Course Code	18CSE355T	Course Name	DATA MINING AND ANALYTICS	Course Category	E	Professional Elective	L	T	P	C
							3	0	0	3

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	CSE	Data Book / Codes/Standards	Nil		

Course Learning Rationale (CLR):	The purpose of learning this course is to:
CLR-1 :	Understand the concepts of Data Mining
CLR-2 :	Familiarize with Association rule mining
CLR-3 :	Familiarize with various Classification algorithms
CLR-4 :	Understand the concepts of Cluster Analysis
CLR-5 :	Familiarize with Outlier analysis techniques
CLR-6 :	Familiarize with applications of Data mining in different domains

Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:	Learning Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)	Program Learning Outcomes (PLO) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		1	2	3	Engineering Knowledge	Problem Analysis	Design & Development	Analysis, Design, Research	Modern Tool Usage	Society & Culture	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO - 1	PSO - 2	PSO – 3
CLO-1 :	Gain knowledge about the concepts of Data Mining	2	80	85															
CLO-2 :	Understand and Apply Association rule mining techniques	2	75	80															
CLO-3 :	Understand and Apply various Classification algorithms	2	85	80															
CLO-4 :	Gain knowledge on the concepts of Cluster Analysis	2	80	75															
CLO-5 :	Gain knowledge on Outlier analysis techniques	2	75	85															
CLO-6 :	Understand the importance of applying Data mining concepts in different domains	2	80	85															

Duration (hour)		9	9	9	9	9
S-1	SLO-1	Why Data mining? What is Data mining ?	Mining frequent patterns: Basic concepts	Classification: Basic concepts	Cluster Analysis: Introduction	Outliers: Introduction
	SLO-2	Kinds of data meant for mining	Market Basket Analysis	General approach to Classification	Requirements and overview of different categories	Challenges of outlier detection
S-2	SLO-1	Kinds of patterns that can be mined	Frequent itemsets, Closed itemsets	Decision tree induction	Partitioning method: Introduction	Outlier detection methods: Introduction
	SLO-2	Applications suitable for data mining	Association rules- Introduction	Algorithm for Decision tree induction	k-means	Supervized and Semi-supervized methods
S-3	SLO-1	Issues in Data mining	Apriori algorithm-theoritical approach	Numerical example for Decision tree induction	k-medoids	Unsupervized methods
	SLO-2	Data objects and Attribute types	Apply Apriori algorithm on dataset-1	Attribute selection measure	Hierarchical method: Introduction	
S-4	SLO-1	Statistical descriptions of data	Apply Apriori algorithm on dataset-2	Tree pruning	Agglomerative vs. Divisive method	Statistical and Proximity based methods
	SLO-2		Generating Association rules from frequent itemsets	Scalability and Decision tree induction	Distance measures in algorithmic methods	
S-5	SLO-1	Need for data preprocessing and data quality	Improving efficiency of Apriori	Bayes' Theorem	BIRCH technique	Statistical approaches
	SLO-2			Naive Bayesian Classification		
S-6	SLO-1	Data cleaning	Pattern growth approach	IF-THEN rules for classification	DBSCAN technique	Statistical data mining
	SLO-2	Data integration		Rule extraction from a decision tree		
S-7	SLO-1	Data reduction	Mining frequest itemsets using Vertical data format	Metrics for evaluating classifier performance	STING technique	Data mining and recommender systems
	SLO-2		Strong rules vs. weak rules	Cross validation		
S-8	SLO-1	Data transformation	Association analysis to Correlation analysis	Bootstrap	CLIQUE technique	Data mining for financial data analysis
	SLO-2			Ensemble methods-Introduction		
S-9	SLO-1	Data cube and its usage	Comparison of pattern evaluation measures	Bagging and Boosting	Evaluation of clustering techniques	Data mining for Intrusion detection