**Specialised Programme on Web based Application Development**

**Course Content**

**HTML , CSS, JAVASCRIPT, AJAX and Rest API (100 Hours)**

**HTML**

* Introduction to HTML5
* Basic HTML
* Introduction to basic HTML Aligning the Headings: Anchor Tag, Paragraph, Images and Pictures, Tables
* Framesets
* New features in HTML5
* New element
* New attributes
* Multimedia
* HTML5 Validation
* Audio & Video Support
* HTML Forms

**HTML Controls**

* INPUT
* Text Area
* Radio Button
* Check Box
* Dropdown
* List box
* Submit button
* Set button
* Button
* List and Tables
* Document Object Model (DOM)
* Elements
* Events

**Working with CSS**

* Introduction to CSS
* Styling HTML with CSS
* Structuring pages with CSS
* Cascading style sheet
* Inline Styling (Inline CSS)
* External Styling (External CSS)
* CSS Fonts
* The CSS Box Model
* The id Attribute
* The class Attribute
* HTML Style Tags
* Linking a style to an HTML document
* Internal style sheet
* Multiple styles

**JavaScript**

* Introduction to JavaScript: Advantages of using Java Script on client side over VB Script, Variables in Java Script, Statements, Operators, Comments, Constructs, Functions, Expressions, JavaScript console, Scope, Events, Strings, String Methods, Numbers, Number Methods, Dates, Date Formats, Date Methods, Arrays, Array Methods, Booleans, Comparisons, Control Structures, Conditions, Switch, Loop For, Loop While, Break, Functions, Function Definitions, Function Parameters, Function Invocation, Function Closures
* Document Object Model, Document and Events (DOM Manipulation)
* HTML DOM
* DOM Intro
* DOM Methods
* DOM Document
* DOM Elements
* DOM HTML
* DOM CSS
* DOM Animations
* DOM Events
* DOM EventListener
* DOM Navigation
* DOM Nodes
* DOM Nodelist
* Object hierarchy in Java Script
* Debugging
* Type Conversion, Regular expressions
* Errors, Debugging
* Forms
* Forms Validation
* Forms API
* JS Browser BOM, Window, Screen, Location, History, Navigator, Popup Alert, Timing, Cookies

**Introduction to PHP**

* Basic rule of PHP
* PHP in action
* Working with text, variable and numbers
* Making decisions and repeating yourself
* Arrays
* Working with Arrays
* Looping through array
* Sorting arrays
* Functions

**PHP web forms**

* Form processing with functions
* Validating data
* Display default value
* Working with cookies and Sessions
* Login and User Identification
* Parsing, display date and times

**PHP Database**

* Storing information with databases
* Connection to database
* Create a table
* Inserting and retrieving data from database
* Inserting and retrieving form data safely

**Working with files**

* File permissions
* Reading and writing files
* Working with CSV Files
* Checking for errors
* Command line PHP
* Running Shell command
* IMAP, POP3 and NNTP
* Graphics, PDF
* Sending and receiving mails

**Working with Ajax and JSON**

* + Introduction to Ajax
  + Ajax Framework
  + Ajax using HTML, CSS, JavaScript and DOM
  + Ajax Architecture
  + Creating a windows web services
  + AJAX using JSON and jQuery
  + Introduction to the JavaScript Object Notation (JSON)
  + Need of JSON
  + JSON Syntax Rules
  + JSON Data - a Name and a Value,
  + JSON Objects,
  + JSON Arrays,
  + JSON Files
  + JSON parsing

**Rest APIs**

**Bootstrap**

* + Overview of Bootstrap
  + Need to use Bootstrap
  + Bootstrap Grid System, Grid Classes, Basic Structure of a Bootstrap Grid
  + Typography
  + Tables, Images, Jumbotron, Wells, Alerts, Buttons, Button Groups, Badges/Labels, Progress Bars, Pagination, List Groups, Panels, Dropdowns, Collapse, Tabs/Pills, Navbar, Forms, Inputs
  + Bootstrap Grids, Grid System, Stacked/Horizontal
  + Bootstrap Themes, Templates

**Database Technology, MySQL (60 hours)**

**Introduction to DBMS**

What is DBMS, Its need

Areas where DBMS are used

**Types of DBMS:**

Introduction to Hierarchical Model, Network and Relational Models,

Object Oriented Database

Data models (conceptual physical and logical)

**Integrity Rules**

Data Integrity & integrity rules

Entity integrity constraint and referential integrity constraint

**MYSQL Commands**

DDL Commands

DML & DCL Commands

Inbuilt Functions

SQL Practice Questions Including:-

DDL Commands: Create/Alter/Drop/Grant/Revoke

DML Commands: Select/Insert/Update/Delete/Truncate

DCL Commands: RollBack Commit

Number Functions: -

Single Value Functions: ABS, CEIL etc

Group Value Functions: AVG, COUNT, MAX etc

**Group by Command**

Grouping Things Together (Group By, Having Clause)

Advance Sub-queries (Correlated Sub query)

Set Operators (UNION, UNION ALL)

**Joins**

Joins, types of join

**Views**

Types of Views

Creating Complex View

**Java and Advance Java Programming MVC (180 hours)**

**Core Java**

**Fundamental Programming Structures in Java**

* The main() method
* Primitive Data Types
* Variables
* Constants
* Assignments
* Initializations
* Operators
* Strings
* Control Flow
* Code Examples & Exercises

**Classes and Objects in Java**

* Classes & Objects
* OOP Principles
* Instantiation
* Encapsulation
* Specialization
* Instance Variables
* Class Variables
* Constructors
* Method Overloading
* The **this** keyword
* Passing and returning objects

**Object Design and Programming with Java**

* Abstraction
* Inheritance
* Polymorphism
* Method Overriding

**Java Interfaces**

* Purpose of Interfaces
* When to use them
* Interface Declaration
* Implementing an Interface

**Java Exception Handling**

* Why Exceptions
* Standard Exception Handling Options
* Exception Class Hierarchy
* Checked vs. Unchecked Exceptions
* Catching an Exception: try and catch blocks
* Methods Which Throw Exceptions: the throws clause
* Try with resource
* Creating user defined exception

**Java Collections API**

* Arrays
* The Java Collections Framework
* Collections Interfaces
  + java.util.Collection
  + java.util.List
  + java.util.Map
  + java.util.Set
* Concrete Collections
  + java.util.ArrayList
  + java.util.HashMap
  + java.util.HashSet

**JDBC**

* Introduction to JDBC
* The Java, SQL Package
* Connecting to the Database
* Working with Connections
* Working with Results
* Working with Statements

**JSP**

* Introduction to JSP
* Life cycle of jsp page
* Basic tag of JSP
* JSP with JDBC
* Directives, Implicit and Explicit Objects, Scriptlets, Expressions
* Action Tags in JSP
* Request Dispatcher
* Session Tracking

**Spring**

* Overview of Spring Architecture.
* AOP Overview
* Spring Modules Overview
* Spring Application
* Dependency Injection
* What is IoC (Inversion of Control)
  + IOC container
  + Dependency Injection
  + Spring AOP
  + AOP Concepts
  + Spring JDBC Template
  + Spring ORM
* Spring MVC
  + Deployment of web application using Spring MVC Form

**Hibernate Framework**

* Introduction to Hibernate Framework
* Architecture Hibernate in IDE
* Creating web application using Hibernate API
* HQL
* Building web pages using Hibernate

**Mobile Application development using Android (100 Hours)**

**Android App Development**

* Introduction of android
* Activities and Tasks
* Android SDK features
* Development Environment of Android SDK
* Creating android activities
* Fundamental android UI design
* Intents, adapters, dialogs
* Data Storage
* Location and Maps
* Multimedia and graphics
* Activity and services

**Advanced Topics**

* Notification
* FireBase cloud Messaging
* Social Service integration (like Facebook, Twitter etc)
* Sensor programming
* REST API

**Project (60 Hours)**