

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

**TIME SCHEDULE**

MODULE	TOPICS	PERIODS
1	Programming Concepts in C	14
2	Arrays	14
3	Pointers and strings	14
4	Functions	14
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**

### **4.1.0 To apply Functions**

- 4.1.1 Explain how user defined functions can be defined and used.
- 4.1.2 Write programs to illustrate the use of user defined functions
- 4.1.3 Illustrate array operations using functions
- 4.1.4 Differentiate call by value and call by reference
- 4.1.5 Illustrate array operations using pointers.
- 4.1.6 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.