</p>	
10.	<p><b>Course Content:</b> PR overview-Feature extraction-Statistical Pattern Recognition-Supervised &amp; Unsupervised Learning; Bayes decision Theory, Linear discriminant functions; Parametric methods, ML and MAP estimation-Bayes estimation. Non parametric methods; Parzen windows &amp; k NN approaches. Dimensionality reduction (PCA) &amp; Fishers linear discriminant. Linear perceptron and Neural Networks. Introduction to Deep Neural nets. Kernel methods and Support vector machine. Unsupervised learning and Clustering. K-means and Hierarchical clustering. Linear &amp; Logistic Regression. Decision trees for classification. Ensemble/ Adaboost classifier. Expectation Maximization (EM). Applications to document analysis and recognition.</p>	
11.	<p><b>Textbook(s):</b> 1. Duda R O, Hart P E and Stork D G, Pattern classification, John Wiley and Sons (2001) 2. Christopher M B, <i>Pattern Recognition and Machine Learning</i>, Springer (2006).</p>	
12.	<p><b>Reference(s):</b> 1. Sergios T and Konstantinos K, <i>Pattern Recognition</i>, 4th Edition, Academic Press (2008).</p>	