CENTRE FOR DEVELOPMENT OF IMAGING TECHNOLOGY
TECHNOLOGY EXTENSION DIVISION

SYLLABUS

CERTIFICATE IN .NET PROGRAMMING	
Duration: 3 Months	
Eligibility: Plus two or equivalent/3 year Diploma in Engineering	
SCHEME OF STUDY	
CNT 101	**Principles of Programming**
CNT 102	**Programming in .NET**
CNT 103	**Lab I - .NET Lab**

PAPER I - PRINCIPLES OF PROGRAMMING

Module – I- Programming Practice and Techniques (8 Hrs)

Introduction—steps in Programming Process— Understanding Program Specification— Design Program Model— Determine correctness of the program— code the program— Test and debug the program— document the program— Structured Programming- Sequence— Selection— Repetition—Criteria for a good program—Program Tools — Flowcharts — Pseudo codes— Algorithm checking Methods— Dry Run— Independent Inspection— Structured Walk-through—Algorithm Development- Decision— Decision symbol— selection Construct— guidelines for if statements— Algorithm Development- Iteration; While loop construct— for loop construct— repeat until construct—Arrays— What is an array— declaring an array— initialising an array— boundaries of an array— Single dimensional array— two dimensional array—multi dimensional array—Subroutines: modular programming— criteria for decomposing larger modules— recursion.

Module II -Programming Practice using C (12 Hrs)

Program structure —input and output statements— function definition— delimiters— statement terminator— comment lines —libraries— compiling and running—Variables — constants— identifiers— keywords— data types—Operators —Arithmetic operators- binary operators— unary operators —Arithmetic expressions— assignment operators— multiple assignment and short hand operators .Precedence of operators —type casting—Relational operators and expressions— logical operators and expression— if statement— nested if statement— switch case—Loop Structure- the for loop —while loop— do... while loop. Working of nested loops. Jump statements break and continue—Arrays- Array elements and indices— string/char arrays. Array searching –linear and binary search. Sorting techniques selection and bubble sort— multi dimension arrays and matrix examples— Functions- Function declaration— invoking a function— function body— function prototypes. Formal variables— actual variables—Call by value— call by reference—Global variables —local variables and static variables. Working of recursive functions.

Module –III- Object Oriented Programming Concepts (10 Hrs)

Structured programming and its drawbacks. Object oriented approach and its advantages. Define classes and objects—Properties and methods of a class— Access Modifiers —public and private sections —Classes and Objects: Implementing Data hiding— Data Abstraction and Encapsulation. Memory allocation for an object— The reference object 'this'. Static class members— Object Arrays—Functions— function overloading. Constructors— parameterised constructor— Destructors— Methods with default arguments— constructor overloading—Inheritance: Introduction— Advantages of inheritance— derived and base classes— types of inheritance— inheritance and access control— constructors in inheritance— super key word. Multiple inheritance —Polymorphism and overriding: Introduction— overriding methods— virtual— super key words. Abstract classes— interfaces.

Module –IV - Database Concepts (8Hrs)

Database Management system introduction— purpose of database —Advantages of DBMS— Database Architecture—Data Models: Object Based Logical Model —Record based Logical Model— Object-based Logical Model: Entity Relationship Data Models— Types of Relationship: ER Diagram Symbols—Record-based Logical Model: Hierarchical Model— Network model— Relational model— Entity— Strong Entity— Weak entity— subtypes— Sub types— super types. Attribute— Keys:- Primary key— Foreign Key— candidate key— Alternate Ker— Composite Key. Relationship— cardinality of relationship— One-to-One— One-to-many— Many-to Many—Relational algebra: Restrict— Project— Product— Union— Intersect— difference— Join— divide—Normalization: Different forms of Normalization. First Normal Form— second Normal Form —Third Normal form and BCNF

Module –V- Practicing MySQL (12 Hrs)

Introduction—Mysql features— Data Types—Data Definition Commands: Create database— Drop database and select database. Create table— alter table —add constraints and drop table—Data Manipulation Commands: Insert records — delete records and update records—Querying Data : select command with options —Retrieving specific Attributes— retrieving selected Rows— where and order by clauses—Functions— aggregate functions— group by and having clause—Querying data by using Joins and sub queries— inner join— outer join— self join—Creating views — indexers— Stored procedure

PAPER II - PROGRAMMING IN .NET

Module –I (10 Hrs)

 Introduction— **The .NET framework**— Components of the .NET Framework— Common Language Runtime (CLR) — **Visual Studio .NET Integrated Development Environment (IDE)** — Creating a project in Visual Studio.net—User Interface of Visual Studio .NET IDE—The Start Page—Windows Forms Designer—The Solution Explorer Window—The properties window—Tool Box—The Output Window—The Task List Window—The Server Explorer Window—The Class View Window—The Code and Text Editor Window

Module –II (25 Hrs)

Understanding the User Interface—**Window Forms**—Windows Forms Properties—Windows Forms Events—Windows Forms Methods—**Visual Basic .NET Language Features**—Data types—Variables— Arrays—Operators—Control Flow Constructs—Loop Structures—**Creating Windows Forms—Identify the controls to be used for accepting input from the user**—The TextBox Control—The Label Control—The ListBox Control—The ComboBox Control—The CheckBox Control—The RadioButton Control—The Button Control—The StatusBar Control—**Object Orientation in Visual Basic .NET**—Class—Object—Structure—Abstract Classes in Visual Basic .NET—Interfaces in Visual Basic .NET—**Creating a Class in Visual Basic .NET**—Add a Class to the project—**Namespaces**— **Introduction to Procedures**—Sub procedures—Function procedures—Property Procedures— **Msgbox Function**—**MessageBox Class**—**Introduction to CommonDialog Classes**—ColorDialog Class—FontDialog Class—FileDialog Class—OpefileDialog Class—SaveFileDialog Class—PrintDialog Class—PageSetupDialog Class

Module -III (25 Hrs)

Working with ADO.NET—Features of ADO.NET—The ADO.NET Object Model—Data provider— Dataset—**Creating Data Adapter**—**Creating Dataset**—**Connecting to a Database**—**Accessing and Manipulating Data**—Data Binding—**Filtering and Sorting Data**—**Displaying Data from Multiple Tables**—**Performing Data Updates**—**Creating Reports**—Crystal Reports—**Creating Menus and Working with MDI Applications**—MDI Applications—**Performing File I/O Operations**—Threads in Visual Basic .NET—**Exception Handling and Debugging**—**Creating and Using Web Services**—Using Web Services in Web Applications—Deploying .NET Applications**

Module-IV (15 Hrs)

Introduction to C sharp—Features of C#—Compiling and Running C#—C# Syntax—Data types— Operators—String Concatenation—Arrays—Methods—Structures—Classes —Constructors and Destructors—**Interfaces**—Properties—Indexers— Delegates—Events—**Virtual Functions**—

Abstract Classes—Operator Overloading—Namespaces—Nested Namespaces—Using Directives—**File and Folder Operations—Exception Handling—Windows Applications—Winforms/Web Forms—Multithreading—Database Connectivity in C# through ADO.NET—Web Services**

Module-V (25 Hrs)

ASP Vs ASP.NET—ASP.NET Architecture—ASP.Net Web Pages—Asp.Net Pages- HTML Forms—Asp.Net Pages- Objects—**ASP.NET Working with Data**—Data Binding —Validation—**ASP.NET State Management**—Static Members—View State—Hidden Field in Form—Query String—Http Context—Sessions—Cookies—**Web Configuration File**—Introduction to configuration files—Page setting in web.config—Custom Errors—**Authentications**— Types of Authentications—Forms Authentications—Role Based Authentication—Windows and Basic Authentication—**Data Bound Controls**—sqlDataSource—GridView—DetailsView—FormView— DataList—**ASP.NET Web —Application**— Advantages of IIS Applications—Creating Web Application in IIS— Converting File Application to IIS Application—Using Virtual Directory—Publishing ASP.NET Website