**Syllabus on**

**C programming**

**National Academy for Computer Training And Research (NACTAR)**

**Bogra**

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| **Sl.** | **Covered Areas** | **Hours** |
| 1 | * **Computer Fundamentals** * **Concept of Hardware**   Basic Components & Units of a computer   * **Concept of Software**   **System Software**: Introduction to Operating System (OS).  **Application Software:** Concept of real world application software & customize software.   * **Computer Networks Basic Concept:**   Classification of Network & Topology | 3 hours |
| 2 | * **Generations and Levels of Programming Languages** * **IDE(Turbo C, Dev C, Code block)** * **C Language – Overview** | 3 hours |
| 3 | C - Environment SetupLocal Environment SetupCompiler & InterpreterC - Program Structure  * Input-Output Statement  Hello World ExampleCorresponding Lab Session | 3x2=6 hours |
| 4 | Compile and Execute C ProgramTokens in CSemicolonsCommentsIdentifiersKeywordsWhitespace in CCorresponding Lab Session | 3 hours |
| 5 | C - Data TypesTypes & Description  * **Basic Types:**   They are arithmetic types and are further classified into: (a) integer types and (b) floating-point types.   * **Enumerated types**   They are again arithmetic types and they are used to define variables that can only assign certain discrete integer values throughout the program.   * **The type void**   The type specifier *void* indicates that no value is available.   * **Derived types**   They include (a) Pointer types, (b) Array types, (c) Structure types, (d) Union types and (e) Function types. Corresponding Lab Session | 3 hours |
| 6 | C – Variables:Variable Definition in CVariable Declaration in CC - Constants & Literals:Integer LiteralsFloating-point LiteralsCharacter ConstantsString LiteralsDefining ConstantsCorresponding Lab Session | 3x2=6 hours |
| 7 | * **C – Operators**  Arithmetic OperatorsRelational OperatorsLogical OperatorsBitwise OperatorsAssignment OperatorsMisc Operators ↦ sizeof & ternaryOperators Precedence in C  * **C - Decision Making:**  The **? :** Operator  Corresponding Lab Session | 3x4=12 hours |
| 8 | * **Step of Programming** * **Flowchart & Algorithm (Searching & Sorting)** * **Basic concept of data structure: Array, Stack, Queue, Linked list** | 3 hours |
| 9 | * **Control Statements and Loops** * If statement * if else statement * else if statement * Nested if else statement * Switch Statement * Break Statement * Continue Statement * Comma Operator and goto Statement * For loop, while Loop, do-while Loop * Nested Loops  Corresponding Lab Session | 3x6=18 hours |
| 10 | * **C – Functions**  Defining a FunctionFunction DeclarationsCalling a FunctionFunction Arguments  * User Define vs Library Function  Corresponding Lab Session | 3x2=6 hours |
| 11 | * **C - Scope Rules**  Local VariablesGlobal VariablesFormal ParametersInitializing Local and Global VariablesCorresponding Lab Session | 3 hours |
| 12 | * **C – Arrays**  Declaring ArraysInitializing ArraysAccessing Array ElementsArrays in Detail: 1D & Multi-DimensionalCorresponding Lab Session | 3x3=9 hours |
| 13 | * **C – Pointers**  What are Pointers?How to Use Pointers?NULL PointersPointers in DetailCorresponding Lab Session | 3 hours |
| 14 | * **C – Strings** * String Functions and Examples * Basic Operations on String  Corresponding Lab Session | 3 hours |
| 15 | * **C - Structures**  Defining a StructureAccessing Structure MembersStructures as Function ArgumentsPointers to Structures  * **C - Unions**  Defining a Union & Accessing Union MembersCorresponding Lab Session | 3x2=6 hours |
| 16 | * **C - File Operation**  Opening Files, Closing a File, Writing a File, Writing a FileCorresponding Lab Session | 3 hours |
| 17 | * **C - Recursion**  Number FactorialFibonacci Series  * **C - Variable Arguments**  Corresponding Lab Session | 3 hours |
| 18 | * **Graphics Programming in C**  Corresponding Lab Session | 3 hours |
| 19 | * **Real life project using C:**   + - 1. **Calculator Design**       2. **Contact Management System**       3. **Bus Reservation System**       4. **Student Record System**       5. **Tic-Tac-Toe** | 3x5=15 hours |
| 20 | * **Evaluation( Theory+ Lab Test), Project Presentation & Submission** | 3x3=9 hours |
|  | **Total** | 120 hours |
| Prepared By:  1.Istiaque Ahmed, Lecturer in CSE,Pundra University of Science & Technology(PUB)  2.Md.Minhazur Rahman, CSE,DUET  3.Md.Abdul Alim, Instructor,NACTAR  4.Md.Khondokar Mahmudul Islam,Assistant Instructor (Computer),NACTAR  5.Md.Abu Bakar Shiddiq, Assistant Instructor(Research),NACTAR  **Syllabus on**  **C programming For HSC-ICT**  **National Academy for Computer Training And Research (NACTAR)**  **Bogra.**  Syllabus on C programming  For HSC-ICT  **Number of days: 25 (working day)**  **Class Time: 03 hours daily.**  **Total hours: 75 Hours.**   |  |  |  | | --- | --- | --- | | **Sl** | **Topic** | **Hour(s)** | | **C PROGRAMMING LANGUAGE** | | | | **01** | **Introduction**   * + Concept of C Programming.   + Structure of C Program,   + IDE: Turbo C, Dev C , Code block;   + String, C token,   + Character set,   + Identifiers and Keywords,   + Data Types,   + Constants, Variables and Array,   + Variable Declarations,   + Statements,   + C programming style   + Compiler and Program Design   + Preprocessor directive.   + Header file. | **09 hours** | | **02** | **Formatted Output Statement & Operators & Expressions**.   * Output Statement: printf() * Assignment Operator * Arithmetic Operators * Relational Operators * Logical Operators * Conditional Operators * Comma Operator, * Increment & Decrement Operator * Precedence of Operators * Precedence of Logical Operators * **Lab Session:** Write a simple C program using Output statements. | **18 hours** |  |  |  |  | | --- | --- | --- | | **03** | **Formatted Input Statement**   * + Structure of C Program,   + Input Statement: scanf()   + Expressions.   + **Lab Session:** Write a simple C programs using Input-Output Statements. | **03 hours** | | **04** | **Control Statements**   * + If statement   + Flowchart & Algorithm   + If else statement,   + Flowchart for if else   + else if statement   + Flowchart for else if   + switch Statement,   + Flowchart for switch statement   + Break Statement,   + **Lab Session:** Write a simple program using Control statements.   **Real Life Project:** Simple Calculator Design**.** | **12 hours** | | **05** | **Looping Statement**   * + For statement   + Flowchart for (for looping statement)   + While statement,   + Flowchart for (while looping statement)   + Do-While statement,   + Flowchart for (do while looping statement)   + Nested Loops.   + goto statement   + continue statement   + **Lab Session:** Write a simple program using looping statements. | **15 hours** | | **06** | **Array**   * + Defining an Array,   + Processing an Array,   + Passing Array to a Function,   + Multidimensional Arrays.   + **Lab Session:** Write a simple program using array. | **09 hours** |  |  |  |  | | --- | --- | --- | | **07** | **Function**   * + A Brief Overview of function,   + Defining and declaring a Function,   + Accessing a Function,   + Passing Arguments to a Function,   + Specifying Argument,   + Data Types,   + Function prototypes,   + Recursive Function. Macro.   + **Lab Session:** Write a simple program using functions and Evaluation.   + **Real Life Project**: Calculator Design using function | **09 hours** | |  | **Total** | **75 hours** |   Prepared By:  1.Istiaque Ahmed, Lecturer in CSE,Pundra University of Science & Technology(PUB)  2.Md.Minhazur Rahman, CSE,DUET  3.Md.Abdul Alim, Instructor,NACTAR  4.Md.Khondokar Mahmudul Islam,Assistant Instructor (Computer),NACTAR  5.Md.Abu Bakar Shiddiq, Assistant Instructor(Research),NACTAR | | |