BCA107:C Programming	
Teaching Scheme Lectures: 3 hrs/Week Tutorials: 1 hr/Week Credits: 4	**Examination Scheme** Class Test -12 Marks Teachers Assessment – 6 Marks 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, control statements, loops, functions, pointers, etc.

Detailed Syllabus

UNIT I (8 Hours) **Introduction & Basic Concepts of 'C' Programming Language**: History of 'C' Programming, Assembly & Machine Languages, Editors, Translators, Programming Rules, Algorithm, Structure of C program, C Character Set, Keywords, Identifiers, Rules to form an Identifier, Variables, Constants, and types, Comments, Data types, Operators, Precedence and Associativity, Types of problems (Sequential, Selective & Repetitive).
UNIT II (10 Hours) **Control structures & Loops**: if, if-else, if-else ladder, Nesting of if, break, continue, Switch statement, use of break and default with switch, goto, exit. Types of loops. Programs
UNIT III (10 Hours) **Array, Structure and Union**: Introductions to Arrays, and Union. Operations on Array, Sorting (Selection, Bubble, Insertion), Searching (Linear, Binary), Multidimensional arrays, Pointers and arrays, Pointer and 2-d arrays, Pointer to an array, Array of Pointers, Dynamic memory allocation. Structure declaration, Operations on Structure, Nesting of structures, Array of structure, differentiate between array & structure, passing structure to function, passing array of structure to function, Structure pointer, Union, Basic operation on Union.
UNIT IV (10 Hours) **Functions and Macros**: Function declaration, definition, calling, types of function, return statement, function calling methods, Storage Classes, Recursion. Macro, Macro Declaration, nesting of macros, Macros with argument, Differences between macro & function.

Head
Department of Computer Applications
Faculty of Computer Applications
Invertis University, Bareilly (UP)

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Faculty of Computer Applications
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Bareilly

UNIT V (8 Hours)

Strings: Definition, declaration and initialization, standard library functions. 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(), Creation of user header file.

Text and Reference Books

1. Rajaraman V. Fundamental of Computers
2. Ram B. Computer Fundamentals, New Age International
3. Kernighan 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 connecting decision structures, loops and functions.
4. Understand normal and abnormal combustion phenomena in SI and CI engines
5. Understand the dynamic behavior of memory by the use of pointers
6. Use different data structures and create / manipulate basic data files and developing applications for real world problems.