Web Development Course Modules

Course Overview

This comprehensive Web Development course introduces students and professionals to the core technologies and tools used to build modern, responsive websites and web applications. Covering both front-end and back-end development, the course equips learners with hands-on experience in HTML, CSS, JavaScript, and server-side programming using frameworks like Node.js and Express. Learners will also gain familiarity with databases, version control, APIs, and deployment processes.

Learning Outcomes:
By the end of the course, students and Professionals will be able to:

- Build fully functional web pages and single-page applications

- Develop server-side logic and connect to databases

- Integrate APIs and manage data flow between front-end and back-end

- Use version control for project management and collaboration

- Deploy and maintain a web application in a live environment

Key Topics Covered:

- **HTML & CSS**: Structuring and styling responsive web pages

- **JavaScript**: Programming fundamentals and DOM manipulation

- **Front-End Frameworks**: Introduction to libraries like React or Vue

- **Back-End Development**: Node.js, Express.js, and RESTful API design

- **Databases**: Working with MongoDB or SQL databases

- **Version Control**: Git and GitHub for collaboration

- **Deployment**: Hosting apps using platforms like Vercel, Netlify, or Heroku

Prerequisites:

1. Basic proficiency in mathematics and familiarity with spreadsheets.

2. No prior programming experience required.

Course Modules

Module	Title	Topics
1.	**Introduction to Web Development**	➢ What is Web Development? ➢ Client-Server Architecture ➢ Front-End vs Back-End ➢ Web Development Tools Overview (IDEs, Browsers, DevTools)
2.	**HTML – Structure of Web Pages**	➢ HTML Elements, Attributes, and Tags ➢ Lists, Tables, Forms ➢ Semantic HTML ➢ Multimedia Elements (audio, video, images)
3.	**CSS – Styling the Web**	➢ CSS Syntax and Selectors ➢ Box Model, Flexbox, and Grid ➢ Responsive Design with Media Queries ➢ CSS Frameworks (Bootstrap/Tailwind CSS)
4.	**JavaScript – Making Pages Interactive**	➢ JavaScript Basics (Variables, Operators, Loops, Functions) ➢ DOM Manipulation ➢ Events and Event Listeners ➢ JavaScript ES6+ Features
5.	**Front-End Development Frameworks**	➢ Introduction to React ➢ Components, Props, and State ➢ Routing and Conditional Rendering ➢ Project: Build a Single Page Application (SPA)
6.	**Version Control with Git**	➢ Introduction to Git and GitHub ➢ Git Commands (commit, push, pull, clone, branch) ➢ Collaborating on Projects
7.	**Back-End Development with Node.js**	➢ Introduction to Node.js and Express.js ➢ Creating RESTful APIs ➢ Routing and Middleware ➢ Handling Requests and Responses
8.	**Databases and Data Storage**	➢ Introduction to Databases (SQL vs NoSQL)

			➢ CRUD Operations with database (like as MySQL/PostgreSQL) ➢ Connecting Backend to Database
9.	**Authentication & Security**	➢ User Authentication (JWT, OAuth, Sessions) ➢ Password Hashing and Data Validation ➢ Securing APIs ➢ Environment Variables and Config Management
10.	**Deployment and DevOps Basics**	➢ Hosting with Vercel, Netlify, or Heroku ➢ Domain Setup and HTTPS ➢ Continuous Deployment Basics ➢ Debugging and Monitoring
11	**Capstone Project**	➢ Design and Build a Full-Stack Web Application ➢ Project Planning and Execution ➢ Code Review and Final Presentation