

BVM ENGINEERING COLLEGE [AN AUTONOMOUS INSTITUTION]**119ES: FUNDAMENTALS OF PROGRAMMING****CREDITS - 4 (L_c, T_c, P_c : 3,0,1)****Course Objectives:**

To enhance logical thinking and to impart basic programming skills using C programming language

Teaching and Assessment Scheme:

Teaching Scheme (Hours per week)			Credits	Assessment Scheme				Total Marks
L	T	P	C	Theory		Practical		
				ESE	CE	ESE	CE	150
3	0	2	4	60	40	20	30	

Course Contents:

Unit No.	Topics	Teaching Hours
1	Introduction: Introduction of machine level, assembly level and high level languages, Idea of algorithm: steps to solve logical and numerical problems, representation of algorithm: flowchart / pseudo code with examples.	3
2	Fundamentals: Features of 'C' language, structure of a 'C' program, basic data types, constants and variables, operators and their hierarchy, arithmetic expressions and precedence, writing simple programs in 'C', concept of header files	7
3	Control Structure Of 'C': Conditional branching using <i>if – else</i> statement, variations in usage of <i>if – else</i> statement, <i>switch-case</i> , and <i>goto</i> statements; looping using <i>for</i> , <i>while</i> , and <i>do – while</i> , use of <i>break</i> and <i>continue</i> statements	6
4	Arrays and Strings: 1D and 2D arrays, character arrays and strings, library functions for manipulation of strings	7
5	Functions and Recursion: Library and user-defined function, passing parameters to functions, passing array to functions, recursion as different way of solving problems, overview of macros and pre-processors	6

Unit No.	Topics	Teaching Hours
6	Pointers and Structures: Idea of pointers, defining pointers, simple programs using pointers in 'C', pointers and arrays, calling function by value and by reference, dynamic memory allocation: <i>malloc</i> and <i>calloc</i> , structures, defining structures, array of structures, nested structures, structure as an argument to functions, structures and pointers, unions	7
7	File Handling in C: Introduction, opening, closing, and input / output operations on files, error handling during I/O operations, random access of files	3
8	Introduction to Object Oriented Programming: Procedural v/s Object oriented programming, applications of object oriented programming, characteristics of object oriented programming.	3
Total		42

List of References:

1. Balagarusamy E, "*Programming in ANCI C*", Sixth edition; Tata McGraw-Hill Publishing Company Limited, 2012
2. Gottfried B S, "*Programming with C*", Second edition; Tata McGraw-Hill Publishing Company Limited, 2006
3. Kernighan B W and Ritchie D M, "*C Programming language*" Second edition; Prentice Hall, 2006
4. Kanetkar Y. P., "*Let us C*" Fifth edition; BPB Publication, 2004

Course Outcomes (COs):

After successful completion of this course, students will be able to:

1. Explain different features (keywords, constructs, functions, pointers, etc...) of C programming language and object oriented programming language.
2. Decompose a problem into functions and synthesize a complete program using divide and conquer approach.
3. To formulate simple algorithms for arithmetic and logical problems and translate them to programs.
4. Use different features of C programming language to develop a possible programming solution to a given problem in a given domain.
5. Decipher simple C programs and determine the outputs
6. Test and execute the programs and correct syntax and logical errors