

Course Code	Category	L	T	P	C	I.M	E.M	Exam	
B20CS1101	ES	3	--	--	3	30	70	3 Hrs.	
PROGRAMMING FOR PROBLEM SOLVING USING C									
(Common to AIDS, CSE, ECE & IT)									
Course Objectives:									
1.	To learn about the computer systems, computing environments, developing of a computer program, Structure of a C Program and to evaluate expressions								
2.	To gain knowledge of the operators, selection, control statements and repetition in C								
3.	To learn about the design concepts of arrays, strings, enumerated structure and union types and their usage.								
4.	To understand the concepts of pointers, dynamic memory allocation and know the significance of Preprocessor.								
5.	To learn about various File I/O operations and significance of functions								
Course Outcomes:At the end of the course the students will be able to									
S.No	Outcome								KL
1.	Apply Precedence and Associativity rules to evaluate Expressions.								K3
2.	Make use of Decision Making and Looping statements to solve various problems in C								K3
3.	Illustrate the importance of Arrays and Strings and to apply various operations on them.								K2
4.	Solve various problems by making use of Structure and Union concepts								K3
5.	Design and implement programs to analyze the different pointer applications								K3
6.	Develop programs using Functions and Pointers.								K3
SYLLABUS									
UNIT-I (10 Hrs)	Introduction to Computers: Creating and running Programs, Computer Numbering System, Storing Integers, Storing Real Numbers Introduction to the C Language: Background, C Programs, Identifiers, Types, Variable, Constants, Input/output, Programming Examples, Scope, Storage Classes and Type Qualifiers. Structure of a C Program: Expressions Precedence and Associativity, Side Effects, Evaluating Expressions, Type Conversion Statements, Simple Programs, Command Line Arguments.								
UNIT-II (10 Hrs)	Bitwise Operators: Exact Size Integer Types, Logical Bitwise Operators, Shift Operators. Selection & Making Decisions: Logical Data and Operators, Two Way Selection, Multiway Selection, More Standard Functions. Repetition: Concept of Loop, Pretest and Post-test Loops, Initialization and Updating, Event and Counter Controlled Loops, Loops in C, Other Statements Related to Looping, Looping Applications, Programming Examples.								
UNIT-III (10 Hrs)	Arrays: Concepts, Using Array in C, Array Application, Two Dimensional Arrays, Multidimensional Arrays, Programming Example – Calculate Averages Strings: String Concepts, C String, String Input / Output Functions, Arrays of Strings, String Manipulation Functions String/ Data Conversion, A Programming Example – Morse Code Enumerated, Structure, and Union: The Type Definition (Type def), Enumerated Types, Structure, Unions, and Programming Application.								

UNIT-IV (10 Hrs)	Pointers: Introduction, Pointers to pointers, Compatibility, L value and R value Pointer Applications: Arrays, and Pointers, Pointer Arithmetic and Arrays, Memory Allocation Function, Array of Pointers, Programming Application. Processor Commands: Processor Commands.
UNIT-V (10 Hrs)	Functions: Designing, Structured Programs, Function in C, User Defined Functions, Inter Function Communication, Standard Functions, Passing Array to Functions, Passing Pointers to Functions, Recursion Text Input / Output: Files, Streams, Standard Library Input / Output Functions, Formatting Input / Output Functions, Character Input / Output Functions Binary Input / Output: Text versus Binary Streams, Standard Library, Functions for Files, Converting File Type.
Text Books:	
1.	Programming for Problem Solving, Behrouz A. Forouzan, Richard F.Gilberg, CENGAGE
2.	The C Programming Language, Brian W.Kernighan, Dennis M. Ritchie, 2e, Pearson
Reference Books:	
1.	Computer Fundamentals and Programming, Sumithabha Das, Mc Graw Hill.
2.	Programming in C, Ashok N. Kamthane, Amit Kamthane, Pearson.
3.	Computer Fundamentals and Programming in C, Pradip Dey, Manas Ghosh, OXFORD.
e-Resources:	
1.	https://www.geeksforgeeks.org/c-programming-language/
2.	https://www.learn-c.org/
3.	https://www.w3resource.com/c-programming-exercises/