

PROGRAMMING FOR PROBLEM SOLVING [As Per Choice Based Credit System (CBCS) System] (Effective from the academic year 2018 -2019) SEMESTER – I/II			
Subject Code	18PPS13/23	CIE Marks	40
Number of Lecture Hours/Week	4	SEE Marks	60
Total Number of Lecture Hours	40	Exam Hours	3 Hrs
CREDITS – 4			
Course Objectives :			
<ul style="list-style-type: none"> • To familiarize with writing of algorithms, fundamentals of C and philosophy of problem solving. • To implement different programming constructs and decomposition of problems into functions. • To use and implement data structures like arrays and structures to obtain solutions. • To define and use of pointers with simple applications. 			
Module 1			Teaching Hours
Introduction to Programming: Introduction to components of a computer system (disks, memory, processor, where a program is stored and executed, operating system, compilers etc.). Idea of Algorithm: steps to solve logical and numerical problems. Representation of Algorithm: Flowchart/Pseudocode with examples. From algorithms to programs; source code, variables (with data types) variables and memory locations, Syntax and Logical Errors in compilation, object and executable code Arithmetic expressions and precedence Conditional Branching and Loops: Writing and evaluation of conditionals and consequent branching. Iteration and loops			08
Module 2			
Arrays: Arrays (1-D, 2-D), Character arrays and Strings Basic Algorithms: Searching, Basic Sorting Algorithms (Bubble, Insertion and Selection), Finding roots of equations, notion of order of complexity through example programs (no formal definition required)			08
Module 3			
Function: Functions (including using built in libraries), Parameter passing in functions, call by value, Passing arrays to functions: idea of call by reference			08
Module 4			
Recursion: Recursion, as a different way of solving problems. Example programs, such as Finding Factorial, Fibonacci series, Ackerman function etc. Quick sort or Merge sort.			08
Module 5			
Structure: Structures, Defining structures and Array of Structures Pointers: Idea of pointers, Defining pointers, Use of Pointers in self-referential structures, notion of linked list (no implementation)			08

Course Outcomes: The student will be able to :
<ul style="list-style-type: none"> • Write algorithms to simple problems involving logic. • Code the simple algorithms from the different domains such as mathematics, physics, etc. • Correct syntax and logical errors and execute the programs. • Demonstrate problem solving skills.
Question Paper Pattern:
<ul style="list-style-type: none"> • The question paper will have ten questions. • Each full Question consisting of 20 marks • There will be 2 full questions(with a maximum of four sub questions) from each module. • Each full question will have sub questions covering all the topics under a module. • The students will have to answer 5 full questions, selecting one full question from each module.
Textbooks:
<ol style="list-style-type: none"> 1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India. 2. E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill
Reference Books:
<ol style="list-style-type: none"> 1. Vikas Gupta: Computer Concepts and C Programming, Dreamtech Press 2013. 2. R S Bichkar, Programming with C, University Press, 2012. 3. V Rajaraman: Computer Programming in C, PHI, 2013. 4. Basavaraj S. Anami, Shanmukhappa A Angadi, Sunilkumar S. Manvi, Computer Concepts and C Programming: A Holistic Approach to Learning C, Seond edition, PHI India, 2010.