AMITY UNIVERSITY

UTTAR PRADESH

FORMAT FOR COURSE CURRICULUM

Course Title:DATA MINING AND BUSINESS INTELLIGENCE
Credit Units: 4

L	T	P/S	SW/FW	No. of PSDA	TOTAL CREDIT UNITS
3	1	-	-	-	4

Course Level: UG **Course Code: IT402**

Course Objectives:

The purpose of this course is to introduce the basic data mining technologies and their use for business intelligence. The objective of this course is to teach the students how to analyze the business needs for knowledge discovery in order to create competitive advantages and to apply data mining technologies appropriately in order to realize their real business value

Student Learning Outcomes/Course Outcomes:

At the end of this course, the student will be able to

- Approach business problems data-analytical by identifying opportunities to derive business value from data.
- Know the basics of data mining techniques and how they can be applied to extract relevant business intelligence.
- Examine the types of the data to be mined and present a general classification of tasks and primitives to integrate a data mining system.
- Discover interesting patterns from large amounts of data to analyze and extract patterns to solve problems, make predictions of outcomes
- Apply and analyze data mining for Business Intelligence Application.

Pre-requisites: Understanding of basic **c**oncepts of Database Management System and Algorithms and Data Structures

Course Contents/Syllabus:

	Weightage (%)
Module I Introduction to Data Mining and Business Intelligence	
Introduction to DM and KDD process Integration of a data mining system with a database or a data warehousing understanding, BI and DW architectures and its types - Relation between BI and DW - Difference between OLAP and OLTP - Dimensional analysis – data cube representations, Drill-down and roll-up - slice and dice or rotation - OLAP models - ROLAP versus MOLAP - defining schemas: Stars, snowflakes and fact constellations	**25%**
Module II Data Preprocessing	**15%**
Data Pre-Processing: What kinds of data can be mined, Data Cleaning: Missing Values, Noisy Data, (Binning, Clustering, Regression), Inconsistent Data, Data Integration and Transformation. Data Reduction:-Data Cube Aggregation, Dimensionality reduction, Data Compression, Numerosity Reduction, Discretization and Concept hierarchy generation.	
Module III Association and Clustering algorithm	**20%**
Association rules: Introduction to market basket analysis, Large Item sets, Basic APRIORI AND FP Tree Algorithms Clustering: Introduction, Similarity and Distance Measures, Partitioned and Hierarchical Algorithms. Density Based Clustering Methods - DBSCAN.	
Module IV Classification and Predictions	**20%**
What is Classification & Prediction, Issues regarding Classification and prediction, Decision tree, Bayesian Classification, Classification by Back propagation, Support Vector Machine, K-nearest neighbor classifiers, Regression (Linear and Logistic Regression)	
Module V Data Mining for Business Intelligence Applications	**20%**
BI Architecture, Introduction to Business analytical tool (Power BI, LIS) spread sheets, concept of dashboard, Decision Engineering. Data mining for business Applications like Balanced Scorecard, Fraud Detection, Click stream Mining, Market Segmentation, Retail industry, Telecommunications Industry, Banking & Finance and CRM etc	

Course and PLO Mapping

1- Slightly (Low) 2- Moderate (Medium) 3- Substantial (High)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
Data Mining and Business Intelligence	**3**	**1**	**2**	**1**	**3**				**3**	**3**	**3**	**3**

CO and PLO Mapping

1- Slightly (Low) 2- Moderate (Medium) 3- Substantial (High)

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CO 1	3								3	3	1	3
CO 2	3	1	2		3				3	3	3	3
CO 3	3	1	2	1	3				3	3	3	3
CO 4	3	1	2	1	3				3	3	3	3
CO 5	3		2		3				3	3	3	3
CO 6	3								3	3	1	3

Pedagogy for Course Delivery:

Subject will be taught on the basis of lectures, concepts learn in the classroom using various real life situations and discussing case study covering different module with special reference to Classification, clustering, predictions for business intelligence concept

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	End Term Examination
100%	NA	100%

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	Mid Term Exam	Home Assignment	Presentation/ Viva	Attendance	End Term Examination
Weightage (%)	10%	8%	7%	5%	70%

Text Book:

- Data Warehousing Fundamentals for IT Professionals, Paulraj Ponniah, Willey 2nd Edition.
- Business Intelligence: Practices, Technologies, and Management- Rajiv Sabherwal , Irma Becerra-Fernandez
- Data Warehousing, Reema Thareja, Oxford University Press, 2009 Edition
- Data Mining: Concepts and Techniques‖, J.Han, M.Kamber, Academic Press, Morgan Kanf man Publishers, 2001.

Reference books:

- Data Warehousing, Data Mining & OLAP, Alex Berson and Stephen J. Smith, Tata McGraw-Hill Edition, 2004.
- Data Mining, VikramPudi and P. Radha Krishna, Oxford University Press, 2009 Edition
- G. Shmueli, N.R. Patel, P.C. Bruce, "Data Mining for Business Intelligence:Concepts, Techniques, and Applications in Microsoft Office Excel with XLMiner",Wiley India