COURSE TITLE : PROGRAMMING IN C (THEORY)
COURSE CODE : 4044
COURSE CATEGORY : B
PERIOD /WEEK : 4
PERIOD / SEMESTER :56/4
CREDITS : 4

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Programming Concepts in C	13
	TEST	1
2	Arrays	13
	TEST	1
3	Pointers and strings	13
	TEST	1
4	Functions	13
	TEST	1
	TOTAL	**56**

MODULE I

1.1.0 To apply programming concepts in C**.**

1.1.1 Demonstrate output functions and input function for a simple application.
1.1.2 Illustrate the structure of a C program with example.
1.1.3 Discuss the concept of identifiers -Variable.
1.1.4 Discuss the data types, qualifiers-long, short, double, signed, unsigned etc
1.1.5 Explain different operators.
1.1.6 Write programs to solve simple arithmetic problems.
1.1.7 Discuss the selection structures – two way and multi way.
1.1.8 Solve problems using two way and multi way selection structures (if, if .. else, switch).

MODULE II

2.1.0 To apply iterative control structures.

2.1.1 Discuss the looping(repetition) structures –entry controlled, exit controlled
2.1.2 Discuss the counter controlled loop.
2.1.3 Solve the problems using looping structures(while, do.. while, for)

2.2.0 To know about arrays.

2.2.1 Explain how one dimensional array can be created.
2.2.2 Illustrate the array operations- like insertion, deletion, searching, sorting, largest/smallest/second largest, sum/average.
2.2.3 Explain how two dimensional arrays can be created.
2.2.4 Illustrate the two dimensional array operations.

MODULE III

3.1.0 To apply Pointers and Strings.

3.1.1 Describe Pointer And Pointer Arithmetic.
3.1.2 Write programs to apply pointers.
3.1.3 Explain how strings are handled in C.
3.1.4 Write programs for string manipulations.

MODULE IV

3.2.0 To apply Functions.

3.2.1 Explain how user defined functions can be defined and used.
3.2.2 Write programs to illustrate the use of user defined functions
3.2.3 Illustrate array operations using functions
3.2.4 Differentiate call by value and call by reference
3.2.5 Illustrate array operations using pointers.
3.2.6 Describe Recursion.

COURSE CONTENTS

Module I- Programming concepts in C.

Output functions and input function for a simple application - Structure of a C program - Variables and Constants - Data types and type qualifiers (long, short, double, signed, unsigned etc) – Operators (Arithmetic, relational, logical, increment/decrement, conditional, assignment, bit wise etc) – Writing simple programs for the evaluation of arithmetic expressions.
Selection structures – two way and multi way. - Solve problems using if, if .. else and switch.

Module II- Iterative control structures and arrays

1. Looping (repetition) structures –entry controlled, exit controlled- while, do..while- Counter controlled loop – for loop – Programming using looping structures(while, do.. while, for) - Nested Looping.
2. Array - Array operations- insertion, deletion, searching, sorting, largest/smallest/second largest, sum/average, reverse the array. - Two dimensional array - two dimensional array operations- transpose of a matrix, checking the symmetric matrix, sum of elements, row sum, column sum, diagonal sum, matrix addition and matrix multiplication.

Module III – Pointers and Strings

Pointer and pointer arithmetic - Programs to apply pointers - Strings – Declaring & Initialising string variables, Reading & writing strings from variables, Comparison of two strings, String handling functions – Programs for string manipulations.

Module IV – Functions

Definition of Functions - Standard Library of C functions - Prototype of a function: Formal parameter list - Return Type - Function call - Passing arguments to a Function: call by value, call by reference - arrays as function arguments. Array operations using pointers.- Recursion.

Text Book:

1. Programming in C – Ashok N. Kamthane, Pearson education

Reference Books:

1. Programming in C -second edition – R. Subburaj, - Vikas Publishing House.