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| **C-Programming Language Course Details** |  |

**Syllabus:**

**Introduction to Software and Classification**  
• System Software  
• Types of Operating System  
• Types of Programming Languages  
• Translators  
• Desirable Program Characteristics  
• Programming Techniques

**Introduction to C**  
• History of C Language  
• Characteristics of C language  
• Flavours of C Language  
• The C character set  
• Identifiers and Keywords  
• Data types  
• Constants  
• Variables and Arrays  
• Declarations  
• Expressions  
• Statements  
• Symbolic Constants

**Operators**  
• Arithmetic Operators  
• Unary Operators  
• Relational and Logical Operators  
• Assignment Operators  
• The Conditional Operator  
• Bitwise Operators

**Standard Input and Output Functions**  
• Preliminaries  
• Library Functions  
• Single Character Input – The get char Function  
• Single Character Output – The Put char Function  
• Entering input Data – The scanf Function  
• More about the scanf Function  
• Writing Output Data – The Printf Function  
• More About the printf Function  
• The gets and Puts Function  
• Interactive (Conversational) Programming

**Preparing and Running a Complete C Program**  
• Planning a C Program  
• Writing a C Program

• Entering the Program into the Computer  
• Compiling and Executing the Program  
• Error Diagnostics  
• Debugging Techniques

**Control Structures**  
• Branching : The Decision Control Structure  
• The if –else statement  
• Nesting of if …Else statement  
• Switch statement

**Control Statements**  
• Unconditional Uncontrolled Statements  
• Conditional Controlled Statements  
• Conditional Uncontrolled Statements

**Low Level Programming**  
• Number Systems  
• Bitwise Operators  
• Bit Fields  
• Applications of Binary Systems

**Functions**  
• Introducing Functions  
• Defining a Function  
• Accessing a Function  
• Function Prototype  
• Passing Arguments to a Function  
• Recursion  
• Nested Functions  
• User Defined Header Files  
• Function Calls

**Memory Organization**  
• Understanding Memory Concepts  
• Storage Classes  
• Automatic Variables  
• External (Global) Variables  
• Static Variables  
• MultiFile Programs  
• Register variables

**Pointers**  
• Fundamentals  
• Introduction to Memory  
• Pointer Declarations  
• Operations on Pointers  
• Void Pointers  
• Passing Pointer to Functions  
• Function returning pointers  
• More about Pointer   
• Passing Pointer Parameters to Functions  
• Call by References

**Arrays**  
• Introduction  
• Array Declaration  
• Array initialization  
• Single Dimension Arrays  
• Pointer and Arrays (Single Dimension)  
• Array of Pointers  
• Initialization a 2-Dimensional Arrays  
• Three Dimensional Arrays  
• Working with Pointers and Multidimensional Arrays

**Strings**  
• Introduction to Strings  
• Standard String Library Functions  
• Arrays and Strings  
• Pointer and Strings  
• Function and Strings  
• Dynamic Memory Allocation

**Introduction To Macros**  
• Macro Substitution  
• Macros with arguments  
• File Inclusion  
• Macro Testing  
• ANSI Additions

**Structures and Unions**  
• Declaring a Structure  
• Processing a Structure  
• Typedef  
• Array of Structures  
• Structures and Pointers  
• Passing Structures to Functions  
• Self Referential Structures  
• Unions and Structures Differences  
• Uses of Structures  
• Enumerations

**Data Files**  
• File Formatted I/O Functions  
• Opening and Closing File  
• Creating a Data File  
• Processing a Data File  
• Unformatted Data File  
• Random Access Files  
• Command Line Parameters  
• Discussion on a Mini Project

**Graphics**  
• Function to Support GUI  
• Implementation of Graphics

**Highlights:  
  
• Solving technical interview questions from different companies on each topic in the classroom.  
• Project implementation**