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


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]


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]


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:

Reference Books:
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:

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 - PCA704T

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.

UNIT – II: [12 Hrs]
Files and protection: File concept-Access Methods-Directory Structure-Protection

UNIT – III: [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 – IV: [12 Hrs]
Storage Management: Swapping – Contiguous Memory Allocation-Paging - Segmentation -Virtual Memory - Demand paging - Page replacement and algorithms.

UNIT – V: [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.

Text Books:

Reference Book:
SEMESTER – I  PRINCIPLES OF PROGRAMMING - EPCA705S  

LANGUAGES

UNIT – I:  

UNIT - II:  
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 coroutines, Tasks etc.

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

UNIT - IV:  

UNIT - V:  
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
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
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.
12. Sorting & Searching
   a) Insertion sort
   b) Bubble sort
   c) Selection sort
   d) Linear search
   e) Binary search
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
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]

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() 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]

Text Books:

Reference Books:
SEMESTER – II   DESIGN AND ANALYSIS OF ALGORITHM - PCA807S

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]

UNIT - II: [15 Hrs]

UNIT - III: [15 Hrs]

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:

Reference Books:
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]

UNIT-2: [15 Hrs]

UNIT-3: [15 Hrs]

UNIT-4: [15 Hrs]
Three dimensional concepts: – 3D transformations – 3D viewing.

UNIT-5: [15 Hrs]

Text Books:

Reference Books:
UNIT-I: **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-NUL 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: **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: **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-V: **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


Objective:

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

UNIT-I: [12 Hrs]

UNIT-II: [12 Hrs]

UNIT-III: [12 Hrs]

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:

Reference Book:
Mohammad Rafiguzzaman - “Microprocessor and microcomputer based system Design” - Universal Bookstall, 1990.
SEMESTER – II FUZZY LOGIC SYSTEM

UNIT – I: [12 Hrs]


UNIT – II: [12 Hrs]


UNIT- III: [12 Hrs]


UNIT – IV: [12 Hrs]

UNIT- V: [12 Hrs]


Text Books:
1. George J. Klir & Bo Yuan, "Fuzzy Sets And Fuzzy Logic Theory And Applications.

Reference Books:

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.
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.
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.
4. Displaying Data from Multiple Tables.
5. Writing Sub queries
6. Creating PL\SQL blocks.
7. Handling Exceptions
8. Creating Stored procedures, functions and packages
9. Working with Cursors.
10. Creating Triggers.
11. Working with Abstract Data Types
   i) Types
   ii) Object Views
   iii) Methods
   iv) Nested Tables
   v) Varying arrays