

CC121: COMPUTER PROGRAMMING

CREDITS = 5 (L=3, T=0, P=2)

Course Objective:

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

Teaching and Assessment Scheme:

Teaching Scheme			Credits	Assessment Scheme				
L	T	P		Theory		Practical		Total Marks
			ESE	CE	ESE	CE		
3	0	2	5	70	30	30	20	150

Course Contents:

Unit No.	Topics	Teaching Hours
1	<u>Introduction:</u> Basic block diagram and functions of various components of a computer, concept of hardware and software, compiler and interpreter, concepts of machine level, assembly level and high level programming, developing logic of program through flowcharts, algorithms, and pseudocode.	06
2	<u>Fundamentals:</u> Features of 'C' language, structure of 'C' program, Basic data types, constants and variables, basic operators and their hierarchy, evaluation of expressions, writing simple programs using 'C', concept of header files, basic I/O functions.	07
3	<u>Control Structure Of 'c':</u> <i>If – else</i> statement and its use in programming, variations in usage of <i>if – else</i> statement, <i>switch</i> , <i>break</i> , <i>continue</i> and <i>goto</i> statements, applications and implementation of various looping structures (i.e. <i>for</i> , <i>while</i> , <i>do - while</i>).	07
4	<u>Arrays and Strings:</u> One dimensional and multidimensional arrays and implementation of these concepts in 'C', strings and related functions.	07

Unit No.	Topics	Teaching Hours
5	<u>Functions and Recursion:</u> Concepts of functions with various types of parameters, various types of parameter passing mechanisms, recursive functions and implementation of these concepts in 'C', macros and pre-processors.	07
6	<u>Pointers and Structures:</u> Concepts of pointers and simple programs using pointers in 'C', applications of pointers, pointer and array, dynamic memory allocation: <i>malloc</i> and <i>calloc</i> , concepts of structure and its implementations. Structure as argument to functions, structures and pointers, union and its applications.	06
7	<u>File Management in C:</u> Introduction, opening, closing, and input / output operations on files, error handling during I/O operations, random access of files, command line arguments.	05
TOTAL		45

List of References:

1. Balagurusamy 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):

1. Explain different features (keywords, constructs, functions, pointers, etc...) of C programming language
2. Break-up a medium (or large) problem into smaller sub-problems so as to make it tractable for a possible solution through computer programming
3. Represent and communicate a conceived solution to a problem in a systematic way using the tools of algorithms and flow-charts
4. Use different features of C programming language to develop a possible programming solution to a given problem in a given domain
5. Decipher a given C program of simple to moderate complexity and determine the output
6. Identify syntactical and semantic errors in given C program