**ELECTIVE: III**

**BEIT803T3** **PATTERN RECOGNITION**

**(Theory Credit: 05)**

| **Teaching Scheme:** | **Examination Scheme:** |
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| **Lecture: 4 Hours/week** | **Theory: T (U): 80 Marks T (I): 20 Marks** |
| **Tutorial: 1 Hour/week** | **Duration of University Exam. : 03 Hours** |

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**UNIT I:**

**Pattern Classifier**: Overview of Pattern recognition, Discriminant functions, supervised learning, parametric estimation, Maximum Likelihood Estimation,

**UNIT II:**

**Bayes Classifier:** Bayesian parameter Estimation, Problems with Bayes approach, Pattern classification by distance functions, Minimum distance pattern classifier.

**UNIT III:**

**Clustering:** Clustering for unsupervised learning and classification Clustering concept, C Means algorithm, Hierarchical clustering, Graph theoretic approach to pattern Clustering, Validity of Clusters.

**UNIT IV:**

**Feature Extraction and Structural Pattern Recognition:** KL Transforms, Feature selection through functional approximation, Binary selection, Elements of formal grammars, Syntactic description, stochastic grammars, Structural representation.

**UNIT V:**

**Hidden Markov model and Support Vector Machine:** State machine, Hidden Markov model, Training, Classification, Support vector machine, Feature Selection.

**UNIT VI:**

**Recent Advances:**

Fuzzy logic, Fuzzy Pattern Classifier, Pattern classification using genetic algorithms, Case study using Fuzzy pattern classifier and perception

**Text Books:**


1. M. Narasimha Murthy and V. Susheela Devi, "Pattern Recognition", Springer 2011
2. S. Theodoridis and K. Koutroumbas, "Pattern Recognition", 4th Ed., Academic Press, 2009.
3. Robert J. Schalkoff, "Pattern Recognition Statistical, Structural and Neural Approaches", John Wiley and Sons Inc., New York, 1992.
4. C. M. Bishop, "Pattern Recognition and Machine Learning", Springer, 2006.


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