

THIRUVALLUVAR UNIVERSITY
MASTER OF COMPUTER APPLICATIONS
DEGREE COURSE
UNDER CBCS
(with effect from 2012-2013)

The Course of Study and the Scheme of Examinations

S.No.	Study Components		Ins. hrs /week	Credit	Title of the Paper	Maximum Marks		
	Course Title					CIA	Uni. Exam	Total
SEMESTER I								
1	MAIN	Paper-1	4	4	C Programming	25	75	100
2	MAIN	Paper-2	4	4	Fundamentals of Digital Logic and Design	25	75	100
3	MAIN	Paper-3	4	4	Relational Database Management Systems	25	75	100
4	MAIN PRACTICAL	Paper-1	5	-	C Programming Lab.	-	-	-
5	MAIN PRACTICAL	Paper-2	5	-	Office Automation Lab.	-	-	-
6	MAIN PRACTICAL	Paper-3	5	-	Relational Data Base Management Systems Lab.	-	-	-
7	ELECTIVE	Paper-1	3	3	(to choose 1 out 3) A. Introduction to Information Technology B. Principles of Programming Languages C. Computer Architecture	25	75	100
			30	15		100	300	400
SEMESTER II								
8	MAIN	Paper-4	4	4	Object Oriented Programming using C++	25	75	100
9	MAIN	Paper-5	4	4	Data Structures	25	75	100
10	MAIN	Paper-6	4	4	Computer Graphics	25	75	100
11	MAIN PRACTICAL	Paper-1	4	5	C++ Programming Lab.	40	60	100
12	MAIN PRACTICAL	Paper-2	4	4	Data Structures Lab.	40	60	100
13	MAIN PRACTICAL	Paper-3	5	4	Computer Graphics 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) Discrete Mathematics A. Resource Management Techniques B. Accounting and Financial Management	25	75	100
			30	30		245	555	800

MASTER OF COMPUTER APPLICATIONS: Syllabus (CBCS)

SEMESTER III						CIA	Uni. Exam	Total
14	MAIN	Paper-7	4	4	Design and Analysis of Algorithms	25	75	100
15	MAIN	Paper-8	4	4	Java Programming	25	75	100
16	MAIN	Paper-9	4	4	Computer Networks	25	75	100
17	MAIN PRACTICAL	Paper-4	5	4	Computer Networks Lab.	40	60	100
18	MAIN PRACTICAL	Paper-5	5	4	Windows Programming Lab. (using VC++)	40	60	100
	MAIN PRACTICAL	Paper-6	5	4	Java Programming Lab.	40	60	100
19	ELECTIVE	Paper-3	3	3	(to choose 1 out 3) A. Object Oriented Analysis and Design B. Multimedia and Animations C. Enterprise Resource Planning	25	75	100
			30	27		220	480	700
SEMESTER IV						CIA	Uni. Exam	Total
	MAIN	Paper-10	4	4	Operating System	25	75	100
	MAIN	Paper-11	4	4	Visual Programming	25	75	100
	MAIN	Paper-12	4	4	Web Technology	25	75	100
	MAIN PRACTICAL	Paper-7	5	4	Operating Systems Lab.	40	60	100
	MAIN PRACTICAL	Paper-8	5	4	Visual Programming Lab.	40	60	100
	MAIN PRACTICAL	Paper-9	5	4	Web Technology Lab	40	60	100
	ELECTIVE	Paper-4	3	3	(to choose 1 out 3) A. OpenCL Programming B. E-Business C. Client/Server Computing	25	75	100
			30	27		220	480	700
SEMESTER V						CIA	Uni. Exam	Total
	MAIN	Paper-13	4	4	JSP and Servlet Programming	25	75	100
	MAIN	Paper-14	4	4	C# and .NET Framework	25	75	100
	MAIN	Paper-15	4	4	Software Engineering	25	75	100
	MAIN PRACTICAL	Paper-10	5	4	C# and .NET Programming Lab.	40	60	100
	MAIN PRACTICAL	Paper-11	5	5	JSP and Servlet Programming	40	60	100
	MAIN PRACTICAL	Paper-12	5	5	Mini Project	40	60	100

MASTER OF COMPUTER APPLICATIONS: Syllabus (CBCS)

	ELECTIVE	Paper-4	3	3	(to choose 1 out of 3) A. Grid Computing B. Principles of Compiler Design C. Data Warehouse and Mining	25	75	100
			30	29		220	480	700
SEMESTER VI								
	Project Work and Viva Voce		30	12	-	80	120	200

Subject	Papers	Credit	Total Credits	Marks	Total marks
MAIN	15	4-5	60	100	1500
MAIN Project	1	12	12	200	200
MAIN PRACTICAL	12	4-5	51	100	1200
ELECTIVE	5	3	15	100	500
COMPULSORY PAPER	1	2	2	100	100
Total	34	-	140	-	3500

THIRUVALLUVAR UNIVERSITY
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SYLLABUS
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SEMESTER I
PAPER – 1
C PROGRAMMING

UNIT-I

C language fundamentals: Program structure-identifiers-data types - integer - float -double-char - constants-variables-operators and expressions-managing input and output operations

UNIT-II

C control structures: Decision making with IF statement - IF...ELSE statement -nested IF statement - FOR statement-DO...WHILE statement - WHILE...DO statement - GOTO statement - SWITCH statement.

UNIT-III

C functions: Mathematical functions-string functions - user defined functions.

UNIT-IV

Array: Arrays - passing arrays to a function Structure: Definitions - assigning structure variable-assigning initial values - structures and functions-union.

UNIT-V

Pointers and file operations: Understanding pointers - pointers and functions - understanding files - I/O functions - formatted I/O - working with structures –reading and writing disk files.

Text books:

Balagurusamy E, "Programming in ANSI C", 3/E, TMG, 2007.

RajaramanV,"Programming in C", PHI, 1996.

References Books:

B.W.Kernighan and D.M.Ritchie," The C Programming Language:ANSI C version ", Second Edition ,PHI/Pearson Education Pvt. Ltd.

B.S.Gottfried,"Programming with C",2/e,SchaumOutline Series, TMH,2005.

Somashekara , "Programming in C", PHI, 2006.

Anami et al. Computer Concepts and C programming: A Holistic Apporach to learning C, 2nd ed., 10 PHI

PAPER – 2

FUNDAMENTALS OF DIGITAL LOGIC AND DESIGN

UNIT-I

Binary Systems

Digital Computers and Digital Systems-Binary Numbers-Number Base Conversion-Octal and Hexadecimal Numbers-Complements-Binary's Codes-Binary Storage and registers-Binary Logic-Integrated Circuits.

UNIT-II

Boolean algebra and Logic Gates

Basic Definitions of Boolean Algebra-Axiomatic Definition of Boolean Algebra-Basic Theorems and Properties of Boolean algebra-Boolean Functions-Canonical and Standard Forms-Other Logic Operations-Digital Logic Gates.

UNIT-III

Simplification of Boolean Functions

The Map Method-Two and Three Variable Maps-Four Variable Map-Five and Six Variable Maps-Product of Sums Simplification-NAND and NOR implementation-Other Two Level Implementations-Don't Care Conditions.

UNIT-IV

Combinational Logic

Introduction-Adders-Subtractors-Code Conversion-Binary Adder-Encoder-Decoders-Multiplexor and Demultiplexors

UNIT-V

Sequential Logic

Flip Flops-Registers-Shift registers-Ripple counters-Synchronous Counters-Timing Sequences-The Memory Unit.

Text books:

M. Moris Mano, "Digital Logic and Computer Design", PHI 1996.

References Books:

Louis Neshelsky, "Introduction to Digital Technology", John Wiley & Sons, Third Edition, 1983, Digital Logic Design-Ployd.

Rajaraman & Radhakrishnan, "Introduction to Digital Computer Design, An, 5th ed PHI.

PAPER – 3

RELATIONAL DATABASE MANAGEMENT SYSTEMS

UNIT-I

File System Vs. DBMS - Database System Applications - View of Data-Database language – Database design – ER Model _ Relational Model – Network Data Model – Hierarchical 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 Databases – Distributed Data Storage – Distributed Transactions – Commit Protocols – Concurrency Control.

Case Study : Oracle – Introduction – Basics elements of SQL – Operators – Expression-Functions – SQL Statements – PL/SQL- Triggers – Cursor.

Text Books:

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

References Books:

1. Raghu Ramakrishnan and Johannes Gehrke, "Database Management Systems", Tata McGraw-Hill Publishing Company, 2003.

Ramez Elmasri and Shamkant B. Navathe, "Fundamental Database Systems", Third Edition, Pearson Education, 2003.

Hector Garcia-Molina, Jeffrey D. Ullman and Jennifer Widom- "Database System Implementation"- Pearson Education- 2000.

Narang, "Database management systems", 2nd ed., PHI

PRACTICAL – I
C PROGRAMMING LAB

1. Display the following:
 - (i) Floyd's triangle (ii) Pascal Triangle
2. Generate the following series of numbers:
Armstrong numbers between 1 to 100
Prime numbers between 1 to 50
Fibonacci series up to N numbers
3. Manipulate the strings with following operations.
 - (i) Concatenating two strings (ii) Reversing the string (iii) Finding the substring
 - (iv) Replacing a string (v) Finding length of the string
4. Find the summation of the following series:
 - (i) Sine (ii) Cosine (iii) Exponential
5. Create the sales report for M sales person and N products using two dimensional array.
6. Simulate following Banking operations using functions.
 - (i) Deposit (ii) Withdrawal (iii) Balance Enquiry
7. Implement using recursion
 - I, Find the solution of Towers of Hanoi problem using recursion.
 - II, Fibonacci number generation.
 - III, Factorial
8. Generate Student mark sheets using structures.
9. Create a collection of books using arrays of structures and do the following:
 - i) Search a book with title and author name (ii) Sorts the books on title.

PRACTICAL – II

Office Automation Lab

Implement the following exercises

I. MS Word

Creating a new document

Performing modifications on existing documents.

Creating table

Mail merge operations

Operations like Spell check, formatting text etc.

II. MS Excel

Creating a work sheet

Performing calculations

Generating graphs (bar, pie, etc.,)

III. POWER PONT

1. Preparation of slides for presentation and to do the operations:

Inserting text, Bullets,

Shadow effect,

Changing the fonts,

Deleting slides,

Inserting a pictures,

Arranging the slides,

Providing transition effects and Animations

IV. MS ACCESS

Creation of databases

Updating a database

Retrieving required information

Viewing database

Generating reports.

PRACTICAL – III

Relational Database Management Systems Lab

To implement the following exercises

1. Study of Database Concepts

Relational Model – Table – Operations On Tables –Index – Tablespace – Clusters – Synonym – View –Schema – Data Dictionary – Privilege – Role –Transactions

2. Study of SQL

Primitive Data Types – User Defined data Types – Built-in Functions –Parts of Speech of CREATE, ALTER, DROP, SELECT, INSERT, DELETE, UPDATE, COMMIT, ROLLBACK, SAVEPOINT, GRANT, REVOKE

3. Study of Query Types

Queries involving Union, Intersection, Difference, Cartesian Product, Divide Operations – Sub Queries – Join Queries – Nested Queries –Correlated Queries – Recursive Queries

4. Study of PL/SQL

Blocks, Exception Handling, Functions, Procedures, Cursors, Triggers, Packages.

5. Applications

Design and develop any two of the following

- Library Information System
- Logistics Management System
- Students' Information System
- Ticket Reservation System
- Hotel Management System
- Hospital Management System
- Inventory Control
- Retail Shop Management
- Employee Information System
- Payroll System
- Any other Similar System

Clearly mention the scope of the system. Use standard tools for expressing the design of the systems.

ELECTIVE

PAPER – 1

A. INTRODUCTION TO INFORMATION TECHNOLOGY

UNIT-I

Introduction: Introduction to IT, Scope for IT, IT Usage, Information System, its functions and applications.

UNIT-II

Hardware: Architecture (Mainframe, Mini, PC, Workstations), Real time system, Transaction Processing system, Laptop, Palmtop, Client server, N-Tier. Introduction to Networks: LAN, WAN, MAN, etc. Peripherals: Information about Input devices (Keyboard, Mouse, Joystick, Track ball, etc.) - Details about Storage devices (Floppy disk, Hard disk, Tapes (Cartridge, DAT), Compact Disk), Information about Monitors, Printers (impact, non-impact) - Various types of plotters.

UNIT-III

Software: Software Classification (System, Application, and Utilities). Operating System: Introduction, Basic functions of OS, Classification of OS. Programming Languages: Generation of Languages and their uses. Packages: Spread sheets, DTP Tools, Presentation tools. Application areas of Software - Commercial, Scientific, Real time application etc.

UNIT-IV

Multimedia and Internet: Introduction to multimedia - Hardware, Software and applications - Introduction to Internet, Service providers, Internet naming and addressing - Information about electronic mail, Remote login, File Transfer, Usenet-BBS, HTML. Intranet, Extranet: Introduction to Intranet and Extranet.

UNIT-V

Object Oriented System: Concepts, Benefits of OOS over conventional system. Enterprise Computing: About ERP, Activities under ERP. Mobile Computing – An Introduction to Mobile Computing.

Text books:

1. Brain, K. Williams, et. al., *Using Information Technology*, Third edition, TMH, 2000.
2. Turban, Rainer, Potter, *Introduction to Information Technology*, second edition, Wiley Publications.
3. Dennis P. Curtin, et.al., *Information Technology - The Breaking View*, TMH, 2000.

PAPER – 1

B. 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 books:

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

References Books:

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.

PAPER – 1

C. COMPUTER ARCHITECTURE

UNIT-I

Digital logic fundamentals: Number systems Boolean algebra gates simplification of Boolean expressions combinational logic : adders subtractors Decoders encoders multiplexer / demultiplexers Sequential Logic : Flip-flops - Counters.

UNIT-II

Introduction to Intel s 8086/88 : Register model Bus interface Unit Execution unit Control Unit: hardwired and microprogrammed control. Memory organization: Basic memory cell RAM, ROM and DRAM associative, cache and virtual memory organizations.

UNIT-III

Assembly Language Programming : Instruction formats addressing modes Intel 8086/88 instruction mnemonics timing data transfer arithmetic and machine control instructions - Introduction to Macro assembler.

UNIT-IV

Input/Output organization : Input interface Data transfer techniques : synchronous asynchronous Interrupt driven Intel 8086/88 interrupt organization types DMA I/O processors serial communication.

UNIT-V

Processor organization: General register organization stack organization. IBM PC architecture: Mother board display adapters add on cards power supply. Architectural overview of Pentium, P-II, P-III and P-4.

Text books:

1. M.Morris Mano, *Computer Systems Architecture*, Pearson Education, 3rd Edition, 2003.
2. Liu Gibson, *Microcomputer Systems the 8086/88 family*, PHI, 2nd edition, 2001.
3. Govindarajulu, *IBM PC and Clones*, PHI, 2002.

References Books:

1. A.K.Ray, K.M.Bhurchandi, *Advanced Microprocessors and Peripherals*, TMH, 2000.
2. Peter Abel, *IBM PC Assembly language and Programming*, PHI,2000,
3. William Stallings,"Computer Organization and Architecture", 8th ed., Pearson edition.
4. Pal Chaudhuri,"Compter Organization and Design, 3rd ed., PHI

PAPER – 4

OBJECT ORIENTED PROGRAMMING USING C++

UNIT-I

Introduction to OOP: Overview of C++-classes-structures-union-friend function-friend class-inline function-constructors-static members-scope resolution operator-passing objects to functions-function returning objects

UNIT-II

Arrays-pointers-this pointer-references-dynamic memory allocation-functions overloading-default arguments-overloading constructors-pointers to functions

UNIT-III

Operator overloading-member operator function-friend operator function-type conversion-inheritance-types of inheritance-virtual base class-polymorphism-virtual function.

UNIT-IV

Class templates and generic classes-function templates and generic functions-overloading a function templates-power of templates-exception handling-derived class exception-exception handling functions

UNIT-V

Streams-formatted I/O with its class functions and manipulators-creating own manipulators-file I/O-conversion functions-standard template library.

Text Books:

Balagurusamy E, "Object Oriented Programming with C++", 3/E, TMG, 2006.

References Books:

Hubbard , "Programming with C++", 2/e, Schaum Outline Series, TMH, 2006.

Bjarne Stroustrup, "The C++ Programming Language", Addison Wesley Publications, Second Edition, 1991.

Sarang Proonachandra, "Object Oriented Programming with C++", PHI, 2006.

Jagadev A K, Rath A M, and Dehuri S, "Object Oriented Programming Using C++", PHI, 2007.

Somashekara, "Programming in C++", PHI

PAPER – 5

DATA STRUCTURES

UNIT-I - Basics

Primitive And Abstract Data Types: Data types – abstract data type – data structures – classification.

Sorting And Searching Techniques: Sorting algorithms – Insertion sort- selection sort – shell sort- bubble sort – quick sort – heap sort- merge sort – radix sort – searching – linear search – binary search – indexed search techniques.

UNIT-II List

Array implementation – linked list – doubly linked list – circular linked list – multi linked lists – applications of linked lists – representation of polynomials and sparse matrices.

UNIT-III - Stacks and Queues

Stack ADT – array and linked implementation of stacks – queue ADT – array and linked list implementation of queues – application of stacks and queues –expression evaluation - priority queues – double ended queues

UNIT-IV - Non-Linear Data Structures

Binary tree – array and linked implementation of binary trees – application of trees – tree traversals – graphs – representation – breadth first search – depth first search – spanning trees – application of graphs

UNIT-V - Advanced Search Techniques

Binary tree indexing – binary search tree – B-tree indexing – B+ trees – Trie indexing – AVL trees - Hash table – hash functions – collision resolution and open addressing

Text Books:

1. Mark Allen Weiss, Data structures and algorithm analysis in C, Pearson Education, 2007
2. Yedidyah Langsam, Moshe J Augenstein and Aaron M Tanenbaum, Data Structures using C and C++, Prentice Hall of India, 2006.

Reference Books:

1. Robert L. Kruse, Clovis L.Tondo and Bruce P.Leung, Data Structures and Program Design in C, Prentice Hall of India, 2007.
2. G.A.V.Pai, Data Structures and Algorithms – Concepts, Techniques and Applications, Tata McGraw Hill Publishing Company Limited, New Delhi, 2008.
3. Ellis Horowitz and Sartaj Sahni, Fundamentals of Data structures, Galgotia Publications, 2nd Edition, New Delhi, 2001.
4. Jean Paul Treblay and Paul G.Sorenson, An Introduction to data structures with applications, 2nd edition, Tata McGraw-Hill, 2001.
5. Alfred V. Aho, Jeffrey D. Ullman, John E. Hopcroft. Data Structures and Algorithms. Addison Wesley, 1983.
6. Nair & Mahalekshmi, "Data Structures in C", PHI
7. Thomas H.Corman, Charles E.Leiserson, Ronald L. Rivest, "Introduction to Algorithms", Second Edition, PHI 2003.

PAPER – 6

COMPUTER GRAPHICS

UNIT-I

Introduction, Overview of Graphics Systems, Video Display Devices, Refresh Cathode Ray Tubes, Raster Scan and Random Scan Displays, Raster Scan and Random Scan Display Processor, Color CRT Monitors, DBST, 3D Viewing Devices, Stereoscopic and VR Systems, Input Devices, Hard Copy Devices.

UNIT-II

Output primitives, Line drawing algorithms, Circle Drawing algorithms, Circle drawing algorithms, Polynomials and spline curves, Area filling algorithms, character generation, Attributes of Output primitives, Line, Curve, Area fill, Character and bundled attributes, Anti aliasing techniques.

UNIT-III

2D Transformations, 2D viewing, Graphical User interfaces and Interactive Input Methods.

UNIT-IV

3D Concepts, 3D Transformations, 3D Viewing. Visible Surface Detection.

UNIT-V

Multimedia hardware & software - Components of multimedia Text, Image Graphics Audio Video Animation Authoring, Multimedia communication systems, Applications Video conferencing Virtual reality Interactive video on demand

Text Books:

1. Donald Hearn and M. Pauline Baker, Computer Graphics , 3rd Edition, Prentice Hall of India,2011.

2.Ralf Steinmetz, Klara steinmetz, "Multimedia Computing, Communications and Applications", Pearson education, 2004

References Books:

1. Steven Harrington, Computer Graphics Programming Approach , McGraw Hill, 2nd Edition.
2. Roy A. Plastock and Gordon Kelley, Theory and Problems of Computer Graphics , Schaum s Outline Series, McGraw Hill,2007.
3. Pakhira,"Computer Graphics, Multimedia and Animation, 2nd ed., PHI
4. Mukherjee & Jana,"Computer Graphics: Algorithms and Implementations",PHI.
5. Desai,"Computer Graphics", PHI.

ELECTIVE

PAPER – 2

A. DISCRETE MATHEMATICS

UNIT-I

Matrices : Introduction - Matrix operations - Inverse of a Square Matrix - Elementary Operations and Rank of a Matrix - Simultaneous Equations - Inverse by Partitioning - Eigen Values and Eigen Vectors.

UNIT-II

Set Theory : Introduction - Sets - Notations and Description of Sets - Subsets - Venn-Diagram - Operations on Sets - Properties of Set Operations - Verification of the Basic Laws of Algebra by Venn Diagrams - The Principles of Duality - Relations: Cartesian Product of Two sets - Relations - Representation of a Relation - Operations on Relations - Equivalence Relation - Closure and Warshall's algorithm .

UNIT-III

Logic : Introduction - TF Statements - Connectives - Atomic and Compound Statements - Well Formed Formulae - Truth Table of a Formula - Tautology - Tautology Implications and Equivalence of Formulae - Replacement Process - Functionally Complete Sets of Connectives and Duality Law - Normal Forms - Principles of Normal Forms .

UNIT-IV

Finite Automata - Definition of Finite Automaton - Representation of Finite Automaton - Acceptability of a String by Non-Deterministic Finite Automata - Equivalence of FA and NFA - Procedure for finding an FA equivalent to a given NFA – Properties of Regular Sets - Finite State Machines .

UNIT-V

Chomsky Hierarchy of Languages - Finite Automata and Regular Languages - Derivation Trees for Context-free Grammars - Normal Forms for Context-free Grammars - Ambiguity, Polish Notation - Simple Precedence Grammar - Pushdown Automaton - Instantaneous Description of a PDA .

Text books:

Discrete Mathematics - Venkatraman M K, Sridharan N, Chandrasekaran N, The National Publishing Company, Chennai, 2000.

Somasundaram RM, "Discrete Mathematical Structures", PHI, 2003.

References Books:

Introduction to Automata Theory, Languages & Computation, Hopcraft and Ullman, 2nd Edition, Pearson Education.

Discrete Mathematical structures with applications to computer science, Tremblay and Manohar, Tata McGraw Hill.

Discrete Mathematical Structures with Applications to Combinatorics, Ramaswamy V, University Press, 2006.

Veerarajan T, "Discrete mathematics with graph theory and combinatorics", TMG, 2007

T.segadin, "Discrete Mathematics and Combinatorics", Pearson

Kennath Hrosen, "Discrete Mathematics and its applications", 7th ed., McGraw-Hill.

PAPER – 2

B. RESOURCE MANAGEMENT TECHNIQUES

UNIT-I

Linear Programming Models:Mathematical Formulation - Graphical Solution of linear programming models - Simplex method - Artificial variable Techniques - Variants of Simplex method

UNIT-II

Transportation and Assignment Models:Mathematical formulation of transportation problem - Methods for finding initial basic feasible solution - optimum solution - degeneracy -Mathematical formulation ofassignment models - Hungarian Algorithm - Variants of the Assignment problem

UNIT-III

Integer Programming Models: Formulation - Gomory's IPP method - Gomory's mixed integer method - Branch and bound technique.

UNIT-IV

Scheduling by Pert and CPM:Network Construction - Critical Path Method - Project Evaluation and Review Technique - Resource Analysis in Network Scheduling

UNIT-V

Queueing Models:Characteristics of Queueing Models - Poisson Queues - (M / M / 1) : (FIFO / ∞ / ∞), (M / M / 1) : (FIFO / N / ∞), (M / M / C) : (FIFO / ∞ / ∞), (M / M / C) : (FIFO / N / ∞) models.

Text books:

Taha H.A., Operations Research: An Introduction , 8th Edition,PHI/Pearson Education, 2006.

References Books:

A.M.Natarajan, P.Balasubramani, A.Tamilarasi, Operations Research , Prem Kumar Gupta, D.S. Hira, S.Chand& Company Ltd, New Delhi, 3rd Edition , 2003.

PaneerselvamR,"Operations Research",2/E,PHI,2006.

SrinivasanR,"OperationsResearch : Principles and Applications",PHI,2007.

Sivarethinamohan R, "Operations research", TMG, 2005.

PAPER – 2

C. Accounting and Financial Management

UNIT-I

Financial Accounting: Meaning and scope of Accounting – Principles - Concepts – Conventions – Accounting Standards – Final Accounts – Trail Balance – Trading Account – Profit and Loss Account – Balance Sheet – Accounting Ratio Analysis – Simple Problems only

UNIT-II

Accounting: Meaning – Objectives – Elements of Cost – Cost Sheet Marginal Costing and Cost Volume Profit Analysis – Break Even Analysis – Application – Limitations – Material Issues – FIFO – LIFO – Simple Average Method and Weighted Average Method.

UNIT-III

Budgets and Budgeting Control: Budgets and Budgetary Content Meaning – Types - Sales Budget – Production Budget - Cost of Production Budget – Flexible Budgeting – Cash Budget – Master Budget – Zero Base Budgeting – Computerized Accounting.

UNIT-IV

Management of fixed assets - Evaluation of Capital Investment decision: Payback Period – ARR – IRR – NPV - CAPM.

UNIT-V

Working Capital Management: Meaning – Working Capital Cycle- Need for working Capital – Factor influencing W/C - Source of W/C.

References Books:

Cost and Management Accounting, S.P.Iyengar, Sultan Chand & Co,

Elements of Management Accounting, I.M.Pandey, Vikas Publishing House, 1993.

Base Chandra, “Fundamentals of Financial Management”, PHI, 2007

RamachandraAryasri A, Ramana Murthy, “Engineering Economics and Financial Accounting”, TMG, 2006.

PRACTICAL – I

PAPER – 1

C++ PROGRAMMING LAB

Implement the following exercises using C++

1. Programs using Constructor and Destructor.
2. Creation of classes and use of different types of functions.
3. Count the number of objects created for a class using static member function.
4. Write programs using function overloading and operator overloading.
5. Programs using inheritance.
6. Program using friend functions.
7. Program using Hierarchical inheritance with virtual function and RTTI
8. Write a program using exception handling mechanism.
9. Programs using files.
10. Programs using function templates.

PRACTICAL

PAPER – 2

DATA STRUCTURES LAB

Implementation of Sorting techniques

Implementation of Searching techniques

Implementation of stack and queue operations using array.

Implementation of stack and queue operations using linked list.

Expression evaluation

Polynomial addition

Binary tree representation and traversal techniques

Single source shortest path algorithm

PRACTICAL

PAPER – 3

COMPUTER GRAPHICS LAB

Implementation of Bresenham's algorithms

LINE

CIRCLE

ELLIPSE.

Implementation of 2D Transformations:

Translation

Rotation

Scaling

Implementation of 2D Transformations:

Reflection

Shearing of Objects.

Implementation of COHENSUTHERLAND 2D clipping.

Implementation of COHENSUTHERLAND 2D windowing.

Implementation of 3D Transformations

Translation

Rotation

Scaling.

7. Animate any two of the following

- a) National flying Flag
- b) Moving Wheel
- c) Flying kite
- d) Moving fish
- e) Moving Pendulum
- f) Clock with rotating needles
- g) Movement of earth around sun
- h) Human walking

SEMESTER III

PAPER – 7

DESIGN AND ANALYSIS OF ALGORITHMS

UNIT-I

Introduction - Algorithm - Specification - Performance Analysis - Divide - And Conquer - General Method - Binary Search - Finding the Maximum and Minimum - Merge Sort - Quick Sort.

UNIT-II

The Greedy Method - General Method - Knapsack Problem - Tree Vertex Splitting Dynamic Programming - General Method - Multistage Graphs - All pairs shortest paths - Single - Source Shortest paths - The traveling salesperson problem.

UNIT-III

Basic Traversal and Search Techniques - Binary Trees - Graphs - Connected Components and Spanning Trees.

UNIT-IV

Backtracking - General Method - 8 Queens Problem - Graph Coloring - Branch and Bound - Method - 0/1 Knapsack Problem

UNIT-V

NP-Hard and NP-Complete Problem - Basic Concepts - Cooke's Theorem - NP-Hard Problems - Code generation with Common Sub expressions - Approximation Algorithms - Introduction - Absolute Approximations .

Text Book:

Ellis Horowitz, SartajSahni and SanguthevarRajasekaran, "Computer Algorithms", Galgotia Publications Pvt. Ltd., 2002

References Books:

Sara Baase and Allen Van Gelde, "Computer Algorithms, Introduction to Design and Analysis", 3rd Edition, Pearson Education, Delhi, 2002.

Aho, Hopcroft and Ullman, "The Design and Analysis of Computer Algorithms", Pearson Education, Delhi, 2001.

Basu S.K., "Design Methods and Analysis of Algorithms", PHI, 2006.

Brassard and Bratley, "Fundamentals of Algorithms", PHI, 1995.

Sanjoy Dasgupta, Christos Papadimitriou, Umesh Vazirani, "Algorithms", TMG, 2007.

Chandra Mohan, "Design and Analysis of Algorithms", PHI.

PAPER – 8

JAVA PROGRAMMING

UNIT-I

Object Oriented Programming: Abstract Data Type (APT), Encapsulation, Object, Message, Method, Class, Inheritance, Polymorphism-Virtual Functions-Abstract Classes-Interface- Generic Classes and Interface-Constructors and Destructors-Overloading and Overriding-Copy Constructor.

UNIT-II

JAVA Basics: Importance and Features of Java-Modifiers-Access Controls-Data Types- Expressions-Declarations-Statements and Control Structures-Program Structures-String handling-Packages-Interfaces-Working with java.util Package-Garbage Collection-Object Class.

UNIT-III

Exception handling-I/O and JDBC-Exception types-uncaught exceptions, throw, throw final-Built-in exceptions-creating your own exceptions-Input Stream and Output Streams-Byte and Character Streams-Predefined Streams-Reading and Writing from Console and Files-Buffered Reader and Writer, Serialization, Data Compression-Using Standard Java Packages (lang, util, io, net)

Database: JDBC Architecture-JDBC basics-JDBC Drivers-Connecting to Database and accessing databases.

UNIT-IV

AWT & Event handling-Creating User Interface with AWT, Applets=Applet Life Cycle-Simple Graphics-Fonts and Colors-Events-Listeners-Components-Containers-Working with Layouts-Image Processing-AWT Exceptions-Delegation Event Model-Event Classes-Event Listener Interfaces-Adapter and Inner Classes.

UNIT-V

Multiplexing and Communication Java Thread Model: Priorities, Synchronization, Messaging-Life Cycle of Thread, Thread Class-Runnable Interface-Interthread Communication-Suspending, Resuming and Stopping Threads-Multithreading-Synchronization-Scheduling and Priority of Threads-Sockets-Types of Sockets-Working with URLs-Web Browsers and Handlers.

Text books:

Balagurusamy. E – Programming with Java: A Primer, 3rd Edition-Tata McGraw Hill, 2007.

Bruce Eckel, Thinking of Java, 3rd Edition, Prentice Hall, 2000.

References

Thomas Wu- An Introduction to Object Oriented Programming with Java – Special Indian Edition 4th -2006, TMH, New Delhi.

Patrick Naughton and Herbertz Schildtm Java-2- The Complete Reference, 5th Edition, Tata McGraw Hill.

Cay C. Horstmann, Computing Concepts with Java 2 Essentials, John Wiley.

Samanta,"Object-Oriented Programming with C++ and Java",PHI

PAPER – 9

COMPUTER NETWORKS

UNIT-I

Introduction to networks and communication media: uses – network h/w-network s/w-reference model- example networks- basic for data communication-transmission media-wireless transmission –telephone system-satellite communication.

UNIT-II

Data Link layer: design issues-error detection code-error correction methods-elementary data link protocols-protocol-sliding window protocol –verification methods-channel allocation-multiple access protocol- IEEE 802 standards

Unit-III

Network layer: design issue- routing algorithms-conjunction control algorithms-internetworking- network layer in the internet

Unit-IV

Transportation layer: transport service – transport protocol-Internet transfer protocols UDP-TCP-performance

UNIT-V

Application layer – design issues-DNS - Email-WWW-Multimedia-other application-network security-basic cryptography–RSA

Text books:

1. COMPUTER NETWORKS –Andrew Tanenbaum – 3rd edition PHI

References Books:

1. COMPUTER NETWORKS - William Stalling –PHI
2. BehrouzForouzan, “ Data communication and networking” 2nd edition TMH 2006
3. Kundu,”Fundamentals of Computer Networks”, 2nd ed., PHI.

ELECTIVE

PAPER – 3

A. 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 Books:

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

References Books:

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

PAPER – 3

B. 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:

Prabhat K. Andleigh and Kiran Thakrar, Multimedia System Design, Pearson Education.

Ralf Steinmetz and Klara Nahrstedt, Multimedia Computing, Communications and Applications, Pearson Education.

Fred Halsall, Multimedia Communications : Applications, Networks, Protocols and Standards, Pearson Education.

John F Koegel Buford, Multimedia Systems, Pearson Education.

Judith Jeffcoate, Multimedia in Practice – Technology and Applications, Prentice Hall of India, 2001.

PAPER – 3

C. ENTERPRISE RESOURCE PLANNING

UNIT-I

Integrated Management Information Seamless Integration-Supply Chain Management- Integrated Data Model- Benefits Of ERP-Business Engineering And ERP- Definition Of Business Engineering- Principles of business engineering- Business engineering with information technology.

UNIT-II

Building The Business model - ERP implementation an Overview Role Of Consultant, Vendors and Users, Customization- Precautions- ERP Post implementation options- ERP Implementation Technology Guidelines for ERP Implementation.

UNIT-III

ERP domain- MPG/PRO IFS/Avalon- Industrial and financial systems- Baan IV SAP Market Dynamics and dynamic strategy.

UNIT-IV

Description Multi- client server solution- Open technology- User Interface-Application Integration.

UNIT-V

Basic architectural Concepts- The system control interfaces- Services-Presentation interface Database Interface.

Text books:

Vinod Kumar Garg and N.K.Venkita Krishnan, *Enterprise Resource Planning- Concepts and Practice* , PHI,2nd edition,2004.

References Books:

Jose Antonio Fernandz, *The SAP R/3 Handbook* , Tata McGraw Hill Publications,2006.

PRACTICAL

PAPER – 4

NETWORKING PROGRAMMING LAB

Implement the following exercises

Display IP address and port number of a Server

To send a set of numbers and a string using UDP UDP Socket and TCP/IP Socket

To get filename from the client, retrieve the file and send it to the client from server and display the contents.

Chat utility for Client – Server text chat

Read and Display the message send by the client and ECHO it back to the client.

Implement PING command

Implement MULTICAST Server

Count the number of connected clients and display the value

PRACTICAL

PAPER – 5

WINDOWS PROGRAMMING LAB USING VC++

Write a VC++ application using MFC that creates a new Window and new Fonts.

Write a VC++ Win32 application that displays a Greetings Message.

Write a VC++ application that allows the user to draw pictures using the mouse button. Use MFC method.

Write a VC++ program to create a List Box and add the capital cities of various states in our country.

Write a VC++ program using MFC that displays line, rectangle, rounded rectangle, ellipse and polygon filled with colours.

Write a VC++ program using MFC that fills the background of the client area with a bitmap.

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.

Write a VC++ program using MFC that displays the status of ALT, CTRL, SHIFT, NUM LOCK and SCROLL LOCK keys.

PRACTICAL

PAPER – 6

JAVA PROGRAMMING LAB

Implement the following exercises

Multithreading Using Priorities

File and String Manipulations

Write an Applet Program to use various Controls and perform Font Animation.

Create a menu with submenu, popup menu, short cut keys, check box items and separator.

Implement calculator using Java AWT controls.

Create a Student mark statement using JDBC control and display the information using JTable.

Program to implement Client/Server technology.

Write a Java program to create an Employee pay bill calculation using various swing controls.

SEMESTER IV

PAPER – 10

OPERATING SYSTEMS

UNIT-I

Introduction Early Operating Systems --- Buffering & Spooling --- Multiprogramming --- Time Sharing --- Protection --- Operating System Structures.
Process Management: Process Concept --- Hierarchy of Process --- Critical Section Problem --- Semaphores --- Process Coordination Problems --- Inter Process Communication

UNIT-II

CPU Scheduling : Scheduling Concepts --- Scheduling Algorithms --- Algorithms --- Algorithm Evaluation --- Multiple Processor Scheduling
Deadlock: Deadlock Problem: Characterization --- Prevention --- Avoidance --- Detection --- Recovery --- Combined Approach to Deadlock Handling.

UNIT-III

Memory Management: Introduction --- Multiple Partition --- Paging --- Segmentation --- Paged Segmentation --- Virtual Memory Concept --- Overlays --- Demand Paging and Performance --- Page Replacement Algorithms --- Allocation Algorithms --- Trashing.

UNIT-IV

Secondary Storage Management: Physical Characteristics --- Disk Scheduling --- Disk Scheduling Algorithms --- Sector Queuing File Systems: File Operations --- Access methods --- Allocation Methods --- Directory Systems --- File Protection --- Implementation Issues.

UNIT-V

Case Studies: Introduction to Unix/Linux OS - Commands –Files and directories- Basic commands - Filenames and permission – Vi/ Vim editor and its features - Shell programming - Windows Operating Systems.

Text books:

Silberschatz, Peter Baer Galvin & Greg Gagne, *Operating System Concepts*
Seventh Ed., Addison Wesley Publications..

References Books:

1. William Stallings, *Operating Systems Internals and Design Principles*, PHI India, Fourth Edition, 2003.
2. H.M. Deitel, *Operating Systems*, Addison-Wesley, 2nd Edition.
3. Pramod Koparkar "UNIX for You", Tata McGraw-Hill, 1991.
4. Dm Dhamdhere, "Operating Systems A Concept-Based Approach" 2nd Mc-Graw Hill.

PAPER – 11

VISUAL PROGRAMMING

UNIT-I

Customizing a form-Writing a simple program-Tool Box-Creating controls-Name Property-Command Button-Access keys-Image control-Text Boxes-Labels-Message Boxes-Variables-Data Types-String Number.

UNIT-II

Displaying Information-Determinate loops-Indeterminate loops-Conditionals-Built-in-functions-Functions and Procedures.

UNIT-III

Arrays-List-Sorting and Searching records-Control arrays-Grid control-Project with multiple forms-Do Events and Sub Main-Error Trapping.

UNIT-IV

VB Objects-Dialog Boxes-Common Controls-Menus-MDI Forms-Testing-Debugging and Optimization-Working with Graphics.

UNIT-V

File Handling-File System Control-File System Objects-ODBC-Oracle & VB Connectivity-Oracle & MS Access Connectivity

Text books:

Gary Cornell – Visual Basic 6.0 from the Ground Up – Tata McGraw Hill – 2006.

Noel jerke – Visual Basic “ The Complete Reference “ – Tata McGraw Hill – 1999.

Deital & Deital, T.R. Nieto – Visual Basic 6 – Pearson Edition – 2008.

PAPER – 12

WEB TECHNOLOGY

UNIT-I

Internet Basic-Introduction to HTML- Lists - Adding Graphics to HTML Documents– Tables - Linking Documents – Frames – Cascading Style Sheet – Class – Layers.

UNIT-II

Introduction to Java script- advantage of JavaScript- Data type – Variable – Array-Operator and Expression-Control and looping Constructs – Functions - Dialog Boxes - JavaScript Document Object Model - Event Handling-Form Object- Built in Object- User Defined Object- Cookies.

UNIT-III

Introduction to Visual Studio 2005 - Application and Page Frameworks - ASP.NET Server Controls - HTML Server Controls- Client-Side Callback

UNIT-IV

ASP.NET Web Server Controls- Validation Server Controls- Working with Master Pages.

UNIT-V

Data Binding in ASP.NET: Data Source Controls- Using Bound List Controls with Data Source Controls - Other Data bound Controls - Data Management with ADO.NET - ASP.NET 2.0 Authentication - ASP.NET 2.0 Authorization - Applying Authentication Measures - State Management

Text Books:

Bayross, “Web Enable Commercial Application Development Using HTML, DHTML, JavaScript, Perl CGI”, BPB Publications, 2000.(I &II Unit)

Bill Evjen, Scott Hanselman, Farhan Muhammad, SrinivasaSivakumar, Devin Rader, “ProfessionalASP.NET 2.0”, Wiley Publishing, 2006.(III, IV &V Unit)

References Books:

J. Jaworski, "Mastering Javascript", BPB Publications, 2000.

T.A. Powell, "Complete Reference HTML (Third Edition)", TMH, 2002.

G. Buczek, "ASP.NET Developer Guide", TMH, 2002.

Robert W. Sebesta "Programming World wide web" 4th ed., Pearson.

Deitel P.J and H.M, "Internet and World wide web How to Program", 4th Prentice Hall.

Gopalan & Akilandeswari, "Web Technology: A Developer's Perspective", PHI.

ELECTIVE

PAPER – 4

A. OPENCL 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, NVIDIA 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:

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

References Books:

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 – 4

B. E-BUSINESS

UNIT-I

Definition of e-Business – Comparison of e-Business with E-Commerce – Advantages of e-Business – Limitations of e-Business – Rules of e-Business.

UNIT-II

Spotting e-Business Trends – e-Business Revolution – e-Business Model Schematics – Atomic e-business Models and Initiatives.

UNIT-III

e-Business Categories – E-Auctioning – E-Banking – E-Directories – E-Engineering – E-Franchising – E-Gambling – E-learning – E-Marketing – E-Operational Resources Management – E-Supply – E-Travel.

UNIT-IV

Internet Networking – Deciding Enterprise Middleware – Choosing the Right Enterprise Applications – Building e-Business Applications – Payment in e-Business – Return on Investment.

UNIT-V

Legal Issues – Global Contracts- Website Issues - Crisis Management - Digital Complaint Services - Cyber Law – Some e-Business Applications.

Text Books :

1. Peter Weill and Michael R. Vitale, Place to Space : Migrating to e-Business Models, Harvard Business School Press, 2001
2. Daniel Amor, e-Business (R)evolution, Pearson Education, 2001.
3. Ravi Kalakota and Marcia Robinson, e-Business 2.0 Roadmap for Success, Pearson Education, 2nd Edition, 2000.

PAPER – 4

C. CLIENT / SERVER COMPUTING

UNIT-I

Introduction

Introduction to client/server computing-Mainframe Computers-Client/Server computing-Porting and Down Sizing-Client/Server Development Tools-Advantages of Client/Server computing.

UNIT-II

Client Component

Components of Client/Server applications-The Client-The Client Services-Request for Services-RPC-Windows Services-DDE-OLE-CORBA-The Server-Detailed Server functionality-NOS-Novell Network-LAN Manager-IBM LAN Server-Banyan VINES-PC-Network File Services-Server Operating Systems-Novell Netware , OS/2, Windows Vista, Windows 7, UNIX , LINUX.

UNIT-III

Server Component

Components of client/server architecture-Connectivity-OSI-IPC-LAN-WAN-Internet and Intranet-Platform migration and reengineering of existing systems-Hardware components.

UNIT-IV

Distributed Objects and Internet

Client/Server with distributed objects-Distributed Objects and components-From ORB to Business Objects-COM and DCOM-The Hyper Text Era-The Interactive Era-The Java and Distributed Object Era.

UNIT-V

Application Development Tools

The Prototype Process-Application Development-Workbench Architecture-EASEL Workbench-Eclipse-SQL Windows-Power Builder-Delphi-APT Workbench component.

Text books:

Dewire and Dawna Travis – Client/Server Computing – McGraw Hill – 1993.

Robert Orfali, Dan Harley, Jeri Edward – The Essential Client/Server Survival Guide, Second Edition, Galgotia 1997.

References Books:

Beth Gold-Bernstein, David Marca – Designing Enterprise Client/Server Systems, PHI-1998.

Thomas S. Ligon – Client/Server Communications – McGraw Hill series on Client Server Computing – 1997.

PRACTICAL

PAPER – 7

OPERATING SYSTEMS LAB

Implement the following exercises

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.

Write a shell scripts using the following statements.

While-loop

For-loop

If-then-else

Switch

Write a shell script using grep statement.

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.

PRACTICAL

PAPER – 8

VISUAL PROGRAMMING LAB

Implement following exercises

Develop an application for implementing the functions of a simple Calculator.

Develop an application for a Gas Agency System.

Develop an application for generating the Telephone Bill.

Develop an application for Payroll System.

Develop an application for the Exam Section of your University.

Develop an application for the Traffic Police.

Develop an application to implement the Drag and Drop Events.

Create an ActiveX Control

PRACTICAL

PAPER – 9

WEB TECHNOLOGY LAB

Create a simple page introducing you and modify it with bullet list.

Put an existing image on a web page. Create table with data

Create a web page with various HTML tags.

Write a script to create an array of 10 elements and find the total of it.

Write a function in JavaScript to reverse the string and check for palindrome

Create a simple calculator using form fields

Create a document and add a link to show the page using mouse events

Implement any one of the following

Create Web form for an online library and do the various operations.

Create Web form for online Banking application system

Create Web form for online Railway Reservation system

SEMESTER V

PAPER – 13

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() ,getParameterNames() ,getParameterValues() ,getRemoteHost() ,getRemoteAddr() get_cookies() ,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 Collaboration ,Request Dispatching with Request ,Dispatcher interface Forward() ,Include() ,Servlet 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:

Core Java Volume-I, Horstman and Cornell, Pearson Education

Core Java Volume-II, Horstman and Cornell, Pearson Education

Inside Servlets – Dustin R. Callway- Pearson Education

Developing Java Servlets – James Goodwill. Techmedia.

Java Server Pages, Pekowsky, Pearson.

Programming world wide web-Sebesta,Pearson

Murach's beginning JAVA JDK 5, Murach, SPD

Paper – 14

C # AND. NET FRAMEWORK

UNIT-I

Introducing C# - Understanding .NET - Overview of C# - Literals – Variables - Data Types – Operators – Expressions – Branching – Looping – Methods – Arrays – Strings – Structures - Enumerations.

UNIT- II

Classes – Objects – Inheritance – Polymorphism – Interfaces - Operator Overloading – Delegates – Events - Errors and Exceptions - Garbage Collection.

UNIT-III

Introduction to .NET Collections – Indexers -Building Windows Applications - Accessing Data with ADO.NET.

UNIT-IV

Programming Web Applications with Web Forms - Programming Web Services.

UNIT-V

Attributes and Reflection - Marshaling and Remoting – Threads and Synchronization – Streams [Directories, files, and streams]

Text books:

- E. Balagurusamy, "Programming in C#", Tata McGraw-Hill, 2004. (Unit I, II)
- J. Liberty, "Programming C#", 2nd ed., O'Reilly, 2002. (Unit III, IV, V)

References Books:

1. Herbert Schildt, "The Complete Reference: C#", Tata McGraw-Hill, 2004.
2. Robinson et al, "Professional C#", 2nd ed., Wrox Press, 2002.
3. Andrew Troelsen, "C# and the .NET Platform", A! Press, 2003.
4. S. ThamaraiSelvi, R. Murugesan, "A Textbook on C#", Pearson Education, 2003.
5. Ben Albahari , Peter Drayton and Brad Merrill, "C# essentials", O'Reilley, SPD, 2012
6. Sestoft, "C# Precisely" PHI.

PAPER – 15

SOFTWARE ENGINEERING

UNIT-I

Introduction - Evolving Role of Software - Changing Nature of Software - Software Myths. A Generic View of Process : Layered Technology - Process Models : Waterfall Model - Evolutionary Process Models. Software Engineering : Computer Based Systems .

UNIT-II

Requirements Engineering: Tasks - Initiating the Requirements Engineering Process - Eliciting Requirements - Building the Analysis Model - Requirements Analysis - Data Modeling Concepts - Flow Oriented Modeling - Class Based Modeling.

UNIT-III

Data Engineering: Design Process and Design Quality - Design Concepts - The Design Model. Creating an Architectural Design : Software Architecture - Data Design - Architectural Design - Mapping Data Flow into Software Architecture. Performing User Interface Design : Golden Rules.

UNIT-IV

Testing Strategies : Strategic Approach to Software Testing - Test Strategies for Conventional and Object Oriented Software - Validation Testing - System Testing - Art of Debugging . Testing Tactics : Fundamentals - White Box - Basis Path - Control Structure - Black Box Testing Methods .

UNIT-V

Project Management: Management Spectrum - People - Product - Process - Project. Estimation: Project Planning Process - Resources - Software Project Estimation - Decomposition Techniques - Empirical Estimation Models. Project Scheduling: Project Scheduling - Scheduling. Quality Management: Quality Concepts - Software Quality Assurance - Formal Technical Reviews.

Text book:

Roges S Pressman, "Software Engineering A Practitioner's Approach", Sixth Edition, McGraw Hill International Edition, New York : 2005.

References Books:

Ian Somerville, "Software Engineering", Seventh Edition, Pearson Education Pvt. Ltd., New Delhi : 2006.

Mall Rajib, "Software Engineering", 2/E, PHI, 2006.

James, "Software Engineering", PHI.

ELECTIVE

PAPER – 5

A. GRID COMPUTING

UNIT-I

IT Infrastructure Evolution: Introduction - Microprocessor Technology –Optical Networking Technology –Storage Technology -Wireless Technology - Sensor Technology -Global Internet Infrastructure -World Wide Web and Web Services -Open-Source Movement - Conclusion - Productivity Paradox and Information Technology- Introduction -Productivity Paradox - Return on Technology Investment -Multi-Story Bureaucracy - Information Technology Straightjacket - Consolidation -Outsourcing -Toward a Real-Time Enterprise--Operational Excellence - Conclusion- Business Value of Grid Computing-Introduction -Grid Computing Business Value Analysis -Risk Analysis - Grid Marketplace -Conclusion –Grid Computing Technology Overview.

UNIT-II

The Open Grid Services Architecture: Introduction -An Analogy for OGSA - The Evolution to OGSA -OGSA Overview -Building on the OGSA Platform -Implementing OGSA-Based Grids - Conclusion - Creating and Managing Grid Services -Introduction -Services and the Grid - Converting Existing Software -Service Discovery - Operational Requirements - Tools and Toolkits -Support in UDDI - UDDI and OGSA - UDDIe: UDDI Extensions and Implementation - Uses -Quality of Service Management -Conclusion

UNIT-III

Desktop Grids -Introduction -Background -Desktop Grids Defined - The Desktop Grid Value Proposition -Desktop Grid Challenges -Desktop Grid Technology-Key Elements to Evaluate - Desktop Grid Suitability-Key Areas for Exploration - The Grid Server-Additional Functionality to Consider - Role of Desktop Grids in an Enterprise Computing Infrastructure - Practical Uses of Desktop Grids--Real-World Examples -Conclusion- Cluster Grids- Introduction – Clusters- Industry Examples-Cluster Grids -Conclusion Data Grids- Introduction -Data Grids - Alternatives to Data Grids - Avaki Data Grid - Data Grid Architecture -Conclusion

UNIT-IV

Desktop Supercomputing- Native Programming for Grids - Introduction - Historical Background--Parallel Computing -Parallel Programming Paradigms -Problems of Current Parallel Programming Paradigms -Desktop Supercomputing: Solving the Parallel Programming Problem -Desktop Supercomputing Programming Paradigm - Parallel

Programming in CxC - Parallelizing Existing Applications -Conclusion -Grid Enabling Application- Software Applications - Introduction - Grid Computing: Discontinuous Innovation or Massive Yawn -The Needs of Grid Users - Grid Deployment Criteria -Methods of Grid Deployment - When to Grid-Enable Software -Requirements for Grid-Enabling Software - Grid Programming Tools and Expertise -The Process of Grid-Enabling Software Applications -Grid-Enabling a Mainstream Software Application: An Example – Conclusion- Application Integration-Introduction - Application Classification -Grid Requirements - Integrating Applications with Middleware Platforms -Conclusion

UNIT-V

Grid Computing Toolkit: Globus GT3 Toolkit-Architecture-Programming Model- Sample Implementation- High level Services.

Case Studies: Sun Grid Engine – National Grid Project – Garuda.

Text Books:

1. Ahmar Abbas, Grid Computing: A Practical Guide to Technology and Application, Charles River Media, 2005.

References Books:

1. Joshy Joseph and Craig Fellenstein, Grid Computing, Pearson Education, 2003.
2. Ian Foster and Carl Kesselman, The Grid2: Blueprint for a New Computing Infrastructure, Morgan Kaufman, 2004.
3. Prabhu, "Grid ana cluster computing", PHI.

PAPER – 5

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 Books:

Allen I. Holub, "Compiler Design in C", Prentice Hall of India, 1993.

Fischer Leblanc, "Crafting Compiler", Benjamin Cummings, Menlo Park, 1988.

Chattopadhyay, "Compiler Design", PHI.

Dasaradh, "Introduction to Automata and Compiler Design", PHI.

Holub, "Compiler Design in C", PHI.

PAPER – 5

C. DATA WAREHOUSING AND MINING

UNIT-I

Data Warehousing: An Introduction- Characteristic Of A Data Warehouse – Data Marts – 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 Issues-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:Introduction-National Data Warehousing And Data Mining

UNIT –III

Basic Data Mining Tasks – Data Mining Versus Knowledge Discovery In Databases – Data Mining Issues – Data Mining Metrics – 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 Books:

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.

PRACTICAL

PAPER – 10

C# AND .NET 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

PRACTICAL

PAPER - 11

JSP AND SERVLET PROGRAMMING LAB

Implement the following exercises

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
5. Write programs in Java using Servlets:
 - i) To invoke servlets from HTML forms
 - ii) To invoke servlets from Applets
6. 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.
7. Programs using AJAX.
8. 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
