Course Type	Course Code	Name of Course	L	T	P	Credit
DC	NMSC522	**Data Mining for Business**	3	1	0	4

Course Objective
This course will provide students the opportunity to learn the importance of data mining and various techniques for handling different types of data and its importance in business. Also, they will learn how and when to implement a specific data mining technique for solving a particular business problem. They will be exposed to various classification, clustering and outlier detection algorithms & will learn their workability in detail. They will also be exposed to the weka software (https://sourceforge.net/projects/weka/) for practical learning of data mining concepts using popular iris dataset.
Learning Outcomes
Students will be able to comprehend with various data mining techniques and it will improve their skills to solve industrial/business related problems. They can get useful insights and accordingly can enhance their decision making capability.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1.	Data Mining Relevance, types of data, types of patterns and technologies used to handle different types of data & patterns, Major issues in data mining.	5L + 2T	Students will get exposed to brief overview of data mining & different types of data & patterns.
2.	Getting to know your data: Data Objects, & Attribute Types, Basic Statistical Descriptions of Data, Data Visualization, Measuring Similarity and Dissimilarity.	5L + 2T	Students will get to know more about data & attributes, and its type. They will be exposed to statistical tools and techniques to extract useful information from the complex data.
3.	Data Pre-processing: An overview, data cleaning, data integration, data reduction, & data transformation.	5L + 2T	Students will get to know about data pre-processing relevance and various techniques to get data in a desired format.
4.	Overview of Business Analytics and, Brief Introduction to Data Warehouse and OLAP Technology Concepts, supervised, and unsupervised data.	5L + 1T	Students will get an overview of Business Analytics domain with the emphasis on Industry practices and they will learn concepts, principles, and skills to practice and engage in scalable pattern discovery methods on massive data.
5.	Mining Frequent Patterns, associations, Correlations: Basic Concepts & Methods.	6L + 2T	In this module students will be exposed to mining patterns with a Market Basket Analysis case. They will learn to identify patterns using frequent item sets and association rules.

6.	Classification: Basic Concepts, decision tree, support vector machine, regression technique, logistic classifier, neural network and a clustering algorithms, model evaluation and selection techniques.	10L + 2T	In this module students will learn classification models and evaluation techniques to compare the algorithms performance & learn to enhance accuracy with examples.
7.	Handling Missing values and Outliers; Dimension Reduction: Curse of Dimensionality; Dimension Reduction using Principle Component Analysis; Feature Engineering; Imbalanced data handling techniques	3L + 1T	In this section, students will get hold on how to prepare the data for modeling to meet the desired objectives and this will focus on the in-depth study regarding dimensionality reduction techniques & its relevance in business domain.
8.	Data mining trends and Research Frontiers: mining complex data types and data mining applications in various domains (through Harvard Business Cases)	2L + 1T	Students will learn the trends and research frontier in data mining. They will be exposed to various application in several domain to learn the deployment of model in the business environment.
9.	Data Mining Concepts Deployment using Weka Software	1L + 1T	Students will get a hands-on experience to apply data mining concepts using software for iris dataset.
	Total Lecture Hours	**42L+14T**	

Text Books:
1. Data Mining: Concepts and Techniques by Jiawei Han, Micheline Kamber, and Jian Pei (Morgan Kaufmann, Elsevier publisher)
2. Data Mining: Practical Machine Learning Tools and Techniques (Morgan Kaufmann Series in Data Management Systems)

Reference Books:

1. Storytelling with Data: A Data Visualization Guide for Business Professionals
2. Exploratory Data Mining and Data Cleaning: 442 (Wiley Series in Probability and Statistics)
3. Data Mining for Business Analytics: Concepts, Techniques, and Applications in Python, by Galit Shmueli, Peter C Bruce, Peter Gedeck, Nitin R Patel, (2020), Wiley.