



Shri Vile Parle Kelavani Mandal's

Dwarkadas J. Sanghvi College of Engineering

(Autonomous College Affiliated to the University of Mumbai)

Scheme and Detailed Syllabus (DJS23)

of

Honours Degree Program

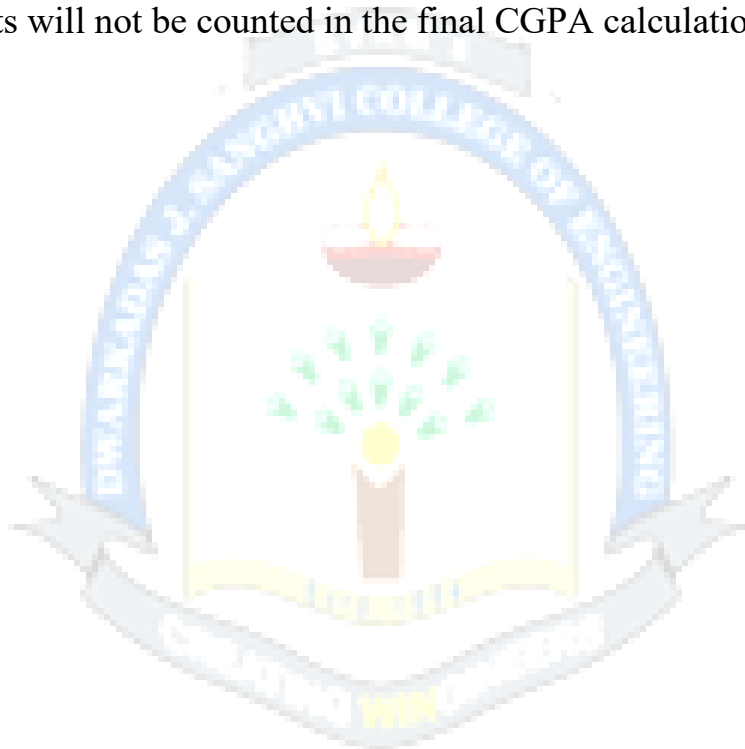
in

Financial Analytics

Revision: 1

With effect from the Academic Year: 2026-2027

- Honours Degree will cumulatively require additional **18 credits** in the specified area in addition to the credits essential for obtaining the undergraduate Degree in Major Discipline.
- Eligibility: All eligible students for admission to Sem III can opt for honours degree program.
- Candidates should not be involved in unfair means cases in any semester.
- Candidate should have no Backlog and CGPA ≥ 7.5 .
- Earn 18 credits (Sem III – VII) in addition to 165 – 170 credits of UG program.
- Scheme and grading of examination: same as UG program.
- Honours Credits will not be counted in the final CGPA calculation.



Sr.	Course Code	Course	Teaching Scheme (hrs.)				Continuous Assessment (A) (marks)			Semester End Assessment (B) (marks)					(A+B)	Total Credits
			Th	P	T	Credits	Th	T/W	Total CA (A)	Th	O	P	O & P	Total SEA (B)		
Sem III																
1	DJS23IH2201	Foundations of Financial Analytics	4	--	--	4	40	--	40	60	--	--	--	60	100	4
Sem IV																
2	DJS23IH2251L	Financial Data Analytics & Visualization	--	4	--	2	--	25	25	--	--	--	25	--	50	2
Sem V																
3	DJS23IH2301	Machine Learning for Financial Forecasting	3	--	--	3	40	--	40	60	--	--	--	60	100	3
4	DJS23IH2301L	Machine Learning for Financial Forecasting Laboratory	--	2	--	1	--	25	25	--	--	--	--	--	25	1
Sem VI																
5	DJS23IH2351	Financial Risk Management & Portfolio Analytics	3	--	--	3	40	--	40	60	--	--	--	60	100	3
6	DJS23IH2351L	Financial Risk Management & Portfolio Analytics Laboratory	--	2	--	1	--	25	25	--	--	--	--	--	25	1
Sem VII																
7	DJS23IH2401	Emerging Financial Technologies	4	--	--	4	40	--	40	60	--	--	--	60	100	4
		Total	14	8	0	18	160	75	235	240	0	0	25	240	500	18

Prepared by

Checked by

Head of the Department

Principal

Course: Foundations of Financial Analytics (DJS23IH2201)**Pre-requisite:** Basic Mathematics

Course Objectives: This course aims to introduce students to the fundamentals of financial systems, the digital economy, and financial analytics, with a focus on technology-driven applications. It develops an understanding of financial decision-making, financial markets, business performance metrics, and digital payment ecosystems. The course also equips students with basic skills in financial data analysis, visualization, and computational tools to solve real-world problems in finance and fintech while appreciating the associated ethical and regulatory aspects.

Course Outcomes: On successful completion of this course, student should be able to:

1. Explore the structure and functioning of financial systems, digital banking, fintech ecosystems, and their role in the digital economy.
2. Apply financial mathematics and decision-making techniques to analyze investments, loans, risk-return trade-offs and financial planning scenarios.
3. Interpret financial statements and business performance metrics to support business decision-making.
4. Analyze financial datasets for emerging applications using data analytics techniques and tools.

Detailed Syllabus: (Unit wise)

Unit	Description	Duration
1	Introduction to Financial Systems and Digital Economy: Introduction to finance and financial analytics, Role of finance in business and technology companies, Personal finance vs business finance, Revenue, profit, cost, and expenses, Financial systems and institutions, Banking ecosystem and digital economy, Digital payments and UPI ecosystem, Introduction to fintech, Financial analytics applications in real-world systems, Ethical issues in digital financial systems	09
2	Financial Mathematics and Decision Making: Simple interest and compound interest, Savings and investment concepts, Present value and future value, EMI and loan calculations, Inflation and purchasing power, Risk and return fundamentals, Introduction to investment decision-making, Financial planning basics, Decision-making under uncertainty, Comparative financial analysis	11
3	Financial Markets and Investment Ecosystem: Functions and organization of financial systems, overview of Indian Financial System. Introduction to Money markets, Equity Markets, Debt instruments, Foreign exchange and their risk structure, Commodities. Introduction to cryptocurrency (or contemporary currency), Market risks and investment behavior, Introduction to online trading platforms, Overview of regulatory bodies: RBI, SEBI	11
4	Financial Statements and Business Metrics: Introduction to financial statements, Income statement fundamentals, Balance sheet fundamentals, Cash flow basics, Revenue analysis, Profitability concepts, Budgeting fundamentals, Key Performance Indicators (KPIs), Business analytics metrics, Financial KPIs for technology companies, Customer acquisition cost, burn rate, ARR/MRR, Introduction to platform economics.	11
5	Financial Data Analytics and Visualization: Introduction to financial datasets, Data collection and preprocessing basics, Spreadsheet analytics, Data sorting and filtering, Pivot tables and lookup functions, Trend analysis, Correlation basics, Exploratory Data Analysis (EDA), Time-series visualization, Anomaly detection basics, Financial dashboards, Data storytelling and business interpretation, Introduction to visualization tools	07

6	Computational Finance and Applications: Introduction to computational finance, Financial APIs and real-time financial data, Introduction to Python for financial analytics, Basic Python libraries: Pandas, NumPy, Matplotlib, Introduction to stock market datasets, AI applications in finance, Fraud detection concepts, Recommendation systems in fintech, Ethical issues in digital finance, Future trends in fintech.	07
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Books Recommended:**Textbooks:**

1. I. M. Pandey, Financial Management, Vikas Publishing House Pvt Ltd, 11th Edition, 2018.
2. M. Y. Khan, P. K. Jain, Indian Financial System, McGraw-Hill India, 11th Edition, 2019.
3. M.Y. Khan, P.K. Jain, Financial Management Text, Problems and Cases, McGraw-Hill Education, 8th Edition 2019.
4. Prasanna Chandra, Fundamentals of Financial Management, McGraw Hill Education (India), 7th Edition, 2022.
5. E. Gordon and K. Natarajan, Financial Markets and Services, Himalaya Publishing House, 2nd Edition, 2017.
6. Chandrahauns Chavan and Atul Patankar, Introduction to Fintech, Pearson Education India, 1st Edition, 2024.
7. U. Dinesh Kumar, Business Analytics: The Science of Data-Driven Decision Making, Wiley India, 2nd Edition, 2017.

Reference Books:

1. Yves Hilpisch, Python for Finance: Mastering Data-Driven Finance, O'Reilly Media, 2nd Edition, 2020.
2. Karen Berman, Joe Knight and John Case, Financial Intelligence, Harvard Business Review Press, Revised Edition, 2022.
3. Frederic S. Mishkin, The Economics of Money, Banking and Financial Markets, Pearson, 13th Global Edition, 2021.
4. Peter Bruce, Andrew Bruce and Peter Gedeck, Practical Statistics for Data Scientists, O'Reilly Media, 2nd Edition, 2020.
5. Cole Nussbaumer Knaflie, Storytelling with Data, Wiley, 1st Edition, 2015.
6. Wes McKinney, *Python for Data Analysis*, O'Reilly Media, 3rd Edition, 2022.