PATTERN RECOGNITION AND APPLICATION

PROF. PRABIR KUMAR BISWAS
Department of Electrical Engineering
IIT Kharagpur

TYPE OF COURSE : Rerun | Core | UG
COURSE DURATION : 12 weeks (29 Jul’19 -18 Oct’19)
EXAM DATE : 16 Nov 2019

PRE-REQUISITES : Basic knowledge of - Probability, random variables, Digital modulation, BPSK, QPSK etc

COURSE OUTLINE:
The course has been designed to be offered as an elective to final year undergraduate students mainly from Electrical Sciences background. The course syllabus assumes basic knowledge of Signal Processing, Probability Theory and Graph Theory. The course will also be of interest to researchers working in the areas of Machine Vision, Speech Recognition, Speaker Identification, Process Identification etc. The course covers feature extraction techniques and representation of patterns in feature space. Measure of similarity between two patterns. Statistical, nonparametric and neural network techniques for pattern recognition have been discussed in this course. Techniques for recognition of time varying patterns have also been covered. Numerous examples from machine vision, speech recognition and movement recognition have been discussed as applications. Unsupervised classification or clustering techniques have also been addressed in this course. Analytical aspects have been adequately stressed so that on completion of the course the students can apply the concepts learnt in real life problems.

ABOUT INSTRUCTOR:
Prof. Prabir Kumar Biswas is professor and head of the department of Electronics & Electrical Communication Engineering, IIT Kharagpur. His research areas are Image Processing, Computer Vision, Automated Visual Inspection, Multimedia Network, Pattern Recognition and Sensor Network. He had received Humboldt Fellow award in 2002. He is a senior member Institute of Electrical and Electronics Engineers, USA.

COURSE PLAN:
Week 1 : Introduction
Week 2 : Statistical Pattern Recognition
Week 3 : Dimensionality Problem
Week 4 : Nonparametric Pattern Classification
Week 5&6 : Linear Discriminant Functions
Week 7&8 : Neural Network Classifier
Week 9&10 : Time Varying Pattern Recognition
Week 11&12 : Unsupervised Classification