P.T.V.A.'s

M.L.Dahanukar College of Commerce

Teaching Plan: 2020 – 2021

Department: Information Technology

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

Month	Topics to be Covered	Internal Assessment	Number of Lectures
JAN	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		22
FEB	Quality and Productivity Relationship, Software Development Process, Types of Products, Pillars of Quality Management System. Fundamentals of testing, Necessity of testing, Misconceptions about testing, testing methodologies, Unit Testing: Boundary Value Testing, Random Testing, Class Testing, Decision Table–Based Testing: Decision Tables,		20
MAR	Decision Table Techniques, Cause-and-Effect Graphing, Guidelines and Observations, Path Testing: Program Graphs, DD-Paths, Test Coverage Metrics, Basis Path Testing, Guidelines and Observations, Data Flow Testing, Software Verification and Validation smoke testing, Adhoc Testing, eBusiness ecommerce Testing.		18

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M.L. Dahanukar College of Commerce

Teaching Plan: 2020- 21

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

Subject: Software Quality Assurance

Name of the Faculty: Navneet Kaur Nagpal

Month	Topics to be Covered	Number of Lectures
January	Historical Perspective of Quality, What is Quality, Definitions of Quality, Core Components of Quality, Quality View, Financial Aspect of Quality, Customers, Suppliers and Processes, Total Quality Management (TQM), Quality Principles of Total Quality Management, Quality Management Through Statistical Process Control, Quality Management Through Cultural Changes, Continual (Continuous) Improvement Cycle, Quality in Different Areas, Benchmarking and Metrics, Problem Solving Techniques, Problem Solving Software Tools. Constraints of Software Product Quality Assessment, Customer is a King, Quality and Productivity Relationship, ware, Software Development Process, Types of Products, Schemes Requirements of a Product, Organization Culture, Problematic Areas of Software Development Life Cycle, Software Quality Management, Why Software Has Defects? Processes Related to Software Quality, Quality Management System Structure, Pillars of Quality Management System	16
February	Necessity of testing, What is testing? Fundamental test process, The psychology of testing, Historical Perspective of Testing, Definitions of Testing, Approaches to Testing, Testing During Development Life Cycle, Requirement Traceability Matrix, Essentials of Software Testing, Workbench, Important Features of Testing Process, Misconceptions About Testing, Principles of Software Testing, Salient Features of Good Testing, Test Policy, Test Strategy or Test Approach, Test Planning, Testing Process and Number of Defects Found in Testing, Test Team Efficiency, Mutation Testing, Challenges in Testing, Test Team Approach, Process Problems Faced by Testing, Cost Aspect of	18

	Testing, Establishing Testing Policy, Methods, Structured Approach to Testing, Categories of Defect, Defect, Error, or Mistake in Software, Developing Test Strategy, Developing Testing Methodologies (Test Plan), Testing Process, Attitude Towards Testing (Common People Issues), Test Methodologies/Approaches, People Challenges in Software Testing, Raising Management Awareness for Testing, Skills Required by Tester, Testing throughout the software life cycle, Software development models, Test levels, Test types, the targets of testing, Maintenance testing	
March	Normal Boundary Value Testing, Robust Boundary Value Testing, Worst-Case Boundary Value Testing, Special Value Testing, Examples, Random Testing, Guidelines for Boundary Value Testing, Equivalence Classes, Traditional Equivalence Class Testing, Improved Equivalence Class Testing, Edge Testing, Guidelines and Observations, Decision Tables, Decision Table Techniques, Cause-and-Effect Graphing, Guidelines and Observations, Program Graphs, DD-Paths, Test Coverage Metrics, Basis Path Testing, Guidelines and Observations, Define/Use Testing, Slice-Based Testing, Program Slicing Tools.	16
April	Verification, Verification Workbench, Methods of Verification, Types of reviews on the basis of Stage Phase, Entities involved in verification, Reviews in testing lifecycle, Coverage in Verification, Concerns of Verification, Validation, Validation Workbench, Levels of Validation, Coverage in Validation, Acceptance Testing, Management of Verification and Validation, Software development verification and validation activities, V-model for software, Testing during Proposal stage, Testing during requirement stage, Testing during test planning phase, Testing during design phase, Testing during coding, VV Model, Critical Roles and Responsibilities. Intersystem Testing, Control Testing, Smoke Testing, Adhoc Testing, Parallel Testing, Execution Testing, Operations Testing, Compliance Testing, Usability Testing, Decision Table Testing, Documentation Testing, Training testing, Rapid Testing, Control flow graph, State Graph, Risk Associated with New Technologies, Process maturity level of Technology, Testing Adequacy of Control in New technology usage, Object Oriented Application Testing, Testing of Internal Controls, COTS Testing,	16

	Client Server Testing, Web Application Testing, Mobile Application Testing, eBusiness eCommerce Testing, Agile Development Testing, Data Warehousing Testing.	

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M. L. Dhanukar College of Commerce

Teaching Plan: 2020 - 21

Department: B.Sc.IT **Semester: VI**

Class: T.Y.BScIT

Subject: Security in Computing

Name of the Faculty: Ms.Shruti Save

Month	Topics to be Covered	Internal Assessment	Number of Lectures
JANUARY	**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. **Unit II** **Authentication and Authorization**: Authentication, Authorization		22
FEBRUARY	**Unit II** **Encryption**: A Brief History of Encryption, Symmetric-Key Cryptography, Public Key Cryptography, Public Key Infrastructure. **Storage Security**:Storage Security Evolution, Modern Storage Security, Risk Remediation, Best Practices. **Database Security**: General Database Security		18

	Concepts, Understanding Database Security Layers Understanding Database-Level Security, Using Application Security, Database Backup and Recovery, Keeping Your Servers Up to Date, Database Auditing and Monitoring.		
MARCH	**UNIT III:** **Secure Network Design**: Introduction to Secure Network Design, Performance, Availability, Security. **Network Device Security**: Switch and Router Basics, Network Hardening. **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, Wireless Intrusion Detection and Prevention, Wireless Network Positioning and Secure Gateways **UNIT IV:** **Intrusion Detection and Prevention Systems**: IDS Concepts, IDS Types and Detection Models, IDS Features, IDS Deployment Considerations, Security Information and Event Management (SIEM).		20
APRIL	**UNIT IV:** **Voice over IP (VoIP) and PBX Security**: Background, VoIP Components, VoIP Vulnerabilities and Countermeasure, Telecom Expense Management.		10

	Operating System Security Models: Operating System Models, Classic Security Models, Reference Monitor, Trustworthy Computing, International Standards for Operating System Security. **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.		

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M.L. Dahanukar College of Commerce

Teaching Plan: 2020 - 21

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

Subject:Business Intelligence

Name of the Faculty:Shweta D.Shirsat

Month	Topics to be Covered	Internal Assessment	Number of Lectures
January	**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 **Mathematical models for decision making**: Structure of mathematical,models, Development of a model, Classes of models		15
February	**Data mining**: Definition of data mining, Representation of input data , Data mining process, Analysis methodologies **Data preparation**: Data validation, Data transformation, Data reduction		14

	Classification: Classification problems, Evaluation of classification models, Bayesian methods, Logistic regression, Neural networks, Support vector machines		
March	**Business intelligence applications**: Marketing models: Relational marketing, Sales force management, **Logistic and production models**: Supply chain optimization, Optimization models for logistics planning, Revenue management systems. **Data envelopment analysis**: Efficiency measures, Efficient frontier, The CCR model, Identification of good operating practices		16
April	**Knowledge Management**: An Introduction to Knowledge Management, Organizational Learning and Transformation, Knowledge Management Activities, Approaches to Knowledge Management, Information Technology (IT) In Knowledge Management, Knowledge Management Systems Implementation, Roles of People in Knowledge Management **Artificial Intelligence and Expert Systems**:		15

	Concepts and Definitions of Artificial Intelligence, Artificial Intelligence Versus Natural Intelligence, Basic Concepts of Expert Systems, Applications of Expert Systems, Structure of Expert Systems, Knowledge Engineering, Development of Expert Systems		

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M.L. Dahanukar College of Commerce

Teaching Plan: 2020 - 21

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

Subject: Geographic Information System

Name of the Faculty: Srushty Padte

Month	Topics to be Covered	Internal Assessment	Number of Lectures
January	**Unit I- Nature of GIS:** Definition, GISystem, GIScience , GIApplications ,Spatial data and Geoinformation. **Real World Representation of it:** Models and modelling,Maps, Databases, Saptial database and analysis. **Geographic Phenomena:** Definition, types, Geographic fields, Geographic objects, Boundaries. **Computer representation of geographic information:** Tessellations and types, Vector representations, Topology and spatial relationships, Scale and resolution, Representation of geographic fields and objects. **Organizing and managing spatial data.** **The temporal dimension.** **Unit II- Geographic Information system:** GIS software,GIS architecture and functionality, SDI. **Stages of spatial data handling:** Storage and maintenance, Query and analysis, Data presentation.		22
February	**Unit II:Database Management System:** DBMS,Alternatives for Data management, Relational Model, Querying the relational model. **Unit II: GIS and spatial database:** Linking GIS and DBMS, Spatial database functionality. **Unit III: Spatial Referencing and positioning:** Spatial Referencing, Satellite based positioning.		20

	Spatial data input: Direct spatial data capture, Indirect capture, obtaining data elsewhere. **Data Quality:** Accuracy and positioning, Positional and temporal accuracy, Lineage, Completeness, Logical consistency. **Data preparation:** Data checks and repairs, combining data from multiple sources.		
March	**Unit IV: Point data transformation: Interpolation.** **Retrieval, Classification and measurement:** Measurement, selection queries, classification. **Overlay functions:** Vector and raster overlay. **Neighbourhood functions.** **Unit IV: Network analysis, GIS and application models.** **Error propation in spatial data processing.** **Unit V: Visualization strategies.** **Cartographic toolbox.**		14
April	**Unit V: How to map?** **Map cosmetics and dissemination**		4

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M.L. Dahanukar College of Commerce

Teaching Plan: 2020 - 21

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

Subject: Cyber Laws

Name of the Faculty: Sweta Chheda

Month	Topics to be Covered	Internal Assessment	Number of Lectures
January	Unit I - Chap 1 - Power of Arrest Without Warrant Under the IT Act, 2000 Unit I - Chap 2 - Cyber Crime and Criminal Justice: Penalties, Adjudication and Appeals Under the IT Act,2000 Unit II – Chap 3- Contracts in the Infotech World		16
February	Unit II – Chap 4 - Jurisdiction in the Cyber World Unit III – Chap 5 - Battling Cyber Squatters and Copyright Protection in the Cyber World.		16
March	Unit IV – Chap 6 - E-Commerce Taxation: Real Problems in the Virtual World Unit IV – Chap 7 - Digital Signature, Certifying Authorities and E-Governance		16
April	Unit V – Chap 8 - The Indian Evidence Act of 1872 v. Information Technology Act, 2000 Unit V – Chap 9 - Protection of Cyber Consumers in India		14

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