**DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY-MODULE 1.**

**STRUCTURED PROGRAMMING-COURSE OUTLINE**

**Objectives**

By the end of this unit, the trainee should be able to:

1. Understand the program development cycle
2. Apply development skills in Pascal and c programing languages
3. Understand the various data types, control and data structured used in structured computer programs.
4. Develop a program in a structured programming language
5. **INTRODUCTION TO STRUCTURED PROGRAMMING**

* Explaining the meaning of structured programming;
* Meaning of computer software and hardware
* Classification of computer software
* Identify different types of structured programming languages;
* Pascal
* C
* Fortran
* Cobol
* Others
* History of programming languages;
* Machine language
* Low level languages
* High level languages
* Fourth generation languages
* Fifth generation languages
* Programming paradigms;
* Unstructured programming
* structured programming
* object-oriented programming
* visual programming
* internet based programming
* Computer hardware and software consideration;
* Hardware requirement
* Appropriate operating system

1. **PROGRAM DEVELOPMENT AND DESIGN**

* Explain the meaning of program development
* Explain the meaning of program design
* Describe programming development cycle
* Describe structured programing designs concepts;
* Top-down design
* Bottom-up design
* Modular design
* Control flow structure
* Monolithic design
* Describing program design tools;
* Algorithm
* Flowchart
* Pseudocode
* Structured charts
* Decision tables

1. **PROGRM STRUCTURE**

* Explain the meaning of program structure
* Describe the format of structured programming languages
* Describe common operators;
* Operators and order of precedence
* Operations
* Describe data types;
* Simple
* Structured
* User defined
* Describe identifiers, expressions and I/O instructions

1. **PROGRAM WRITING**

* Describing the content of structured programming
* Describe error handling

1. **CONTROL STRUCTURES**

* Explain the meaning of control structures
* Importance of control structures
* Types of control structures;
* Sequence
* Selection
* Looping/Iteration

1. **DATA STRUCTURES**

* Meaning of data structures
* Types of data structures;
* Strings
* List
* Arrays
* Records
* Pointers
* Linked list
* Queues
* Stacks
* Trees
* Sort techniques;
* Bubble sort
* Selection sort
* Quick sort
* Insertion sort
* Merge sort
* Search technique;
* Sequential
* Binary
* Merge

1. **SUB PROGRAMS**

* Definition of sub-programs
* Types of sub-programs
* Scope of variables;
* Local
* Global
* Parameters;
* Meaning of parameters
* Parameter passing

1. **FILE HANDLING**

* Importance of file handling
* Types of file
* File organization techniques;
* Sequential
* Random
* Indexed
* File design
* File handling operations

1. **PROGRAM DOCUMENTATION**

* Define program documentation
* Importance of programming documentation
* Types of program documentation
* Writing program documentation

1. **EMERGING TRENDS OF STRUCTURED PROGRAMMING**

* Identify emerging trends in structured programming
* Explaining the challenges of emerging trends in structured programming.