

Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NMCD502	Data Mining	3	0	0	3
Prerequisite						
<ul style="list-style-type: none"> Linear Algebra, Probability and Statistics 						

Course Objective
<ul style="list-style-type: none"> To provide exposure to theory of Data Mining.
Learning Outcomes
<ul style="list-style-type: none"> Students will be learning basic concepts and techniques in data mining along with applications.

Unit No.	Topics to be Covered	Contact Hours	Learning Outcome
1	Introduction: Data mining and knowledge discovery, challenges, data mining tasks, types of data and datasets, issues related to measurement and data collection.	5	This unit will help students to understand basics of data Mining and its challenges.
2	Data preprocessing: overview, cleaning, integration, reduction, transformation and discretization.	5	This unit will help students to understand various data preprocessing techniques.
3	Introduction to data warehousing: general principles, modelling, design, implementation, and optimization.	5	This unit will help students to understand the concept of data warehousing.
4	Data classification: basic concepts and algorithms, decision tree, Naïve Bayes, rule-based. Ensemble methods: bagging, boosting, random forest. Advanced classification methods. Evaluation of classification algorithms.	12	This unit will help students to learn data classification basic and advanced techniques.
5	Data Clustering: Cluster analysis, methods, evaluation. Association Analysis: Frequent item generation, rule generation, FP-growth algorithm, evaluation. Anomaly detection: Techniques	10	This unit will help students to understand the concept data clustering, association analysis, and outlier detection.
6	Mining of complex data: time-series, spatial, multimedia, etc.	5	This unit will help students to understand mining of complex data.
Total		42	

Text Books:

1. J. Han, M.Kamber and J. Pie, Data Mining: Concepts and Techniques, Elsevier, 2012.
2. Tan, Pang-Ning, Michael Steinbach, and Vipin Kumar. Introduction to data mining. Pearson Education India, 2016.

Reference Books:

1. M. J. Zaki and W. Meira, Data Mining and Analysis: Fundamental Concepts and Algorithms, Cambridge University Press, 2014.
2. E. Frank, I. H. Witten and M. Hall, Data Mining: Practical Machine Learning Tools and Techniques, Elsevier, 2017.