Syllabus for Procurement of Books 2025

Titles	Subjects
1	Computer Networking
2	RDBMS
3	ASP.net
4	Software Engineering & Project Management
5	Management Information System

Computer Network		
	Total Hrs : 64 (T: 48, P: 16)	
Topics	**Theory**	**Practical**
Section -I		
DATA COMMUNICATIONS: Multiplexing, Signaling, Encoding & Decoding, Error Detection & Recovery, Flow Control, Sliding Window, Congestion Management. **COMMUNICATION NETWORKS**: Introduction to networking, Internet, ATM, Network Components , Network Topologies, Shared Medium, Peer to Peer, Hybrid Technology. bandwidth, bit rate, error rate, transmission delays, modems, speed and compression standards. **NETWORK TECHNOLOGIES:** Ethernet Technologies, Versions, Token Ring Technologies, WAN Technologies, Wireless Networks (Radio Frequencies, Microwave Frequencies, Infrared Waves.	8	2
Section -II		
OSI LAYERS: OSI Model for Networking, Seven layer OSI architecture of ISO, concepts of layer protocols and layer interfaces. Physical layer concepts, Data Link Layer, Network Layer, Transport Layer, Session Layer,Presentataion Layer,Appplication Layer **MULTIPLE ACCESS:** Design Issues, Distributed & Centralized Design, Circuit Mode & Packet Mode Design, Implementation Issues, Performance Considerations, Base Technology (FDMA, TDMA, CDMA, Centralized Access, Circuit Mode Access, Poling or Packet Mode Access, Reservation Based Access), Distributed Access (decentralized polling, CSMA, CSMA/CA, CSMA/CD, Busy Tone Multiple Access & Multiple Access Collision Avoidance, Token Passing, ALOHA, Slotted ALOHA, Reservation ALOHA), Hardware Addressing	16	4
Section -III		
SWITCHING: Circuit, Packet Switching, Blocking, ATM Switching, Switching Fabric (Crossbar, Broadcast, and Switching Fabric Elements). **NAMING & ADDRESSING:** Hierarchical Naming, Addressing, Telephone Networks, Internet, IPv4, Subnetting Ipv4 Networks, Private Networks, Asynchronous Transfer Mode, Name Resolution, Address Resolution Protocol (Arp), RARP	12	4
Section -IV		
LAN STANDARDS: Ethernet, token ring, token bus, MAC layer concepts for LANs, FDDI, radio and satellite broadcast networks. **ROUTING:** Routing Information, Routing Protocols, Hierarchical Routing, Multicast Routing. **SERVICES & APPLICATIONS:** File transfer protocol, TFTP, Domain Name System, DHCP, SNMP, Electronic Mail, WWW, HTML, HTTP, RPC & Middleware. **SECURITY:** Threats, Encryption/Decryption, Firewalls, IP Security, Web Security, E-Mail Security.	12	6
Total	48	16

Relational Data Base Management System(RDBMS)		
Total Hrs :112(T: 48, P: 64)		
Topics	**Theory**	**Prac.**
Section-I		
BASIC CONCEPTS: File Systems vs. DMBS, Characteristics of the Data Base Approach, Abstraction and Data Integration, Database users, Advantages and Disadvantages of a DBMS. **DATA BASE SYSTEMS CONCEPTS AND ARCHITECTURE**: Data Models, Schema and Instances, DBMS architecture and Data Independence, Data Base languages and Interfaces, DBMS functions and component modules.	8	4
Section-II		
ENTITY RELATIONSHIP MODEL: Entity Types, Entity Sets, Attributes & keys, Relationships, Relationships Types, Roles and Structural Constraints, Design issues, E-R Diagrams, Design of an E-R Database Schema, Reduction of an E-R schema to Tables. **RELATIONAL DATA MODEL:** Relational model concepts, Integrity constraints over Relations, Relational Algebra – Basic Operations.	8	8
Section-III		
RELATIONAL DATA BASE MANAGEMENT SYSTEM: Basic structure, Data Base Structure & its manipulation, Storage Organization, Programming Applications. Conventional Data Models: An overview of Network and Hierarchical Data Models. **RELATIONAL DATA BASE DESIGN:** Functional Dependencies, Decomposition, Normal forms based on primary keys (1 NF, 2 NF, 3 NF, & BCNF), Multi-valued Dependencies, 4 NF, Join dependencies, 5 NF, Domain key normal form. **PRACTICAL DATA BASE DESIGN:** Role of Information systems in Organizations, Database design process, physical database design in Relational Database.	16	20
Section-IV		
INTRODUCTION TO SQL PLUS, SQL: DDL, DML, and DCL, views& Queries in SQL, Specifying Constraints & Indexes in SQL. **Data types:** CHAR, VARCHAR, Number, Date, Long, Raw, Longraw, naming convention of variables, Invoking SQL *PLUS< SQL *PLUS Editor commands, DESC, SAVE TO, GET, RUN, SQL commands; SELECT: FROM Relational, Logical and Special operators for using [WHERE <condition>], Use of Aggregate Functions: Count, Sum, AVG, MIN, MAX and [GROUP BY <column>, [HAVING <condition>"]. Sorting the result by using [ORDER BY <expn>], Using DISTINCT clause with SELECT. MAKING QUERIES USING MULTIPLE TABLES, Use of Joins: Equijoin. Cartesian .loin, Outer Join and Self Join, By use of SET Operators [UNION, INTERSECT, MINUS 1. NESTED QUERIES: Sub queries; using Operators **FUNCTIONS:** ARITHMATIC FUNCTIONS, CHARACTER FUNCTIONS, DATE FUNCTIONS Sql*Plus Reporting, Defining header, footers column headings, formatting columns, control break reports. PL/SQL, date types variables [%ROWTYPE, &TYPE] constants, assign values to variables, PL/SQL block structure: [Declare Begin Exception END] Writing PL/SQL code, [IF< ELSE, ELSIF, END, IK LOOP, END LOOP, FOR-IN-LOOP WHILE LOOP EXIT WHEN] Cursor Management in PL/SQL : Declare cursor, OPEN< FETCH, CLOSE: Explicit, [%NOTFOUND, %FOUND, %ROWCOUNT, %ISOPEN] Implicit: [SQL%NOTFOUND, SQL%FOUND, SQL%ROWCOUNT, SQL%ISOPEN] PL/SQL Records, Exception handling in PL/SQL.	16	32
Total	48	64

Web Technology-II(ASP.net)

Total Hrs :112 (T: 48, P: 64)

Topics	Theory	Prac.
Section-1		
INTRODUCING .NET: What is .Net Framework Components of a .NET Application, Migrating Existing Applications .NET, ASP.NET, and Distributed Application Development: The .NET Framework Active Server Pages : ASP.NET Page Basics, Server Control Syntax, Code Basics, Page Life Cycle, Input Validation, Web Services, XML Configuration File, Security Infrastructure, Improved ASP.NET Availability and Performance; Distributed Application Architecture. Functional Overview, Designing Distributed Applications, Fundamental Application Boundaries: Presentation, Logic, and Data Services, Coupling, Multitiered Design, +COM,CLR,Assembling, **THE .NET STANDARDS:** Web Standards, Web Services Standards, Language and Infrastructure Standards **VISUAL STUDIO .NET:** .NET and Visual Studio .NET, The Development Environment, Building a .NET Project, Installation Steps. **THREE TIER ARCHITECTURE:** The .NET Paradigms: Building Distributed .NET Applications, Data Access Layer, Business Logic Layer, Presentation Layer Web User Interface with ASP.NET. **NET EXPOSED:** .NET Framework, Deployment and Version Compatibility Request Objects: Forms, Using .NET Controls, Using the Form Collection; Query String, Using Parameters, Parameters Spaces, Query String Collections. Server Variables; Introduction to Name Spaces, Manage & Unmanaged Code, Hash Tables, Shadowing, Spaces.	8	8
Section-II		
INTRODUCTION TO ASP.NET: A Review of Classic ASP, ASP.NET Web Applications, Rendering HTML with Server Controls, Using ASP.NET to Deliver XML Web Services. Classic ASP vs. ASP.NET , Introduction to Web Forms , Controlling Page Layout , Targeting a Browser , Investigating Server Controls , Validating Data with Validation Controls , Data Binding with ASP.NET Working with Web Forms Controls: Introduction to Web Forms Controls , Simple Input Controls , HyperLinks and Button Controls , List Controls **VALIDATING USER INPUT:** Overview of ASP.NET Validation Controls, Using the Simple Validators, Using the Complex Validators, Summarizing Results with the Validation Summary Control ,Compare, Regular expression **AJAX TECHNOLOGIES:** The Calendar Control , The Ad Rotator Control , Script Manager XML Introduction to XML Controls, How to use with data bound controls	12	16
Section-III		
INTRODUCTION TO ADO.NET: Overview; ADO.NET Name Spaces; Managed Providers(Connection, Command, Data Reader, Parameter Binding with SQL Commands, Stored Procedures and Parameter Binding); The Dataset Object(Data Adapter, Data Table, Data Views, Data Relations); Error Handling; Database Transactions; Concurrent Database Access; ADO.NET Performance, How to retrieve data with data bound Control **WHAT'S WRONG WITH ADO?** Filling a DataTable Manually , Connecting to Data, Reading Data using the DataReader Object, Manipulating Data with the Data Adapter and DataSet Objects , Using DataRelation Objects to Relate Data, Updating Data and the Command Builder Object, ADO.NET and XML **ACCESSING DATA WITH ADO.NET**: Overview of ADO.NET , Connecting to Data , Executing Commands , Working with Data , Choosing an ADO.NET Provider **USING THE DATALIST AND REPEATER CONTROLS:** Overview of List-Bound Controls , Creating a Repeater Control , Creating a DataList Control Working with the DataGrid Control: Introduction to the DataGrid , Setting Up the DataGrid , Using Advanced DataGrid Features , Adding Advanced	16	24

Features **MANAGING DATA WITH ADO.NET DATASETS**: The Role of DataSets in ADO.NET , Using DataSets in ASP.NET , Saving Datasets in Session State , Using DataTable Constraints and DataSet Data Relations , Using DataSets with Data Adapters to Modify Data , The Transactional Model in DataSets **CONSUMING XML WEB SERVICES:** Creating Web Services Clients , HTTP Clients , Creating .NET Consumers , Web Services and Legacy Clients , Discovering Web Services Using UDDI Crystal reports using ADO.NET		
Section-IV		
INTRODUCTION TO STATIC MANAGEMENT: Security,Cookies,Types of cookies, Brief Introduction ,Session, Types of session,Quries,String,View State,Rollback,Forms Base, Passport windows, Authentication, Redirect; Cookies; Write File; The Application Object, Event Handlers, Using Event Handlers to Determine, Using Application Variables, Storing Global Information, Using the Lock and Unlock Methods, Using Application Object Collections: Contents and Static Objects The Session Object: Session Event Handlers, Using Event Handlers to Determine, Using Session Variables). **ASP.NET CONTROLS:** Intrinsic Control (Using the asp: TextEdit Control, Using the asp: Check-Box Control, Using the asp: Radio-Button Control); List Controls (Using the Repeater Control, Using the DataList Control); Rich Controls (Calendar Control); Validation Controls. **DATA BOUND CONTROLS:** Repeater Control; DataList Control; DataGrid Control; The Data History Application. **CREATING CONSOLE APPLICATIONS AND WINDOWS SERVICES IN .NET:** Investigating Console Applications , Creating a Console Application , Debugging Console Applications , Investigating Windows Services , Creating a Simple Windows Service , Debugging Windows Services **WEBFORMS:** Classic HTML and Server-Side Controls; HTML Controls; Web Controls; Intrinsic Web Controls, Intrinsic Web Controls; Buttons and Links; WebForms Examples (Shakespeare Program, Guessing Game, Temperature Calculator). **WEB SERVICES:** What is a Web Service? ; What Is SOAP? ; SOAP Packages; Why Is SOAP Important for Web Services? ; Why are Web Services Useful? ; Real World Scenarios for Using Web Services; Writing a Web Service; A Health tip Web Service; A Credit Card Validator Service; Consuming a Web Service. **CREATING WEB SERVICES:** Introduction to Web Services , Creating a Simple Web Service , Investigating the WSDL, Creating Web Service Consumers , Handling Asynchronous vs. Synchronous Web Service Calls	12	16
Total	**48**	**64**

Software Engineering & Project Management		
	Total Hrs :48(T: 48)	
Topics	**Theory**	**Pract.**
Section-I		
INTRODUCTION : The Software Problem (Software is Expensive, Late, Costly and Unreliable, Problem of Change and Rework); Software Engineering Problem (Problem of Scale, Cost, Schedule and Quality and Consistency); The Software Engineering Approach (Phased Development Process, Project Management and Metrics). **SOFTWARE PROCESSES :** Software Process (Processes, Projects, and Products, Component Software Processes); Characteristics of a Software Process (Predictability, Support Testability and Maintainability, Early Defect Removal and Defect Prevention, Process Improvement); Software Development Process (A Process Step Specification, Waterfall Model, Iterative Enhancement, The Spiral Model); Project Management Process (Phases of Management Process, Metrics, Measurement and Models); Software Configuration Management Process (Configuration Identification, Change Control, Status Accounting and Auditing); Process Management Process (Building Estimation Models, Process Improvement and Maturity). **SOFTWARE REQUIREMENTS ANALYSIS AND SPECIFICATION :** Software Requirements (Need for SRS, Requirement Process); Problem Analysis (Analysis Issues, Informal Approach, Structured Analysis, Object-Oriented Modeling, Other Modeling Approaches, Prototyping, Requirement Specification (Characteristics of an SRS, Components of an SRS, Specification Languages, Structure of a Requirement Document); Validation (Requirement Reviews, Other Methods); Metrics (Size Measures, Quality Metrics).	**12**	**---**
Section-II		
FUNCTION-ORIENTED DESIGN : Design Principles (Problem Partitioning and Hierarchy, Abstraction, Modularity, Top-Down and Bottom-Up Strategies); Module-Level Concepts (Coupling, Cohesion); Design Notation and Specification (Structure Charts, Specification); Structured Design Methodology (Restate the Problem as a Data Flow Diagram, Identify the Most Abstract Input and Output Data Elements, First-Level Factoring, Factoring the Input, Output, and Transform Branches, Design Heuristics, Transaction Analysis, Discussion); Verification (Design Reviews, Automated Cross-Checking); Metrics (Network Metrics, Stability Metrics, Information Flow Metrics). **DETAILED DESIGN:** Module Specifications (Specifying Functional Modules, Specifying Classes); Detailed Design (PDL, Logic/Algorithm Design, State Modeling of Classes), Verification (Design Walkthroughs, Critical Design Review, Consistency Checkers); Metrics (Cyclomatic Complexity, Data Bindings, Cohesion Metric).	**12**	**----**
Section-III		
CODING : Programming Practice (Top-Down and Bottom-Up, Structured Programming, Information Hiding, Programming Style, Internal Documentation, Verification (Code Reading, Static Analysis, Symbolic Execution, Proving Correctness, Code Inspections or Reviews, Unit Testing); Metrics (Size Measures, Complexity Metrics, Style Metrics). **TESTING :** Testing Fundamentals (Error, Fault and Failure, Test Oracles, Top-Down and Bottom-Up Approaches, Test Cases and Test Criteria, Psychology of Testing); Functional Testing (Equivalence Class Partitioning, Boundary Value Analysis, Cause-Effect Graphing, Special Cases); Structural Testing (Control Flow – Based Criteria, Data Flow –	**12**	**----**

Based Testing, An Example, Mutation Testing, Test Case Generation and Tool Support); Testing Object-Oriented Programs (Issues in Testing Classes, State-Based Testing, Incremental Testing for Subclasses); Testing Process (Comparison of Different Techniques, Levels of Testing, Test Plan, Test Case Specifications, Test Case Execution and Analysis);	7	
Section-IV		
PROJECT MANAGEMENT:		
PLANNING A SOFTWARE PROJECT : Cost Estimation, Uncertainties in Cost Estimation Building Cost Estimation Models, On Size Estimation, COCOMO Model, Project Scheduling, Average Duration Estimation, Project Scheduling and Milestones, Staffing and Personnel Planning (Rayleigh Curve, Personnel Plan, Team Structure ; Software Configuration Management Plans; Quality Assurance Plans (Verification and Validation (V&V), Inspections and Reviews); Project Monitoring Plans (Time Sheets, Reviews, Cost-Schedule-Milestone Graph, Earned Value Method, Unit Development Folder); Risk Management ,Risk Management overview Risk Assessment, Risk Control.	**12**	----
Total	**48**	

Management Information System

Topics	Theory	Prac.
Section I		
INTRODUCTION to Systems and Basic Systems Concepts, Types of Systems, The Systems Approach, Information Systems: Definition & Characteristics, Types of Information, Role of Information in Decision – Making, Sub – Systems of an information system	8	--
Section II		
AN OVERVIEW OF MANAGEMENT INFORMATION SYSTEM: Definition & Characteristics, Components of MIS, Frame Work for Understanding MIS: Robert Anthony's Hierarchy of Management Activity, Information requirements & Levels of Management, Simon's Model of decision – Making, Structured Vs Un-structured decisions, Formal Vs. Informal systems.	8	--
Section III		
DECISION MAKING: Decision-Making, Simon's Model of Decision-Making, Types of Decisions (Purpose of Decision-Making, Level of Programmability, Knowledge of Outcomes); Methods for Choosing Among Alternatives (Decision Theory or Decision Analysis, Utility, Decision Tree, Optimization Techniques).Business Intelligence, Role of BI. **DECISION SUPPORT SYSTEM:** Introduction of DSS, Characteristics & Objectives, Level of Decision support System, Role of Decision support System & application, Components of DSS.	8	--
Section IV		
DEVELOPING INFORMATION SYSTEMS: Analysis & Design of Information Systems: Implementation & Evaluation, Pitfalls in MIS Development. Functional MIS: A Study of Marketing, Personnel, Financial and Production MIS. **ENTERPRISE RESOURCES PLANNING (ERP):** Features, selection criteria, merits, issues and challenges in Implementation - Supply Chain Management (SCM): Features, Modules in SCM - Customer Relationship Management (CRM): Phases. Knowledge Management and e-governance	8	--
Total	**32**	

Total Hrs : 32