P.T.V.A.'s

M.L. Dahanukar College of Commerce

Teaching Plan: 2025 – 2026

Department: Information Technology

Class: T.Y.B.Sc. (I.T.) – Semester VI
Subject: Software Testing and Quality Assurance
Name of the Faculty: Supritha Bhandary

Month	Topics to be Covered	Internal Assessment	Number of Lectures
NOV	**Introduction to Quality**: Historical Perspective of Quality, what is Quality? Definitions of Quality, Total Quality Management, Principles of Total Quality Management, Continual (Continuous) Improvement Cycle, Quality in Different Areas, Problem Solving Software Tools, **Software Quality**: Introduction, Constraints of Software Product Quality Assessment Quality and Productivity Relationship, Software Development Process, Types of Products, Pillars of Quality Management System.		14
DEC	**Fundamentals of testing:** Necessity of testing, Misconceptions about testing, testing methodologies, the psychology of testing, Salient Features of Good Testing, Test Policy, Test Strategy or Test Approach, Test Planning, Testing Process and Number of Defects Found in Testing, Attitude Towards Testing. **Unit Testing:** Boundary Value Testing: Normal Boundary Value Testing, Robust Boundary Value Testing, Worst-Case Boundary Value Testing, Special Value Testing, Examples, Random Testing, Guidelines for Boundary Value Testing.		12
JAN	**Software Verification and Validation**: Introduction, Verification, Methods of Verification, Types of reviews, Verification and validation activities. **V-test Model**: Testing during Proposal stage, testing during requirement stage, Testing during test planning phase, design phase, during coding, VV Model. **Levels of Testing**: Proposal Testing, Requirement testing, Big-Bang Testing. Sandwich Testing, Critical Path First, Sub System Testing, System Testing, Testing Tools: Introduction, Features of Test tools, Guidelines for selecting a tool, Tool and skills of a tester, Static Testing tools, Dynamic Testing tools, Advantages of using Tools, Disadvantages of Using Tools, when to use Automated Test tools, Testing Using Automated Tools, Difficulties while introducing new tools.		22
FEB	**Taxonomy of Testing Tools**: Functional/Regression testing tools, Source code testing tools, Performance testing tools, Java testing tools, Embedded software testing tools, Network protocol testing tools, Configuration management /Bug tracking tools, Testing management tools. How to select a testing tool?		12

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M. L. Dahanukar College of Commerce

Teaching Plan: 2025 – 26

Department: B.Sc.IT **Class: T.Y.BSc. (I.T.)** **Semester: VI**

Subject: Information Security

Name of the Faculty: Ms. Shruti Save

Month	Topics to be Covered	Internal Assessment	Number of Lectures
NOVEMBER	**Unit I** **Information Security Overview**: The Importance of Information Protection, The Evolution of Information Security, Justifying Security Investment, Security Methodology, How to Build a Security Program, The Impossible Job, The Weakest Link, Strategy and Tactics, Business Processes vs. Technical Controls. **Risk Analysis**: Threat Definition, Types of Attacks, Risk Analysis. **Secure Design Principles**: The CIA Triad and Other Models, Defense Models, Zones of Trust, Best Practices for Network Defense.		15
DECEMBER	**Unit II** **Authentication and Authorization**: Authentication, Authorization **Storage Security**: Storage Security Evolution, Modern Storage Security, Risk Remediation, Best Practices. **Database Security**: General Database Security Concepts, Understanding Database Security Layers Understanding Database-Level Security, Using Application Security, Database Backup and Recovery. **UNIT III:** **Secure Network Design**: Introduction to Secure Network Design, Performance, Availability, Security. **Network Device Security**: Switch and Router Basics, Network Hardening.		15
JANUARY	**UNIT III:** **Firewalls**: Overview, The Evolution of Firewalls, Core Firewall Functions, Additional Firewall Capabilities, Firewall Design. **Wireless Network Security**: Radio Frequency Security Basics, Data-Link Layer Wireless Security Features, Flaws, and Threats, Wireless Vulnerabilities and Mitigations, Wireless Network Hardening Practices and Recommendations. **UNIT IV:** **Intrusion Detection and Prevention Systems**: IDS Concepts, IDS Types and Detection Models, IDS Features, IDS Deployment Considerations,		20

	Security Information and Event Management (SIEM) **Voice over IP (VoIP) and PBX Security**: Background, VoIP Components, VoIP Vulnerabilities and Countermeasure, Telecom Expense Management. **Operating System Security Models**: Operating System Models, Classic Security Models		
FEBRUARY	**UNIT V:** **Virtual Machines and Cloud Computing**: Virtual Machines, Cloud Computing. **Secure Application Design**: Secure Development Lifecycle, Application Security Practices, Web Application Security, Client Application Security, Remote Administration Security. **Physical Security**: Classification of Assets, Physical Vulnerability Assessment, Choosing Site Location for Security, Securing Assets: Locks and Entry Controls, Physical Intrusion Detection.		10

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M.L.Dhanukar College of Commerce

Teaching Plan: 2025 - 26

Department: I.T. **Semester: VI**

Class: T.Y.B.Sc.I.T. **Div: A/B**

Subject: Business Intelligence and Data Analytics

Name of the Faculty: Mrs. Snehal Borade

Month	Topics to be Covered	Internal Assessment	Number of Lectures
November	**Unit I:- Business intelligence**: Effective and timely decisions, Data, information and knowledge, The role of mathematical models, Business intelligence architectures, Ethics and business intelligence Decision support systems: Definition of system, Representation of the decision-making process, Evolution of information systems, Definition of decision support system, Development of a decision support system. **Unit II:- Mathematical models for decision making**: Structure of mathematical models.		10
December	**Unit II:-** , Development of a model, Classes of models Data mining: Definition of data mining, Representation of input data, Data mining process, Analysis methodologies Data preparation: Data validation, Data transformation, Data reduction. **Unit III:- Classification**: Classification problems, Evaluation of classification models, Bayesian methods, Logistic regression, Neural networks, Support vector machines.		10
January	Clustering: Clustering methods, Partition methods, Hierarchical methods, Evaluation of clustering models. **Unit IV:- Management Information System (MIS)**: Classification and Quality of Information, Marketing models: Relational marketing, Sales force management, Logistic and production models: Supply chain optimization,.		16
February	Optimization models for logistics planning, Revenue management systems. Data envelopment analysis, The CCR model, Identification of good operating practices **Unit V:-Knowledge Management** Metrics, Organizational Culture-Types and analysis, Organizational maturity model, Artificial Intelligence and Expert Systems: Concepts and Definitions of Artificial Intelligence,		16
March	Concepts and Definitions of Artificial Intelligence, Artificial Intelligence Versus Natural Intelligence, Machine Learning- Data Distribution, Machine Learning Process, Tools, TensorFlow .		8

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M.L. Dahanukar College of Commerce

Teaching Plan: 2025 - 26

Department: I.T. Class: B.Sc.(I.T.) Semester: VI

Subject: Fundamentals of GIS

Name of the Faculty: Mr. Gufran Qureshi

Month	Topics to be Covered	Internal Assessment	Number of Lectures
Nov	**Unit 1:** A Gentle Introduction to GIS: The nature of GIS: Some fundamental observations, Defining GIS, GISystems, GIScience and GIApplications, Spatial data and Geoinformation. The real world and representations of it: Models and modelling, Maps, Databases, Spatial databases and spatial analysis Geographic Information and Spatial Database Models and Representations of the real world.		12
Dec	Geographic Phenomena: Defining geographic phenomena, types of geographic phenomena, Geographic fields, Geographic objects, Boundaries Computer Representations of Geographic Information: Regular tessellations, irregular tessellations, Vector representations, Topology and Spatial relationships, Scale and Resolution, Representation of Geographic fields, Representation of Geographic objects Organizing and Managing Spatial Data The Temporal Dimension. **Unit II:** Data Management and Processing Systems, Hardware and Software Trends Geographic Information Systems: GIS Software, GIS Architecture and functionality, Spatial Data Infrastructure (SDI) Stages of Spatial Data handling: Spatial data handling and preparation, Spatial Data Storage and maintenance, Spatial Query and Analysis, Spatial Data Presentation. Database management Systems: Reasons for using a DBMS, Alternatives for data management, The relational data model, Querying the relational database. GIS and Spatial Databases: Linking GIS and DBMS, Spatial database functionality.		18
Jan	**Unit III:** Spatial Referencing and Positioning Spatial Referencing: Reference surfaces for mapping, Coordinate Systems, Map Projections, Coordinate Transformations Satellite-based Positioning: Absolute positioning, Errors in absolute positioning, Relative positioning, Network positioning, code versus phase measurements, Positioning technology Data Entry and Preparation. Spatial Data Input: Direct spatial data capture, Indirect spatial data capture, Obtaining spatial data elsewhere Data Quality: Accuracy and Positioning, Positional accuracy, Attribute accuracy, temporal accuracy, Lineage, Completeness,		14

	Logical consistency Data Preparation: Data checks and repairs, Combining data from multiple sources Point Data Transformation: Interpolating discrete data, Interpolating continuous data **Unit IV:** Spatial Data Analysis: Classification of analytical GIS Capabilities Retrieval, classification and measurement: Measurement, Spatial selection queries, Classification		
Feb	Overlay functions: Vector overlay operators, Raster overlay operators Neighbourhood functions: Proximity computations, Computation of diffusion, Flow computation, Raster based surface analysis Analysis: Network analysis, interpolation, terrain modeling GIS and Application models: GPS, Open GIS Standards, GIS Applications and Advances Error Propagation in spatial data processing: How Errors propagate, Quantifying error propagation **Unit V:** Data Visualization: GIS and Maps, The Visualization Process Visualization Strategies: Present or explore? The cartographic toolbox: What kind of data do I have? How can I map my data? How to map? How to map qualitative data, How to map quantitative data, How to map the terrain elevation, How to map time series Map Cosmetics, Map Dissemination		16

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M.L. Dahanukar College of Commerce

Teaching Plan: 2025 - 26

Department: I.T. **Class: B.Sc.(I.T.)** **Semester: VI**

Subject: IT Act and Cyber Law (ITACL)

Name of the Faculty: Farhan M. Shaikh

Month	Topics to be Covered	Internal Assessment	Number of Lectures
November	**Unit I: Power of Arrest Without Warrant Under the IT Act, 2000:** A Critique, Crimes of this Millennium, Section 80 of the IT Act, 2000 – A Weapon or a Farce? Forgetting the Line Between Cognizable and Non-Cognizable Offences, Necessity of Arrest without Warrant from Any Place, Public or Otherwise, Check and Balances Against Arbitrary Arrests, Arrest for "About to Commit" an Offence Under the IT Act: A Tribute to Draco, Arrest, But NO Punishment! **Cyber Crime and Criminal Justice:** Penalties, Adjudication and Appeals Under the IT Act,2000: Concept of "Cyber Crime " and the IT Act , 2000, Hacking, Teenage Web Vandals, Cyber Fraud and Cyber Cheating, Virus on the Internet, Defamation, Harassment and Email Abuse, Cyber Pornography, Other IT Act Offences, Monetary Penalties, Adjudication and Appeals Under IT Act , 2000, Network Service Providers, Jurisdiction and Cyber Crime, Nature of Cyber Criminality, Strategies to Tackle Cyber Crime and Trends, Criminal Justice in India and Implications on Cyber Crime. **Unit II: Contracts in the Infotech World:** Contracts in the Infotech World, Click-Wrap and Shrink-Wrap Contract: Status under the Indian Contract Act, 1872, Contract Formation Under the Indian Contract Act, 1872, Contract Formation on the Internet, Terms and Conditions of Contracts.	Case Study, video clips and discussion	15
December	**Jurisdiction in the Cyber World:** Questioning the Jurisdiction and Validity of the Present Law of Jurisdiction, Civil Law of Jurisdiction in India, Cause of Action, Jurisdiction and the Information Technology Act,2000, Foreign Judgements in India, Place of Cause of Action in Contractual and IPR Disputes, Exclusion Clauses in Contracts, Abuse of Exclusion Clauses, Objection of Lack of Jurisdiction, Misuse of the Law of Jurisdiction, Legal Principles on Jurisdiction in the United State of America, Jurisdiction Disputes w.r.t. the Internet in the United State of America. **Unit III: Battling Cyber Squatters and Copyright Protection in the Cyber World:** Concept of Domain Name and Reply to Cyber Squatters, Meta-Tagging, Legislative and Other Innovative Moves Against Cyber Squatting, The Battle Between Freedom and Control on the Internet, Works in Which Copyright Subsists and meaning of Copyright, Copyright Ownership and Assignment, License of Copyright, Copyright Terms and Respect	Case Studies and discussion	15

	for Foreign Works		
January	Copyright Infringement, Remedies and Offences, Copyright Protection of Content on the Internet; Copyright Notice, Disclaimer and Acknowledgement, Downloading for Viewing Content on the Internet, Hyper-Linking and Framing, Liability of ISPs for Copyright Violation in the Cyber World: Legal Developments in the US, Napster and its Cousins: A Revolution on the Internet but a Crisis for Copyright Owners, Computer Software Piracy. **Unit IV: E-Commerce Taxation: Real Problems in the Virtual World:** A Tug of War on the Concept of "Permanent Establishment", Finding the PE in Cross Border E-Commerce, The United Nations Model Tax Treaty, The Law of Double Taxation Avoidance Agreements and Taxable Jurisdiction Over Non-Residents, Under the Income Tax Act, 1961, Tax Agents of Non-Residents under the Income Tax Act,1961 and the Relevance to E-Commerce, Source versus Residence and Classification between Business Income and Royalty, The Impact of the Internet on Customer Duties, Taxation Policies in India: At a Glance. **Digital Signature, Certifying Authorities and E-Governance:** Digital Signatures, Digital Signature Certificate, Certifying Authorities and Liability in the Event of Digital Signature Compromise, E-Governance in India: A Warning to Babudom! **Unit V: The Indian Evidence Act of 1872 v. Information Technology Act, 2000:** Status of Electronic Records as Evidence, Proof and Management of Electronic Records; Relevancy, Admissibility and Probative Value of E-Evidence, Proving Digital Signatures, Proof of Electronic Agreements, Proving Electronic Messages, Other Amendments in the Indian Evidence Act by the IT Act, Amendments to the Bankers Books Evidence Act, 1891 and Reserve Bank of India Act, 1934.	Case Studies, video clips and discussion	15
February	**Protection of Cyber Consumers in India:** Are Cyber Consumers Covered Under the Consumer Protection Act? Goods and Services, Consumer Complaint, Defect in Goods and Deficiency in Services, Restrictive and Unfair Trade Practices, Instances of Unfair Trade Practices, Reliefs Under CPA, Beware Consumers, Consumer Foras, Jurisdiction and Implications on cyber Consumers in India, Applicability of CPA to Manufacturers, Distributors, Retailers and Service Providers Based in Foreign Lands Whose Goods are Sold or Services Provided to a Consumer in India. Amendments in Indian IT Act 2000.	Case Studies and discussion	5

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