Shri Vile Parle Kelavani Mandal's

Dwarkadas J. Sanghvi College of Engineering

(Autonomous College Affiliated to the University of Mumbai)

Scheme and detailed syllabus of DJS23 Honors Program in Data Analytics

With effect from the Academic Year: 2025-2026

Shri Vile Parle Kelavani Mandal's

DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING

(Autonomous College Affiliated to the University of Mumbai)

NAAC Accredited with "A" Grade (CGPA: 3.18)

Department of Computer Science and Engineering (IoT and Cyber Security with Block Chain Technology)

Proposed Scheme for Honors Degree Program in Data Analytics : Semester: III(Autonomous)

(Academic Year 2025-2026)

Sr. No.	Course Code	Course	Teaching Scheme			Continuous Assessment (A)						Semester End Examination (B)						Aggregate (A+B)	Credits
			Theory (hrs.)	Practical (hrs.)	Tutorial (hrs)	Term Test 1 (TT1) - a	Term Test 2 (TT2) - b	Assg/CP/ GD/Presn tation/ Quiz) - c	Total (a+b+c)	Term work	CA Total	Duration	Theory	Oral	Pract	Oral & Pract	SEE Total		
SEM III																			
1	DJS23BH1201	Fundamentals of Data Mining	3	--	--	15	15	10	40	--	40	2	60	--	--	--	60	100	3
SEM IV																			
2	DJS23BH1251	Data Analytics and Visualization	3	--	--	15	15	10	40	--	40	2	60	--	--	--	60	100	3
	DJS23BH1251L	Data Analytics and Visualization Laboratory	--	2	--	--	--	--	--	25	25	2	--	25	--	--	25	50	1
SEM V																			
3	DJS23BH1301	Natural Language Processing	3	--	--	15	15	10	40	--	40	2	60	--	--	--	60	100	3
	DJS23BH1301L	Natural Language Processing Laboratory	--	2	--	--	--	--	--	25	25	2	--	25	--	--	25	50	1
SEM VI																			
4	DJS23BH1351	Time Series and Forecasting Analytics	3	--	--	15	15	10	40	--	40	2	60	--	--	--	60	100	3
	DJS23BH1351L	Time Series and Forecasting Analytics Laboratory	--	2	--	--	--	--	--	25	25	2	--	25	--	--	25	50	1
SEM VIII																			
5	DJS23BH1401	Optimization for Decision Analytics	3	--	--	15	15	10	40	--	40	2	60	--	--	--	60	100	3
		Total	**15**	**6**	**0**	**75**	**75**	**50**	**200**	**75**	**275**	**16**	**300**	**75**	**0**	**0**	**375**	**650**	**18**

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Continuous Assessment (A):

Course	Assessment Tools	Marks	Time (hrs.)
Theory	One Term test (based on 40 % syllabus)	15 each	1
	Second Term test (next 40 % syllabus) / presentation / assignment / course project / group discussion / any other.		As applicable
Audit course	Performance in the assignments / quiz / power point presentation / poster presentation / group project / any other tool.	10	
Laboratory	Performance in the laboratory and documentation.	--	
Tutorial	Performance in each tutorial & / assignment.	--	
Laboratory &Tutorial	Performance in the laboratory and tutorial.	--	

The final certification and acceptance of term work will be subject to satisfactory performance upon fulfilling minimum passing criteria in the term work / completion of audit course.

Continuous Assessment (B):

Course	Assessment Tools	Marks	Time (hrs.)
Theory / * Computer based	Written paper based on the entire syllabus.	60	2
	* Computer based assessment in the college premises.		
Oral	Questions based on the entire syllabus.	--	As applicable
Practical	Performance of the practical assigned during the examination and the output / results obtained.	--	2
Oral & Practical	Project based courses - Performance of the practical assigned during the examination and the output / results obtained. Based on the practical performed during the examination and on the entire syllabus.	--	2

Program: B. Tech in Computer Science and Engineering (IoT and Cybersecurity with Block chain Technology)	S.Y.B.Tech	Semester : III
Course : Fundamentals of Data Mining	Course Code: DJS23BH1201	

Teaching Scheme (Hours / week)				Evaluation Scheme								
				Continuous Assessment Marks (A)				Semester End Examination Marks (B)				Total marks (A+B)
Lectures	Practical	Tutorial	Total Credits	Term Test 1	Term Test 2	Assignment	Total	Theory				
				15	15	10	40	60				100
				Term work			Total Term work	Laboratory Examination				
3	--	--	3	Laboratory Work	Tutorial / Mini project / presentation/ Assignment			Oral	Practical	Oral & Practical		--
				--	--		--	--	--	--		

Pre-requisite:

1. Database Management Systems

Objectives:

1. To understand data mining concepts.
2. To learn Data mining techniques and algorithms.
3. Comprehend the data mining environments

Outcomes: On completion of the course, learners will be able to:

1. Gain practical skills in collecting and preprocessing the raw data from various sources
2. Characterize the various kinds of patterns that can be discovered by association rule mining.

3. Develop a deep understanding of various classification algorithms.
4. Understand clustering and Categorization of clustering methods.
5. Study Web Mining techniques that can be applied to extract valuable insights from web data.
6. Examine current research trends and emerging technologies in data mining.

Detailed Syllabus:		
Unit	**Description**	**Duration**
1	**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. KDD vs Data Mining, DBMS vs DM, Other Related Areas, DM Techniques, Other Mining Techniques, Issues and Challenges in DM, DM Applications- Case Studies	**9**
2	**Association Rules:** What is an Association Rule?, Methods to Discover Association Rules, A Priori Algorithm, Partition Algorithm, Pincer-Search Algorithm, Dynamic Itemset Counting Algorithms, FP-Tree Growth Algorithm, Discussion on Different Algorithms, Incremental Algorithms, Border Algorithms, Generalized Association Rule, Association Rules with Item Constraints	**9**
3	**Classification:** Classification and Prediction – Basic concepts–Decision tree induction– Bayesian classification, Rule–based classification, Lazy learner.	**07**
4	**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.	**06**
5	**Web Mining:** Web Mining, Web Content Mining, Web Structure Mining, Web Usage Mining, Text Mining, Unstructured Text, Episode Rule Discovery for Texts, Hierarchy of Categories, Text Clustering	**04**
6	**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	**04**
	Total	**39**

Books Recommended:

Text Books

1. Data Mining – Concepts and Techniques – Jiawei Han & Micheline Kamber, 3rd Edition Elsevier,2011.

2. Data Mining Introductory and Advanced topics – Margaret H Dunham, PEA, 2006.

3. Data Mining Techniques, Arun K Pujari, University Press,2013.

Reference Books

1. Ian H. Witten and Eibe Frank, Data Mining: Practical Machine Learning Tools and Techniques (Second Edition), Morgan Kaufmann, 2005.

Web resources:

1. https://www.javatpoint.com/data-mining
2. https://www.spiceworks.com/tech/big-data/articles/what-is-data-mining/

Online Courses: NPTEL / Swayam

1. Course on- Data Mining

- https://onlinecourses.nptel.ac.in/noc21_cs06/preview

Evaluation Scheme:

Continuous Assessment (A):

Theory:

1. Two term test of 15 marks each, Assignment / course project / group discussion /presentation / quiz/ any other 10 marks
2. Total duration allotted for writing the paper is 45 min.

Semester End Examination (B):

Theory:

1. Question paper will be based on the entire syllabus summing up to 60 marks.
2. Total duration allotted for writing the paper is 2 hrs.

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