CSH102: Programming Using C	
Teaching Scheme Lectures: 3 hrs/Week Tutorials: 1 hr/Week Credits: 4	**Examination Scheme** Class Test -12Marks Teachers Assessment - 6Marks Attendance – 12 Marks End Semester Exam – 70 marks

Prerequisite: - Boolean Algebra, Number System and basic mathematical formulas

Course Objectives:

1. To develop the programming skills of students
2. To know the principles of designing structured programs
3. To write basic C programs using
   - i) Selection statements
   - ii) Repetitive statements
   - iii) Functions
   - iv) Pointers
   - v) Arrays
   - vi) String
   - vii) File handling

Detailed Syllabus

Head
Department of Computer Applications
Faculty of Computer Applications
...iversity, Bareilly

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Invertis University, Bareilly (UP)

UNIT I (8 Hours)

Introduction & Basic Concepts of 'C' Programming Language: History of 'C' Programming, Assembly language, Machine Language, Editors, Translators (Compiler, Interpreter, Assembler), Programming Rules, Algorithm, Flowcharts, Structure of C program, Executing the C program. C Character Set, C Keywords/Reserve words, Identifiers, Rules to form an Identifier, Variables, Constants, Types of Constants (Numeric, Character, String, Symbolic), Comments in C, Data types in C, Operators- Types of operators(Arithmetic, Relational, Logical, Unary, Assignment, Compound Assignment, sizeof(), Conditional/Ternary, Bitwise) , Precedence and Associativity, Comments, Concept of header files, Types of problems(Sequential, Selective & Repetitive).

UNIT II (10 Hours)

Introductions to Control structures: Control statements- if, if-else, if-else ladder, Nesting of if, break, continue, Switch statement, use of break and default with switch, goto, exit. Program Loops and Iteration: Loops/Iteration, types of loops, for, Nesting of for, while, do-while. Difference b/w while & do-while, break & exit, break & continue.

UNIT III (10 Hours)

Array, Structure and Union: Introductions to Arrays, Structures and Union: Array (Definition, Declaration, Initialization, characteristics), How to store values in an array, How to display values stored in an array, Sorting (Selection, Bubble, Insertion), Searching (Linear, Binary), Multidimensional arrays (Definition, Declaration, and Initialization), Pointers and arrays, Pointer and 2-d arrays, Pointer to an array, Array of Pointers, Dynamic memory allocation. Structure, Structure declaration, Declaration & Initialization of structure variable how to store values in a structure, how to access values of structure elements, Nesting of structures, Array of structure, Differentiate between array & structure, passing structure to function, passing array of structure to function, Structure pointer, Union

UNIT IV (10 Hours)

Functions and Macros: Function (Declaration, Definition, Calling), Function Prototype, types of function, return statement, function calling methods (Call by value, call by Reference), Storage Classes, Recursion. Macro, Macro Declaration, nesting of macros, Macros with argument, Diff between macro & function.

UNIT V (8 Hours)

Strings:Strings-Definition, declaration and initialization of strings, standard library functions: strlen( ), strcpy( ), strcat( ), strcmp( ), etc. Pointer and Strings, Two Dimensional array of characters, Array of Pointers to String.

UNIT VI (10 Hours)

File Handling: File, File operations, Opening and Closing Files, File opening modes, Reading and Writing a data file, Text files Vs Binary files, Command Line Arguments(argc,argv), sprintf() & sscanf(), gets() & puts(), fgetc() & fputc(), fseek() & ftell().

Text and Reference Books

1. Rajaraman V. Fundamental of Computers
2. Ram B. Computer Fundamentals, New Age International
3. Kerninghan B.W. & Ritchie D.M. - The C Programming Language
4. Gottfried - Programming with C Schaum
5. Kanetkar Y. - Let us C
6. Balaguruswamy - Programming in C

Course Outcomes:

1. Understanding the concept and recognize the basic terminology used in computer programming.
2. Write, Compile and Debug programs in C language and use different data types for writing the programs.
3. Design programs involving decision structures, loops and functions.

Registrar
Invertis University
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