

CERTIFICATE IN WEB PROGRAMMING

COURSE DURATION: 6 MONTHS

CONTENTS :

1. PROGRAMMING IN C and C++ Language
2. HTML/CSS and JavaScript
3. PHP and MySQL
4. Project on Development of Web Application

1. PROGRAMMING IN C and C++ LANGUAGES

FUNDAMENTALS OF C : Introduction of C, C Character Set, Variables, Data Types, Operators, their precedence, expressions and their evaluation.

OPERATORS AND EXPRESSIONS : Arithmetic, Unary, Relational and Logical, Assignment and Conditional Operators

INPUT/OUTPUT FUNCTIONS: Formatted I/O, Character I/O & String I/O Functions.

CONTROL STRUCTURES: Taking decisions using if, if-else, switch constructs and Conditional Operator, Description of break and continue Statements. Performing loops using for, while, do-while Constructs.

FUNCTIONS: Library Functions vs User-Defined Functions, Declaring (Prototyping) and defining User-Defined functions, ways of passing parameters to functions, specifying Argument data types, Recursion, Storage Classes

ARRAYS & STRING: What are Arrays? Declaring arrays, initializing arrays, processing of arrays, passing arrays arguments to functions, Multidimensional arrays. What are Strings? How strings are handled in C? String functions, arrays of string.

POINTERS: What is a pointer variable? Declaring pointers, accessing values via pointers, pointer arithmetic, pointer to strings, passing arguments using pointers.

STRUCTURE AND UNIONS: Defining a structure type, declaring variables of structure type, initializing structures. Accessing Structure Elements, Use of assignment Statement for structures, array of structures, nested structures, Unions; Declaring a Union, Accessing elements of a type union.

MANAGING DATA FILES: Creating, Processing a file, Standard Input/Output, System Level I/O, File updating

C++

INTRODUCTION to OOPs and C++: OOP Concepts, Top down and bottom up approaches of programming, Over view of C++: Character and string literals, Variables, Objects and their declarations, operators.

DATA TYPES, OPERATORS AND STATEMENTS: Identifiers and Keywords, Constants (String constants, Numeric constants, Character constants), C++ Operators , Type Conversion, Statements, compound conditions, Boolean expression, nested expression.

LOOPS AND ITERATIONS/ CONTROL STATEMENTS: While statements, do...while, for, break, continue. Conditional Expressions (if statement, if else statement), switch Statement, Loop, GoTo statement, **WRITING A PROGRAM IN C++:** Declaration of Variables, Statements, Simple C++ Programs, Features of iostream.h, Keyboard and screen I/O, Manipulator Functions, Predefined manipulators, Input and Output (I/O) Stream Flags.

FUNCTIONS AND PROGRAM STRUCTURES: Function types, passing by reference, passing by constant reference, scope of functions, overloading, Defining a Function, return Statement, Actual and Formal Arguments, Local and Global Variables, Default Arguments, Multifunction Program, Storage Class Specifiers (Automatic variable, Register variable, Static variable, External variable), Recursive Function, Preprocessors (Simple macro definitions, Macro with parameters, Other Processing Techniques, Conditional Compilation), Header Files, Standard Functions.

POINTERS AND REFERENCES: Introduction to pointers and references Pointer Declaration , Pointers Arithmetic and Functions, objects and values, returning a reference, new and delete operators, Pointer and one dimensional array, Pointer and multidimensional array.

STRINGS: Strings, input output, array of strings, string related library functions

CLASSES AND OBJECTS: Introduction, class declaration constructors, destructors, polymorphism, access functions, copy constructors. Operator Overloading, conversion operators, string classes composition and inheritance

STRUCTURES AND CLASSES: Declaration of Class, Member Functions, Defining the Object of a Class, Accessing a Member of Class, Array of Class Objects, Pointers and Classes, Unions and Classes, Classes within Classes (Nested Class), Constructors ,Destructors, Inline Member Functions, Static Class Members Friend Functions, Dynamic Memory Allocations. Virtual Functions: Needs, Pure virtual function, virtual destructor, virtual derivation, abstract class.

INHERITANCE: Single Inheritance, Types of Base Classes (Direct base classes, Indirect base classes), Types of Derivation (Public inheritance, Private inheritance, Protected inheritance), Ambiguity in Single Inheritance, Array of Class Objects and Single Inheritance, Multiple Inheritance (Array of class objects and multiple inheritance, Ambiguity in the multiple inheritance), Container Classes, Member Access Control (Accessing the public data, Accessing the private data, Accessing the protected data, Accessing private member by friend class).

OVERLOADING: Function Overloading (Function overloading with various data types, Function overloading with arguments, Scoping rules for function overloading)Operator Overloading, Overloading assignment operator, Overloading of Binary Operators, Overloading arithmetic operators, Overloading of comparison operators, Overloading of Unary Operators).

POLYMORPHISM: Polymorphism, Early Binding, Polymorphism with Pointers, Virtual Functions, Late Binding, Pure Virtual Functions, Abstract Base Classes, Constructors under Inheritance, Destructors under Inheritance, Virtual Destructors, Virtual Base class

GENERIC PROGRAMMING & EXCEPTION HANDLING: Template functions, Template class, Exception handling features of C++.

FILE HANDLING: Hierarchy of File Stream classes, Opening and Closing files, File modes, testing for errors, File pointers and their manipulations, ASCII & Binary files, Sequential and Random access files. File pointers and their manipulations, ASCII & Binary files, Sequential and Random access files.

2. HTML/CSS and Java Script

INTRODUCTION TO HTML: Information Files Creation; Web Server; Web Client/Browser, Designing a Home Page, History of HTML, HTML Generations, HTML Tags, Paired Tags, HTML Documents; Anchor Tag; Hyper Links.

HEAD AND BODY SECTIONS: Commonly used HTML Commands , Titles and Footers; Header Section; Prologue; Links; Colorful Web Page; Comment Lines.

DESIGNING THE BODY SECTION: Heading Printing; Aligning the Headings; Horizontal Rule; Paragraph; Tab Setting; Images and Pictures; Embedding PNG Format Images. Text Formatting Emphasizing Material in a Web Page Text Styles, Other Text Effects, Spacing. Headings in a List; Ordered Lists (Numbering); Nested Lists, Definition Lists.

TABLE HANDLING: Tables; Table Creation in HTML; Width of the Table and Cells; Cells Spanning Multiple Rows/Columns; Coloring Cells; Column Specification. FRAMES: Frame Definition; Nested Framesets. Forms: Action Attribute; Method Attribute; Enctype Attribute; Drop Down List.

ORDERED AND UNORDERED LISTS: Types of Lists; Unordered Lists Adding Graphics to HTML Documents. DHTML AND STYLE SHEETS: Introduction to DHTML, Defining Styles; Linking a Style Sheet to an HTML Document; In-line Styles; Internal & External Style Sheets; Internal Style Sheets; Multiple Styles.

JavaScript

INTRODUCTION TO JAVASCRIPT: JavaScript in Web Pages, The Advantages of JavaScript.

JAVASCRIPT GRAMMAR: Writing JavaScript into HTML; Building Up JavaScript Syntax; Basic Programming Techniques ,Data Types and Literal, Type Casting, Creating Variables, Incorporating variables in a Script, Variables, operators, expressions, statements, object, function and methods, Variables and Data ,The JavaScript Array, The JavaScript Array and its length Property;

TYPES: Local variables, global variables, Data Types.

OPERATORS: Operators and Expressions in JavaScript (Arithmetic Operators, Logical Operators, Comparison Operators, String Operators, Assignment Operators, Arithmetical & computational, Boolean, comparison, +string, assignment and special.

STATEMENTS: If-else, do-while, while-do, for, loop, Break-Continue, switch. Conditional Checking, Super Controlled - Endless Loops ,JavaScript Programming Constructs; Functions: Defining function, Calling Function, Examples of function Functions in JavaScript.

EVENT HANDLERS: Click, Change, Focus Blur, Mouseout, Mouseover, Select Submit, Resize, Unload, Load, Events, Alerts, Password, confirmation, Browser Detection, Redirection, Opening a new window, Placing text in a Browser; Dialog

THE JAVASCRIPT DOCUMENT OBJECT MODEL: Objects: Document Object Model, Properties, Method Creating objects, Introduction (Instance, Hierarchy); The JavaScript Assisted Style Sheets DOM, Events Using JavaScript.

FORMS USED BY A WEB SITE: The Form Object; The Form Object's Methods , Other Built-In Objects in JavaScript (The String Object, The Math Object, The Date Object); User Defined Objects . Cookies: What are Cookies; Setting a Cookie

3. PHP & MySQL

PHP:

Introduction to PHP: History of PHP. Create a basic PHP Script, Taking user input, Self Referring Forms, Selecting alternatives, Use PHP to generate HTTP headers, Pass PHP variables via the URL, Debugging Tips

Introduction: Common Terminology, Getting started, Server Side Scripting Language/Definition of OBJECTS. Naming convention, data types and operators, constants array declaration, data type conversions.

Taking User Input from Forms via PHPL: Creating forms with PHP, Using the form GET method, Using the form POST method, Obtaining data from forms through variables, Using hidden fields, Secure Web Forms, Calling pages from themselves using forms, Quoting HTML entities in user input

Variables and Expressions in PHP: Identifiers, Data Types (integers, floats, strings and booleans), Text constants, interpolation, here documents, Creating Variables, Variable assignment, Variable Scope, Userdefined Constants, HTTP environment variables, Magic Constants, Variable References

PHP Operators: Arithmetic Operators, Logical Operators, Relational Operators, The Identity Operator, Bitwise Operators, Other Operators, Assignment Operators, Operator Precedence and Associativity

Conditional Tests and Events in PHP: True and False, If, Comparing Strings and Numbers, else and elseif The switch / case statement, The ? : Operator, Comparing for equality or identity

PHP Flow Control: Loops, while, do ... while, for, break and continue, exit

PHP Configuration: The php.ini file, Module Vs CGI Usage, register_globals, Commonly set configurations, PHP 4.1 and above, PHP4 compatibility in PHP5, A glance at upcoming PHP6

PHP Functions: Purpose of functions, Built-in functions, Declaring functions, Functions Arguments, Arguments - Call by Reference, Default Arguments, Return, Returning References, Variable Scope (global vs local), Static variables, Recursion, include and require, Variable function calls

Storing Data in Arrays using PHP: What are arrays?, How and when to use arrays, Indexing arrays, numeric and hashes, Initialising arrays, Using foreach, Add/remove info from arrays, One-dimensional arrays, Multidimensional arrays, Array operators, Array related functions

Handling Databases with PHP: PHP's database APIs, Error-handling strategies, Connection/disconnection, log in/log out, Escaping strings in SQL statements, Including common access functions, Doing simple SQL queries via PHP, Building HTML tables using SQL Queries, Show access to: MySql, Oracle & MS-SQL, Using PEAR DB

String Manipulation in PHP: substring and [] operators, Case conversion, trimming, Formatting output data, Regular expressions

Sessions and Cookies in PHP: What is a session?, Dependencies on the php.ini file, Understanding PHP session variables, Create a PHP session variable, Register and modify PHP session variables, Putting PHP session IDs in pages

Good Practise with sessions and PHP, Cookie properties, Setting a cookie in PHP, Retrieving PHP cookies, Expiring/Deleting PHP cookies, Drawbacks to cookies, Using cookies well, Cookie Security Issues

File and Directory Access Using PHP: Opening files, local and remote, Reading and writing files, Handling file permissions Handling file ownership, File locking, Opening and reading directories, File uploads from the browser/user

Handling Email with PHP: Sending email, Unix and NT setup, mail function

Graphics in PHP: Graphics basics, Image MIME type, Basic examples, Creation from an existing image, Image copying and resizing, Drawing text on images, True Type fonts

Other Segments: Difference between PHP and ASP, Adding Script to Documents Working with Numbers strings Date & Time and Arrays, if... Then ... Else, loops, Error Trapping, Getting message across , Confirming user action, working with forms, Validation of data , Creating and displaying graphic images.

MYSQL

An overview of MYSQL Systems Architecture: Introduction to Database Management Systems; Date Models; Database System Architecture; Relational Database Management Systems; Candidate Key and Primary Key in a Relation; Foreign Key; Relational Operators; Set Operations on Relations; Attribute domains and their Implementation.

Introduction; first Normal Form; data Anomalies in 1NF Relations Partial Dependencies; Second Normal Form; data Anomalies in 2NF Relations; Transitive Dependencies; Third Normal Form; data Anomalies in 3NF Relations. The Entity Relationship Model; Entities and Attributes; Relationships

MYSQL Commands: MYSQL commands; Data Definition Language commands; Data Manipulations Language Commands; Data types, Insert, View, Select, drop tables; Data Constraints; Type of Data Constraint; Column Level Constraint; Table Level Constraint; The CHECK Constraint; Viewing the User Constraint; Computation; Arithmetic Operators; Logical Operators; Comparison Operators; Range

Searching; MYSQL FUNCTIONS; Number Functions; Group Functions; Scalar Functions; Data Conversation Functions; Manipulating Dates in MYSQL; Character Functions;

Sub Queries and Joins: Joins; Equi Joins; No Equi Joins; Self Joins; Outer Joins; Sub Queries; Correlated Queries; Using Set Operators: - Union, Intersect; Minus;

4. Project:

Development of Web Application.