

BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI – 620 024.**CENTRE FOR DISTANCE EDUCATION****M.Sc. Information Technology - Course Structure
(For the candidates admitted from the year 2005-2006 onwards)**

Semester	Course	Course Title	Credit	Exam Hrs	Marks		Total
					Int.	Extn	
I	Core Course – I (CC)	Java Programming	4	3	25	75	100
	Core Course – II (CC)	Data Structures & Algorithms	4	3	25	75	100
	Core Course – III (CC)	Software Engineering	4	3	25	75	100
	Core Course – IV (CC)	Computing Lab – I - Java Programming	4	3	25	75	100
	Elective Course – I (EC)	Internet & E-Commerce	4	3	25	75	100
II	Core Course – V (CC)	Distributed Operating System	4	3	25	75	100
	Core Course – VI (CC)	Network & Unix	4	3	25	75	100
	Core Course – VII (CC)	Computing Lab–II - Unix Programming	4	3	25	75	100
	Elective Course – II (EC)	Data Warehousing & Mining	4	3	25	75	100
	Special Course – I	Software Testing	2	3	25	75	100
	Special Course – II	Software Project Management	2	3	25	75	100
III	Core Course – VIII (CC)	Web Programming	4	3	25	75	100
	Core Course – IX (CC)	Computer Networks	4	3	25	75	100
	Core Course – X (CC)	Multimedia & Its Applications	4	3	25	75	100
	Core Course – XI (CC)	Computing Lab-III Web Design	4	3	25	75	100
	Elective Course – III (EC)	Network Security	4	3	25	75	100
IV	Project Work Viva Voce 25 marks Dissertation 75 marks		12	-	-	-	100
			72				

Core Course - I (CC) - JAVA PROGRAMMING

UNIT-I

JAVA PROGRAMMING: Overview of Java, Data Types, Variables and Arrays, Operators, Control Statements.

UNIT -II

INTRODUCTION TO CLASSES AND METHODS: Class Fundamentals, Declaring and Assigning Objects,) introducing Methods, Constructors, This Keyword, Overloading Methods, Overloading Constructors, Objects As Parameters and Argument Passing, Returning Objects, Recursion, Understanding static, Nested and Inner Classes, String Class, Using Command Line Arguments - INHERITANCE -PACKAGES AND INTERFACES.

UNIT-III

Exception Handling -Multithreaded Programming -I/O streams, Applets and Other Topics -The Applet Class.

UNIT-IV

Networking -JDBC -String Processing

UNIT -V

JAVA BEANS: Introduction, JAR Files, Developing Simple Bean -Serve lets -Life Cycle, Simple Serve let, Serve let Package.

TEXT BOOKS

- 1 THE COMPUTER REFERENCE JAVA2 – Patrick Naughton, Herbert Schildt, Third Edition,
Tata McGraw Hill.
2. PROGRAMMING WITH JAVA – C.Muthu, Vijay Nicole (P) Ltd, and First Edition.

Core Course - II (CC) - DATA STRUCTURE & ALGORITHMS

UNIT- I

Designs And Analysis Of Algorithms: From Problems to Programs "- Abstract Data Types –Data Types, Data Structures, and Abstract Data Types- Basic Data Types: The Data Type "List" Implementation of Lists -Stacks -Queues -Mappings - Stacks and Recursive Procedures.

UNIT -II

Trees: Basic Terminology -The ADT TREE -Implementations of Trees - Binary Trees -Basic Operations On Sets: Introduction to Sets -An ADT with Union, Intersection and Difference -A Bit -Vector Implementation of Sets -A Linked -List Implementation of Sets -The Dictionary -Simple Dictionary Implementations -The Hash Table Data Structure -Estimating the Efficiency of Hash Functions - Implementation of the Mapping ADT Priority Queues -Implementations of Priority Queues.

UNIT- III

Advanced Set Representation Methods : Binary Search Trees – Time Analysis of Binary search tree operations – Tries – Balanced Tree Implementations of Sets – Sets with the MERGE and FIND operations – An ADT with MERGE and SPLIT – Directed Graphs : Basic Definitions – Representations For Directed Graphs – The Single – Source Shortest Paths Problems – The All – Pairs Shortest Path Problem – Traversals of Directed Graphs – Directed Acyclic Graphs – Strong Components.

UNIT -IV

Undirected Graphs: Definitions -Minimum -Cost Spanning Trees / *Traversals* -- *Articulation Points* and Biconnected Components -graph matching -Sorting: The Internal Sorting Model Some Simple Sorting Schemes –Quick sort –Heap sort -Bin Sorting -A Lower Bound for Sorting by comparisons -Order Statistics -Algorithm Analysis Techniques: Efficiency of Algorithms .-Analysis of Recursive Programs ~ Solving Recurrence Equations -A General Solution for a Large Class

UNIT-V

Algorithm Design Techniques: Divide -and -Conquer Algorithms - Dynamic Programming -Greedy Algorithms -Backtracking -Local Search Algorithms -Data Structures And Algorithms For External Storage: A Model of External Computation -External Sorting- Storing Information in; Files- External Search Trees.

Text Book:

Alfred V .AHO John E.Hopcroft, Jeffrey D.Ullman, "Data Structures and Algorithms", Addison Wesley Longman Inc. Third Indian Reprint 2000.

Reference Book:

1. S.Sahni, "Data structures and Algorithms and Applications in C++", McGraw Hill, 1998.
2. Trembly & Soreson, " An Introduction to Data structures with applicatios", Second Edition, 1999.

Core Course - III (CC) - SOFTWARE ENGINEERING

UNIT-I

Software Characteristics -Software Engineering Layers -Software Process -Process Models -Linear Sequential, Evolutionary and Formal Methods -Software Measurement Size Oriented, Function Oriented, Extended Function Point Metrics, Metrics For Quality .

UNIT -II

Software Project Planning -Software Scope', Resources -Project Estimation - Problem Based, Loc Based, Process Based Estimation -Estimation Models - COCOMO Model - Software Quality -Quality Assurance- Software Reviews - Formal Technical Reviews -Statistical Quality Assurance -Software Reliability - SQA Plan.

UNIT-III

Software Requirements Analysis -Communication Techniques -Analysis Principles - Software Prototyping -Specification -Software Design Concepts -Effective Modular Design -Cohesion -Coupling -Design Documentation -Real Time Systems and Design Methods -Data, Architecture, Transform and Transaction Mapping, Interface and Procedural Design.

UNIT-IV

Object Oriented Software Engineering -Concepts Identifying The Elements of Object Model -Object Oriented Analysis -Domain Analysis -Object Relationship and Object Behavior ModDesign For Object Oriented Systems -System Design Process - Testing Strategies -Test Case Design And Testing Methods -Metrics For Object Oriented

Systems -Class Oriented Metrics -Operation Oriented Metrics -Metrics For Object Oriented Testing and Projects.

UNIT -V.

Software Testing -Fundamentals -White Box, Black Box, Control Structure Testing - Testing On Specialized Environments, Unit, Integration, Validation, System Testing - Art of Debugging. Software Reengineering -Software Maintenance -Process Model - Reverse Engineering -Forward Engineering -CASE -Building Blocks -Taxonomy -I -CASE -Integration Architecture -CASE Repository .

TEXTBOOK:

I. SOFTWARE ENGINEERING- A Practitioner's Approach, Roger S.Pressman, McGraw Hill Companies Inc. (1998)

REFERENCEBOOK :

I.SOFTWARE ENGINEERING -Richard Fairley ,McGrawHill Companies Inc.

Core Course - IV (CC) - COMPUTING LAB–I JAVA PROGRAMMING

1. Write a JAVA program to sort the given numbers using arrays.
2. Write a JAVA program to implement the FIND and REPLACE operations in the given multiple text.
3. Write a JAVA program to implement a calculator to perform basic arithmetic operations.
4. Write a JAVA program to handle the division by zero operation.
5. Write a JAVA program to use inheritance.
6. Write a JAVA program to find the area of a rectangle using constructor
7. Develop an applet to get interactive input for adding two numbers and display the sum of the same applet.
8. Write a JAVA program to create buttons in a frame that displays the information on clicking it.
9. Write a JAVA program to display the mouse co-ordinates.
10. Write a JAVA program to display the item selected from a drop-down list.
11. Write a JAVA program to find the student's percentage and grade using command line arguments.

12. Write a JAVA program to create threads and assign priorities to them
13. Write a JAVA program to develop an applet to play multiple audio clips using multithreading.
14. Write a JAVA program to create a window with three check boxes called red, green and blue. The applet should change the colors according to the selection.
15. Write a JAVA program to display the file name chosen from the file dialog box.

Core Course – V (CC) - DISTRIBUTED OPERATING SYSTEM

UNIT -I

Distributed Computing Systems: Definition, Evolution, Models, Popularity of Distributed Computing Systems. Distributed Operating Systems: Definition, Design Issues, Introduction to Distributed Computing Environment, A TM Technology.

Message Passing: Introduction, Desirable Features of a Good Message Passing System, Issues in IPC, Synchronization, Buffering, Multidatagram Messages, Encoding and Decoding of Message Data, Process Addressing, Failure Handling, Group Communication.

UNIT-II

RPC: Introduction, Model, Transparency of RPC, Implementation, Stub Generation, RPC Messages, Marshalling Arguments and Results, Server Management, Semantics, Protocols, CIS Binding, Exception Handling, Security, Special Types of RPC, Heterogeneous Environment, Lightweight RPC, Optimization.

Distributed Shared Memory: Architecture of DSM Systems, Design and Implementation Issues, Granularity, Structure of Shared Memory Space, Consistency Models, Replacement Strategy, Thrashing, Other Approaches, Heterogeneous DSM, Advantages.

UNIT-III

Synchronization: Introduction, Clock Synchronization, Event Ordering, Mutual Exclusion, Deadlock, Election Algorithms.

Resource Management: Features of Global Scheduling Algorithm, Task Assignment Approach, Load Sharing Approach.

UNIT-IV

Process Management: Process Migration, Threads.

Distributed File Systems: Features, File Models, Accessing Models, File Sharing Semantics, File Caching schemes, Replication, Fault Tolerance, Atomic Transactions, design Principles.

UNIT –V

Naming System: Features, Fundamental Terminology and Concepts, System Oriented Names, Object Locating Mechanism, Human Oriented Names, Name Caches, Naming and Security.

Security: Potential Attacks to Computers, Cryptography, Authentication, Access Control, Digital Signatures, design principles.

TEXT BOOK:

Pradeep K. Sinha, "Distributed Operating System", PHI, 2002

Core Course – VI (CC) - NETWARE & UNIX

UNIT -I

Basis concepts of Netware : over view of MSDOS Commands – Netware 4.1 features – Netware file system – Netware Directory and File Commands.

UNIT -II

Netware Advanced Features : Netware Printing Services – Login Scripts – Netware Data Protection And Backup, Netware Accounting System, Netware File System, Network Information System – Message Passing Interface.

UNIT -III

Unix Basic Concepts : Introduction to UNIX Operating System – File System – Visual Editor Essential UNIX Commands – Bourne Shell

UNIT –IV

UNIX Advanced Features : Overview Of UNIX System Administration – Introduction To Shell Programming – Disk Blocks And I-Nodes

UNIT –V

WINDOWS : Features Of Windows – Windows Programming – HTML Programming

References :

1. TOM SHELDON , Netware 4.1 , The Complete Reference, 2nd edition , 1997, Tata McGraw Hill Publications.
2. RACHEL MORGAN, HENRY MEGILTON , Introduction to UNIX System V, 1997, Tata McGraw Hill Publications.
3. Windows Primer plus 3.1 BPB Publications
4. C.H.PAPPAS and N.H.MURRAY , Visual C++ 5: The Complete Reference, 1998, Tata McGraw Hill Publications.
5. S.PRATA, Advanced UNIX – A Programmer’s Guide, BPB Publications, 1992
6. R.DUNCAN, MSDOS Encyclopedia
7. Sumitabha Das, “Unix concepts and Applications”, 2nd Edition, 1998, Tata McGraw Hill Publications.

Core Course – VII(CC) - COMPUTING LAB – II UNIX PROGRAMMING

Standard exercises in UNIX.

Core Course - VIII (CC) - WEB PROGRAMMING

Unit -I

The origins of ASP -ASP connection with IIS -Set-up Issues and Management - ASP object model in overview -Handling Request and Response: Client Server, interaction -The ASP Request and Response Objects -Working with Form and Query String Collections -Using Cookies and Server Variables -Other Request and Response Techniques.

UNIT -II

ASP Applications and Sessions: Managing the state on the web -The ASP Application and Session Objects -Server Process and the ASP Server Object: Server - side processing in Dynamic Pages -Server Side Includes -The ASP Server Object - Scripting Objects: Creating Instances of Objects and Components, Scripting. Dictionary, Scripting. File system, Scripting, Text Stream Objects.

UNIT -III

Active Server Components: Content Linking Components -The Ado Rotator Component -Counter Component -Browser Capabilities Component -Content Rotator Component -Page Counter Component -Permission Checker Component – My Info Component -Tools Component -Logging Utility Component -Debugging and Error Handling: Different Kinds of Errors -Preventing Errors -Handling Errors -Finding and Curing Errors -Debugging.

UNIT -IV

ADO 2.5 Basics -The ADO 2.5 Object Model -Connecting to Data Stores - Record Sets -Managing Errors -The Connection Object -Command Object - Optimization - ASP and Data on Client: Disconnected Record Sets -Remote Data Service -Data transfer between the server and the client -Record set paging -Working with XML data: Extensible Mark Up Language -XML in ADO and IE5 -Styling with XSL .

UNIT-V

Universal Data Access: OLEDB Providers -Semi Structured Data -Enterprise Data -ASP in the Enterprise -Distributed Application Architecture -Component -Component Application Design -Application Design Case Study -COM: COM Development tools -Interfaces -COM+ runtime changes -Building an ASP COM Component -COM+ Applications: Microsoft Component Services -Apartment and Threading Models -COM+ Applications -Component Service and Debugging - ASP Script Components: Windows Script Component -Structure of WSC - Available Interfaces -Writing ASP Script Component.

TEXTBOOKS

1. Alex Homer, Dave Sussman, Brian Francis, "Professional Active Server Pages", Alex Homer, Dave Sussman, Brian Francis -Wrox Press -Shroff Publishers and Distributors – 1999.
2. Saini A.K & Sumit Tuli, “Mastering XML”,Excel Books.

Core Course - IX(CC) - COMPUTER NETWORKS

UNIT

INTRODUCTION: Uses of Computer Networks - Network Hardware - Network Software - Reference Models - Example Networks THE PHYSICAL LAYER: Transmission Media -Wireless Transmission -The Telephone System - Narrow Band ISDN -Broadband ISDN and ATM -Cellular Radio -Communication Satellites.

UNIT II

THE DATA LINK LAYER : Design Issues -Error Detection and Correction - Elementary Data Link Protocols -Sliding Window Protocols -The Channel Allocation Problem -Multiple Access Protocols -IEEE Standard 802 for LANs & MANs -Bridges -High Speed LANs -Satellite Networks.

THE NETWORK LAYER: Design Issues -Routing Algorithms -Congestion Control Algorithms –Internet works -The Network Layer in the Internet.

UNIT III

THE TRANSPORT LAYER: Transport Service -Elements of Transport Protocols -The Internet Transport Protocol -THE SESSION LAYER: Design Issues.
THE APPLICATION LAYER: Usenet News -Multimedia.

UNIT IV

Introduction and Overview of TCP/IP -Internetworking and Architectural Model - Internet Protocol: Routing IP Datagram -UDP Reliable Stream Transport Service (TCP) -TCP/IP over ATM Networks -Mobile IP.

UNIT V

Private Network Interconnection (NAT, VPN) -The Socket Interface - Bootstrap and Auto Configuration -DNS -Applications: Remote Login, File Transfer and Access -Electronic Mail- World Wide Web -Voice and Video over IP -SNMP - Internet Security and Firewall Design.

TEXT BOOKS:

- I. COMPUTER NETWORKS -Andrew S. Tanenebaum, PHI Publications, Third Edition, 2001.
2. INTERNETWORKING WITH TCP/IP -Douglas E. Comer, Pearson Education Asia, Fourth Edition, 2001.

Core Course - X(CC) - MULTIMEDIA & ITS APPLICATIONS

UNIT I

Definition -Multimedia Hardware -Multimedia software multimedia networking - Multimedia Applications -Multimedia Standards -Text : Elements of Text -Text Technology -Fonts -Coloring text .

UNIT II

Graphics: Elements of Graphics -»ictures and Images -Raster Images - Vector. Images -Images and Color -Bitmap, Vector ,Compressed Formats - Hypertext - Hyperpicture -CD family -Various CD Formats -.Audio: Digital audio -Calculating the digital audio data size -Digital Audio Systems -Audio File Formats - Digital Representation of sound -Transmission of digital sound -Digital signal processing .

UNIT III .

Video: Analog Video ~ Digital Video -Calculating the digital video data size - video file size -video file formats. Digital Video and Image Compression: Video compression techniques -.JPEG Image Compression Standard -MPEG Video Compression Standard.

Photoshop : File types -Tool Box -Importing and Exporting Images -Image mode- Rotate Canvas -Extract -Layers -Feather -filters -Zooming Images - Navigator - Colors -Styles -Channels.

UNIT IV

Flash MX : File Types -MX interface on Macintosh and windows - Keyboard Shortcuts ,. Toolbox -Document Window -Timeline Window -Editing frames and layers -Primary Drawing tools -Choosing Colors -Choosing line styles -Document Library -Editing Symbols -Color ~watches Panel -Text Field types - Timeline Animation fundamentals -Applying Layer Types -Importing Sound into Flash - Editing audio in Flash -Bitmaps and File Formats Import to Flash -Importing .Video -Navigating Flash timelines.

UNIT V

3DS Max: Working With Cameras And Lights – Interface Elements – Main Toolbar-Additional Interface Controls-Viewport Navigation Controls –Working With Max Scene Files –Using Primitive Objects – Selecting Objects And Setting Objects Properties-Cloning Objects And Creating Object Arrays-Transforming Objects-Using Modifiers –Drawing And Using 2d Splines And Shapes –Working With Meshes –Building Compound Objects-Exploring The Materials Editors-Applying Materials-Using Maps-Working With Lights-Material Editor-Applying Materials-Using Maps-Working With Lights-Controlling Cameras-Creating And Controlling Particles System-Animation Basics-Working With Track View-Using Render Elements And Effects.

Text Books :

1. Toy Vaughn , “Multimedia Making It Work” (Unit I,II,III).
2. John F.Koegel Buford, “Multimedia Systems”, Addison Wesley, 1994 (Unit II,III)
3. Mastering in Photoshop (Unit III)
4. Robert Reinhardt, “Macromedia Flash MX Bible” (Unit IV)
5. Kelly L.Murdock, “3DS Max Bible”. (Unit V).

Reference Books

1. Free T.Hosfstetter, “Multimedia Literacy” ,McGrawHill , 1995.
2. Simon J.Gibbs, Dionysios C.Tsichritziz, “Multimedia Programming”, Addison Wesley, 1995

Core Course - XI(CC) - COMPUTING LAB – III WEB DESIGN

1. Create a Web Page for ABC INFOTECH LTD., With necessary images and marquee.
2. Create Web Pages which displays the menu card of a hotel. The first page should contain the list of items available. After selection of one item, the corresponding details should be displayed on the next page.
3. Create a Web Page which displays the balance sheets for the given list of companies (same as above problem)
4. Create a Web Page for XYZ INFOTECH LTD., to display the company profile employee details Balance sheet, receive resume, Customer service using links.
5. Using frames create web pages for a travel agency
6. Create a Web Page using forms for our college students admission process. (Use list box, Push button, Radio button, Command Button, Rich text box, text box, etc where ever applicable)
7. Create a Web Page which receives suggestions from customers for a software development & consultancy agency using necessary VB Script.
8. Using VB Script language, Write a program to display the multiplication table in web page.
9. Using Java Script, display the product details of a vehicle dealer for a given date and time. Also display the details of the vehicles available. Use necessary controls where ever applicable
10. Create a Web Page which displays the wage of style attributes and event function with demo.
11. Create a Web Page which displays the mouse co-ordinates and image co-ordinates.
12. Create a Web Page which displays the dynamic changing style. The web page should consist of list of cites organized in an order and the corresponding information using mouse over.
13. Using Perl, Create a Program to perform recursion concept.
14. Using Perl, Create a Program to perform all file Manipulation commands.
15. Using Perl, Create a Program to perform all necessary operations on payroll process.
16. Using Active X, Add an object in a web page such as calendar for any given year & time zone.

Elective Course I (EC) - INTERNET & E-COMMERCE

UNIT- I

Introduction: Electronic Commerce Frame Work -The anatomy of E- Commerce Applications -Electronic Commerce Consumer Applications --- Electronic Commerce Organization Applications -The Network infrastructure for Electronic Commerce: Components of the Highway - Network Access Equipment -Global Information Distribution Networks.

UNIT- II

The internet as a Network Infrastructure: The Internet Terminology Chronological History of the Internet -NSFNET -Architecture and Components -National Research and Education Network -Globalization of the Academic Internet -The Business of Internet Commercialization: Telco/Cable/Online Companies -National independent ISPs -Regional Level ISPs -Local Level ISPs -Service Provided Connectivity --internet Connectivity Options.

UNIT- III

Network Security and Firewalls: Client Server Network Security - Firewalls & Network Security -Data & Message Security -Challenge Response System -Encrypted Documents & Electronic Mail –Electronic commerce & World Wide Web: Architectural Framework for Electronic Commerce - Technology Behind the Web -Security and the Web - Consumer Oriented Electronic Commerce: Consumer Oriented Applications --Mercantile Models from the Consumers Perspective.

UNIT- IV

Electronic Payment System: Types of Electronic Payment Systems -Digital Token Based Electronic Payment Systems Smart Card & Electronic Payment Systems -Credit Card Based Electronic Payment Systems -Risk & Electronic Payment Systems -Designing Electronic Payment Systems - Inter Organizational Commerce & EDI:

Electronic Data Interchange -EDI Applications in Business -EDI - Implementation, MIME, and Value Added Networks: EDI Software Implementation -EDI Envelope for Message Transport -Value -Added Networks (VANs) --Internet -Based EDI.

UNIT- V

Advertising and marketing on the Internet: The New age of Information Based Marketing -Advertising on the Internet -Charting the On-line Marketing Process -Consumer Search and Resource Discovery: Information search and Retrieval -Electronic Commerce Catalogues or Directories -Information Filtering -Consumer Data Interface Emerging Tools -On Demand Education and Digital Copyrights: Computer Based Education on Demand -Software Agents: Characteristics and Properties of Agents - The Technology Behind Software Agents -Applets, Browsers and Software Agents.

Text Book:

1.Ravikalakota & Andrew Whinston, "Frontiers of Electronic Commerce", Addison Wesley, 2000.

Reference Book:

1.Pete Loshin, & Paul A.Murphy, "Electronic Commerce", 2nd Ed., Jaico Publishing House,2000.

Elective Course – II(EC) - DATA WARE HOUSING & MINING

UNIT - I

Data warehousing components-Introduction: Overall Architecture-Data warehouse database-Sourcing, Acquisition, Cleanup and Transformation tools-Metadata. Access Tools: Accessing and Visualizing Information: Tool Taxonomy-Query and Reporting tools-Applications-OLAP tools-Data mining tools. Data Marts-Data Warehouse Administration and Management-Impact of the Web- Approaches to using the Web.

UNIT-II

Data Mining- The Mining Analogy-Measuring Data Mining Effectiveness- (Accuracy- Speed-Cost Embedding-Data Mining into a Business Process)-Data Mining Methodology.

UNIT -III

Classical Techniques-Statistics, Neighbourhoods and Clustering. Next Generation Techniques- Trees, Network rules-When to use Data Mining.

UNIT-IV

The Business Value - Customer Profitability, Customer Acquisition, Cross Selling, Customer Retention-Customer Segmentation.

UNIT-V

Business Intelligence and Information Mining- Text Mining and Knowledge Management- Text Mining Technologies- Text Mining Products-Conclusion.

TEXTBOOK

Alex Berson, Stephen Smith & Kurt Thearling, "Building Data Mining Applications for CRM ",
Tata McGraw Hill Edition, 2000.

Elective Course III-(EC) - NETWORK SECURITY

UNIT I

Introduction – Primer on a Networking – Active and Passive Attacks – Layers and Cryptography – authorization – Viruses, worms. The Multi level Model of Security – Cryptography – Breaking an Encryption Scheme – Types of Cryptographic functions – secret key Cryptography – Public key Cryptography – Hash algorithms. Secret key cryptography – Data encryption standard – International Data Encryption Algorithm (IDEA) Modes 4 Operations – Encrypting a Large message – Electronic code book, cipher block chaining, OFB, CFB, CTR – Generating MACs.

UNIT II

Introduction to public key algorithms – Model of arithmetic – Modular addition, Multiplication, Exponentiation. RSA – RSA Algorithm – RSA Security – Efficiency of RSA – Public Key cryptography Standard (PKCS) - Digital Signature Standard – DSS Algorithm – Working of Verification procedure – Security and DSS – DSS controversy.

UNIT III

Authentication – Overview of authentication systems – password based authentication – Add nets based authentication – cryptographic authentication protocols – who is seeing authenticate – passwords as cryptographic keys – Eaves dropping and server database reading – Trusted intermediaries – Session key establishment. Authentication of people – passwords – online – off line password

of using – Eavesdropping – passwords and careless users – Initial Password distribution – Authentication tokens.

UNIT IV

Standards and IP security – Introduction to Kerberos – Tickets and Ticket granting tickets. Configuration - logging into the network – replicated KDCs. Overview of IP security – security associations – security association database - security policy database, AH and ESP – Tunnel Transport mode why protect - IP Header IPV4 and IPV6, NAT, Firewalls, IPV4, IPV6 Authentication Header – ESP.

UNIT V

Network Security Application – Email Security – distribution lists – store and forward – security services for email – establishing keys privacy – authentication of the source – message Integrity – Non-Repudiation – Proof of submission – Proof of delivery. Message flow confidentially – Anonymity – Names and Addresses. Firewalls – packet filters – application level gateway – encrypted tunnels – comparisons why firewalls don't work – denial of service attacks. Web security – Introduction – URLs/URIs – HTTP – HTTP digest authentication. Cookies – other web security problems.

TEXT BOOK

1. Charlie Kaufman, Radia Perlman and Mike Speciner “Network Security: Private Communication in a Public Work”, Second Edition, Pearson Education, Delhi, 2002.

REFERENCES

1. William Stallings, “Network Security: Essentials Applications and Standards”, Pearson Education, Delhi, 2002.
2. Hans, “Information and Communication Security”, Springer verlag, 1998.
- 3 Derek Atkins, “Internet Security”, Tech media, 1998.

M.Sc. INFORMATION TECHNOLOGY

SPECIAL COURSE I – SOFTWARE TESTING

UNIT I TESTING AND SQA OVERVIEW

Software chaos – criteria of project success – life cycle models for software – SQA for software – Quality management system – Process change management – Introduction to testing process – levels of testing – testing approach – types of testing – test plan – criteria for completion of testing – manual testing and its limitation.

UNIT II BUILDING A SOFTWARE TESTING ENVIRONMENT

Building a software testing strategy – Establishing a software testing methodology – Determining software testing techniques – Incorporating testing tools for test activity.

UNIT III ELEVEN-STEP TESTING PROCESS (only overview to be covered)

Eleven-step software testing process overview – Assess project management development – Develop test plan – requirements phase testing – design phase testing – program phase testing – Execute test and record results – Acceptance test – Report test results – testing software installation – test software changes – Evaluate test effectiveness.

UNIT IV TESTING SPECIALIZED SYSTEMS, APPLICATIONS AND BUILDING TEST DOCUMENTATION

Testing client / server systems – testing rapid application development – testing the adequacy of system documentation – testing web – based systems – testing off-the Shelf software – testing security – test documentation.

UNIT V SOFTWARE TESTING TOOLS (Only overview to be covered)

Software testing tools overview – Details of using “Winrunner” in GUI testing – Using “Silk test” for data – driven testing – Application testing using SQA robot – Loadrunner – Java program testing using JMETER – Using “Test Director” for test case management, test process management.

Text Book:

1. William Perry, Effective methods for Software Testing, 2nd edition, John Wiley Sons, 2000 (For 2nd unit – Chapter 2 to 4; 3rd unit – Chapter 6 to 17; 4th unit – Chapter 18, 19, 20, 21, 22, 26)
2. Dr.K.V.K.K. Prasad, Software testing tools, Dreamtech press, 2004 (For 1st unit – Chapter 1 and 2; 5th unit – Chapter 3 to 9).

References:

1. Boris Beizer, Software Testing Techniques, Dream Tech Press, 2003.
2. Marine L.Hutcheson, Software Testing Fundamentals, Dreamtech Press, 2003.

SPECIAL COURSE II – SOFTWARE PROJECT MANAGEMENT**UNIT I BASIC CONCEPTS**

Product, Process and Project – Definition; Product Life Cycle – Project Life Cycle Models – Process models – CMM, PCMM, ISO-9001 applied to software.

UNIT II UMBRELLA ACTIVITIES IN PROJECTS

Metrics in software management; Software configuration management; Software quality assurance (SQA) – Risk management; Verification and validation activity in each phase deliverables; Software quality control (SQC) activity in software.

UNIT III PROJECT MANAGEMENT PROCESS AND ACTIVITIES

Project life cycle – In stream activities; Project initiation – Activities, Outputs, Records and Process database; Project planning and tracking – what, when, how, by whom, Activities, Process database interface; Project closure – closure process, metrics, Interfaces to process database.

UNIT IV ENGINEERING ACTIVITIES IN PROJECT MANAGEMENT – Phase I

Requirements gathering – Details on the activities performed here, records / data produced and metrics applicable; Estimation – Project sizing and effort estimation – COCOMO – change metrics; Metrics for estimation process.

UNIT V ENGINEERING ACTIVITIES IN PROJECT MANAGEMENT – Phase 2

Design and Development phase activities – Testing phase activities – Maintenance phase activities; Special considerations in project management for India and geographic distribution issues.

Text Book:

1. Ramesh Gopaldaswamy, “Managing Global Projects”, Tata McGraw Hill, 2001.

References:

1. Humphrey, Watts: “Managing the software process”, Addison Wesley, 1986.
2. Walker Royce, Software Project Management, Pearson Education, 2004.
3. Kemerer, Software Project Management – Readings and cases, Irwin / McGraw Hill, 1997.
4. Jim McCarthy, Dynamics of Software development, WP publishers, 2001 (Indian imprint).
