UNIT - I: Fundamentals of Computers:

Introduction to Computer, Memory, Main Memory, Secondary Memory, Operating system, Types of Operating systems, Introduction to DOS, Introduction to Windows, Internet Explorer, Windows Explorer – Types of Programming Languages. 

12 hrs.

UNIT - II: MS Word and MS Power Point:


Power Point, Creating Presentations, Power Point Transition and build effects, Printing presentation elements. 

14 hrs.

UNIT - III: MS Excel and MS Access:

MS Access: Creating a Simple Database and Tables, Forms, Queries and Dynasets, Printing Reports, Relational Databases, Relational Types.

12 hrs.

UNIT - IV: MS Excel:


14 hrs.

TEXT BOOKS:


REFERENCE BOOKS:

C PROGRAMMING

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UNIT - I: C Fundamentals:

C Character Set, Identifiers and Key Words under ANSI C. Data Types, Constants (int, float, double, char, Qualifiers, long, short, unsigned and signed), Escape sequences (like \n, b etc.), Arithmetic expressions and different operators, Pre-processor directives, Symbolic constants, Comments, sizeof.

14 hrs.

UNIT - II: Loop Control Structure:

The for statement, Nested for Loop, for loop variants, the while statement, Increment/decrement operators, Use of Break and Continue, the do-while loop.

12 hrs.

UNIT - III: Decision and Case Control Structure:

If statement, if-else construct, use of logical operators and Compound Relational Tests, Nested if statements, The else if construct, the relational operators, the conditional expression (ternary) operator, The switch statement with or without break.

14 hrs.

UNIT - IV: Arrays:

Declaration, Referring individual elements, Entering data into an array, reading data from an array, Array Initialization, Bounds checking, Passing array elements to a function, Passing array to a function.

12 hrs.

TEXT BOOK:

1. Balguruswamy, “Programming in ANSI C”, TATA Mc GRAW HILL.

REFERENCE BOOKS:

1. H.Schidt “Turbo C/C++ - The Complete Reference”
2. S.Kochan, “Programming in C.”
3. H.Schidt, “Born to code in C.”
6. Agarwal, “Programming in ANSI C.”
UNIT - I: Introduction:
Introduction; An example; Characteristics of Database approach; Actors on the screen; Workers behind the scene; Advantages of using DBMS approach; A brief history of database applications; when not to use a DBMS. Data models, schemas and instances; Three-schema architecture and data independence; Database languages and interfaces; The database system environment; Centralized and client-server architectures; Classification of Database Management systems.  

UNIT - II: Entity-Relationship Model:
Using High-Level Conceptual Data Models for Database Design; An Example Database Application; Entity Types, Entity Sets, Attributes and Keys; Relationship types, Relationship Sets, Roles and Structural Constraints; Weak Entity Types; Refining the ER Design; ER Diagrams, Naming Conventions and Design Issues; Relationship types of degree higher than two.

UNIT - III: Relational Model and Relational Algebra:
Relational Model Concepts; Relational Model Constraints and Relational Database Schemas; Update Operations, Transactions and dealing with constraint violations; Unary Relational Operations: SELECT and PROJECT; Relational Algebra Operations from Set Theory; Binary Relational Operations : JOIN and DIVISION; Additional Relational Operations; Examples of Queries in Relational Algebra; Relational Database Design Using ER- to-Relational Mapping.

UNIT - IV: SQL - 1:
SQL Data Definition and Data Types; Specifying basic constraints in SQL; Schema change statements in SQL; Basic queries in SQL; More complex SQL Queries.

TEXT BOOKS:

REFERENCE BOOKS:
**VISUAL BASIC (VB)**

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**UNIT – I: Visual Programming:**


12 hrs.

**UNIT - II:**

Visual Basic’ Declaring Variables, Types Of Variables, Converting variables Types, User Defined Data Types, Constants, and Array. Control Flow Statements, Loop Statements

14 hrs.

**UNIT - III:**

The Appearance of Forms, the Start-up Form, Designing Menus, The Menu Editors, Programming Menu Commands Drag & Drop operation.

14 hrs.

**UNIT - IV: Working With Forms:**


12 hrs.

**TEXT BOOKS:**


**REFERENCES:**

ELECTIVE – I
E-COMMERCE

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UNIT – I:


UNIT – II:

**Network Infrastructure:** LAN, Ethernet (IEEE 802.3), WAN, Internet, TCP/IP reference model, Domain names, Internet Industry Structure, FTP applications, Electronic mail, History of WWW. HTTP, Web Browsers, HTML, Simple exercises in HTML, Common Gateway Interface. **13 hrs.**

UNIT - III:


UNIT - IV:


**TEXT BOOK:**

**REFERENCE BOOKS:**
UNIT - I: A Survey Of Computer Graphics:


12 hrs.

UNIT – II: Output Primitives:


12 hrs.

UNIT- III: Attributes Of Output Primitives:

Line Primitives, Curve Primitives, Colors And Gray Scale Levels, Area Fill Attributes, Character Attributes.

Two Dimensional Geometric Transformations: Basic Transformations, Matrix Representation And Homogeneous Coordinates, Composite Transformations.

16 hrs.

UNIT - IV: Two Dimensional Viewing:

The Viewing Pipeline, Viewing Co-Ordinate Reference Frame, Window To View Port Co-Ordinate Transformations, Clipping Operations, Point Clipping.

12 hrs.

**TEXT BOOK:**


**REFERENCE BOOK:**

DATA STRUCTURES

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UNIT – I: Pointers:

Pointers: Concept, pointer variables, Accessing variables through pointers, pointer declaration and definition of pointer variables, Pointer and function, pointer to pointers, Compatibility, Lvalue and Revalue, Array and pointer, pointer arithmetic and arrays, passing an array to a function, Understanding complex declaration, Memory allocation function, Array of pointers. 12 hrs.

UNIT – II:

Introduction to concept of Data structures, Overview and Implementation of Data Structures.

Stacks: Stack representation, Operation on stack, Application of stack, Conversion of expression precedence. 12 hrs.

UNIT – III: Recursion:

Recursion: Recursive definition, How recursion works, Fibonacci series, Tower of Hanoi problems.

Queue: Definition of queue, Operations on queue, Application of Queue, Types of queue, Double ended queue, Circular queue, priority queue. 14 hrs.

UNIT - IV:

Lists: Definition of Linked list, Singly linked list, Operation on singly linked list.

Trees: Binary tree, representation of binary tree, Operation on binary tree, Application of Binary tree. 12 hrs.

TEXT BOOKS:


REFERENCES:

2. Robert Kruse and Bruce. Lenug, “Data structures & program design in C”, Pearson Education.
ARTIFICIAL INTELLIGENCE

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UNIT - I: What Is Artificial Intelligence?:

The AI Problem, The Underlying Assumptions, What Is An AI Technique? The Level Of The Model, Criteria For Success. 12 hrs.

UNIT - II: Problems, Problem Spaces And Search:


UNIT - III: Heuristic Search Techniques:

Generate And Test, Hill Climbing, Best First Search, Problem Reduction, Constraint Satisfaction, Means –Ends Analysis. 12 hrs.

UNIT - IV: Knowledge Representing Issues:


TEXT BOOK:

1. Elaine Rich, Kevin Knight, “Artificial Intelligence”, Tata Mc-GRAW HILL

REFERENCE BOOKS:

UNIT - I: Neural Dynamics – Activations And Signals:

Neurons As Functions, Signal Monotonicity, Biological Activations And Signals, Neuron Field, Neuron Dynamical System, Common Signal Function.  

UNIT- II: Neural Dynamics – Activations Models:


UNIT - III: Synaptic Dynamics – Unsupervised Learning:

Learning As Encoding, Change And Quantization, Four Unsupervised Learning Laws, Probability Spaces And Random Processing, Stochastic Unsupervised Learning Stochastic, Competitive Learning.

UNIT - IV: Synaptic Dynamics And Supervised Learning:

Supervised Function Estimation, Supervised Learning As Operant Conditioning, Supervised Learning As Stochastic Pattern Learning With Known Class Membership And As Stochastic Approximation.

TEXT BOOK:

1. *Bart Kosko*, “Neural Networks And Fuzzy Systems - A Dynamical Systems Approach To Machine Intelligence”, PHI (L996).

REFERENCES:

2. *Stamatios V. Kartalopoulos*, “Understanding Neural Networks And Fuzzy Logic”, PHI
### C PROGRAMMING LAB PROGRAMS

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### VISUAL BASIC (VB) LAB PROGRAMS

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OBJECT ORIENTED PROGRAMMING
WITH C++

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UNIT - I: Principles Of Object Oriented Programming:

UNIT - II:
Beginning With C++: What is C++? Applications of C++, Structure of C++ program, Creating A Source File, Compiling and Linking, Tokens, Keywords, Identifiers and Constants, Data Types. 12 hrs.

UNIT - III:
Class and Objects: Introduction to Classes and Objects. Member Functions and Member data, Nesting of Member Functions, Private Member Functions, Arrays within a Class, Memory Allocation for Objects, Static Data Members, Static Member Functions, Arrays of Objects. 12 hrs.

UNIT - IV:

TEXT BOOK:

REFERENCE BOOK:
SOFTWARE ENGINEERING

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UNIT - I: Introduction:
what is software, Software Engineering, Software process, What is a software Process Model, Costs of Software Engineering Attributes of good Software. 10 hrs.

UNIT - II: Socio Technical Systems:

UNIT - III: Software Processes:

UNIT - IV: Project Management:

TEXT BOOK:

REFERENCE BOOKS:
COMPUTER NETWORKS

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UNIT - I: Introduction of computer networks:
what is Computer Network, Network Goal/Motivations, Applications of Networks, Network Structure, Topology, Classification of Networks, OSI Reference Model. 10 hrs.

UNIT - II:

UNIT - III: Multiple access:
Random Access, ALOHA, Carrier Sense Multiple Access (CSMA), Carrier Sense Multiple Access With Collision detection (CSMA/CD), Carrier Sense Multiple Access With Collision Avoidance(CSMA/CA). 15 hrs.

UNIT - IV: Bluetooth:

TEXT BOOKS:

REFERENCE BOOKS:
JAVA AND INTERNET PROGRAMMING

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UNIT - I:

History and design features of JAVA, Advantages of Java compared to CPP, how java works, basics of JAVA, Applications and Applets, using the tools in JDK, java doc, java, jdb etc. JAVA Language keywords, Constants, variables and Data Types. Operators and Expressions.  

UNIT - II:

Conditional Statements, branching and Looping, Labeled Loops Statement, Jump statements: Break, Continue, and Return. Arrays and Strings-Creating an Arrays, one and two Dimension, String Array. 

UNIT - III:

Classes, Objects and Methods Defining a class, adding variables and Methods, creating Objects constructors, class inheritance, Basics types, using super, multi level hierarchy, abstract and final classes, object class. 

UNIT - IV:

Packages and interfaces, Access protection, Extending interfaces, packages. Exception Handling, Fundamentals exception types, uncaught exceptions, throw and try catch, blocks, final statements. Multithreading Fundamentals, Java Thread model priorities, synchronization, messaging, thread class.

TEXT BOOK:


REFERENCES:

UNIT - I: Data types:

Properties of type and objects, data objects, Variables and Constants, Data types, Specification and Implementations of elementary data types, declaration, Type checking and type conversion.  

UNIT - II:

Scalar data types, Structured data types, Vectors and arrays, records, lists, Character string, files input, input – output

UNIT - III: Sequence Control:

Implicit and Explicit sequence control, Sequencing with Arithmetic expressions, Sequence control between statements.

UNIT - IV: Subprogram Control:

Subprogram sequence control, attributes of data control, shared data in subprograms, Advances in language design, Comparative study of Programming languages.

TEXT BOOK :


REFERENCES :

2. Ellis Horowitz, “Fundamentals of Programming Languages”, Galgotia Publication
OPERATING SYSTEM

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UNIT - I: Introduction:
what is operating, system computer, system operation process management, memory management, storage management, File system management, mass storage management. 10 hrs.

UNIT - II: System structure:
Operating system services, system programs, operating system Structure, simple structure. 12 hrs.

UNIT - III: Process concepts & deadlock:
The process, process stste, process control Block, Deadlock characterization, Resource –allocation Graph. 12 hrs.

UNIT - IV: Memory management:
Contiguous memory Allocation, memory` mapping & protection, memory Allocation, Fragmentation. 18 hrs.

TEXT BOOK:

REFERENCE BOOKS:
# C# Programming and .NET Concept

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**UNIT - I: The Philosophy of .NET:**


**12 hrs.**

**UNIT - II: Building C# Applications:**


**12 hrs.**

**UNIT - III: C# Object-Oriented Programming with C#:**


**18 hrs.**

**UNIT - IV: Object-Oriented Programming with C#:**

Formal Definition of the C# Class, Definition the “Default Public Interface” of a Type, Recapping the Pillars of OOP, The First Pillars: C#’s Encapsulation Services, Pseudo-Encapsulation: Creating Read-Only Fields, The Second Pillar: C# Inheritance Supports, Keeping Family Secrets: The “Protected: Keyword, Nested Type Definitions Using Visual Studio.NET.

**10 hrs.**

**TEXT BOOK:**


**REFERENCE BOOKS:**

SYSTEM SOFTWARE

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UNIT - I: Introduction:

System Software And Machine Architecture, SIC, Traditional (CISC) Machines, RISC Machines.  
12 hrs.

UNIT - II: Assemblers:

Basic Assembles Functions, Machine Dependent Assembler Features, Machine Independent Assembler Features, Assembler Design Options, Implementation Examples.  
14 hrs.

UNIT - III: Loaders And Linkers:

14 hrs.

UNIT - IV: Macro Processors:

Basic Macro Processor Functions, Machine Independent Macro Processor Features, Macro Processor Design Options, Implementation Examples.  
12 hrs.

TEXT BOOK:


REFERENCE BOOK:

OPERATIONS RESEARCH

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UNIT - I: THEORY OF PROBABILITY:

Sample Space Events, Classical & Axiomatite Definition Of Probability, Condition Probability, Addition Multiplication & Total Probability Theorems, Ayes Theorem.


UNIT - II:

Canonical & Standards Form Of LLP, Graphical Method; Standard LLP & Basic Solution. Fundamental Theorem Of LLP, Simplex Algorithm, Big-M Method. 12 hrs.

UNIT - III: CONCEPT OF DUALITY:

Formation Of Dual LLP. Duality Theorem, Advantage Of Duality Dual Simplex Algorithm. 12 hrs.

UNIT-IV: TRANSPORT PROBLEM:

Introduction, Transport Problem, Loops In Transportation Table, Method For Finding Initial Basic Feasible Solution. Test For Optimality. Unbounded Transport Problem. 14 hrs.

TEXT BOOK:


REFERENCES:

C++ AND JAVA LAB

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P.G.D.C.A 2.6: PROJECT WORK

Individual project to be carried out under the supervision of the guide in the Department.
Software to be used as front end: VB/C++/JAVA.
Software to be used as back end: Oracle/SQL/MS Excess/Visual Foxpro.
Any other software/Hardware projects of practical relevance may also be encouraged.