

COURSE PLAN & COURSE DATA SHEET

PROGRAM:	B.Tech IVth Sem	DEGREE:	B.Tech
COURSE: DATA MINING AND VISUALIZATION		SEMESTER:	4 th CREDITS: 3
COURSE CODE:	CS-216 REGULATION:	COURSE TYPE:	CORE
COURSE AREA/DOMAIN:	Data Science	CONTACT HOURS:	3 hours/week
CORRESPONDING LAB COURSE CODE (IF ANY):	CS-266	LAB COURSE NAME (IF ANY):	DATA MINING AND VISUALIZATION LAB

PROGRAM EDUCATIONAL OBJECTIVES:

SYLLABUS:

UNIT	DETAILS	HOURS
I	Data Mining: Data–Types of Data–, Data Mining Functionalities– Interestingness Patterns–Classification of Data Mining systems– Data mining Task primitives –Integration of Data mining system with a Data warehouse–Major issues in Data Mining–Data Preprocessing.	09
II	Association Rule Mining: Mining Frequent Patterns–Associations and correlations – Mining Methods– Mining Various kinds of Association Rules– Correlation Analysis– Constraint based Association mining. Graph Pattern Mining, SPM.	08
III	Classification: Classification and Prediction – Basic concepts–Decision tree induction–Bayesian classification, Rule–based classification, Lazy learner.	07
IV	Clustering and Applications: Cluster analysis–Types of Data in Cluster Analysis–Categorization of Major Clustering Methods– Partitioning Methods, Hierarchical Methods– Density–Based Methods, Grid–Based Methods, Outlier Analysis.	09
V	Advanced Concepts: Basic concepts in Mining data streams–Mining Time–series data—Mining sequence patterns in Transactional databases– Mining Object– Spatial– Multimedia–Text and Web data – Spatial Data mining– Multimedia Data mining–Text Mining– Mining the World Wide Web.	09
TOTAL HOURS		42

Teacher Centric Approach			
TC1: Chalk and Talk, Blended learning	TC2: PPT,	TC3: Video Lectures	TC4:
Learner Centric Approach:			
LC1: Assignment.	LC2: Mini project.	LC3: Quiz/Class test.	LC 4: Seminar on recent trends.
LC5: Group Task.	LC6: Others		

DETAILED SESSION PLAN

Lecture session/ Number	Topics to be covered	CO addressed	Teacher Centric Approach	Learner Centric Approach	References	Relevance with POs and PSOs
1	UNIT-1 Data Mining: Data, Types of Data working principles and attack surface		TC1	LC1,LC3	T1	PO1,PO3,PO5,PO8,PSO1
2	Data Mining Functionalities,		TC1	LC1,LC3	T1	PO1,PO3,PO5,PO8,PSO1
3	Interestingness Patterns		TC1	LC1,LC3	T1	PO1,PO3,PO5,PO8,PSO1
4	Classification of Data Mining systems,		TC1	LC1,LC3	T1	PO1,PO3,PO5,PO8,PSO1
5	Data mining Task primitives		TC1	LC1,LC3	T1	PO1,PO3,PO5,PO8,PSO1
6	Integration of Data mining system with a Data warehouse		TC1	LC1,LC3	T1	PO1,PO3,PO5,PO8,PSO1
7	Major issues in Data Mining		TC1	LC1,LC3	T1	PO1,PO3,PO5,PO8,PSO1
8	Data Preprocessing		TC1	LC1,LC3	T1	PO1,PO3,PO5,PO8,PSO1
9	Doubt call			-	-	-
10	UNIT-2 Association Rule Mining: Mining Frequent Patterns		TC1	LC1,LC3	T1	PO2,PO4,PO6,PO8,PSO1,PSO2
11	Associations and correlations		TC1	LC1,LC3	T1	PO2,PO4,PO6,PO8,PSO1,PSO2

12	Mining Methods– Mining Various kinds of Association Rules		TC1	LC1,LC3	T1	PO2,PO4,PO6,PO8,PSO1,PSO2
13	Correlation Analysis					
14	Constraint based Association mining					
15	Graph Pattern Mining					
16	SPM Application proxies.					
17	Doubt class		-	-	-	-
18	UNIT-3 Classification: Classification and Prediction		TC1	LC1,LC3	T1	PO1,PO2,PO3,PO8,PO12,PSO1, PSO2
19	Basic concepts		TC1	LC1,LC3	T1	PO1,PO2,PO3,PO8,PO12,PSO1, PSO2
20	Decision tree induction		TC1	LC1,LC3	T1	PO1,PO2,PO3,PO8,PO12,PSO1, PSO2
21	Bayesian classification		TC1	LC1,LC3	T1	PO1,PO2,PO3,PO8,PO12,PSO1, PSO2
22	Rule–based classification,		TC1	LC1,LC3	T1	PO1,PO2,PO3,PO8,PO12,PSO1, PSO2
23	Lazy learner.		TC1	LC1,LC3	T1	PO1,PO2,PO3,PO8,PO12,PSO1, PSO2
24	Decision tree induction, Bayesian classification, Rule–based classification, Lazy learner.		TC1	LC1,LC3	T1	PO1,PO2,PO3,PO8,PO12,PSO1, PSO2
25	Doubt Class		-	-	-	-
26	UNIT – 4 Clustering and Applications: Cluster analysis–Types		TC1	LC1,LC3	T1	PO2,PO3,PO5,PO8,PSO1
27	Types of Data in Cluster Analysis		TC1	LC1,LC3	T1	PO2,PO3,PO5,PO8,PSO1
28	Categorization of Major Clustering Methods		TC1	LC1,LC3	T1	PO2,PO3,PO5,PO8,PSO1
29	Partitioning Methods, Hierarchical Methods		TC1	LC1,LC3	T1	PO2,PO3,PO5,PO8,PSO1
30	Density–Based Methods, Grid–Based Methods,		TC1	LC1,LC3	T1	PO2,PO3,PO5,PO8,PSO1
31	Outlier Analysis.		TC1	LC1,LC3	T1	PO2,PO3,PO5,PO8,PSO1
32	Doubt class		-	-	-	-

33	UNIT-5 Advanced Concepts: Basic concepts in Mining data streams		TC1	LC1,LC3	T1	PO1,PO3,PO4,PO11, PSO1
34	Mining Time-series data Network;		TC1	LC1,LC3	T1	PO1,PO3,PO4,PO11, PSO1
35	Mining sequence patterns in Transactional databases		TC1	LC1,LC3	T1	PO1,PO3,PO4,PO11, PSO1
36	Mining Object		TC1	LC1,LC3	T1	PO1,PO3,PO4,PO11, PSO1
36	Spatial- Multimedia, Text and Web data		TC1	LC1,LC3	T1	PO1,PO3,PO4,PO11, PSO1
38	Spatial Data mining		TC1	LC1,LC3	T1	PO1,PO3,PO4,PO11, PSO1
39	Multimedia Data mining		TC1	LC1,LC3	T1	PO1,PO3,PO4,PO11, PSO1
40	Text Mining		TC1	LC1,LC3	T1	PO1,PO3,PO4,PO11, PSO1
41	Mining the World Wide Web.		TC1	LC1,LC3	T1	PO1,PO3,PO4,PO11, PSO1
42	Doubt Class		-	-	-	-

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
1	Data Mining – Concepts and Techniques – Jiawei Han & Micheline Kamber, 3rd Edition Elsevier.
2	Data Mining Introductory and Advanced topics – Margaret H Dunham, PEA.
3	Ian H. Witten and Eibe Frank, Data Mining: Practical Machine Learning Tools and Techniques, 2005

WEB SOURCE REFERENCES (W):

1	https://www.vssut.ac.in/lecture_notes/lecture1428550844.pdf
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COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
	Database Management Systems		
	Knowledge of probability and statistics		

COURSE OBJECTIVES:

1	It presents methods for mining frequent patterns, associations, and correlations.
2	It then describes methods for data classification and prediction, and data-clustering approaches.
3	It covers mining various types of data stores such as spatial, textual, multimedia, streams.

COURSE OUTCOMES:

S.NO	DESCRIPTION	PO(1..12) MAPPING	PSO(1..3) MAPPING
Cxxx.1	Ability to understand the types of the data to be mined and present a general classification of tasks and primitives to integrate a data mining system.	PO1,PO3,PO5,PO8	PSO1
Cxxx.2	Apply preprocessing methods for any given raw data.	PO2,PO4,PO6,PO8	PSO1, PSO2
Cxxx.3	Extract interesting patterns from large amounts of data.	PO1,PO2,PO3,PO8,PO1 2	PSO1, PSO2
Cxxx.4	Discover the role played by data mining in various fields.	PO2,PO3,PO5,PO8	PSO1
Cxxx.5	Choose and employ suitable data mining algorithms to build analytical applications CO6: Evaluate the accuracy of supervised and unsupervised models and algorithms.	PO2,PO3,PO5,PO8	PSO1
COURSE OVERALL PO/PSO MAPPING:			

COURSE OUTCOMES VS POs MAPPING (DETAILED; HIGH:3; MEDIUM:2; LOW:1):

S.NO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Cxxx.1	1		2		1			1						1	
Cxxx.2		2		2		2		1						2	1
Cxxx.3	1	2	1					3				2		1	1
Cxxx.4		1	3		2			1						2	
Cxxx.5		2	3		1			2						1	

POs & PSO REFERENCE:

PO 1	Engineering Knowledge	PO7	Environment & Sustainability	PSO1	To equip the students with theoretical and implementation knowledge in all the latest area of Computer Science and Engineering for successful career in software industry, pursuing higher studies, or entrepreneurial establishment.
PO 2	Problem Analysis	PO8	Ethics	PSO2	To nurture the students with the critical thinking abilities for better decision making by offering them a socially acceptable solutions to real life problem through computing paradigm.
PO 3	Design & Development	PO9	Individual & Team Work	PSO3	To nurture the students with the comprehensive analytical and design by offering them techno-commercial feasible solutions of real business problem through computing.
PO 4	Investigations	PO10	Communication Skills		
PO 5	Modern Tools	PO11	Project Mgt. & Finance		
PO 6	Engineer & Society	PO12	Life Long Learning		

COs VS POs MAPPING JUSTIFICATION:

S.NO	PO/PSO MAPPED	LEVEL OF MAPPING	JUSTIFICATION
Cxxx.1			
Cxxx.2			
Cxxx.3			
Cxxx.4			
Cxxx.5			
Cxxx*			

GAPS IN THE SYLLABUS - TO MEET INDUSTRY/PROFESSION REQUIREMENTS, POs & PSOs:

SNO	DESCRIPTION	PROPOSED ACTIONS
1		
2		
3		
4		
5		

PROPOSED ACTIONS: TOPICS BEYOND SYLLABUS/ASSIGNMENT/INDUSTRY VISIT/GUEST LECTURER/NPTEL ETC

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

1	
2	
3	
4	
5	
6	
7	

DELIVERY/INSTRUCTIONAL METHODOLOGIES:

<input type="checkbox"/> CHALK & TALK	<input type="checkbox"/> STUD. ASSIGNMENT	<input type="checkbox"/> WEB RESOURCES	<input type="checkbox"/> NPTEL/OTHERS
<input type="checkbox"/> LCD/SMART BOARDS	<input type="checkbox"/> STUD. SEMINARS	<input type="checkbox"/> ADD-ON COURSES	<input type="checkbox"/> WEBNIARS

ASSESSMENT METHODOLOGIES-DIRECT

<input type="checkbox"/> ASSIGNMENTS	<input type="checkbox"/> STUD. SEMINARS	<input type="checkbox"/> TESTS/MODEL EXAMS	<input type="checkbox"/> UNIV. EXAMINATION
<input type="checkbox"/> STUD. LAB PRACTICES	<input type="checkbox"/> STUD. VIVA	<input type="checkbox"/> MINI/MAJOR PROJECTS	<input type="checkbox"/> CERTIFICATIONS
<input type="checkbox"/> ADD-ON COURSES	<input type="checkbox"/> OTHERS		

ASSESSMENT METHODOLOGIES-INDIRECT

<input type="checkbox"/> ASSESSMENT OF COURSE OUTCOMES (BY FEEDBACK, ONCE)	<input type="checkbox"/> STUDENT FEEDBACK ON FACULTY (TWICE)
<input type="checkbox"/> ASSESSMENT OF MINI/MAJOR PROJECTS BY EXT. EXPERTS	<input type="checkbox"/> OTHERS

INNOVATIONS IN TEACHING/LEARNING/EVALUATION PROCESSES:

- 1.
- 2.



Lingaya's Vidyapeeth

Deemed-to-be-University u/s 3 of UGC Act 1956, Government of India

NAAC ACCREDITED

Approved by MHRD / AICTE / PCI / BCI / COA / NCTE

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Additionally, the details to be compiled separately by the Departmental Coordinator for the entire Department.