Branch: BCA	Semester-I
Subject Code: 1102	Lecture: 04 Credit: 04
Course Opted	Core Course-1 (Theory)
Subject Title	PROBLEM SOLVING USING C

Course Objectives:

- To teach students a programming language.
- To help them learn problem solving techniques.
- To teach the student to write programs in C and to solve the problems

Course Outcomes:

Students will be able

- To develop logic which will help them to create programs in C.
- Demonstrate an understanding of computer programming language concepts.
- Design and develop computer programs, analyze, and interpret the concept of pointers, declarations, initialization, operations on pointers and their usage.
- By learning the basic programming constructs they can easily switch over to any other language in future.
- Develop applications

Module	Sr. No.	Topic and Details	No. of Lectures Assigned	Marks Weightage
UNIT- I	1.	**Introduction to problem solving :** Concept: Steps in problem solving - (Define Problem, Analyze Problem, Explore Solution), Problem solving techniques - (Trial& Error, Brain Storming, Divide & Conquer) , Algorithms and Flowcharts (Definitions, Characteristics, Advantage& Disadvantages, Symbols, Examples), Pseudo-code(Definition, Conditional statements, Loops), etc.	5	10
	2.	**Overview of programming languages:** Definition of the program, Concept- Source code, Object code, Compilation, Interpretation, Execution, Input and Output, Debugging etc., Expressions, control structures; subroutines, Storage management; scoping rules; bindings for names, Storage types: Automatic , external, register and static variables	4	8
UNIT - II	3.	**Introduction to 'C' Language** : History of C Programming , Structures of 'C' , Programming, Simple example, Basic Input/ Output, Function as building blocks. Language Fundamentals : Character set, C Tokens, Keywords, Identifiers, Variables, Constant, Data Types, Comments	4	8
	4.	**Operators** : Types of operators, Precedence and Associativity, Expression. Statement and types of statements, Built in	6	12

		Operators and function., Console based I/O and related built in I/O Function: printf(), scanf(), getch(), getchar(), putchar(),etc; Concept of header files, Preprocessor directives: #include, #define, Conditional statements and Loops		
UNIT-III	5	**Control structures** Decision making structures : If, If-else , Nested If –else, Switch, Loop Control structures : While, Do-while, For, Nested for, while, do-while loop, Jumping statements: break, continue, goto, exit.	8	16
	6	**Functions:** Definition, Basic types of function, Declaration and definition, Function call, Types of function, Parameter passing, Call by value, Call by reference, Scope of variables, Recursion, String: Declaration, string Functions, String Manipulations	6	12
	7.	**Pointers** : Introduction to pointers, Pointer notation, Pointer arithmetic, Null Pointer	3	6
UNIT-IV	8.	**Arrays:** Definition, Declaration, Initialization, Bounds checking, One-Dimensional Array, Two-Dimensional Array, Passing array to a function, pointer to Array.	6	12
	9.	**Structure and Union**: Introduction to Structure, Definition, Declaration of Structure Variables, .Dot Operator, Nested Structure, Array of Structure, pointer to structure, Introduction to Union, Difference between Structure and Union .	4	8
	10.	**File Handling**: Concept of File, Definition, File operations(create, open, read, move , write, close), File opening Mode, Closing a file, Input/output operations, Creating and reading a file, Command Line Argument.	4	8
		TOTAL	**50**	**100**

Text Book:

1. C – programming E.Balagurusamy, Tata McGray Hill, 1990

Reference Books:

1. C: The Complete Reference (Fourth Edition), Herbert Schildt, Tata McGraw-Hill Education Pvt. Ltd., 2000
2. Ramkumar and Agrawal, “Programming in ANSI C”, Tata McGraw Hill, 1996.
3. Y.P Kanetkar, “Let Us “C”, , Infinity Science Press,2008