Syllabus

This course offers the following modules:

Module 1: Getting Started with C Programming

- Audience for this Course
- Job Roles and Employment Opportunities
- Pre-requisite Knowledge and Skills
- Inspire with C Programming
- History of C
- What is C?
- Why we learn C?
- Course Objective
- Checklist for Installation
- Step by Step Installation Process
- Hello World Program

Module 2: Language Fundamentals

- The Programming Languages
- Compiler & Interpreter
- The Structure of C Programs
- Understanding Header Files
- The Main Function
- Our First C Program

Module 3: Essentials for C Programming

- Typology
- Size and Signed Qualifiers
- Variables
- Constants
- Keywords
- Comments
- Operators
- Operator Precedence
- Format Strings and Escape Sequences

Module 4: Input and Output Functions

- Standard I/O Functions
- Character I/O Functions

- String I/O Functions

Module 5: Decision and Control Flow Statements

- IF Statements
- Nested IF Statements
- The switch case and go to Statements
- The for Loop
- The while Loop
- The do...while Loop
- Working with break and continue Keywords

Module 6: Working with Arrays

- Understanding Arrays
- Un-sized Array Initializations
- Reading Array Elements
- Characters in Arrays

Module 7: String Manipulations

- Understanding and Comparing Strings
- Copying and Finding Length of a String
- String Reverse and Concatenation
- String Conversion and Searching a String

Module 8: Functions

- User-defined Functions
- Using Return Keyword
- Function with Return Type and without Arguments
- Function without Return Type and with Arguments
- Function with Return Type and Arguments
- Arrays in Functions
- Recursion
- Command Line Arguments

Module 9: Storage Classes

- Understanding Storage Classes
- External Variables
- The Static and Register Variables

Module 10: Pointers

- What is Pointer?
- Pointer Conversions
- Arrays in Pointers
- Function Pointers
- Call by Value and Call by Reference
- Dynamic Memory Allocation
- The calloc function

Module 11: Preprocessor

- Macro Expansion
- File Inclusion
- Conditional Compilation

Module 12: Structures and Unions

- Understanding Structures
- Nested Structures
- Arrays in Structures
- Functions in Structures
- Pointers in Structures
- Understanding Unions

Module 13: File Management in C

- Understanding Files
- File Operations
- Writing and Reading Characters
- FWriting and Reading Strings
- Structures in Files
- Using fscanf and fprintf functions
- Understanding fseek and ftell Functions
- Copying Files
- Renaming and Removing Files

Module 14: Working with Mathematical Functions & Time Utility

- The ABS and SQRT Functions
- Using ceil and floor Functions
- Understanding pow and pow10 Functions
- Working with Logarithmic Functions
- Using the Time Function
- Working with localtime and asctime Functions
- Understanding mktime Function

- Exploring mktime function

Module 15: Character Handling Functions

- Character Testing Functions
- Character Conversion Functions
- Convert String to Double
- Working with atoi Function
- Understanding the ATOL Function

Module 16: Sorting

- An Overview of Sorting
- Bubble Sort
- Quick Sort
- Merge Sort
- Selection Sort
- Shell Sort
- Heap Sort
- Insertion Sort

Module 17: Advanced Types

- The typedef keyword
- Understanding Enumerations
- Type Conversions

Module 18: Linked Lists

- Understanding Linked Lists
- Working with Single Linked List
- Search a Node in a Singly Linked List
- Deleting First Node from a Simple Linked List
- Understanding Doubly Linked Lists
- Reverse the Doubly Linked List
- Insert a node in the doubly linked list
- Delete a node from a double linked list
- Concatenating Two Linked Lists

Module 19: Advanced Data Structures

- Understanding Stack
- Updating Stack using Arrays
- Using the Queue
- Insert an Element in a Queue

- Understanding Circular Queues
- Understanding Trees
- Binary Trees
- Searching in a Binary Tree

Duration

120 Hours to be covered in either 2 months (8 weeks) or 3 months (12 weeks).

Options	Type	Weeks	Days per Week	Hours per Day	Total Hours
Option 1	2 Month Part Time	8	5	3	120
Option 2	2 Month Part Time	8	6	2.5	120
Option 3	3 Month Part Time	12	5	2	120

1. Additionally, learner should have completed Section 4 (**i.e. Section 4** will comprise of **SUPWs i.e. Socially Useful and Productive Work in form of Assignments**)
   o Learner has to complete and upload **minimum 2 out of 5 Assignments**

Eligibility

MS-CIT passed preferred.

Fees

Installment Mode :

Mode	Total Fee (Rupees)	1st Installment (Rupees)	2nd Installment (Rupees)	3rd Installment (
Single Installment	4300	-	-	
Two Installment	4500	2250	2250	