

P.T.V.A.'s

M.L. Dahanukar College of Commerce (Autonomous)

Teaching Plan: 2026- 27

Department: I.T.

Class: M.Sc. (I.T.)

Semester: I

Subject: Data Science

Name of the Faculty: Supritha Bhandary

Month	Topics to be Covered	Internal Assessment	Number of Lectures
June	Data Science Technology stack: Rapid Information Factory, Ecosystem, Data Science Storage Tools, Data Lake, Data Vault. Layered Framework: Definition of Data Science Framework, Cross-Industry Standard Process for Data Mining (CRISP-DM), Business layer, Utility layer. Three Management Layers: Operational Management Layer, Processing-Stream Definition and Management.		14
July	Audit, Balance, and Control Layer, Balance, Control, Yoke Solution, Cause-and-Effect, Analysis System. Functional Layer, Data Science Process. Retrieve Super step: Data Lakes, Data Swamps, Training the Trainer Model, Understanding the Business Dynamics of the Data Lake, Actionable Business Knowledge from Data Lakes, engineering a Practical Retrieve Super step, Connecting to Other Data Sources. Assess Super step Assess Super step, Errors, Analysis of Data, Practical Actions, engineering a Practical Assess Super step Process Super step Data Vault, Time-Person-Object Location-Event Data Vault.		20
August	Data Science Process, Data Science, Transform Super step, building a Data Warehouse, Transforming with Data Science, Hypothesis Testing, Overfitting and Underfitting, Precision-Recall, Cross-Validation Test. Transform Super step: Univariate Analysis Computer Vision (CV)		18
September	Natural Language Processing (NLP), Neural Networks, TensorFlow. Organize and Report Super steps Organize Super step, Report Super step, Graphics, Pictures, Showing the Difference.		08

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Subject: Soft Computing Techniques

Name of the Faculty: Ms. Rasika Sawant

Month	Topics to be Covered	Internal Assessment	Number of Lectures
June	Unit I a) Introduction of soft computing b) Artificial Neural Network c) Supervised Learning Network		10
July	Unit II a) Associative Memory Networks b) Special Networks c) Third Generation Neural Networks d) Unsupervised Learning Networks		18
August	Unit III a) Introduction to Fuzzy Logic, Classical Sets and Fuzzy sets b) Classical Relations and Fuzzy Relations c) Membership Function d) Defuzzification		16
September	e) Fuzzy Arithmetic and Fuzzy measures Unit IV a) Fuzzy Rule base and Approximate reasoning b) Genetic Algorithm		16

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Semester: I

Subject: Cloud Computing

Name of the Faculty: Ms. Sayali Parab

Month	Topics to be Covered	Internal Assessment	Number of Lectures
June	Introduction to Cloud Computing - Introduction, Historical Developments, Building Cloud Computing Environments, Principles of Parallel and Distributed Computing - Eras of Computing, Parallel v/s distributed computing, Elements of Parallel Computing		06
July	Principles of Parallel and Distributed Computing (cont): Elements of distributed computing, Technologies for distributed computing. Virtualization - Introduction, Characteristics of virtualized environments, Taxonomy of virtualization techniques, Virtualization and cloud computing, Pros and cons of virtualization, Technology examples. Logical Network Perimeter, Virtual Server, Cloud Storage Device, Cloud usage monitor, Resource replication, Ready-made environment.		10
August	Cloud Computing Architecture: Introduction, Fundamental concepts and models, Roles and boundaries, Cloud Characteristics, Cloud Delivery models, Cloud Deployment models, Economics of the cloud, Open challenges.		06
September	Fundamental Cloud Security: Basics, Threat agents, Cloud security threats, additional considerations.		04
October	Industrial Platforms and New Developments: Amazon Web Services, Google App Engine, Microsoft Azure		04

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Semester: I

Subject: Image Processing

Name of the Faculty: Ms. Jeenal Jain

Month	Topics to be Covered	Internal Assessment	Number of Lectures
July	Introduction: Digital Image Processing, Origins of Digital Image Processing, Applications and Examples of Digital Image Processing, Digital Image Fundamentals: Elements of Visual Perception, Light and the Electromagnetic Spectrum Intensity Transformations and Spatial Filtering: Basics, Basic Intensity Transformation Functions, Histogram Processing, Fundamentals of Spatial Filtering		16
August	Filtering in the Frequency Domain: Background, Preliminary Concepts, Sampling and the Fourier Transform of Sampled Functions, The Discrete Fourier Transform of One Variable, Extensions to Functions of Two Variables, Properties of the 2-D DFT and IDFT Image Restoration and Reconstruction: A Model of the Image Degradation/Restoration Process, Noise Models		12
September	Wavelet and Other Image Transforms: Preliminaries, Matrix based Transforms, Correlation, Basis Functions in the Time, Frequency Plane, Basis Images, Fourier -Related Transforms Color Image Processing: Color Fundamentals, Color Models, Pseudocolor Image Processing, Full -Color Image Processing, Color Transformations		14
October	Morphological Image Processing: Preliminaries, Erosion and Dilation, Opening and Closing, The Hit -or -Miss Transform, Morphological Algorithms, Morphological Reconstruction, Morphological Operations on Binary Images Image Segmentation I: Edge Detection, Thresholding, and Region Detection: Fundamentals, Thresholding, Segmentation by Region Growing and by Region Splitting and Merging		12
November	Image Segmentation II: Active Contours: Snakes and Level Sets: Background, Image Segmentation Using Snakes Feature Extraction: Background, Boundary Preprocessing, Boundary Feature Descriptors		04

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Semester: I

Subject: Research Methodology

Name of the Faculty: Mr. Chayan Bhattacharjee

Month	Topics to be Covered	Internal Assessment	Number of Lectures
June	Unit 1: a) Introduction: Role of Business Research, Information Systems and Knowledge Management, Theory Building, Organization ethics and Issues		06
July	Unit 1: b) Beginning Stages of Research Process: Problem definition, Qualitative research tools, Secondary data research Unit II: Research Methods and Data Collection: Survey research, communicating with respondents		16
August	Unit II (cont.): Observation methods, Experimental research Unit III: Measurement Concepts, Sampling and Field work: Levels of Scale measurement, attitude measurement, questionnaire design		12
September	Unit III (cont.): Sampling designs and procedures, determination of sample size Unit IV: Data Analysis and Presentation: Editing and Coding, Basic Data Analysis, Univariate Statistical Analysis and Bivariate		14
October	Unit IV: (cont): Statistical analysis and differences between two variables, Multivariate Statistical Analysis		12

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