



Shri Vile Parle Kelavani Mandal's
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Empowered Autonomous College Affiliated to the University of Mumbai)



Shri Vile Parle Kelavani Mandal's

Dwarkadas J. Sanghvi College of Engineering

(Autonomous College Affiliated to the University of Mumbai)

Scheme and detailed syllabus

Final Year B.Tech

in

Computer Science and Engineering

(IoT and Cyber Security with Block Chain Technology)

Honors Program in Data Analytics

(Semester VII)

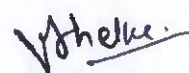
Prepared by:- Board of Studies in Computer Science and Engineering
(IoT and Cyber Security with Block Chain Technology)

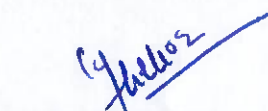
With effect from the Academic Year: 2026-2027



Scheme for Final Year Undergraduate Program in Computer Science and Engineering (IoT and Cyber Security with Blockchain Technology) - Honors in Data Analytics : SEM VII (Autonomous) Academic Year : 2026-27																					
Sr. no.	Course Code	Course	Teaching Scheme				Semester End Examination (SEE) - A						Continuous Assessment (CA) - B						Aggregate (A+B)	Credits Earned	
			Theory (Hrs)	Practical (Hrs)	Tutorial (Hrs)	Credits	Duration (Hrs)	Theory	Oral	Pract	Oral & Pract	SEE Total (A)	Term Test 1 (TT1)	Term Test 2 (TT2)	Term Test 3 (TT3)	Term Test Total (TT1 + TT2 + TT3)	Term Work	CA Total (B)			
SEM III																					
1	DJS23BCH1301	Fundamentals of Data Mining	3	—	—	3	2	60	--	--	—	60	15	15	10	40	--	40	100	3	3
SEM IV																					
2	DJS23BCH1401	Data Analytics and Visualization	3	—	—	3	2	60	--	—	—	60	15	15	10	40	--	40	100	3	4
	DJS23BLH1401	Data Analytics and Visualization Laboratory	—	2	--	1	2	--	25	—	—	25	—	—	—	—	25	25	50	1	
SEM V																					
3	DJS23BCH1501	Natural Language Processing	3	—	--	3	2	60	--	—	—	60	15	15	10	40	—	40	100	3	4
	DJS23BLH1501	Natural Language Processing Laboratory	—	2	--	1	2	--	25	—	—	25	—	—	—	—	25	25	50	1	
SEM VI																					
4	DJS23BCH1601	Time Series and Forecasting Analytics	3	—	--	3	2	60	—	—	—	60	15	15	10	40	--	40	100	3	4
	DJS23BLH1601	Time Series and Forecasting Analytics Laboratory	--	2	--	1	2	--	25	—	—	25	—	—	—	—	25	25	50	1	
SEM VII																					
5	DJS23BCH1701	Business Intelligence	3	—	—	3	2	60	--	—	—	60	15	15	10	40	--	40	100	3	3
Total			15	6	0	18	16	300	75	0	0	375	75	75	50	200	75	275	650	18	18


Mr. Swapnil Gharat
Prepared by


Dr. Vishkha Shelke
Verified by


Dr. Narendra Shekokar
HoD & Vice Principal


Dr. Hari Vasudevan
Principal



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Program: B. Tech in Computer Science and Engineering (IoT and Cybersecurity with Block chain Technology) With Honors in Data Analytics								Final Year B.Tech		Semester: VII	
Course: Business Intelligence								Course Code: DJS23BCH1701			
Teaching Scheme (Hours / week)				Evaluation Scheme							
				Semester End Examination Marks (A)			Continuous Assessment Marks (B)				Total marks (A+ B)
Lectures	Practical	Tutorial	Total Credits	Theory			Term Test 1	Term Test 2	Term Test 3	Total	100
				60			15	15	10	40	
				Laboratory Examination			Term work			Total Term work	
3	-	--	3	Oral	Practical	Oral & Practical	Laboratory Work	Tutorial / Mini project presentation Assignment		-	
				-	--	--	-	-	-		

Pre-requisite:

1. Database Management System.
2. Python Programming.
3. Data Analytics and Visualization

Objectives:

1. To understand the concepts and architecture of Business Intelligence and Decision Analytics.
2. To apply decision modelling and optimization techniques for business problem solving.
3. To analyse business performance using reporting, visualization, and KPI frameworks.
4. To develop AI-driven Business Intelligence solutions for real-world applications.

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

1. Describe the fundamentals and architecture of Business Intelligence and Decision Analytics.
2. Apply decision modelling and optimization techniques for business problem solving.
3. Analyse business data using reporting, dashboards, and visualization techniques.
4. Evaluate business performance using KPIs and performance metrics.
5. Analyse the role of AI and machine learning in intelligent business decision-making.
6. Develop Business Intelligence solutions for real-world business applications.



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Detailed Syllabus: (unit wise)

Unit	Description	Duration
1	Foundations of Business Intelligence and Decision Analytics Overview of Business Intelligence, evolution of Business Intelligence from Decision Support Systems, role of Business Intelligence in organizations, data-driven decision making, Business Intelligence and analytics concepts, Business Intelligence architecture and lifecycle, data sources and data integration concepts, Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) systems as sources of business data, business reporting and visualization fundamentals, Business Intelligence tools and technologies, applications of Business Intelligence in modern enterprises, challenges and emerging trends in Business Intelligence.	06
2	Decision Modelling and Optimization for Business Analytics: Decision-making process in business, structured, semi-structured and unstructured decisions, model-based decision making, types of models (descriptive, predictive, prescriptive), optimization techniques (linear programming and integer programming – basic concepts), multi-criteria decision making, decision trees for business decisions, risk and uncertainty in decision making, scenario analysis and sensitivity analysis.	07
3	Business Analytics Applications and Reporting Business analytics workflow and frameworks, Business reporting systems and reporting practices, Data visualization for business insights, Analytical interpretation and insight generation, Enterprise reporting and dashboard concepts, Decision support applications in organizations, Business analytics applications in finance, marketing, healthcare, supply chain, and operations, Analytics communication and presentation techniques, AI-assisted business reporting concepts, Emerging practices in enterprise analytics.	07
4	Business Metrics and Performance Management: Key Performance Indicators (KPIs), difference between metrics, measures and KPIs, financial metrics (revenue, profit, ROI, ROE, growth analysis), operational metrics (efficiency, productivity, cost, defect rates), customer metrics (CSAT, NPS, churn rate, customer lifetime value), balanced scorecard, performance dashboards, trend and variance analysis.	07
5	AI-Driven Business Intelligence and Decision Intelligence: Concept of decision intelligence, integration of AI in Business Intelligence systems, automated decision-making systems, role of machine learning in BI, predictive and prescriptive analytics in business, real-time decision systems, intelligent agents in business decision making, explainable AI (XAI) in business analytics, ethical issues and bias in AI-driven decisions	08
6	Contemporary Applications of Business Intelligence: Business communication using analytics, Case studies of Business Intelligence applications in finance, marketing, healthcare, supply chain, and operations, AI-enabled business transformation, Digital innovation and intelligent business systems, Human-centered analytics and decision support, Business Intelligence applications in Industry 4.0 environments, Enterprise analytics practices and reporting systems, Emerging applications of AI-powered Business Intelligence.	07
Total		42



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Books Recommended:

Textbooks:

1. Data and Decision Analytics for Business Operations, By M. L. F. Cheong, Springer, 1st Edition, 2024.
2. Data Analytics and Business Intelligence: Computational Frameworks, Practices and Applications, by Vincent Charles, Pratibha Garg, Neha Gupta, and Mohini Agarwal, Routledge, 2022.
3. AI-Powered Business Intelligence, Tobias Zwingmann, O'Reilly Media, 1st Edition, 2022.
4. Business Intelligence, Analytics, and Data Science: A Managerial Perspective, Ramesh Sharda, Dursun Delen, Efraim Turban, Pearson, 5th Edition, 2023.

Reference Books:

1. Decision Support and Business Intelligence Systems, Efraim Turban, Ramesh Sharda and Dursun Delen, Pearson, 10th Edition, 2011.
2. Decision Intelligence in Dynamic Environments, Daniel J. Power (Editor), Springer, 1st Edition, 2022.
3. Data Analytics and Business Intelligence: Computational Frameworks, Practices and Applications, Sanjiv Charles et al., Routledge, 1st Edition, 2022.
4. Advances in Data Analytics for Business Decision Making, Manisha Sharma (Editor), Academic Press / Elsevier, 1st Edition, 2023.
5. Data and Decision Analytics for Business Operations, M. L. F. Cheong, Springer, 1st Edition, 2024.

Online References:

1. IBM – Business Analytics & AI
<https://www.ibm.com/solutions/analytics>
2. McKinsey Analytics Insights
<https://www.mckinsey.com/capabilities/quantumblack/our-insights>
3. Microsoft Learn – Business Intelligence & Power BI
<https://learn.microsoft.com/en-us/power-bi/>
4. Tableau – Data Visualization & BI Resources
<https://www.tableau.com/learn/articles>

Online Courses: NPTEL / Swayam:

1. Business Intelligence & Analytics, Prof. Saji K Mathew, (IIT Madras)
https://onlinecourses.nptel.ac.in/noc26_cs64/preview?utm_source=chatgpt.com
2. Business Analytics for Management Decision, By Prof. Rudra P Pradhan, (IIT Kharagpur)
https://onlinecourses.nptel.ac.in/noc20_mg11/preview?utm_source=chatgpt.com
3. Business Analytics & Text Mining Modeling using Python, Dr. Gaurav Dixit (IIT Roorkee)
https://onlinecourses.nptel.ac.in/noc19_mg47/preview?utm_source=chatgpt.com
4. Business Intelligence with Power BI, Dr. Rupesh Kumar Sinha, JAIN (Deemed-to-be University),
https://onlinecourses.swayam2.ac.in/e-learning/preview/imb26_mg113



Evaluation Scheme:

Semester End Examination (A):

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.

Continuous Assessment (B):

Theory:

1. Term Test 1 (based on 40 % syllabus) of 15 marks for the duration of 45 min.
2. Term Test 2 (on next 40 % syllabus) of 15 marks for the duration of 45 min.
3. Term Test 3 can be conducted as Assignment / course project / group discussion / presentation/quiz/ any other for 10 marks.

Prepared by

Checked by

Head of the Department

Vice Principal

Principal