

Course Title: Front-End Web Development

Course Description:

This course covers the fundamental and advanced concepts of front-end web development. Students will learn to build visually appealing and interactive websites using HTML, CSS, JavaScript, and modern libraries and frameworks.

Course Objectives:

- Understand the basics of web page structure and design.
- Master CSS for styling and layout optimizations.
- Gain proficiency in JavaScript for interactive and dynamic web applications.
- Learn to use front-end frameworks and libraries such as React.js.
- Develop skills in responsive and accessible web design.

Prerequisites:

- Basic computer skills.
- Familiarity with programming concepts is helpful but not required.

Weekly Syllabus Outline:

Week 1: Introduction to Web Development

- Overview of web development.
- Understanding the structure of the web: HTML, CSS, and JavaScript.
- Setting up a development environment.

Week 2: HTML Fundamentals

- HTML syntax and document structure.
- Core HTML elements and their purposes.
- Form elements and their validations.

Week 3: CSS for Styling

- Introduction to CSS: Selectors, properties, and values.
- Box model and the display property.
- CSS positioning and float.

Week 4: Advanced CSS Techniques

- Flexbox for layout management.
- Grid system for complex designs.
- Responsive design with media queries.

Week 5: JavaScript Basics

- Syntax and basic programming concepts.
- Control structures, functions, and events.
- DOM manipulation.

Week 6: Advanced JavaScript

- ES6+ features and syntax.
- Asynchronous JavaScript: Callbacks, promises, and async/await.
- Fetch API for handling network requests.

Week 7: Introduction to React

- React basics: Components, state, and props.
- JSX syntax and event handling in React.
- Managing state with class-based and functional components.

Week 8: More React

- Advanced React features: Context API, hooks.
- Routing with React Router.
- Best practices for component lifecycle management.

Week 9: State Management

- Introduction to Redux for state management.
- Integrating Redux with React applications.
- Alternative state management libraries (e.g., MobX).

Week 10: Testing Front-End Applications

- Introduction to testing frameworks (Jest, Mocha).
- Writing unit tests for JavaScript and React components.
- Integration and end-to-end testing (Cypress).

Week 11: Building and Deploying Websites

- Webpack and Babel for building projects.

- Deployment basics: FTP, Git, CI/CD pipelines.
- Using cloud platforms for hosting (Netlify, Vercel).

Week 12: Web Accessibility

- Principles of accessible web design.
- ARIA roles and properties.
- Accessibility testing tools and techniques.

Week 13: Advanced Topics in Front-End Web Development

- Progressive Web Apps (PWAs).
- Web animations and advanced CSS styling.
- Introduction to TypeScript.

Week 14: Capstone Project

- Project proposal and design phase.
- Implementation phase with peer reviews.
- Focus on responsive design, user experience, and performance.

Week 15: Project Presentations and Course Wrap-Up

- Final project demonstrations.
- Peer and instructor feedback.
- Review session and final assessment.

Assessment Methods:

- Weekly assignments involving practical tasks and mini-projects.
- Midterm and final exams focusing on theoretical and practical knowledge.
- A capstone project that encompasses all learned skills in a real-world project.