



Bhagat Phool Singh Mahila Vishwavidyalaya, Haryana B.E./B.Tech ECE Sem 1 syllabus

# **Programming for Problem Solving**

### Unit - I

Introduction to Programming (4 lectures)

Introduction to components of a computer system (disks, memory. processor, where a program is stored and executed operating system, compilers etc.) - (I lecture). Idea of Algorithm: steps to solve logical and numerical problems. Representation of Algorithm: Flowchart/ Pseudocode with examples. (1 lecture) From algorithms to programs: source code, variables (with data types) variables and memory locations. Syntax and Logical Errors in compilation. object and executable code lectures) Arithmetic expressions and precedence (2 lectures)

#### Unit - 2

Conditional Branching and Loops (6 lectures)

Writing and evaluation of conditionals and consequent branching a lectures) Iteration and loops (3 lectures).

#### Unit - 3

Arrays (6 lectures)

Arrays (1-D, 2-D). Character arrays and Strings

# Unit - 4

Basic Algorithms (6 lectures)

Searching. Basic Sorting Algorithms (Bubble, Insertion and Selection). Finding roots of equations. Notion of order of complexity

through example programs (no formal definition required)

### Unit - 5

Function (5 lectures)

Functions (including using built in libraries). Parameter passing in functions, call by value. Passing arrays to functions: idea of call by reference

### Unit - 6

Recursion (4-5 lectures)

Recursion, as a different way of solving problems. Example programs such as Finding Factorial. Fibonacci series. Ackerman function etc. Quick sort or Merge sort.

#### Unit - 7

Structure (4 lectures)

Structures. Defining structures and Array of Structures Pointers (2 Lectures) idea of pointers. Defining pointers. Use of pointers I selfreferential structures, notion of linked list (no implementation)

#### Unit - 8

File handling (only if time is available, otherwise should be done as part of the lab)

#### **Suggested Text Books:**

(i) Byron Gottfried, Schaum's Outline Programming with , McGrawHill

(ii) E. Balalguruswamy, Programming in ANSI C, Tata McGraw-Hill

# **References:**

Brian W.Kernighan and Dennis M.Ritchie The C Programming Language, Prentice Hall of India

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