

VEER NARMAD SOUTH GUJARAT UNIVERSITY

M.C.A.

Semester - IV

Effective from :July 2004
Proposed Teaching and Evaluation Scheme

Paper No	Title	Teaching			University Exam		Internal Marks	Total Marks
		Theory	Practical	Tutorial	Duration (Hrs)	Marks		
401	System Development Tools	3	-	1	3	70	30	100
402	Management Information System	3	-	1	3	70	30	100
403	Data Communication and Network Protocols	3	-	1	3	70	30	100
404	Core Java Programming	3	-	1	3	70	30	100
405	Software Engineering – II	3	-	1	3	70	30	100
406	Practicals	-	10	-	5	100	50	150

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Paper : 401 : System Development Tools

1. Overview of Microsoft .NET Framework
 - 1.1 The .NET Framework
 - 1.2 The Common Language Runtime (CLR)
 - 2.3 The .NET Framework class Library
 - 2.4 .NET Web Services
2. Visual Basic .NET programming
 - 2.1 Working with Tool box controls
 - 2.2 Working with Menus and Dialog Boxes
 - 2.3 Tapping Errors Using Structured Error Handling
 - 2.4 Using Modules and Procedures
 - 2.5 Using Arrays and Collections
3. Object Oriented Programming
 - 3.1 Creating Classes, Object Construction & Destruction
 - 3.2 Class Libraries : DLL's & Static Classes
 - 3.3 Abstraction, Encapsulation & Polymorphism
 - 3.4 Interfaces & Inheritance
 - 3.5 Object Serialization
4. Multithreading, Files & Streams
5. Database access using ADO.NET
 - 5.1 Visual Database Tools
 - 5.2 ADO.NET Object Model
 - 5.3 ADO.NET Programming
 - 5.4 Working With DataSets
 - 5.5 Integration with XML
 - 5.6 The Middle Tier
6. Introducing ASP.NET
 - 6.1 Overview of ASP.NET
 - 6.2 Building Web Forms
 - 6.3 Maintaining State in Web Applications
 - 6.4 Caching & Configuration
 - 6.5 Accessing Databases from ASP.NET
7. The Web Data Controls
8. Working With WebServices

References :

1. Moving to VB.NET: Strategies, Concepts, and Code
by Dan Appleman
2. Microsoft Visual Basic .NET Step By Step, Michael Halvorson, PHI
3. Database Programming with Visual Basic .NET and ADO.NET
by F. Scott Barker - Sams Publishing
4. Beginning .NET Web Services Using Visual Basic .NET, Joe Bustos and Karlli
Watson, Wrox Publication
5. .NET – Complete Development Cycle, G. Lenz, T. Moeller, Pearson Education
6. Professional VB.NET, 2nd Edition
by Fred Barwell, et al - Wrox Publication
7. Mastering Visual Basic .NET Database Programming - Bilgin - BPB Publication.

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Paper : 402 : Management Information System

1. Management Information System
 - 1.1 Need of Information System
 - 1.1.1 What is an Information System?
 - 1.2.1 Competitive Business Environment
 - 1.2.1 A Business Perspective on Information Systems
 - 1.2 Approaches to Information Systems
 - 1.2.1 Technical Approach
 - 1.2.2 Behavioral Approach
 - 1.2.3 Sociotechnical Systems
 - 1.3 The role of Information System
 - 1.3.2 Scope of Information System
 - 1.3.3 Organizational Design
 - 1.3.4 Electronic Commerce and Electronic Business
 - 1.4 Use of Information System
 - 1.4.2 Challenge of Information Systems
- 2 Information System in Enterprise
 - 2.1 System Applications in the Organization
 - 2.1.1 Kinds of Information Systems
 - 2.1.2 Types of Information Systems
 - 2.1.3 Relationship of systems with one another
 - 2.2 MIS Development Process
 - 2.3 Functional Perspective of System
 - 2.3.1 Various Information Systems like Sales and Marketing, Manufacturing and Production, Financial and Accounting, Human Resource etc.
 - 2.4 Integrating Functions and Business Processes
 - 2.4.1 Business Processes and Information System
 - 2.4.2 Customer Relationship Management (CRM) and Supply Chain Management
 - 2.4.3 Enterprise Systems
 - 2.4.4 Vertical and Horizontal Industrial Networks
- 3 Information System, Organizations, Management and Strategy
 - 3.1 Relationship of an Organization with Information System
 - 3.1.1 What is an Organization?
 - 3.1.2 Features of Organization
 - 3.2 Role of Information System in Organizations
 - 3.2.1 How Information System affect Organization?
 - 3.2.2 Implications for the design and Understanding of Information System
 - 3.3 Relationship of Manager, Decision Making and Information Systems
 - 3.3.1 Role of Managers in Information System
 - 3.3.2 Managers and Decision Making

- 3.4 Information System and Business Strategies
 - 3.4.1 What is Strategic Information System?
 - 3.4.2 Business Level Strategy and Value Chain Model
 - 3.4.3 Supply Chain Management and Efficient Customer Response system

- 4 Electronic Commerce and Electronic Business
 - 4.1 Emerging Trends
 - 4.1.1 New Business Models
 - 4.2 Electronic Commerce
 - 4.3 Electronic Commerce Payment Systems
 - 4.4 Electronic Business and Digital Firm
 - 4.5 Challenges and Opportunities of E-Commerce

- 5 Knowledge Based Systems
 - 5.1 Knowledge Management in Organization
 - 5.1.1 System and Information of Knowledge Management
 - 5.1.2 Knowledge Work and Productivity
 - 5.2 Information and Knowledge Work System
 - 5.2.1 Office and Document Management System
 - 5.2.2 Creating Knowledge Work System
 - 5.2.3 Group Collaboration System
 - 5.3 Use of Artificial Intelligence in Business

- 6 Decision Making
 - 6.1 Decision Support System (DSS)
 - 6.1.1 Relationship of MIS and DSS
 - 6.1.2 Types of Decision Support System
 - 6.1.3 Components of Decision Support System
 - 6.1.4 Decision Support System Applications
 - 6.2 Group Decision Support System (GDSS)
 - 6.2.1 What is Group Decision Support System
 - 6.2.2 Characteristics of Group Decision Support System
 - 6.2.3 Importance of Group Decision Support System
 - 6.3 Executive Support System (ESS)
 - 6.3.1 Role of Executive Support System
 - 6.3.2 Development of Executive Support System
 - 6.3.3 Advantage of Executive Support System

- 7 Control and Security of Information System
 - 7.1 Threats to Information Systems
 - 7.2 System Quality Problems
 - 7.2.1 Software and Data Quality Problems
 - 7.3 Control Environment
 - 7.3.1 General Controls and Application Controls
 - 7.3.2 Security issue on E-Commerce
 - 7.3.3 Control Structure Development

Reference Books :

1. Management Information System : Managing A Digital Firm – 87th Ed., Kenneth C. Laudon & Jane P. Laudon, Pearson Education, Second Indian Reprint 2004
2. Principles of Information Systems, 5th Ed., Ralph M. Stair & George W. Reynolds, Course Technology – Thomson Learning, 2001
3. Management Information system, W.S. Jawadekar, Tata McGraw-Hill,
4. Information Systems Management In Practice, Sixth Edition, B.C. McNurlin, R.H. Sprague, Pearson Education
5. Information Systems for Modern Management, Murdick, Ross and Claget, Prentice Hall

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Paper : 403 : Data Communication and Network Protocols

1. Introduction
 - 1.1 Review of ISO OSI reference model
 - 1.2 Introduction to TCP/IP protocols
 - 1.3 Internet address and port numbers
 - 1.4 DNS
 - 1.5 Client Server Model
 - 1.6 RFCs
 - 1.7 Internet Services and APIs
2. Link Layer
 - 2.1 Ethernet Encapsulation
 - 2.2 SLIP, C-SLIP, PPP
 - 2.3 Loopback Interface
 - 2.4 MTU
3. IP
 - 3.1 Introduction
 - 3.2 Header
 - 3.3 IP routing
 - 3.4 Subnet addressing
 - 3.5 Special case IP address
 - 3.6 Examples
 - 3.7 Commands : ifconfig, netstat
4. ARP
 - 4.1 Introduction
 - 4.2 ARP cache
 - 4.3 ARP, RARP packet formats
 - 4.4 ARP examples
 - 4.5 Proxy ARP
5. ICMP
 - 5.1 Introduction
 - 5.2 Message Types
 - 5.3 ICMP address mask
 - 5.4 ICMP time stamp
6. IP routing
 - 6.1 Examples
 - 6.2 ICMP host and N/W Unreachable Errors
 - 6.3 Introduction to Dynamic routing, RIP, OSPF, BGP, CIDR
7. UDP
 - 7.1 Introduction
 - 7.2 UDP header
 - 7.3 IP fragmentation
 - 7.4 Determination of Path MTU
 - 7.5 UDP server design
8. DNS
 - 8.1 DNS nasics

- 8.2 Message format
- 8.3 Examples
- 8.4 Resource record and caching
- 9. TCP
 - 9.1 Services
 - 9.2 Header
 - 9.3 Connection establishment and termination
 - 9.4 State transition diagram
 - 9.5 TCP option
 - 9.6 TCP interactive data flow
 - 9.7 TCP bulk data flow
 - 9.8 TCP time out & Retransmission
 - 9.9 TCP futures and performance
- 10. Introduction to
TFTP, PING, TRACEROUTE, BOOTP, SNMP, TELNET, RLOGIN, FTP, SMTP,
NFC

Reference Books

1. TCP/IP Illustrated Vol. – 1, W. richard Stevens ASW
2. TCP/P Protocol Suite , Behrounz A. Forouzan , Tata McGraw Hill
3. TCP/IP Illustrated vol –2, W. Richard Stevens, ASW
4. Data and Network Communication, M.A. Miller, Thomson Leearning
5. Data Communication and Networks, A.S. Godbole, Tata MCGraw Hill

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Paper : 404 : Core Java Programming

1. Internet and Java Language
 - 1.1 Introduction to Internet
 - 1.2 Introduction to Java Phenomenon
 - 1.3 Features of Java
 - 1.4 Java Developer's Kit
 - 1.4.1 Java Compiler
 - 1.4.2 Java Interpreter
 - 1.4.3 Java Debugger
 - 1.4.4 Applet Viewer
 - 1.5 Comparison of Java with C++
- 2 Java Language Introduction
 - 2.1 Variables
 - 2.2 Data Types
 - 2.3 Arrays
 - 2.4 Operators
 - 2.5 Flow Control
- 3 Classes and Objects
 - 3.1 Simple Class
 - 3.2 Fields
 - 3.3 Access Controls
 - 3.4 Object Creation
 - 3.5 Construction and Initialization
 - 3.6 Methods
 - 3.7 This
 - 3.8 Overloading Methods
 - 3.9 The main method
 - 3.10 Extended Class and constructor in Extended Class
 - 3.11 Inheriting and redefining members
 - 3.12 Type computability and conversion
- 4 Interfaces
 - 4.1 Introduction to Interfaces
 - 4.2 Interface declaration
 - 4.3 Inheriting and Hiding Constants
 - 4.4 Inheriting Overloading and Overriding Methods
 - 4.5 Interface Implementation
- 5 Exceptions
 - 5.1 Introduction to Exception
 - 5.2 Creating Exception Types
 - 5.3 throw
 - 5.4 throws
 - 5.5 try, catch and finally

- 6 Strings
 - 6.1 Basic String Operations
 - 6.2 String Comparison
 - 6.3 StringBuffer Class
- 7 Threads
 - 7.1 Introduction to Threads
 - 7.2 Creating Threads
 - 7.3 Runnable
 - 7.4 Synchronization
 - 7.5 wait, notify and notifyall
 - 7.6 Thread scheduling
 - 7.7 Deadlocks
 - 7.8 volatile
 - 7.9 Threads and Exceptions
- 8 Garbage Collection and Memory
 - 8.1 Garbage Collection
 - 8.2 Finalization
 - 8.3 Interacting with Garbage Collector
 - 8.4 Reachability States and Reference Objects
- 9 Packages
 - 9.1 Package Naming
 - 9.2 Type Imports
 - 9.3 Package Access
 - 9.4 Package Contents
 - 9.5 Package Object and Specification
- 10 The I/O Package
 - 10.1 Byte Stream
 - 10.2 Character Stream
 - 10.3 InputStream reader and OutputStream Reader
 - 10.4 Stream Classes
 - 10.5 The data byte stream
 - 10.6 Files
 - 10.7 Object Serialization
 - 10.8 IOException Classes
- 11 Applets
 - 11.1 Introduction to Applets
 - 11.2 Applet Life Cycle
 - 11.3 Abstract Window Toolkit (AWT) Class
 - 11.3.1 Labels
 - 11.3.2 Buttons
 - 11.3.3 Text Fields
 - 11.3.4 Text Areas
 - 11.3.5 Check Boxes
 - 11.3.6 Choice List
 - 11.3.7 Layout Managers
 - 11.4 Event Handling

Reference Books

1. Java Programming Language Third Ed., Arnold James Gosling, David Holmes, Addison Wesley
2. Java – The Complete Reference, Patrick Naughton, Tata McGraw Hill
3. Experiments with Java : An Introductory Lab Manuals, S.A. Robelsky – Addison Wesley
4. Java 2 From Scratch, Stevens Halmes, PHI
5. Complete Reference, Peter Naughten, Tata McGraw Hill

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Paper No. : 405 : Software Engineering –II

1. Software Project Management
 - 1.1 Introduction to project management
 - 1.2 Process and project metrics
 - 1.2.1 Introduction
 - 1.2.2 Software measurement
 - 1.2.3 Metrics for s/w quality
 - 1.3 S/W project planning
 - 1.3.1 Estimation, Decomposition techniques & models.
 - 1.3.2 Risk management
 - 1.3.3 Project scheduling & tracking
2. Software Quality Assurance
 - 2.1 Software quality and assurance
 - 2.2 Software Reviews
 - 2.3 Technical Reviews
 - 2.4 Approaches to SDA
 - 2.5 Software Reliability
3. Software Testing
 - 3.1 Testing fundamentals
 - 3.2 Testing approaches
 - 3.2.1 White box testing
 - 3.2.2 Basis path methods
 - 3.2.3 Control structure testing
 - 3.2.4 Black box testing
 - 3.3 Automatic Testing Tools
4. Software Testing Strategies
 - 4.1 Unit Testing
 - 4.2 Integration Testing
 - 4.3 Validation Testing
5. Computer Aided software engineering (CASE)
 - 5.1 CASE
 - 5.1.1 Case Classification
 - 5.1.2 Integrated CASE
 - 5.1.3 The CASE life cycle
6. Software Maintenance
 - 6.1 The Maintenance Process
 - 6.2 System Documentation
 - 6.3 Program Evolution dynamics
 - 6.4 Maintenance Cost
 - 6.5 Maintainability Measurements

7. Configuration Management
 - 7.1 Configuration Management Planning
 - 7.2 Change Management
 - 7.3 Version and Release Management

Reference Books :

1. Roger S. Pressman : Software Engineering A Practitioner's Approach – M.Hill
2. Ian Sommerville : software engineering – Addison Wesley
3. James Senn : Analysis and Design of Information system – McGraw Hill
4. Awad : System Analysis and Design – Galgotia Publication
5. Pankaj Jalote : An Integrated Approach to Software Engineering- Narosa Pub.

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Paper : 406 : Practical

Practicals shall be based on paper no 401, 402 and 404. Under paper 402 a part time project is expected from a student. Separate journals to be prepared for subject 401 and 404. Project report to be prepared and to be submitted for paper 402.