Course code: Course Title	Course Structure			Pre-Requisite
	L	T	P	
SE425: Data Warehouse and Data Mining	3	0	2	Database Management System

Course Objective: To introduce the concept of Data Warehousing and Data Mining, respective techniques and applications in real world scenario.

S. NO	Course Outcomes (CO)
CO1	Describe fundamental concepts, architecture, and OLAP techniques.
CO2	Apply data mining concepts, and association rule mining techniques to extract useful patterns from large datasets.
CO3	Compare and contrast various classification, prediction, and clustering techniques to categorize and predict data patterns.
CO4	Implement advanced data mining techniques for mining complex data types, including spatial, multimedia, and time-series data.
CO5	Design solutions to solve real-world problems.

S. NO	Contents	Contact Hours
UNIT 1	**Data Warehousing:** Basic concepts in data warehousing, Collecting the requirements of data warehouse, Data Warehouse Architecture, Design, Implementation & Maintenance, OLAP in data warehouse, Data warehousing and the web, Data Cube Technology, From Data Warehousing to Data Mining.	8
UNIT 2	**Data Mining Concepts:** Data mining primitives, Basics of data mining, Query language, Architectures of data mining systems.	6
UNIT 3	**Mining Association Rules in Large Databases:** Association Rule Mining, Mining Single Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses, From Association Mining to Correlation Analysis, Constraint Based Association Mining.	8
UNIT 4	**Classification and Prediction:** Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back propagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods, Prediction, Classifier Accuracy.	8
UNIT 5	**Cluster Analysis in Data Mining:** Types of Data in Cluster Analysis. A Categorization of Major Clustering Methods, Partitioning Methods, Density Based Methods, Grid Based Methods; Model Based Clustering Methods, Outlier Analysis.	6
UNIT 6	**Mining Complex Types of Data:** Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Mining Spatial Databases, Mining Multimedia Databases, Mining Time Series and Sequence Data, Mining Text Databases. **Applications and trends in Data Mining: -** Applications, Systems products and research prototypes, Additional themes in data mining, Trends in Data mining, spatial mining, and Web Mining.	6

	TOTAL	42

REFERENCES		
S.No.	**Name of Books/Authors/Publishers**	**Year of Publication / Reprint**
1	P. Ponnian, "Data Warehousing Fundamentals for IT Professionals", John Wiley & Sons Inc, 2nd Edition.	**2010**
2	Margaret H. Dunham, "Data Mining Introductory and Advanced Topics", Pearson Education India.	**2006**
3	Jiawei Han, Micheline Kamber, "Data Mining: Concepts & Techniques", 2nd Edition.	**2010**
4	Ralph Kimball, Margy Ross, "The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling", John Wiley & Sons, 3rd Edition.	**2013**
5	Michael J. A. Berry, Gordon S. Linoff, "Mastering Data Mining: The Art and Science of Customer Relationship Management", Wiley, 3rd Edition.	**2008**
6	W. H. Inmon, "Building the Data Warehouse", Wiley, 3rd Edition.	**2008**