THIRUVALLUVAR UNIVERSITY

MASTER OF SCIENCE

DEGREE COURSE

M.Sc. COMPUTER SCIENCE

UNDER CBCS

(with effect from 2012-2013)

The Course of Study and the Scheme of Examinations

S.NO.	Study Components / Course Title		Ins. hrs /week	Credit	Title of the Paper	Maximum Marks		
	SEMESTER I					CIA	Uni. Exam	Total
1	MAIN	Paper-1	4	4	Advanced Java Programming	25	75	100
2	MAIN	Paper-2	4	4	Computer Architecture and Parallel Processing	25	75	100
3	MAIN	Paper-3	4	4	Advanced Relational Data Base Management Systems	25	75	100
4	MAIN PRACTICAL	Paper-1	5	-	Advanced Java Programming Lab.	-	-	-
5	MAIN PRACTICAL	Paper-2	5	-	Advanced Relational Data Base Management Systems Lab.	-	-	-
6	MAIN PRACTICAL	Paper-3	5	-	Windows Programming Lab.	-	-	-
7	ELECTIVE	Paper-1	3	3	**(to choose 1 out 3)** A. Distributed Operating System B. Object Oriented Analysis and D C. Principles of Programming Languages	25	75	100
			30	**15**		**100**	**300**	**400**
	SEMESTER II					CIA	Uni. Exam	Total
8	MAIN	Paper-4	4	4	ASP .NET Programming	25	75	100
9	MAIN	Paper-5	4	3	Unix Network Programming	25	75	100
10	MAIN	Paper-6	4	3	Advanced Data Structures and Algorithms	25	75	100
11	MAIN PRACTICAL	Paper-1	4	5	Advanced Java Programming Lab. & ASP .NET Programming Lab.	40	60	100
12	MAIN PRACTICAL	Paper-2	4	5	Advanced Relational Data Base Management Systems Lab. & UNIX Programming Lab.	40	60	100
13	MAIN PRACTICAL	Paper-3	5	5	Windows Programming Lab. & PHP Programming Lab.	40	60	100

14	**Compulsory Paper**		2	2	**Human Rights**	25	75	100
15	ELECTIVE	Paper-2	3	3	**(to choose 1 out 3)** A. Mobile Communications B. Embedded Systems C. Multimedia and Animation	25	75	100
			30	**30**				**800**
SEMESTER III						**CIA**	**Uni. Exam**	**Total**
14	MAIN	Paper-7	3	3	JSP and Servlet Programming	25	75	100
15	MAIN	Paper-8	3	3	Internet Programming	25	75	100
16	MAIN	Paper-9	3	3	Data Warehousing and mining	25	75	100
	MAIN	Paper-10	3	3	Software Testing and Quality Assurance	25	75	100
17	MAIN PRACTICAL	Paper-4	5	5	JSP and Servlet Programming Lab	40	60	100
18	MAIN PRACTICAL	Paper-5	5	5	Internet Programming Lab	40	60	100
	MAIN PRACTICAL	Paper-6	5	5	C# Programming Lab	40	60	100
19	ELECTIVE	Paper-3	3	3	**(to choose 1 out 3)** A. Open CL Programming B. Principles of Compiler Design C. Network Security	25	75	100
			30	**30**		**100**	**300**	**800**
SEMESTER IV						**CIA**	**Uni. Exam**	**Total**
		Paper-11	30	15	Project Viva Voce	80	120	200
			30	**15**		**80**	**120**	**200**

Subject	**Papers**	**Credit**	**Total Credits**	**Marks**	**Total marks**
MAIN	10	4-5	58	100	1000
MAIN Project	1	15	15	200	200
MAIN PRACTICAL	6	4-5	8	100	600
ELECTIVE	3	3	12	100	300
COMPULSORY PAPER	1	2	2	100	100
Total	**21**	**-**	**90**	**-**	**2200**

THIRUVALLUVAR UNIVERSITY

M.Sc. COMPUTER SCIENCE
SYLLABUS
UNDER CBCS
(With effect from 2012-2013)

SEMESTER I
PAPER - 1
ADVANCED JAVA PROGRAMMING

UNIT-I

The Applet class - Event Handling - Working with windows, Graphics and Text using AWT Classes - AWT Controls - Layout Managers and menus - Images. Introducing Swing: swing- components and containers - the swing packages - Painting in a Swing - Exploring Swing: Jlabel and ImageIcon - JtextField - The Swing Buttons - Jtabbed Pane - Jscroll Pane - Jlist - JcomboBox - Trees- Jtable.

UNIT-II

JDBC: JDBC Architecture - Installing the ODBC Driver - Connecting to a Database - Structured Query language. JDBC programming concept: Database URL - Executing the action commands - Query with JDBC - Populating a Database - Executing Queries - Metadata - Scrollable and Updatable Result Sets.

UNIT-III

Servlets: A simple Servlets - The servlet API - Servlet Package - Handling HTTP Request and Response. JSP : Evolution of the Web Application - Overview of the HTTP - Introduction to Servlets - JSP Overview - JSP syntax and semantics - Expressions, scriptlets and Declarations

UNIT-IV

Request Dispatching - Session and Thread Management - Application Event Listeners Database Access with JDBC.

UNIT-V

Networking Basics - Socket Programming - Proxy server - TCP/IP Sockets - Net address - datagrams.

TEXT BOOKS

1. Herbert Schildt - The Complete Reference Java - Tata McGraw Hill Publishing Company Limited Edition 7, 2007.
2. Cays Horstmann and Gary Cornell - Core Java Volume II, Pearson Edition, 2001
3. Phil Hanna - JSP 2.0: The Complete Reference -Tata McGraw Hill Publishing Company Limited, Edition 2, 2003

REFERENCE

1. P. Naoughton and H. Schildt - Java2: The Complete Reference - Tata McGraw Hill Publishing Company Limited, Edition 3, 1999.
2. K. Arnold and J. Gosling - The Java Programming Language - Edition 2, Publication, 2000
3. Deitel & Deitel,"Java How to program", 8th ed., PHI.

PAPER-2

COMPUTER ARCHITECTURE AND PARALLEL PROCESSING

UNIT-I

Introduction - Evolution of Computer systems - Trends of Parallel Processing - Parallelism in Uniprocessor Systems - Architecture, Mechanisms, Multiprogramming and Timesharing - Parallel Computer Structures - Pipeline, Array, Multiprocessor, Performance of Parallel computer, Data Flow - Architectural Classification - Applications.

UNIT-II

An Overlapped Parallelism - Instruction and Arithmetic Pipelines - Principles of Designing Pipeline Processors - Instructions Prefetch and Branch Handling, Data Buffering and Busing Structures - Job

Sequencing and Collision Prevention - Vector Processing Requirements - Characteristics of Vector Processing, Pipelined Vector Processing Methods.

UNIT-III

SIMD Array Processors - SIMD Interconnection Networks - Associative Array Processing.

UNIT-IV

Multiprocessor Architecture and Programming: Functional Structures- Interconnection Networks- Parallel Memory Organization.

UNIT-V

Multiprocessor Operating Systems-Interprocessor Communication Mechanisms-Multiprocessor Scheduling Strategies-Parallel Algorithms for Multiprocessors.

TEXT Book

Kai Hwang, Faye A.Briggs, Computer Architecture And Parallel Processing, McGraw-Hill.

REFERENCE

1. John P.Hayes, Computer System Architecture and Parallel Processing, McGraw-Hill.
2. Sasikumar,"Introduction to Parallel Processing", PHI.

PAPER-3

ADVANCE RELATIONAL DATABASE MANAGEMENT SYSTEMS

UNIT-I

File System Vs. DBMS - Database System Applications - View of Data-Datbase language - Database design - ER Model _ Relational Model - Network Data Model - Hierarchial Data Model - Data Storage & Querying - Data Architecture.

UNIT-II

Relational Model - Structure of Relational Databases - Relational Algebra and Calculus - SQL - Basic Structure - Set Operations - Aggregate Functions - Null Values - Nested Queries - Complex Queries - Views - Modification of the Database - Advanced SQL - Triggers.

UNIT-III

Functional Dependencies - Features of Relational designs - Decomposition and Normalisation using Functional Dependencies and Multivalued Dependencies - Join dependencies- Domain key Normal form.

UNIT- IV

Overview of Physical Storage Media - Magnetic disks - RAID - Teritary Storage - File Organisation - Organisation of records in Files - Indexing and Hashing - Ordered Indices - B+ -Tree Index Files - B-Tree Index Files - multiple Key Access - Static and Dynamic Hashing - Query Processing - Transaction Management - Transactions - Concurrency.

UNIT-V

Distributed Databases - Homogeneous and Heterogeneous Databses - Distributed Data Storage - Distributed Transactions - Commit Protocols - Concurrency Control - Object Based Databases - Complex Data types - Structured Types and Inheritance in SQL - Object

identity and Reference - Types in SQL - XML - structure of XML data - XML Document - Schema - Querying and Transformation - Data Mining and Data Warehousing.

TEXT Book

Abraham Silberschatz, Henry F. Korth and S. Sudarshan- "Database System Concepts", FifthEdition,McGraw-Hill,2006.

REFERENCES

1. Raghu Ramakrishnan and Johannes Gehrke, "Database Management Systems", Tata McGraw-Hill Publishing Company, 2003.
2. Ramez Elmasri and Shamkant B. Navathe, "Fundamental Database Systems", Third Edition, Pearson Education, 2003.
3. Hector Garcia–Molina, Jeffrey D.Ullman and Jennifer Widom- "Database System Implementation"- Pearson Education- 2000.
4. Narang,"Database Management Systems", 2nd ed., PHI.

ELECTIVE

PAPER-1

(to choose 1 out of 3)

A. DISTRIBUTED OPERATING SYSTEM

UNIT-I

Introduction - Operating system concepts - System Calls - OS Structure - Process and Threads: Process - Threads - Inter Process Communication - Scheduling - Classical IPC Problems.

UNIT-II

Memory Management - Memory abstraction - Virtual Memory - Page Replacement Algorithm - Design issues for paging systems - implementation issues - Segmentation. File Systems: Files - Directories - File System Implementation - File System Management and Optimization.

UNIT-III

Input/Output: Principles of I/O hardware - Principles of I/O software - I/O Software Layers - Disks - Clocks - User Interface - Thin Clients - Power Management. Deadlocks: Resources - Introduction - The Ostrich Algorithm - Deadlock Avoidance - Deadlock Prevention - Other issues.

UNIT-IV

Multimedia Operating System: Introduction - Multimedia Files - Video & Audio compression - Multimedia Process Scheduling - Multimedia File System Paradigms - File placement - Caching - Disk scheduling for Multimedia - Multiple Processor system: Multiprocessor - Multicomputers - Virtualization - Distributed systems.

UNIT-V

Security - Security Environment - Basics of Cryptography - Protection Mechanisms - Authentication - Insider Attacks - Exploiting Code Bugs - Malware – Defenses - Case Study: LINUX.

TEXT BOOK

Andrew S. Tanenbaum - Modern Operating System - Prentice Hall of India Pvt Limited, 2001

REFERENCES

1. Pradeep K. Sinha. - Distributed Operating Systems Concepts and Design - Prentice Hall of India Pvt Limited, 2008
2. Andrew S. Tanenbaum and Maarten Van Steen - Distributed Systems - Prentice Hall of India Pvt Limited, 2002

PAPER-1

B. OBJECT ORIENTED ANALYSIS AND DESIGN

UNIT-I

System Development - Object Basis - Development life cycle-Methodologies-Patterns-Frameworks-Unified Approach-UML.

UNIT-II

Use-Case Models-Object Analysis-Object relations-Attributes-Methods-Class and object responsibilities-Case Studies.

UNIT-III

Design Process-Design Axioms-Class Design-Object storage-Object Interpretability-Case Studies.

UNIT-IV

User interface design-View layer classed-Micro-level processes-View Layer Interface-Case Studies.

UNIT-V

Quality Assurance Tests-Testing strategies-Object oriented on testing-Test Cases-Test Plans-Continuous testing-Debugging Principles-System usability-Measuring user satisfaction-Case Studies.

Text book

Ali Bahrami, "Object Oriented Systems Development", McGraw Hill International Edition, 1999

Reference

1. Grady Booch, "Object Oriented Analysis and Design", Pearson Education-2nd Edition

2. Matha,"Object-Oriented Analysis and Design using UML",PHI

PAPER-1

C. PRINCIPLES OF PROGRAMMING LANGUAGES

UNIT-I

Language design Issues: Reasons for studying concepts of programming language language evaluation criteria- influences on language design- structure and operation of computer virtual computers and binding times- language paradigms.

UNIT-II

Data types: Properties of types and objects-elementary data types- structured data types.

Abstraction: Abstract data types-encapsulation by subprograms-type definition- storage management.

UNIT-III

Sequence Control : Implicit and explicit sequence control- sequencing with arithmetic and non-arithmetic expressions-sequence control between statements**. Subprograms control**: subprogram sequence control- attributes of data control shared data in subprograms.

UNIT-IV

Inheritance: Inheritance- polymorphism; **Language Translation Issues:** Programming language syntax- stages in translation- formal translation models.

UNIT-V

Advances in language design: variations on subprogram control- language constructors for parallel processing language semantics-software architecture.

TEXT BOOK

Terrance W.Pratt, Marvin V Zelkowitz, *Programming Languages, Design and Implementation* , PHI, 2002, (4th edition).

REFERENCES

1. Ravi Sethi, *Programming Languages Concepts & Constructs* , Addison-Wesley,(2nd edition),1996.
2. E.Horowitz, *Fundamentals of programming languages* , Galgotia Publishers,1984.
3. A.B.Tucker, Robert, Noonan, *Programming Languages* , McGraw Hill,2002.
4. D.Appleby, J.J.VandeKopple, *Programming languages Paradigm and practice* , McGraw Hill, International Editions, (2nd edition), 1997.

MAIN PRACTICAL

PAPER-1

ADVANCED JAVA PROGRAMMING LAB

1. Multithreading Using Priorities
2. File & String Manipulations
3. Write an Applet Program to use various Controls and perform Font Animation.
4. Create a menu with submenu, popup menu, short cut keys, check box items and separator.
5. Implement calculator using Java AWT controls.
6. Create a Student mark statement using JDBC control and display the information using Table.
7. Program to implement Client/Server technology.
8. Write a Java program to create an Employee pay bill calculation using various swing controls.

MAIN PRACTICAL

PAPER-2

ADVANCED RELATIONAL DATABASE MANAGEMENT SYSTEMS LAB

1. Creating database tables and using data types.
   - Create table, • Modify table, • Drop table
2. Practical Based on Data Manipulation.
   - Adding data with Insert, • Modify data with Update,
   - Deleting records with Delete
3. Practical Based on Implementing the Constraints.
   - NULL and NOT NULL, • Primary Key and Foreign Key Constraint
   - Unique, Check and Default Constraint
4. Practical for Retrieving Data Using following clauses.
   - Simple select clause, • Accessing specific data with Where, Ordered By, Distinct and Group By
5. Practical Based on Aggregate Functions.
   - AVG, • COUNT, • MAX, • MIN, • SUM, • CUBE
6. Practical Based on implementing all String functions.
7. Practical Based on implementing Date and Time Functions.
8. Practical Based on implementing use of union, intersection, set difference.
9. Implement Nested Queries & JOIN operation.
10. Practical Based on performing different operations on a view.
11. Practical Based on implementing use of triggers, cursors & procedures.
12. Make a Database connectivity with front end tools like – VB, VC++

MAIN PRACTICAL

PAPER-3

WINDOWS PROGRAMMING LAB

1. Write a VC++ application using MFC that creates a new Window and new Fonts.
2. Write a VC++ Win32 application that displays a Greetings Message.
3. Write a VC++ application that allows the user to draw pictures using the mouse button. Use MFC method.
4. Write a VC++ program to create a List Box and add the capital cities of various states in our country.
5. Write a VC++ program using MFC that displays line, rectangle, rounded rectangle, ellipse and polygon filled with colours.
6. Write a VC++ program using MFC that fills the background of the client area with a bitmap.
7. Write a VC++ program using MFC that displays a menu. Choose the menu items using keyboard accelerator keys and display appropriate messages for the selected menu item using message boxes.
8. Write a VC++ program using MFC that displays the status of ALT, CTRL, SHIFT, NUM LOCK and SCROLL LOCK keys.

SEMESTER II

PAPER - 4

ASP. NET PROGRAMMING

UNIT-I

Introduction to .NET and ASP.NET:

The DOS Paradigm - The GUI Paradigm - The .Net Paradigm - .Net framework - Types, Objects and Namespaces - Setting up ASP.Net and IIS.

UNIT-II

ASP.NET Controls: Overview of dynamic web page-introduction & features of ASP.NET-understanding ASP.NET controls-applications-web servers, installation of IIS. Web form, web forms Controls - server-controls-client controls-adding controls to web Form-buttons-text box-labels-checkbox-radio buttons-list box. Adding controls a runtime-Running a web application- creating a multiform web project- Form validation: client side and server side validation- Validation controls: required field comparison range- Calendar control- Ad rotator control- Internet Explorer control.

UNIT-III

ADO.NET: Overview of ADO.NET- from ADO to ADO.NET- ADO.NET

Architecture- Accessing data using data adapters and datasets- using command and data

Reader- binding data to data bind controls- displaying data in data grid.

UNIT-IV

XML In .NET: XML Basics- Attributes- Fundamentals of XML Classes:

Document- Text Writer- Text Reader- XML Validations- XML In ADO.NET,-Data Document

UNIT-V

Web Services: Introduction- State Management- View State- Session State- Application State- Service Description Language- Building & Consuming A Web Service. Web Application Development- Caching- Threading Concepts- Creating Threads In .NET-

Managing Threads- Thread Synchronization- Features Of .NET- Role Based Security & Code - Access Security- Permissions

TEXT BOOKS

1. Mathew Macdonald - The Complete Reference ASP.NET - Tata McGraw Hill Publishing Pvt Ltd, 2005
2. Professional ASP.NET - Wrox publication PVT Ltd.
3. ASP.NET Developer's Guide - Greg Buczek - Tata McGraw Hill Edition.

REFERENCES

1. VB.NET Programming Black Book - Steven Holzner (Dreamtech pub.)
2. Introduction to .NET framework - Wrox publication.
3. ASP.NET Unleashed - BPB Publication.

PAPER-5

UNIX NETWORKING PROGRAMMING

UNIT-I

INTRODUCTION & FILE SYSTEM

Overview of UNIX OS - File I/O - File Descriptors - File sharing - Files and directories - File types - File access permissions - File systems - Symbolic links - Standard I/O library - Streams and file objects - Buffering - System data files and information - Password file - Group file - Login accounting - system identification.

UNIT-II

PROCESSES

Environment of a UNIX process - Process termination - command line arguments - Process control - Process identifiers - Process relationships terminal logins - Signals - threads.

UNIT-III

INTERPROCESS COMMUNICATION

Introduction - Message passing (SVR4)- pipes - FIFO - message queues - Synchronization (SVR4) - Mutexes - condition variables - read - write locks – file locking - record locking - semaphores - Shared memory(SVR4).

UNIT-IV

SOCKETS

Introduction - transport layer - socket introduction - TCP sockets - UDP sockets - raw sockets - Socket options - I/O multiplexing - Name and address conversions.

UNIT-V

APPLICATIONS - Debugging techniques - TCP echo client server - UDP echo client server - Ping - Trace route - Client server applications like file transfer and chat.

TEXT BOOKS

1. W.Richard Stevens, Advanced programming in the UNIX environment, Addison Wesley, 999.(Unit 1,2 & 3)
2. W. Stevens, Bill Fenner, Andrew Rudoff, "Unix Network Programming", Volume 1,The Sockets Networking API,3rd Edition, Pearson education, Nov 2003.(unit 4 & 5)

REFERENCE

1. Meeta Gandhi,Tilak Shetty and Rajiv Shah – The 'C' Odyssey Unix –The open Boundless C,1st Edition ,BPB Publications 1992.
2. Stvens,"Unix network programming: INterprocess Communications", Vol2, 2nd ed., PHI

PAPER-6

ADVANCED DATA STRUCTURES AND ALGORITHMS

UNIT-I: Complexity Analysis & Elementary Data Structures

Asymptotic notations - Properties of big oh notation - asymptotic notation with several parameters - conditional asymptotic notation - amortized analysis - NP-completeness - NP-hard - recurrence equations - solving recurrence equations - arrays - linked lists - trees.

UNIT-II: HEAP STRUCTURES

Min-max heaps - Deaps - Leftist heaps - Binomial heaps - Fibonacci heaps - Skew heaps - Lazy-binomial heaps.

UNIT-III: SEARCH STRUCTURES

Binary search trees - AVL trees - 2-3 trees - 2-3-4 trees - Red-black trees - B-trees - splay trees - Tries.

UNIT-IV: MULTIMEDIA STRUCTURES

Segment trees - k-d trees - Point Quad trees - MX-Quad trees - R-trees - TV-trees.

UNIT-V: APPLICATIONS

Huffman coding - Garbage collection and compaction - Topological sort - Mincut maxflow algorithm - Activity networks - Set representation - Set union and find operations - Counting binary trees.

TEXT BOOKS

1. Horowitz, S.Sahni and Dinesh Mehta, Fundamentals of Data structures in C++, Galgotia, 1999.
2. Adam Drozdex, Data Structures and algorithms in C++, Second Edition, Thomson learning - vikas publishing house, 2001.
3. G. Brassard and P. Bratley, Algorithmics: Theory and Practice, Printice –Hall, 1988.

4. V.S. Subrahmanian, Principles of Multimedia Database systems, Morgan Kaufman, 1998.
5. Thomas H.Corman, Charles E.Leiserson, Ronald L. Rivest, "Introduction to Algorithms", Second Edition, PHI 2003.
6. Ellis Horowitz and Sartaj Sahni, Fundamentals of Data structures, Galgotia Publications, 2nd Edition, New Delhi, 2001.

ELECTIVE

PAPER - 2

(to choose 1 out of 3)

A. MOBILE COMMUNICATIONS

UNIT-I

Introduction-Applications-Overview-Wireless transmission: Frequencies for radio transmission-Signals-Antennas-Signal Propagation-Multiplexing-Modulation-Spread spectrum-Cellular systems.

UNIT-II

Medium access control: Motivation for a specialized MAC-SDMA-FDMA-TDMA-CDMA

UNIT-III

Telecommunications Systems: GSM: Mobile Services-System Architecture-Radio interface-Protocols-Localization and Calling-Handover-Security-New data services-DECT: System architecture-Protocol architecture-TETRA-UMTS and IMT 2000.

UNIT-IV

Satellite systems: Applications-Basics-Routing-Localization-Handover-Examples. Broadcast systems: Overview-Cyclical repetition of data-Digital audio broadcasting-Digital video broadcasting-Convergence of broadcasting and mobile communications.

UNIT-V

IEE 802.11: System architecture-Protocol architecture-Physical layer-medium access control layer-MAC management-802.11b.251-802.11a.254-HIPERLAN-Bluetooth.

TEXT BOOK

Mobile Communications - Jochen H. Schiller - Second Edition - Pearson Education Ltd.

PAPER – 2

B. EMBEDDED SYSTEMS

UNIT-I

Introduction: Overview of dedicated and automated systems - their specific requirements - robust design - environmental issues - temporal constraints - technological constraints - software systems - product design cycle.

UNIT-II

Development of a System Specification: Evaluation - justification of the available levels of system integration (custom chip design through turnkey - systems) - technological choice.

UNIT-III

Software Issues: Development environment compilers - linkers - debuggers - emulators - real time operating systems - kernels - Designing and implementing code for dedicated systems.

UNIT-IV

Hardware Issues: Choice of processor - I/O - memory - speed integration - development facilities - economics - DSP devices.

UNIT-V

Transducers : Sensors for measuring physical phenomena - output devices such as power actuators - motors. Data transformation - signal conditioning - data conversion. The impact of EMC regulations on design practice.

TEXT Book

Heath S. "Embedded Systems Design", Butterworth - Heinemann 1997.

REFERENCES

1. Kirk Zurell - "C Programming for Embedded Systems" R & D, Books - 2000
2. David. E, Simon, "An embedded software primer", Pearson Education Asia - Addison Wesley Longman (Singapore), Low Priced Edition, 2001, ISBN - 81 - 7808 - 045 - 1.
3. Michael Barr, "Programming Embedded Systems in C and C++", Shroff Publishers & Distributors Pvt.Ltd., Calcutta., March 2001, ISBN - 81 - 7366 - 076 - X.

PAPER – 2

C. MULTIMEDIA AND ANIMATION

UNIT-I

Definition-Taxonomy-Multimedia Information Representation-Text-Images-Audio-Video-Multimedia Architecture-Multimedia Applications-Challenges of Multimedia Systems.

UNIT-II

Compression Principles-Need for Compression-Redundancy and Visibility-Text Compression-Binary Image Compression-Color, Gray Scale and Still-Video Image Compression-Audio Compression-Video Compression.

UNIT-III

Data and File Formats-RTF,TIFF,RIFF,MIDI,JPEG,AVI Video File Formats-MPEG standards-TWAIN Architecture-Digital Audio and Video as Multimedia I/O Technology-Animation.

UNIT-IV

Multimedia Application Design-Virtual Reality-Organizing Multimedia Databases-Application Workflow Design Issues-Distributed Application Design Issues.

UNIT-V

Multimedia Presentation and Authoring-Hypermedia Messaging-Multimedia in Future : High Definition Television and Desktop Computing-Knowledge Based Multimedia Systems.

TEXT BOOKS

1. Prabhat K. Andleigh and Kiran Thakrar, Multimedia System Design, Pearson Education.
2. Ralf Steinmetz and Klara Nahrstedt, Multimedia Computing, Communications and Applications, Pearson Education.
3. Fred Halsall, Multimedia Communications: Applications, Networks, Protocols and Standards, Pearson Education.

4. John F Koegel Buford, Multimedia Systems, Pearson Education.
5. Judith Jeffcoate, Multimedia in Practice – Technology and Applications, Prentice Hall of India, 2001.
6. Pakhira,"Computer Graphics, Multimedia and Animation, 2nd ed., PHI.

MAIN PRACTICAL

PAPER-1

ASP. NET PROGRAMMING LAB

1. Create web page for Course Registration
2. Create web pages for Banking
3. Create web pages for Shopping Cart
4. Create web pages for Airline reservation
5. Create web pages for Job portal
6. Create web pages for On-Line Telephone Billing System
7. Create web pages for On-Line Quiz.
8. Create web pages for Hospital Management System.

MAIN PRACTICAL

PAPER-2

UNIX PROGRAMMING LAB

1. Write a shell script to copy, rename and print multiple files using choice menus.
2. Write a shell script to display logged in users who are using high CPU percentage.
3. Write a shell script to list processes based on CPU percentage and memory un usage.
4. Write a shell script to display total used and free memory space.
5. Write a shell script that takes as command-line input a number n and a word. The program should then print the word n times, one word per line.
6. Write a shell scripts using the following statements.
   a) While-loop
   b) For-loop
   c) If-then-else
   d) Switch
7. Write a shell script using grep statement.
8. Write a shell script that can search all immediate sub-directories of the current-directory for a given file and then quit if it finds one.

MAIN PRACTICAL

PAPER-3

PHP PROGRAMMING LAB

1. Write a PHP Program to demonstrate the techniques of Exception Handing and Error Handling.
2. Write a PHP program to process the marks obtained by students and embed it in HTML. Use the Multi-Dimensional array concept.
3. Write a PHP program using Looping and Control Structures.
4. Write A PHP program to demonstrate the concept of user-defined Functions.
5. Write a PHP program to demonstrate constructors and destructors.
6. Write a PHP program for database management.
7. Write a PHP program for cookies and sessions.
8. Write a PHP program to read a file from an HTTP server and save it into a compressed file.

SEMESTER III

PAPER-7

JSP AND SERVLET PROGRAMMING

UNIT-I

JavaScript :Introduction to JavaScript, Operator,Conditional Structure & Looping, Structure Dialog Boxes ,Arrays,User Define Function ,Built-in Functions ,String : chatAt, concat, ndexOf, lastIndexOf, replace, search, substr, substring, toLowerCase, toUpperCase Math : abs, ceil, floor, pow, random round, max, min Date : date, getDate, getDay, getMonth, getYear, getFullyear, getHours, getMinutes, getSeconds, getMilliseconds, setDate, setDay, setMonth, setYear, setFullyear, setHours, setMinutes, setSeconds Array : Join, reverse, pop, push, shift, sort User Define Object Document Object History Object Navigator ObjectForm Object & Elements Events:onclick, ondblclick, onblur, onfocus, onchange, onkeypress, onkeydown, onkeyup, onMousemove, onmouseout, onsubmit, onreset, onselect, onload, onunload, timer event.

UNIT-II

Database programming with JDBC:

Introduction and Need for JDBC, Database Drivers ,JDBC APIs for database ,Connectivity (Java. sql Package) Connection ,Statement ,Prepared statement ,Callable statement ,Result set,Other JDBC APIs ,Database Meta Data ,Result Set Meta Data-Distributed Computing Using RMI: Introduction to RMI ,RMI Architecture ,Stubs and Skeleton .

UNIT-III

JSP Programming:

JSP development, Basic JSP LifeCycle ,JSP Elements ,Directive Elements ,Page Directive ,Include directive ,Scripting elements ,Declaration ,Scriptlets ,Expressions ,Action lelemtns ,Standard action ,<jps : param> ,<jsp : include> ,<jsp : forward> ,<jsp : plugin> ,Comments and template data ,Scope of JSP variables ,Page ,Request ,Session ,Application Using implicit ,objects ,The request object ,The response object ,The out object ,The session object ,The config object ,The exception object ,The application

object ,Handling Errors and Exception -Dealing with exception in the page ,directive ,Dealing with exception in the ,Deployment Descriptor ,Adding exception handling in JSP ,pages ,Including and forwarding from -JSP ,pages ,Include Action ,Forward Action.

UNIT-IV

Servlet Programming:

Introduction to Servlets ,Servlets Implementation ,The servlet interface ,The Generic Servlet class ,The single thread Model interface ,The Http Servlet class ,Service( ) doGet( ) ,doPost( ) doDelete( ) ,doOption( ) ,doPut( ) ,doTrace( ) ,Servlet Exceptions ,The Servlet Exception class The unavailable Exception class ,Servlet Lifecycle ,Servlet Request and Response ,The Http Servlet Request interface ,GetAttribute(),setAttribute(),getAttributeNames(),getparameters(),getParameternames(),getParameterValues(),getRemoteHost(),getRemoteAddr()getCookies(),getHeaders( ),getQueryString(),getSession() ,The Http servlet Response Interface ,getWriter() ,getcontentType() ,addCookie(),encodeURL() ,sendRedirect( ) setHeader( ) ,setStatus( ) ,Session Tracking Approaches ,URL Rewriting ,Hidden Form Fields Cookies ,Session API ,Session Tracking with Servlet API ,The Http Session interface,GetAttribute( ),GetAttributeNAmes( ) ,GetCreationTime( ) ,GetId( ) GetlastAccessedTime( ) ,IsNew( ) ,RemoveAttribute( ) ,SetAttribute( ) ,SetMaxInactiveinterval( ) ,Invalidate( ) ,Servlet Collabration ,Request Dispatching with Request ,Dispatcher interface Forward( ) ,Include( ) ,Servoet Context ,The servlet Context interface ,getContext( ) getRequestDispatcher( ) ,getServerInfo( ) ,getInitParameter( ) ,getInitParameterNames( ) getAttribute( ) ,removeAttribute( ) ,

UNIT-V

Introduction to Struts:

A Web Application Framework - struts-config.xml; Understanding MVC architecture; ActionServlet,ActionForm,ActionMapping,Actionclasses.

JSP Expression Language:

EL Introduction,EL Implicit Objects ,EL Operators ,EL Functions .JSP Standard Tag Library :JSTL Introduction ,core tags ,xml tags ,sql tags ,fmt tags ,Core tags ,<c : out>

<c : set> ,<c : if> ,SQL tags ,<sql : query> ,<sql : update> ,Fmt tags ,<fmt : formatNumber> <fmt : formatDate> .

TEXT BOOKS

1. Core Java Volume-I, Horstman and Cornell, Pearson Education
2. Core Java Volume-II, Horstman and Cornell, Pearson Education
3. Inside Servlets - Dustin R. Callway- Pearson Education
4. Developing Java Servlets - James Goodwill. Techmedia.
5. Java Server Pages, Pekowsky, Pearson.
6. Programming world wide web-Sebesta,Pearson
7. Murach's beginning JAVA JDK 5, Murach, SPD

PAPER-8

INTERNET PROGRAMMING

UNIT-I

Introduction: Introduction to the Internet and World Wide Web-World Wide Web Consortium (W3C) - History of the Internet-History of the World Wide Web-History of SGML-XML Introduction to Hyper Text Markup Language-Editing HTML-Common Elements-Headers-Linking-Images-Unordered Lists-Nested and Ordered Lists-HTML Tables-Basic HTML forms.

UNIT-II

Dynamic HTML: Dynamic HTML Object Model and Collections, Event Model, Filters and Transitions, Data Binding with Tabular Data Control, Dynamic HTML-Structured Graphics ActiveX Controls-Dynamic HTML-Path, Sequencer and Sprite ActiveX Controls.

UNIT-III

JavaScript: JavaScript, Introduction to Scripting, Control Statements, Functions, Arrays, Objects.

UNIT-IV

XML: Creating Markup with XML-Parses and Well-formed XML Documents-Parsing an XML Document with msxmi-Document Type Definition(DTD)-Document Type Declaration-Element Type Declarations- Attribute Declarations-Document Object Model-DOM Implementations-DOM Components-Path-XSL: Extensible Stylesheet Language Transformations(XSLT)

UNIT-V

PERL, CGI, PHI and PERL-String Processing and Regular Expressions-Form Processing and Business Logic-Server Side Includes-Verifying Username and Password-Using DBI to Connect to a Database-PHP-Form Processing and Business Logic-Connecting to a Database-Dynamic Content in PHP.

TEXT BOOKS

1. Deital & Deital, Internet & World Wide Web – How to Program, 3rd Edition. Pearson Education India, 2004.
2. Deital & Deital, XML How to Program, Pearson Eduction, 2001.

REFERENCES

1. God bole - Web Technologies, TCP/IP to Internet Application Architectures-1st Edition-2005, TMH, New Delhi.
2. Negrinc and Smith, JavaScript for the World Wide Web-5th Edition-Peachpit Press 2003.
3. Deital & Deital, Perl How to Program, Pearson Education 2001.
4. Benoit Marchal, XML by Example, 2nd Edition, Que/Sams 2002.

PAPER-9

DATA WAREHOUSING AND MINING

UNIT-I

Data Warehousing: An Introduction- Characteristic Of A Data Warehouse - Data Mats - Other Aspects Of Data Mart. Online Analytical Processing: Introduction- OLTP & OLAP Systems - Data Modeling - Star Schema For Multidimensional View- Data Modeling - Multifact Star Schema Or Snow Flake Schema - OLAP TOOLS - State Of The Market - OLAP TOOLS And The Internet.

UNIT-II

Developing A Data WAREHOUSE:Why And How To Build A Data Warehouse Architectural Strategies And Organization Issuses-Design Consideration- Data Content-Metadata Distribution Of Data-Tools For Data Warehousing-Performance Consideration-Crucial Decision In Designing A Data Warehouse - Applications Of Data Warehousing And Data Mining In Government:Indroduction-National Data Warehousing And Data Mining

UNIT-III

Basic Data Mining Tasks - Data Mining Versus Knowledge Discovery In Databases – Data Mining Issues - Data Mining Metrices - Social Implications Of Data Mining - Data Mining From A Database Perspective. Data Mining Techniques: Introduction - A Statistical Perspective On Data Mining - Similarity Measures - Decision Trees - Neural Networks - Genetic Algorithms.

UNIT-IV

Classification: Introduction - Statistical - Based Algorithms- Distance - Based Algorithms - Decision Tree - Based Algorithms- Neural Network - Based Algorithms - Rule-Based Algorithms - Combining Techniques.

UNIT-V

Clustering: Introduction - Similarity And Distance Measures - Outliers - Hierarchical Algorithms - Partitional Algorithms. Association Rules:Introduction-Large Item Sets -

Basic Algorithms - Parallel & Distributed Algorithms - Comparing Approaches - Incremental Rules - Advanced Association Rules Techniques - Measuring The Quality Of Rules.

TEXT BOOKS

1. Margaret H.Dunham,"Data Mining Introductory And Advanced Topics", Pearson Education,2003
2. Jiawei Han And Micheline Kamber - Data Mining Concepts And Techniques - Elsevier , Fifth Edition - 2009
3. C.S.R. Prabhu - "Data Warehousing - Concepts,Techniques,Product And Application",PHI,Second Edtion, 2008.

REFERENCES

1. Aler Berson,Stephen J.Smith - "Data Warehousing,Data Mining,& OLAP, TMCH-2008, Edition 13.
2. Arun.K.Pujari - "Data Mining Techniques" ,University Press(India) Pvt.Ltd-2009.
3. Parbhu, "Dataware housing concepts, techniques, products and applications", 3rd ed., PHI.

PAPER-10

SOFTWARE TESTING AND QUALITY ASSURANCE

UNIT-I

Fundamentals of Software Quality Assurance: Ethical Basis for Software Quality – Total Quality Management Principles – Software Processes and Methodologies.

UNIT-II

Quality Standards: Quality Standards, Practices and Conventions - Software Configuration Management - Reviews and Audits - Enterprise Resource Planning Software.

UNIT-III

Quality Metric System: Measurement Theory - Software Quality Metrics - Designing Software Measurement Programs - Complexity Metrics and Models - Organizational Learning - Improving Quality with Methodologies - Structured/Information Engineering.

UNIT-IV

Software testing - Introduction: Testing as an Engineering Activity - Role of Process in Software Quality - Testing as a Process - Basic Definitions - Software Testing Principles - The Tester's Role in a Software Development Organization - Origins of Defects - Defect Classes - The Defect Repository and Test Design - Defect Examples – Developer/Tester Support for Developing a Defect Repository.

UNIT-V

Testing issues: Introduction to Testing Design Strategies - The Smarter Tester -Test Case Design Strategies - Using Black Box Approach to Test Case Design - Random Testing - Equivalence Class Partitioning - Boundary Value Analysis - Other Black - box Test Design Approaches - Black - box testing and COTS - Using White-Box Approach to Test design - Test Adequacy Criteria - Coverage and Control Flow Graphs - Covering Code Logic - Paths - White-box Based Test Design - Additional White Box Test Design Approaches - Evaluating Test Adequacy Criteria.

TEXT BOOKS

1. Schulmeyer, G. Gordon, James McManus, "Handbook of Software Quality Assurance", Second Edition, Van Nostrand Reinhold, 1992.
2. Edward Kit, "Software Testing in the Real World – Improving the Process", Pearson Education, 2004.
3. William E.Perry , "Effective methods for software testing", Second Edition, Wiley , 2000.

ELECTIVE

PAPER - 3

(to choose 1 out of 3)

A. Open CL PROGRAMMING

UNIT-I

Overview of Pipelining and Instruction Level Parallelism. Introduction to Multi-processors, Shared memory architecture, Multi-threading, Interconnection networks and clusters. Architecture of recent CPUs and GPUs: Intel Dual and Quad core processors, NVDIA Fermi and AMD Fusion processors.

UNIT-II

Programming with MPI: Introduction, collective communication, programming model and GPU programming.

UNIT-III

OpenCL programming on CPU/GPU/APU: Software and hardware overview. OpenCL for GPU/APU processor, memory access and architecture, communication between Host and GPU, device scheduling, terminology, programming model, and example programs.

UNIT-IV

Building and running OpenCL programs on GPU/APU: compiling, running calling conventions, predefined macros, debugging, setting the environment and breakpoint, and sample GDP session.

UNIT-V

OpenCL Applications on GPU/APU: Few examples of applications in Electromagnetic Estimations, Digital Signal Processing, Video Processing and Image Processing.

TEXT BOOK

Aaftab Munshi, Benedict R. Gaster, Timothy G. Mattson and James Fung "OpenCL Programming Guide", July 2011.

REFERENCES

1. John L. Hennessy and David A. Patterson, "Computer Architecture – A Quantitative Approach," 3rd Edition, Elsevier Publications, 2003.
2. Peter S Pacheco, "A User's Guide to MPI"
3. Benedict Gaster, Lee Howes, David R. Kaeli and Perhaad Mistry, "Heterogeneous Computing with OpenCL", August 2011.
4. AMD Accelerated Parallel Processing OpenCL Programming Guide, April 2011.

PAPER – 3

B. PRINCIPLES OF COMPILER DESIGN

UNIT-I

Lexical Analysis Compilers - Analysis of Source Program - Phases of Compiler - Compiler Construction Tools - Role of a Lexical Analyzer - Specification and Recognition of Tokens - Finite Automata - Regular Expression to Finite Automation.

UNIT-II

Syntax Analysis Role of a Parser - Context Free Grammars - Top-Down Parsing - Bottom-Up Parsing - LEX and YACC.

UNIT-III

Intermediate Code Generation Intermediate Languages - Declaration - Assignment Statements - Boolean Expressions - Flow Control Statements - Back Patching.

UNIT-IV

Code Optimization Introduction to Code Optimization - Principal Sources of Optimization - Basic Blocks and Flow Graphs - Optimization of Basic Blocks - Code Improving Transformations.

UNIT-V

Code Generation Issues in the Design of a Code Generator - Run-Time Storage Management - Next Use Information - A Simple Code Generator - DAG Representation of Basic Blocks - Peephole Optimization - Code Generation from DAG.

TEXT BOOKS

A.V. Aho, Ravi Sethi, J. D. Ullman, "Compilers - Principles, Techniques and Tools", Addison-Wesley Publishing Company, 1988.

REFERENCES

1. Allen I. Holub, "Compiler Design in C", Prentice Hall of India, 1993.
2. Fischer Leblanc, "Crafting Compiler", Benjamin Cummings, Menlo Park, 1988.
3. Chattopadhyay,"Compiler Design", PHI.
4. Dasaradh,"Introduction to Automata and Compiler Design", PHI.

PAPER – 3

C.NETWORK SECURITY

UNIT-I

Introduction : Attacks-Services-Mechanisms-Conventional Encryption-Classical and Modern Techniques-Encryption Algorithms-Confidentiality.

UNIT-II

Public Key Encryption: RSA-Elliptic Curve Cryptography-Number Theory Concepts.

UNIT-III

Message Authentication: Hash Functions-Digest Functions-Digital Signatures-Authentication Protocols.

UNIT-IV

Network Security Practice: Authentication, Applications-Electronic Mail Security-IP Security-Web Security.

UNIT-V

System Security: Intruders-Viruses-Worms-Firewalls Design Principles-Trusted Systems.

TEXT BOOKS

1. William Stallings, Cryptography and Network Security: Principles & Practice, Prentice Hall, 3rd Edition 2002.
2. Singh,"Network Security and Management", 2nd ed., PHI.

MAIN PRACTICAL

PAPER-4

JSP AND SERVLET PROGAMMING LAB

1. Create a web page with all types of Cascading style sheets.
2. Client Side Scripts for Validating Web Form Controls using DHTML
3. Write programs in Java to create applets incorporating the following features:

   i) Create a color palette with matrix of buttons

   ii) Set background and foreground of the control text area by selecting a color from

   color palette.

   iii) In order to select Foreground or background use check box control as radio

   buttons

   iv) To set background images
4. Write programs in Java using Servlets:

   i) To invoke servlets from HTML forms

   ii) To invoke servlets from Applets
5. Write programs in Java to create three-tier applications using JSP and Databases

   i) for conducting on-line examination.

   ii) for displaying student mark list. Assume that student information is available in a

   database which has been stored in a database server.
6. Programs using AJAX.
7. Consider a case where we have two web Services- an airline service and a travel agent and the travel agent is searching for an airline. Implement this scenario using Web Services and data base

MAIN PRACTICAL

PAPER-5

INTERNET PROGRAMMING LAB

1. Create a Web Page with cascading style sheets and Embedded style sheets.
2. Design a Web Page to perform screen saver animations using Java Script.
3. Design a HTML Editor using Java Script.
4. Design Web Pages for Library Management System using Java Applet and JDBC,
5. Write a Java RMI program to copy a text file from server to client.
6. Design Web Pages to conduct an On-Line Quiz using Java Script.
7. Design Web pages for On-Line Shopping using java script.
8. Design Web pages for On-Line Employee Management System.

MAIN PRACTICAL

PAPER-6

C# PROGRAMMING LAB

1. Creating a C# project within Visual Studio
2. Basic Programs to demonstrate the working of basic data types.
3. Programs to implement the use of Objects.
4. Programs to implement multithreading
5. Programs to implements String handling
6. Programs to implement file handling
7. Using ADO.Net to handle data, connecting to a database, firing queries to display data
8. Using XML Libraries to export data from a database to an XML file
9. Developing windows forms
10. Using various controls on Windows forms.