ITE6012	**Advanced Data Mining Techniques**	L T P J C
Pre-Req.: NIL		3 0 0 3
		Version 1.1

Objectives:

1. To understand the guidelines and principles influences of Data Mining.
2. To learn the methodologies and technologies supporting advances in Data Mining

Expected Outcome :

On completion of this course, student should be able to

1. Analyze huge databases by applying various data mining techniques.
2. Apply data mining techniques to provide efficient solutions
3. Design data mining solutions to analyze real-world Data sets

Module	Topics	L Hrs	SLO
1	**Introduction:** A multidimensional Data Model – Data preprocessing- Data cleaning – Data integration and Transformation- Correlation analysis- Data Reduction	6	2
2	**Data Visualization and Measuring Data Similarity:** Data Objects and Attribute Types, Basic Statistical Descriptions of Data, Data Visualization, Data Matrix versus Dissimilarity Matrix, Proximity Measures for Nominal Attributes ,Binary Attributes, ,Numeric Data, Ordinal Attributes ,Dissimilarity for Attributes of Mixed Types	6	2
3	**Pattern Mining:** Mining Frequent Patters-basic concepts-apriori principle, Pattern Mining in Multilevel, Multidimensional Space, Constraint-Based Frequent Pattern Mining, Mining High-Dimensional Data and Colossal Patterns	6	7
4	**Classification Methods:** Bayesian Belief Networks, Classification by Backpropagation, Support Vector Machines, k-Nearest-Neighbor Classifiers, Genetic Algorithms, Rough Set Approach, Fuzzy Set,Model Evaluation and Selection, Approaches, Techniques to Improve Classification Accuracy	7	7
5	**Cluster Analysis:** k-Means: A Centroid-Based Technique, k-Medoids: probabilistic Model-Based Clustering, Clustering High-Dimensional Data, Clustering Graph and Network Data, Evaluation of Clustering.	7	7
6	**Outlier Detection:** Proximity-Based Methods, and Clustering-Based Methods, Outlier Detection in High-Dimensional Data.	5	7
7	**Complex Data Mining:** Mining Sequence Data: Time-Series, Symbolic Sequences, and Biological Sequences, Mining Graphs and Networks, Statistical Data Mining, Visual and Audio Data Mining	6	17
8	**Contemporary Issues**	2	
	Total Lecture Hours	**45**	

 # Mode: Flipped Class Room, [Lecture to be videotaped], Use of physical and computer models to lecture, Visit to Industry, Min of 2 lectures by experts

Text Book

1. Han J. & Kamber, M, "Data Mining: Concepts and Techniques", Third Edition, Morgan Kaufmann, 2012.

Reference Books

1. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, "Introduction to Data Mining" Pearson, First Edition, 2014.
2. Mohammed J.Zaki, Wagneer meira, "Data Mining and Analysis: Fundamental concepts and algorithms", First Edition, Cambridge University Press India, 2015
3. Ian H. Witten, & Eibe Frank, "Data Mining –Practical Machine Learning Tools and Techniques", 3rd Edition, Elesvier, 2011.

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