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**Faculty of Computers & Information Technology**

**Pattern Recognition**

**Information :**

**Course Code :** ITC 351

**Level :** Undergraduate

**Course Hours :** 3.00- Hours

**Department :** Department of Computer Science

**Description :**

Introduction; Probability theory: Bayes' rule; Parameter estimation; Statistical decision making: discriminate functions; measures of classification performance and measures of classification risk; Non-parametric decision making: Adaptive discriminate functions; Minimum squared error discriminate functions; Clustering techniques: Hierarchical clustering, Partitioning clustering; Artificial neural networks Hopfield nets- Other PR systems: Syntactic pattern recognition; Hidden Markov Model based; Application examples.

This course is an introduction to the subject of pattern recognition. We will cover theoretical foundations of classification and pattern recognition and discuss applications in character, Speech and face recognition and some application in automation and robotics. A tentative list of topics includes. Bayesian decision theory, discriminate functions for normal class distributions, Parameter, Estimation and supervised learning, Nonparametric techniques (Nearest neighbor rules, Parzen kernel rules, Tree classifiers), Linear discriminate functions and learning (Perception, LMS algorithms, support vector machines), Unsupervised learning and clustering, Neural networks including multilayer perceptrons and radial basis networks, and machine learning. Recent correlated software packages should be used though labs.

