

**Course Outline/Syllabus of  
Web & Mobile Technologies (Under MeitY, GoI, GIA Project at RCCIIT, Kolkata)**

**1. Fundamentals (6hrs)**

Introduction to Internet, WWW, Web Browsers, Web Servers, URL, Multipurpose Internet Mail Extensions - Overview of different protocols: HTTP, POP, SMTP, FTP, WAP, Web Architecture, Web Standards - Clients, Servers, and Communication - HTTP request message-response message

**2. Introduction to HTML, XHTML, XML (6hrs)**

Origins and evaluation of HTML, Basic Syntax - Standard HTML Document Structure and Basic Text Formatting - Images, Hypertext Links, Lists, Tables, Frames, Forms, Multimedia in HTML - Introduction to XML, Defining XML tags, their attributes and values, Document type definition, XML Schemas, Document Object model – Parsing XML data: SAX and DOM Parsers in Java

**3. Stylesheets and Bootstraps(6hrs)**

CSS-Introduction to Cascading Style Sheets-Features-Core Syntax-Style Sheets and HTML Style Rule Cascading and Inheritance - Introduction of Bootstrap - Container and Container-fluid – Bootstrap components: Jumbotron, Button, Grid, Table, Form, Pagination, Carousel, Drop Down, Modals, Navbar etc. – HTML5 Font awesome

**4. Client-Side scripting (8hrs)**

Introduction to JavaScript: JavaScript language – declaring variables, scope of variables functions, event handlers (on click, on submit etc.) - Document Object Model – Element Visibility – Dynamic Content - Form validations - Simple AJAX applications - Introduction to JQuery

**5. Server-side programing: Introduction to Servlets (8hrs)**

Lifecycle of a Servlets, The Servlets API, Reading Servlets parameters, reading initialization parameters, Handling Http Request & Responses, Using Cookies, and sessions, Request Dispatcher, Servlet Config Methods and Example – Servlet Context Methods and Example – Filter, FilterConfig - connecting to a database (MySQL) using JDBC.

**6. Server-side programing: Introduction to JSP & Javabeans (8hrs)**

The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, implicit objects, Action Elements (jsp:forward, jsp:include, Bean class, jsp:useBean, jsp:setProperty, jsp:getProperty) - Using JavaBeans in JSP Pages, Using Cookies and session tracking, connecting to database in JSP.

**7. Web Services (8hrs)**

Web services Architecture and its characteristics - core building blocks of web services - standards and technologies available for implementing web services - SOAP: Simple Object Access Protocol, Inter-application communication and wire protocols, SOAP as a messaging protocol, Structure of a SOAP message, SOAP envelope, Encoding, Service Oriented Architectures – WSDL definition and elements, WSDL bindings – RESTful Webservices – Representational State Transfer – GET, PUT, POST, DELETE

## **8. Microservices using Spring Boot. (20hrs)**

Introduction to Microservices architecture - Overview of Spring Framework – IOC Container & Dependency Injection - Autowiring – Spring MVC – Spring JDBC- Introduction to Spring Boot – Spring Initializer – Spring Boot auto configuration, annotations - Spring Web MVC - Thymeleaf – Web applications developments using Spring Boot – REST API development – Swagger and Postman – Actuators and Spring cloud.

## **9. Android basics and Application fundamentals (3 hrs)**

Introduction to android - Android architecture - Application components & Architecture

## **10. Developing Android Application (9 hrs)**

Installation - Introduction - Managing AVD - Using Hardware Device - Managing projects - Bulking & running - Debugging & Tools

## **11. Activities (6 hrs)**

Creating an activity - Managing Activity Lifecycle - Tasks & Back Stacks

## **12. User Interface (6 hrs)**

Layouts - Widgets - Menus - Dialogs - Handling UI Events - User Notification

## **13. Manifest & Application Resource (6 hrs)**

Manifest & Application permissions - Manifest Editor - Application resources