SEMESTER - I DISCRETE MATHEMATICS - PCA701

UNIT-I Set Theory : Introduction-Sets-Notations and Descriptions of Sets-Subsets-Operations on Sets-Properties of Set Operations-Verification of the Basic Laws of Algebra-Cartesian product of two sets-Relations-Representation of a Relation-Operations on Relations-Equivalence Relations-Partition and Equivalence Classes-Functions-One-to-one and Onto Functions-Special types of Functions-Invertible Functions-Composition of Functions.

[18 HRS]

Chapter 1:1 to 4, 6 to 8, Chapter 2:1 to 5, 7 , Chapter 3:1 to 5,

UNIT-II

Logic: Introduction-TF Statements- Connectives-Compound Statements-Truth Table of a Formula-Tautology-Tautology Implications and Equivalence of Formulae-Normal Forms-Principles of Normal Forms-Theory of Inference, simple problems . **Chapter 9:1 to 4, 6 to 8, 11 to 13** **[** [18 HRS]

UNIT-III

Finite Automata-Definition of an Automaton- Representation of Finite Automaton-Acceptability of a string by a Finite Automaton-Languages accepted by a Finite automaton – Nondeterministic Finite automata - Acceptability of a string by Nondeterministic Finite Automata. **Chapter 12:1 to 8**[18 HRS]

UNIT-IV

Equivalence of FA and NFA- Procedure for finding an FA equivalent to a given NFA –Phase-structure Grammars . **Chapter 12:9,10,16**

[18 HRS]

UNIT-V

Pushdown Automata-Definition of a Pushdown Automaton – Instantaneous Descriptions of a PDA-Important properties of move relation - Acceptance by PDA – Equivalence of two types of a Acceptance by PDA. **Chapter 12: 23 to 28**

[18 HRS]

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

Reference Books:1. Theory of Computer Science- K.L.P Mishra and N. Chandrasekaran ,Prentice Hall of India, Pvt Ltd

2. Discrete Mathematical Structures applications toComputerScience, Trembly &Manohar, Tata McGraw.

3. Introduction to Automata Theory, Languages and Computions, Hopcraft and Ullman, 2nd Edition, Pearson Education.

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

5. Veerarajan T, " Discrete Mathematics with graph theory and combinatorics" , TMG, 2007,.

SEMESTER – I PROGRAMMING IN C - PCA702

Objective:
To develop programming skills using C language and to learn to use the specialties of 'C' language for programming.

UNIT-I: [15 Hrs]

Introduction: Identifiers - key words - data types access modifiers - data type conversions - operators - conditional controls - loop controls - i/o operations.

UNIT-II: [15 Hrs]

Function prototyping - function arguments - actual vs formal parameters - pointers - pointer variables - pointer concepts in functions - multiple indirection.

UNIT-III: [15 Hrs]
Arrays - accessing array elements - pointers and arrays - arrays as function arguments - function returning addresses - dynamic memory allocation - storage classes.

UNIT-IV: [15 Hrs]
Structures - unions - typeset - enema - array of structures - pointers to structures -macros and preprocessors. Character I/O - string I/O - formatting I/O - error handling during I/O - command-line arguments.

UNIT-V: [15 Hrs]
Pointers - Declarations - Passing pointers to functions - operation in pointers - pointers and arrays-Arrays of pointers - Structures and pointers – Files: Creating, processing, opening and closing - Bitwise Operations

Text Books:

1. Kanetkar Y. –"Let us C" – BPB Pub., - New Delhi – 1999.
2. B.S.Gottfried – "Programming with C" - Schaum's Outline series – TMH Edition – 1997.
3. Brain W. Kernighan, Dennis M. Ritchie, "The C Programming Language", Prentice Hall of India Pvt. Ltd., New Delhi, Second Edition, 1998.

Reference Books:

1. Robert A. Radcliffe - 'Encyclopedia C' - BPB Publications.
2. E. Balagurusamy – "Programming in ANSI C" – Tata McGraw Hill, Edition 2.1, 2002.

SEMESTER – I COMPUTER ORGANIZATION - PCA703

Objective:

- To give the fundamental principles of digital electronics.
- To give the basic knowledge on various building blocks of a typical digital computer.

UNIT - I: **[15 Hrs]**

Number Systems - Conversion from one number system to another –Complements - Binary Codes - Binary Logic - Logic gates - Truth Tables.

UNIT - II: **[15 Hrs]**

Boolean Algebra – Simplification of Boolean Functions - Map Method(Upto 5 Variables) .Sequential Logic - Flip Flops – Registers - Counters

UNIT – III: **[15 Hrs]**

Central processing UNIT : General register and stack organizations - Instruction formats - Addressing modes - Arithmetic, instruction and RISC pipeline - Computer Arithmetic - Addition and subtraction - Multiplication and Division Algorithms - floating point and decimal arithmetic operations.

UNIT – IV: **[15 Hrs]**

Input-Output organization - peripheral devices, I/O Interfaces - Asynchronous data transfer - modes of transfer - Priority interrupt - direct memory access - I/O processor.

UNIT – V: **[15 Hrs]**

Memory Organization - Memory hierarchy - main memory - Auxiliary memory - associative, cache and virtual memory .

Text Books:

1. M Morris Mano, “Digital Logic and Computer Design” - Prentice-Hall India.
2. M. M. Mano - “Computer System Architecutre” - PHI, Third Edition.
3. J. P. Hayes – “Computer Architecture and Organization” – McGraw Hill, Third Edition.
4. Kai Hwang – “Advanced Computer Architecture”, Tata - McGraw Hill, Edition 2001.

Reference Books:

1. Thomas C Bartee - “Computer Architecture and logic Design” - TMH.
2. Malvino and Leech - “Digital Principles and Applications” - TMH

SEMESTER – I OPERATING SYSTEMS - PCA704S

Objective:

1. To enable the student to learn the operating system and the functioning.
2. To enable the student to understand the memory management, file management and I/O systems.

UNIT – I: [12 Hrs]

Introduction: Mainframe Systems-Distributed systems- I/O structure - Hardware protection-Operating-System Calls-System Services- System programs.

Files and protection: File concept-Access Methods-Directory Structure-Protection

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UNIT – II: [12 Hrs]

Process Management: Process concept-Process Scheduling– Cooperating process-Interprocess communication.– CPU Scheduling – Scheduling Algorithms, Multiple processors Scheduling-Critical section problem-Semaphores, Classical problem of synchronization,

Deadlocks: Characterization, Prevention, Avoidance, and Detection.

UNIT – III: [12 Hrs]

Storage Management: Swapping – Contiguous Memory Allocation-Paging - Segmentation - Virtual Memory - Demand paging - Page replacement and algorithms, Secondary storage management – File System structure – Allocation Methods -Free space management– Directory Implementation – Efficiency and Performance-Recovery

UNIT – IV: [12 Hrs]

Introduction to LINUX: Shell kernel-pipes and redirection-shell as programming-shell syntax-variables-environmental variables-parameter variables-control structures-functions-Basic commands

UNIT – V: [12 Hrs]

Linux files-Linux files structure-Directories-files and devices-system calls and devices drivers-Library functions-files access-write, read, open-Standard I/O library-formatted input/output-Stream functions-file and directory maintenance-the /proc files system.

Text Books:

1. Silberschatz & Galvin & Gagane – "Operating System Concepts" – Addision – Wesley Publishing Co. (Sixth edition).
2. Achyut S. Godbole – "Operating Systems" – Tata McGraw Hill – 1999.
3. Neil Matthew, Richard Stones-"Beginning Linux Programming"-Wiley-India edition-4th edition.-2009(reprint) –Unit IV and V

Reference Book:

Andrew S. Tanenbaum – "Modern Operating Systems" – Prentice Hall of India Private Ltd.NewDelhi,1997

SEMESTER – I PRINCIPLES OF PROGRAMMING - EPCA705S

LANGUAGES

UNIT – I: [15 Hrs]

Introduction: The Study of Programming Languages – Why Study Programming Languages ? – A Short History of Programming Languages – What Makes a Good Language? – Effects of Environments on Languages. Language Design Issues: The Structure and Operation of a Computer – Virtual Computers and Binding Times – Languages Paradigms. Language Translation Issues: Programming Language Syntax – Stages in Translation – Formal Translation Models.

UNIT - II: [15 Hrs]

Elementary and structured data type: Data object variables, constants, data type, elementary data types, declaration, assignments and initialization, enumeration, characters strings.

Structured data type and objects: Specification of data structured types, vectors and arrays, records, variable size data structure, pointers and programmer constructed data structure, Set files.

Imperative Languages: Block structure, Scope rules, Parameter Passing, Construct like co-routines, Tasks etc.

UNIT - III: [15 Hrs]

Object oriented languages: The class notion- Information hiding and data abstraction using classes, derived classes and inheritance– Polymorphism – Parameterized types.

UNIT - IV: [15 Hrs]

Functional languages: Functional programming concepts – Referential transparency – Types – Type systems - Names, bindings, environment and scope – Recursive functions – Polymorphic functions – Type variables – High order functions – Curried functions – Lists and programming with lists – Definition of new user defined types in ML – Abstract data types – Evaluation methods.

UNIT - V: [15 Hrs]

Logic languages: Review of predicate logic – Clause-form logic – Logic as a programming language- Unification algorithm - Abstract interpreter for logic programs – Theory of logic programs – Applications of Logic programming - Introduction to Prolog, Data Structures in Prolog, Programming techniques, Control in Prolog

Text Books:

1. “Programming Languages – Design and Implementation” - by Terrence W. Pratt & Marvin V. Zelkowitz, Fourth Edition
2. “Programming Languages – Concepts & Constructs” - by Ravi Sethi, Pearson Education.

Reference Books :

1. “Programming Language Design Concepts”– by David A. Watt and William Findlay
2. “Fundamentals of Programming Languages” – by Ellis Horowitz – SecondEdition

SEMESTER – I C PROGRAMMING LABORATORY - PCAP101S

Objective:

To enable the students to learn structures, pointers and file concepts in C Programming.

1. Determining a given number is prime or not.
2. Pascal's triangle
3. String Manipulation
4. Matrix Multiplication.
5. Finding determinant of a Matrix.
6. Finding inverse of a Matrix.
7. Checking for tautologies and contradictions.
8. Euclidean's Algorithm for finding GCD.
9. Generating Permutation.
10. Computing Combinations.
11. Creating database for telephone numbers and related operations. Use file concepts.
12. Sorting & Searching
    a) Insertion sort
    b) Bubble sort
    c) Selection sort
    d) Linear search
    e) Binary search

SEMESTER – I LINUX LABORATORY - PCAP102S

Objective:

- To enable the students to learn the basic commands of Linux with sample programs.
- To make the students acquire skill in Linux Programming.

1. Working with Basic Linux Commands
2. Finding the Sum of the Series
3. Arguments Checking
4. Fibonacci Series
5. Finding the given String is Palindrome or not
6. Performing Menu Driven program
7. Sorting
8. Extension Conversion
9. File Manipulation
10. Pay Slip Generation
11. Creating a Electricity Bill
12. Generating student mark list

SEMESTER – II C++ AND DATA STRUCTURES - PCA806S

Objective:

- To provide a sound understanding of the fundamental concepts of the object technology and to learn the realistic application of object oriented software systems using C++.
- To enable the student to learn the object oriented concepts and various types of data structures.

UNIT - I: [15 Hrs]

Introduction to OOPS: OOPS Concepts and Applications– Overview of C++ - classes & Objects – Friend functions – friend classes – inline functions – constructors & destructors – static members – scope resolution operator – passing objects to functions – function returning objects - function overloading.

UNIT - II: [15 Hrs]

Operator Overloading and Inheritance: Operator overloading – member operator overloading – friend operator overloading – overloading some special operators like [ ], ( ), a and comma operator – inheritance – types of inheritance – virtual base class – polymorphism - virtual function – pure virtual functions.

UNIT - III: [15 Hrs]

Class Templates: Class templates and generic classes – function templates and generic functions – overloading a function template – power of templates – exception handling – derived class exception – over handling generic functions – exception handling function – terminate() unexpected ()- uncaught – exception ().

UNIT - IV: [15 Hrs]

Linear Data Structure: General lists – Stacks – Queues – Circular queues – Evaluation of expressions-Singly linked lists – Circular linked lists – Doubly linked lists.

UNIT - V: [15 Hrs]

Non-Linear Data Structures: Trees – binary trees –binary tree representations – binary search trees – binary tree traversals– application of trees (sets) – Graphs-representation of graphs – graph implementation – graph traversals – application of graph traversals – minimum cost spanning trees – shortest path problems.

Text Books:

1. Herbert Schildt, “C++: The Complete Reference” - Third Edition – Tata McGraw Hill, 1999.
2. Robert Lafore - “Object Oriented Programming in Turbo C++” - Galgotia 2001.
3. E. Balagurusamy - “Object Oriented Programming with C++” - TMH, New Delhi.
4. E. Horowitz, S. Sahni and Mehta – Fundamentals of Data structures in C++ - Galgotia – 1999.

Reference Books:

1. J.P. Cohen and J.W. Davidson – “C++ program design – An introduction to programming and object-oriented design – second edition – McGraw Hill – 1999.
2. Gregory L.Heileman – “Data structures, Algorithms and Object Oriented Programming” – Tata McGraw Hill International editions – 1996.

SEMESTER – II DESIGN AND ANALYSIS OF ALGORITHM - PCA807

Objective:

- To enable the student to understand what an algorithm is and to teach the designing of an algorithm.
- To give an exposure in the development of algorithms.

UNIT - I: **[15 Hrs]**

Introduction to Divide and Conquer: Algorithm – complexity analysis – introduction to random algorithm – general method – finding maximum and minimum – Strassen's matrix multiplication – quick sort – selection sort.

UNIT - II: **[15 Hrs]**

Greedy method: General method – tree vertex splitting – job sequencing with dead lines – shortest path – knapsack 0/1. Dynamic Programming – general method – multistage graphs – string editing – traveling salesman problem.

UNIT - III: **[15 Hrs]**

Back tracking: general method – sum of subsets – graph coloring – depth first search – breadth first search.

UNIT - IV: **[15 Hrs]**

Branch and Bound: General method – 0/1 Knapsack problem – traveling salesperson – algebraic manipulation.

UNIT - V: **[15 Hrs]**

Lower bound theory: Comparison trees – Oracles and advisory arguments – lower bounds through reduction – basic concepts of NP-Hard and NP-Complete.

Text Books:

E. Horowitz, S. Sahni and S.Rajasekaran – "Computer Algorithms" – Galgotia.

Reference Books:

1. E. Horowitz, S. Sahni and Mehta – "Fundamentals of Data structures in C++" - Galgotia – 1999.
2. Gregory L.Heileman – "Data structures, Algorithms and Object Oriented Programming" – Mc Graw Hill International editions – 1996.
3. G. Brassard and P. Brateley – "Fundamentals of Algorithms" – PHI.
4. Baase, "Computer Algorithms" - 2000, Pearson Education.
5. S. Lakshmivarahan, Sundarshan K. Dhall., "Analysis and Design of Parallel Algorithms".
6. Mark Allen Weiss - "Data Structures and Algorithm Analysis in C"

SEMESTER – II COMPUTER GRAPHICS - PCA808

Objective:

- To enable the students to learn about the working of input output devices.
- To learn the concepts of 2D and 3D transformations models and generation algorithms.
- To understand computer graphics and various graphic algorithms.

UNIT-1: **[15 Hrs]**

Video display devices: – Raster scan systems – input devices – hardcopy devices– graphics software – output primitives – attributes of output primitives.

UNIT-2: **[15 Hrs]**

Two-dimensional transformation: – clipping – window-view port mapping.

UNIT-3: **[15 Hrs]**

User dialogue – input of graphical data – input functions – input device parameters – picture construction techniques – virtual reality environments.

UNIT-4: **[15 Hrs]**

Three dimensional concepts: – 3D transformations – 3D viewing.

UNIT-5: **[15 Hrs]**

Visible surface detection:– backface detection – depth buffer method – scan line method – a buffer method – properties of light infinitive color concepts – RGB color models – computer animation.

Text Books:

D. Hearn and M. P. Baker – "Computer Graphics" – PHI.

Reference Books:

1. W. M. Neumann and R. F. Sproull – "Principle of interactive computer graphics" – TMH, New Delhi.
2. D. F. Rogers, - "Procedural elements for Computer Graphics" - 2nd Edition, 2001, Tata McGraw-Hill, New Delhi.
3. Steven Harrington – "Computer Graphics – A programming Approach" – Mc Graw Hill, 1983.
4. Harry Katyon Jn. – "Microcomputer Graphics and Programming Techniques" – Van Nostrand Reinhold, 1982.
5. S. Harrington, 1989, Fundamentals of Computer Graphics, Tata McGraw-Hill, New Delhi.
6. Foley, Van Dan, Feiner, Hughes, 2000, Computer Graphics, Addison Wesley, Boston.
7. D. F. Rogers, J. A. Adams, 2002, Mathematical elements for Computer Graphics,2nd Edition, Tata McGraw-Hill, New Delhi.

SEMESTER – II RELATIONAL DATA BASE MANAGEMENT SYSTEMS - PCA809S

UNIT-I: [15 Hrs]

Sql Basics: Introduction to RDBMS –Normalization: First Normal form-Second Normal form-Third Normal form-Creating a Table-Select, from, where and Order by-Logic and Value: Single value tests-LIKE-NULL and NOT NULL-Simple tests against a list of values-Combining logic-Dropping tables-Altering a table: Adding or modifying a column-Changing Data: insert-multiple inserts-update-merge-delete-rollback-commit and Save point

UNIT-II: [15 Hrs]

Sql Concepts: Data types-String functions-Single value functions-Aggregate functions-List functions-Findings Rows with MAX or MIN-Date functions-Conversion functions-Transformation functions: Translate-Decode-Creating a view: Stability of a view-Order by views-Creating a read only view -Grouping Things Together: The use of group by and having-views of Groups-Sub queries-Advanced Sub queries-Outer joins-Natural and inner joins-Union, Intersect, and minus

UNIT-III: [15 Hrs]

Advanced Sql Concepts: Decode and Case: if, then, else-Decode and Case-Creating a table from a table-Using Partitioned Tables: Creating a Partitioned Table-Creating Sub partitions-Indexes-Clusters-Sequences.

Users, Roles and Privileges: Creating a user-Password Management-Standard Roles-Format for grant command-Revoking privileges-What users can Grant: Moving to another user –Create synonym-Create a role-Granting privileges to a role-Granting a role to another role-Adding password to a role-Removing password from a role –Enabling & Disabling roles-Revoking privileges from a role-Drop a role

UNIT-IV: [15 Hrs]

Using SQL*Loader to load data: The Control file-Loading Variable length data-Starting the load-Syntax-Managing the data loads-Tuning Data loads-Using External Tables: Access an external data-External table: Creation-Limitation-Benefits.

Object–Relational Databases: Implementing Types-Object Views- Methods-Collectors (Nested Tables and Varying Arrays**)**-Using Large Objects-Advanced Object –Oriented Concepts.

UNIT-V: [15 Hrs]

Introduction to PL/SQL: Declarations section-Executable commands section-Exception handling section-Triggers: Syntax-Types of Triggers: Row level- Statement level-before & after-Instead of Schema-Database level triggers-Enabling & Disabling triggers-Procedures, Functions & Packages-Cursor M

Text Book:

ORACLE DATABASE 10g-The complete reference- **KEVIN LONELY**, Tata McGraw-Hill Publishing Company Ltd 2004.

Reference Book:

Oracle 9i- A Beginner's Guide-Michael Abhey, Mike Corey and Ian Abramson, Tata McGraw – Hill Publishing Company Ltd.,-2002.

SEMESTER – II MICROPROCESSOR AND ITS - EPCA810S

APPLICATIONS

Objective:

- To enable the student to learn the programming concepts in microprocessors.
- To enable the student to understand assembly languages.

UNIT-I: [12 Hrs]

Introduction to 8086 assembly language programming: – Development steps – Construction – Writing programs and development tools – Standard program structures – Simple programs – Jumps – while-do, repeat-until, delay loops.

UNIT-II: [12 Hrs]

Strings and Macros: Strings – Procedures – Macros – Instruction descriptions – Assembler directives.

UNIT-III: [12 Hrs]

8086 microcomputer: – Observing bus signals – Minimum mode system – Troubleshooting – 8086 Interrupts – Interrupt applications – Programmable Timer/Counter – Interrupt controller

UNIT-IV: [12 Hrs]

Handshaking and Interfacing: Parallel ports – Handshaking – Interfacing digital devices – Analog Interfacing.

UNIT-V: [12 Hrs]

DMA: DRAM's – Cache memory – Co-Processors – EDA Tools

Text Books:

1. Douglas V Hall – "Microprocessors and Interfacing – Programming and Hardware" – TMH – 1999.
2. K. Udayakumar and B.S. Umashankar – "Advanced Microprocessors and IBM PC Assembly language programming" – TMH - 1998.

Reference Book:

Mohammad Rafiguzzaman - "Microprocessor and microcomputer based system Design" - Universal Bookstall, 1990.

SEMESTER – II C++ WITH DATA STRUCTURES - PCAP203S

LABORATORY

Objective:

To make the students to implement data structures concepts using Object Oriented Programming.

1. Binary search using recursion.
2. Implementation of stack using arrays.
1. Implementation of stack using pointers.
2. Implementation of queue using arrays.
3. Implementation of queue using pointers.
4. Converting infix to postfix.
5. Evaluation of expression.
6. Polynomial addition using arrays.
7. Tree traversals.
8. Linked list.
9. Circular list.
10. Doubly linked list.
11. Binary tree traversal.

SEMESTER – II RELATIONAL DATA BASE - PCAP204S

MANAGEMENT SYSTEMS LABORATORY

Objective:

To enable students to write SQL queries and work with PL/SQL.

1. Writing Basic SQL Statements
2. Restricting and Sorting Data
3. Working with Built-in-functions of SQL.
5. Displaying Data from Multiple Tables.
6. Writing Sub queries
7. Creating PL\SQL blocks.
8. Handling Exceptions
9. Creating Stored procedures, functions and packages.
10. Working with Cursors.
11. Creating Triggers.
12. Working with Abstract Data Types
    - i) Types
    - ii) Object Views
    - iii) Methods
    - iv) Nested Tables
    - v) Varying arrays.

SEMESTER – III DESIGN OF INFORMATION SYSTEMS - PCA911S

UNIT – I: [12 Hrs]

Definition of Management Information System - Structure of MIS - Information system for decision making - The role of system analyst - Data base management system.

UNIT - II: [12 Hrs]

Computes and Information Processing - Classification of computers - Main frames – Mini Computers - workstations - micro computers - super computers - Personal Computers -Input Devices - Computer mouse - touch screen - MICA - OCR - pen based input – digital scanners - voice input devices - sensors - Output devices - video display terminals - printers- plotters - voice output devices - Secondary storage - magnetic disk storage – magnetic tape storage - optical disk storage.

UNIT- III:

[12 Hrs]

System Analysis - System Planning and the mutual investigation - Information gathering MIS Organisation - Top management - Data processing group's responsibility

UNIT- IV: [12 Hrs]

Management and MIS - Strategic information system - MIS as competitive advantage – implications for managers - MIS support for planning, organizing, operating, controlling an knowledge work - specific function - finance - personnel - production - materials –marketing - computer - hardware and software - Data representation in computers – Batch Processing Vs online processing.

UNIT –V: [12 Hrs]

Decision Support System - definition - examples of DSS - components - building DSS –Group Decision Support System - GDSS tools - role of GDSS - Executive System– role developing DSS - benefits – examples.

Text Books:

1. Gordan B. Davis ," Management Information System".
2. Sadagopan – "Management Information Systems "- Prentice-Hall of India
3. Mudrick & Ross – "Management Information Systems" - Prentice-Hall of India

Reference Books:

1. Rajagopal SP – "Management Information System"
2. Lawrence S. On/la – "Introduction to Business Data"
3. Davis – "Computer Data Processing"
4. Laudon & Laudon" – "Management Information Systems" - Prentice-Hall Of India.

SEMESTER – III OBJECT ORIENTED PROGRAMMING -PCA912T

WITH SUN MICROS TECHNOLOGY

UNIT-I: **[12 Hrs]**

Introduction to Java : Features of Java - Object oriented concepts - Lexical issues - Data types – Variables – Operators - Type conversion and casting – Control Statements - Arrays .

UNIT-II: **[12 Hrs]**

Constructors - Overloading method - Inner class - Inheritance - Overriding Method –Abstract class - Packages– Importing packages.

UNIT-III: **[12 Hrs]**

Interfaces – Exception handling –Throw and throws - Thread – Multithreading
Simple example using Thread.

UNIT-IV: **[12 Hrs]**

AWT Overview: Components, Container, window, Panel, Canvas-AWT classes: Button, TextField, Checkbox-Layouts. Simple example using AWT. Introduction to Applet- Simple example using Applet.

UNIT-V: **[12 Hrs]**

JDBC-ODBC Driver-Database classes-simple Example using database (msaccess). Network Basics-socket overview- client/ server-reserved sockets—Proxy Servers-Internet Addressing-DNS-TCP/IP-UDP-Simple example using network concepts.

Text Books:

1. P. Naoughton and H. Schildt – Java2: The Complete Reference –TMH 1999, Ed. 3
2. K. Arnold and J. Gosling – The Java Programming Language – Ed. 2, Publication 2000

Reference Books:

1. Cays Horstmann and Gary Cornell – Core Java Volume II, Publications 2001
2. Phil Hanna – JSP 2.0: The Complete Reference – TMH., Edition 2, Publications 2003

SEMESTER – III COMPUTER NETWORKS - PCA913S

UNIT-I: **[12 Hrs]**

DATA COMMUNICATIONS: Components – Direction of Data flow – networks – Components and Categories – types of Connections – Topologies –Protocols and Standards – ISO / OSI model -Transmission Media – Coaxial Cable – Fiber Optics – Line Coding – Modems.

UNIT-II: **[12 Hrs]**

PHYSICAL LAYER AND DATA LINK LAYER: Physical layer-coding-Error – detection and correction – Parity – LRC – CRC – Hamming code – flow Control and Error control - stop and wait – go back-N ARQ – selective repeat ARQ- sliding window..

UNIT-III: **[12 Hrs]**

NETWORK LAYER AND TRANSPORT LAYER: Internetworks – Packet Switching and Datagram approach – IP addressing methods – Subnetting – Routing – Distance Vector Routing – Link State Routing – Routers. Duties of transport layer – Multiplexing – Demultiplexing – Sockets – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services (QOS) – Integrated Services

UNIT-IV: **[12 Hrs]**

UPPER LAYERS: Domain Name Space (DNS) – SMTP – SMNP-FTP-EMAIL-USENET – HTTP - WWW – Security – Cryptography.

UNIT-V: **[12 Hrs]**

MOBILE COMMUNICATION: Telecommunication systems – GSM – Architecture-Protocols- Hand Over and Security **Mobile IP:** Goals– Packet Delivery– Strategies-Registration-Tunneling and Reverse Tunneling–Adhoc Networks-Routing Strategies.

Text Books:

1. Behrouz A. Forouzan, “Data communication and Networking”, Tata McGraw-Hill, 2004.
2. Andrew S. Tanenbaum, “Computer Networks”, PHI, Fourth Edition, 2003.
3. Jochen Schiller, “Mobile Communications”, PHI/Pearson Education, 2/e. Delhi, 2000.

Reference Books:

1. James F. Kurose and Keith W. Ross, “Computer Networking: A Top-Down Approach Featuring the Internet”, Pearson Education, 2003.
2. William Stallings, “Data and Computer Communication”, Sixth Edition, Pearson Education, 2000.

SEMESTER – III PROGRAMMING USING MICROSOFT TECHNOLOGIES - PCA914S

Objective :
To make the student get exposed with the latest programming concept in Dot net and to equip them with skills related to c# programming and web concepts.

UNIT-I [12 Hrs]
Dotnet Technology:- Dot Net framework-CLR-MSIL-JIT-Managed Code-Advantages of dot net approach.

UNIT -II: [12 Hrs]
C#.Net: Data types-Variables-Arrays-Properties-Namespace-Methods-Interface-Delegation.
Controls in C#: Timer-PictureBox-RadioButton-Panel-Menu-Dialog Controls.

UNIT-III: [12 Hrs]
Asp.net: Difference between Asp and Asp.net-Architecture of Asp.net-Execution model-IIS-Difference between Code Behind and aspx file-Implementation of simple web application-**Web Service**- executing web application using web service.

UNIT-IV: [12 Hrs]
Web Controls: AdRotator-Validation-Calendar. Application Level-Session Level-Cookies-NameValueCollection class-QueryString Type.

UNIT –V: [12 Hrs]
ADO.NET: ADO.Net Objects Model – Architecture of ADO.NET-Working with Grid control-List View-Working with Crystal Report Viewer control.

Text Books:

1. Yashavant Kanetkar, 2004 C#.Net. Motilal Books of India.
2. Peter Drayton , Ben Albahari, Ted Neward. C# in an nutshell. O'Reilley Publication.
3. E.Balaguruswamy. Programming with C# - 1- Edition. Tata McGraw – Hill Publication.

Reference Books:

1. Herbert Schlitz. 2002 C# - A Beginner's Guide. Osborne/ McGraw – Hill Publication.
2. Burton Harvey, Simon Robinson, julian Templeman and Karli Waston, 'C# Programming with the Public Bata', Shroff Publishers & Distributors Pvt. Ltd(SPD) Mumbai, April 2001.
3. Ben Albahart, Peter Drayton and Brad Merrill, 'c# Essentials', SPD, Mumbai March 2001.

SEMESTER – III EPCA915T ACCOUNTING AND FINANCIAL MANAGEMENT

Objective:

UNIT-I [15 Hrs]

Meaning and scope of accounting – Objectives of accounting – Basic accounting concept and Convenstions - Principles of Accounting: Principles of double entry-journalizing, ledger posting and Preparation of trail balance.

UNIT-II [15 Hrs]

preparation of trading account profit and loss account and balance sheet Including adjustments-Closing stock – prepaid expenses – Outstanding expenses- Deprection on fixed assects – Bad debts. writen off and provision for bad debts only. (Simple Adjustments Only)

UNIT-III [10 Hrs]

Break-even analysis and marginal costing definition – futures - advantages - limitation –Contribution – margins of safty . Meaning of variable cost and fixed cost - cost Volume - profit analysis - calculation of break even point – Required sales for given profit, profin for given sales only. (Simple problems Only)

UNIT-IV [10 Hrs]

Fund flows – working capital – Current asset and Current liabilities – Objectives of Fund flow Statement – Calculation funds from operation – Preparation of fund flow statement. (Simple Adjustments Only)

UNIT V [10 Hrs]

Cash flow statement – Meaning – Preparation of Cash from operation – Preparation of Cash flow Statement – Sources of cash – Applications of cash.
(Simple Adjustments Only)

Text Books:

Financial and Management Accounting , T.S.Reddy, Y. Hari Prasad Reddy, Margham Pulblications, Chennai Edn., 2008.

REFERENCE:

1. Cost and Management Accounting, S.P.Iyengar, sultan chand and co.
2. Elements of Management Accounting, I.M. Pandey, Vikas Publication House 1993.
3. Bose Chandra", Fundamentals of financial management", PH1,2007.

Ram Chandra Aryasri A, Ramana Murthy, "Engineering economics and financial Accounting", TMG, 2006.

SEMESTER – III ECHR901S HUMAN RIGHTS

UNIT I

Definition of Human Rights- Nature- Content- Characteristics of Human Rights- Classification of Human Rights- Historical Development of Human Rights- Reasons for Human Rights studies today.

UNIT II

International Human Rights Norms- Humanitarian Law- Declaration Covenants- International Covenant on Economic, Social and Cultural Rights, International Covenant on Civil and Political Rights- Optional protocol to the International Covenant on Civil and Political Rights- Human Rights Treaties, Enforcement of Human Rights Law- Universal Jurisdiction.

UNIT III

International Bodies- The United Nations Organization- Human Rights Council, Other Un-treaty Bodies- Amnesty – International- Helsinkin Declaration- Regional Human Rights- Africa, America, Asia, Europe & Oceania.

UNIT IV

Contemporary Issues on Human Rights – Human Rights Violations- Children's Rights- Women's Rights- Scheduled Caste- Minority Rights- Bonded Labour and Wages. Torture- Army Custody.

UNIT V

Human Rights and the Indian Constitution: Directive Principles of State Policy- Fundamental Rights in the Indian Constitution- Fundamental Duties. Various Commissions: National Human Rights Commission- National Commission for Women- Women's Rights in India- Consumer Protection Act- Right to Information- Public Litigation Act- Right to Education.

BOOKS FOR STUDY

1. Bajwa, G.S., Human Rights in India, New Delhi, 1995.
2. Krishna Iyyar, V.R., Human Rights, Delhi, 1995.

REFERECE BOOKS

1. Jack Donnelly, Universal Human Rights in Theory and Practice, USA, 1989.
2. Chandra Sathis, International Documents of Human Rights, New Delhi, 1990.
3. Scott Davidson, Human Rights, Buckingham and Philadelphia, 1993.
4. Tony Evans, Human Rights Fifty Years, 1993.
5. Srivastava and Narayanan, United Nations on human Rights, New Delhi, 2002.
6. Symonides New Dimensions and Challenges for Human Rights, Jaipur, 2003.
7. BaxiUpendra, Future of Human Rights, London, 2003.
8. SachharRajindar, Human Rights: Perspectives and Challenges, New Delhi, 2004.

SEMESTER – III PROGRAMMING IN SUN MICROS - PCAP305S TECHNOLOGY LABORATORY

APPLICATIONS

1. Finding area and perimeter of a circle. Use Buffered reader class.
2. Determining the order of numbers generated randomly using Random class.
3. Usage of calendar class and manipulation.
4. Implementing any four Exception handling classes.
5. Implement a simple application using Synchronization in Thread.
6. Database creation for storing student mark list process(msaccess).

APPLETS

7. Working with frames and various controls.
8. Working with panel and layout.
9. Working with colors and fonts
10. Display different graphical symbols using Applet class

SEMESTER – III PROGRAMMING USING MICROSOFT - PCAP306S TECHNOLOGY LABORATORY

WINDOWS APPLICATION

1. Create splash screens.

2. To develop an application for simple notepad.

3. Create a basic form application which can be used to store the phone numbers along with the name. Create a two field table in MSACCESS and use ADO.NET to connect to this table. Application should provide provisions for adding, updating, viewing and deleting data.
4. Write a menu driven application to store the salary details of employees in an Oracle table and provide facilities for adding, updating, viewing and deleting data.

WEB APPLICATION

5. Implement an Arithmetic Operation using web service.

6. Chatting application using Session .

7. Create an application for storing and retrieving student bio data with image.

8. To develop an application for EB Bill and display information using Crystal Report viewer.

SEMESTER – IV ENTERPRISE COMPUTING PCA1016S

UNIT-I **[12 Hrs]**

Servlet overview – your first servlet – servlet chaining – session management in servlet: Session Tracking, Cookies –The Servlet API-simple database program using Servlet. RMI: Introduction to RMI-A complete example using RMI.

UNIT-II **[12 Hrs]**

An Overview of Java Beans: Software Components, Properties, Events and Methods– The Java Beans Development Kit – Persistence: Saving and Restoring in the BDK, Serialization and Deserialization. The complete example using java beans in BDK software.

UNIT-III **[12 Hrs]**

J2EE Architecture-J2EE technologies: Component Technologies, service technologies, Communication technologies.

UNIT-IV **[12 Hrs]**

EJB Session Beans – EJB Entity Beans-Developing J2EE applications using NetBeans IDE.

UNIT-V **[12 Hrs]**

Variable in Perl-Perl control structures and operators – functions and scope.

Text Books:

1. Karl Moss – Java servlets – TMH Edition.
2. Joseph O'Neil – Java Beans Programming – TMH.
3. Java Server Programming J2EE1.3 Edition,Allamaraju,Buest,Davies
4. Ed Pescho & Michele DeWolfe – Perl Developer's guide – TMH Edition.

Reference Books:

The Complete Reference-J2EE-Jim Keogh.

SEMESTER – IV SOFTWARE ENGINEERING - PCA1017T

UNIT - I: **[12 Hrs]**

The Product and the Process: - The evolving Role of Software, Software: Software Characteristic, Software Components, Software Applications, Process Methods and tools, The Software Process, Software Process Models, The Linear Sequential Model, The Prototype Model, The RAD Model, Evolutionary Software Process Models: The Incremental Model, The Spiral Model, The Component Assembly Model, The Concurrent Development Model, The Formal Methods Model, Fourth Generation Techniques, Managing Software Projects: - The Problem, The Process, Software Measurement, Resources, Empirical Estimation Models

UNIT - II: **[12 Hrs]**

Risk Management: - Software Risks, Risk Identification, Risk Projection, Risk Mitigation monitoring and Management, The RMMM Plan, Defining task set for software projects, Quality Concepts, Software Quality Assurance, Software Reviews, Statistical Quality Assurance, Software Reliability, Software Configuration Management, The SCM Process, Identification of Objects in The Software Configuration, Version Control, Change Control,

UNIT - III: **[12 Hrs]**

Computer Based system, Information Engineering, Information Strategy Planning, Business Area Analysis, Product Engineering, Modeling the System Architecture, System Modeling and Simulation, Communication techniques, Analysis Principles, The elements of Analysis Model, Data Modeling, Functional Modeling And Information Flow, The Mechanics of Structured Analysis, The Data Dictionary

UNIT - IV: **[12 Hrs]**

The Design Process, The Design Principles, Design Concepts, Effective Modular Design, The Design model, Architectural Design Process, Interface Design, Procedural Design.

UNIT - V: **[12 Hrs]**

Design of Real-Time Systems: Real-Time Systems, Software Testing Fundamentals, White Box Testing, Basic Path Testing, Control Structure Testing, Black Box Testing, Unit Testing, Validation Testing, System Testing, Computer-Aided Software Engineering: What is Case?, Building Blocks for Case, A Taxonomy of Case Tools, The Case Repository.

Text Books:

1. R. S. Pressman – “Software Engineering” – Fourth Edition - McGraw Hill International edition – 1997.
2. Richard Fairley – “Software Engineering: Design, Reliability and Management” – Tata McGraw Hill edition –1983.

Reference Books:

1. Sommerville I. – “Software Engineering” - 5th Edition, Addison Wesley, 1996.
2. C. Ghezzi, M. Jazayeri and D. Mandrioli - “Fundamentals of Software Engineering” - Pearson Education.

SEMESTER – IV DATA MINING AND WAREHOUSING PCA1018T

UNIT I : **[15 Hrs]**

Fundamentals : Relation to Statistics – Databases – Data Mining Functionalities –Steps in Data Mining Process – Architecture of a Typical Data Mining Systems– Classification of Data Mining Systems – Overview of Data Mining Techniques.

UNIT II: **[15 Hrs]**

Data preprocessing and association rules: Data Preprocessing – Data Cleaning – Integration – Transformation – Reduction – Discretization Concept Hierarchies – oncept Description Data Generalization and Summarization Based Characterization – Mining Association Rules in Large Databases.

UNIT III : **[15 Hrs]**

Predictive modeling: Classification and Prediction Issues Regarding classification and Prediction – Classification by Decision Tree Induction – Bayesian Classification – Other Classification Methods – Prediction –Clusters Analysis – Types of Data in Cluster Analysis – Categorization of Major Clustering Methods – Partitioning methods-Hierarchical methods.

UNIT IV : **[15 Hrs]**

Data warehousing : Data Warehousing Components – Multi Dimensional Data Model – Data Warehouse Architecture – Data Warehouse Implementation – Mapping the Data Warehouse to Multiprocessor Architecture – OLAP – Need – Categorization of OLAP Tools.

UNIT V : **[15 Hrs]**

Applications: Applications of Data Mining – Social Impacts of Data Mining – Tools – An Introduction to DB Miner – Case studies – Mining WWW – Mining Text Databases – Mining Spatial Databases.

Text Book:

1. Jiawei Han, Micheline Kamber, "Data Mining Concepts and Techniques", Morgan Kaufmann Publishers, 2002.

Reference Books:

1. Alex Berson, Stephen J Smith, “Data Warehousing, Data Mining & OLAP”, Tata Mcgraw Hill, 2004.
2. Ralph Kimball, "The Data Warehouse Life Cycle Toolkit", John Wiley & Sons Inc., 1998.
3. Sean Kelly, "Data Warehousing In Action", John Wiley & Sons Inc., 1997.

SEMESTER – IV STATISTICAL AND NUMERICAL METHODS PCA1019Q

UNIT – I

Introduction to Statistics. Descriptive measures: Mean, Median, Standard deviation, Variance and Coefficient of Variation. Correlation: Karl Pearson's Coefficient of Correlation, Spearman's rank Correlation Coefficient. Simple Regression equations.

UNIT – II

Random variables and distribution functions (Definitions only). Discrete distributions: Binomial and Poisson (Derivations of Mean, Variance and m.g.f). Continuous distributions: Normal(Characteristics and m.g.f) . Exponential distributions (Derivations of Mean, Variance and m.g.f).

UNIT – III

Tests of significance (small samples) based on t, F and χ^2 distributions with respect to mean, variance and correlation coefficient.

UNIT – IV

Interpolation: Lagrange's, Newton's forward and backward formulae. Numerical differentiation: Newton's Forward and Backward methods (problems only).

UNIT –V

Numerical integration: Quadrature formula for equidistant ordinates. Trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8 rule and Weddle's rule (Simple problems only).

Text Books:

1. "Fundamentals of Mathematical Statistics" (11th edition – 2002), Gupta. S. C. and Kapoor. V. K., Sultan Chand & Sons, New Delhi.
2. "Numerical Methods" (1995), Singaravelu. A., Meenakshi Agency, Chennai.

Reference Books:

1. "Statistical Methods" (32nd edition - 2004), Gupta. S. P., Sultan Chand & Sons, New Delhi.
2. "Numerical Methods" (3rd revised edition – 2009), Kandasamy. P,Thilagavathy.K and Gunavathi.K , S.Chand & Company Ltd, New Delhi.

SEMESTER – IV PRINCIPLES OF COMPILER DESIGN EPA1020

UNIT-I: **[12 Hrs]**

Introduction: Introduction on the phase of the Complier – Lexical Analysis – Regular Expression – Non-Deterministic Automaton - Deterministic Automaton - Equivalent to NFA's – Minimizing the state of DFA - Implementation of lexical analyzer

UNIT-II: **[12 Hrs]**

Syntax Analysis: Top Down Parsing concepts – Recursive Decent Parsing – Predictive Parser – Bottom up Parsing Concepts – Handle pruning – Shift Reduce parsing – LR parser

UNIT-III: **[12 Hrs]**

Code Generation: Intermediate code generation – Syntax directed definition - Construction of syntax tree – Top down Translations – Bottom up evaluation of inherited attributes – Type checking – Overloading of function and operators

UNIT-IV: **[12 Hrs]**

Storage Organization: Storage organization – Storage Allocation Strategy – Parameter passing – Symbol table – Dynamic storage allocation – Intermediate language – representation of declaration – Assignment statement – Boolean Expression

UNIT-V: **[12 Hrs]**

Code Generation and Optimization: Design of code generators – Runtime Storage management – Basic Blocks & flow graphs – Register allocation and assignment – DAG representation of basic blocks- peephole optimization – code optimization – the principle codes of optimization – optimization of basic blocks – global dataflow and Analysis loop optimization

Text Books:

1. Alfred Aho, Ravi Sethi, Jeffy D.Ullman – Compliers: Principle Techniques and Tools – Pearson Publication 2006
2. Alfred V. Aho, Jeffrey D. Ullman - Principles of Compiler Design, Pearson Publication 2005

Reference Books:

1. Keith D.Cooper, Linda Torczon – Engineering a Compiler – Morgan Kaufmann Publication 2004
2. Randy Allen, Ken Kennedy – Optimizing Compilers for Modern Architecture - Morgan Kaufmann Publication 2004

SEMESTER –IV ENTERPRISE COMPUTING PCAP407T LABORATORY

Objective:

To help the students to apply the concepts Enterprise Computing in real time applications

1. Write a program to implement chatting application.
2. Implementing application using TCP/IP.
3. Write a program to implement simple Bio-Data application using servlets.
4. Write a program to implement student mark list using servlets with database.
5. Write program to implement Armstrong Number using RMI.
6. Write a program to display the Rectangle symbol using properties in a Bean Box.
7. Write a program to display factorial number using session bean-stateless.
8. Displaying Electricity Bill Information using Entity Beans with database.
9. Implement an Arithmetic operation using pearl programming.

SEMESTER – IV DATA MINING LABORATORY - PCAP408T

Objective:
To enable the students to understand the utility of Data Mining Tools.

1. Data Cleaning
2. Integration
3. Transformation
4. Reduction
5. Association
6. Discretization
7. Generalization and Summarization
8. Classification
9. Prediction
10. Clustering