PECS5303 **PATTERN RECOGNITION** (3-0-0)

Module –I (Lecture Hour 12)

Introduction

Features, Feature Vectors and Classifiers, Supervised vs. unsupervised pattern

Classifier

Classifier based on Bayes Decision Theory, Linear classifier: Least square methods, Mean square estimation, Support vector machines, nonlinear classifier: Two layer & three layer perceptron, Back propagation algorithm, combining classifiers

Module –II (Lecture Hour 12)

Feature Selection

Preprocessing, Statistical hypothesis testing, Class separability measures

Feature Generation

Linear transforms, Discrete Fourier transform (DFT), Hadamard transform, Discrete Time Wavelet transform (DTWT)

Fourier feature, Moment-based features

Fractals: Self similarity, Fractional Brownian Motion (FBM), Fractal dimension

Module –III (Lecture Hour 11)

Template Matching

Based on optimal path searching techniques, correlations

Clustering

Sequential algorithms: Estimation of number of clusters

Hierarchical algorithms: Agglomerative algorithms

Textbooks

1. Pattern Recognition, Sergios Theodoridis & Konstantinous Koutroumbas, Elsevier