

Frontend Development Curriculum

Duration: 12 Weeks

Mode: Hybrid (Physical & Virtual Options)

Certification: Completion Certificate + Real-World Project Management Simulation

Week 1: Introduction to Frontend Development

- Overview of frontend development

- Setting up the development environment

- Installing VS Code, browsers (Chrome/Firefox), and extensions (e.g., Live Server, React Developer Tools)

- Introduction to the structure of a web application

- Basics of the web: HTML, CSS, and JavaScript

Week 2: HTML Foundations

- Semantic HTML and its importance

- Core HTML elements: headings, paragraphs, links, images

- Forms and input types

- Multimedia in HTML (<audio>, <video>)

- Creating a basic webpage with proper HTML structure

Week 3: CSS Basics

- Inline, internal, and external CSS

- CSS selectors and specificity

- Styling text: fonts, colors, and spacing

Box model: margins, borders, padding

Flexbox basics for layout design

Creating a simple responsive webpage with HTML and CSS

Week 4: Advanced CSS

CSS Grid for advanced layouts

Media queries for responsiveness

Pseudo-classes and pseudo-elements

CSS transitions and animations

Week 5: JavaScript Basics

JavaScript syntax and DOM manipulation

Variables (var, let, const)

Functions and event listeners

Basic operations on the DOM (selecting and modifying elements)

Handling events (click, submit, etc.)

Building a simple interactive webpage (e.g., a to-do list)

Week 6: Advanced JavaScript

Working with arrays and objects

JavaScript ES6+ features

Arrow functions, template literals, destructuring

Promises and asynchronous programming

fetch API and making API calls

Error handling with try-catch

Week 7: Introduction to React

Setting up a React environment (using Create React App or Vite)

Understanding JSX and React components

Props and state management

Event handling in React

Building a basic React application (e.g., a counter app)

Week 8: React Component Lifecycle and Hooks

React component lifecycle methods

Introduction to React hooks (useState, useEffect)

Building functional components with hooks

Conditional rendering in React

Implementing a simple project with dynamic data

Week 9: React Routing and State Management

Introduction to React Router

Creating routes and navigating between pages

Passing parameters in routes

Introduction to global state management

Context API basics

Creating a multi-page React application (e.g., a blog app)

Week 10: Advanced React and APIs

Making API calls in React using fetch or Axios

Handling loading and error states

Optimizing React applications with memoization (React.memo, useMemo, useCallback)

Basic Introduction to external libraries (e.g., Material-UI, Bootstrap)

Week 11 – Week 12: Frontend Deployment – Capstone Project

Building a React app for production

Deploying a React application on platforms like Netlify, Vercel, or GitHub Pages

Optimizing frontend performance (lazy loading, code splitting)

Designing and building a complete frontend application

HTML, CSS, and JavaScript for structure and style

React for interactivity and state management

Integrating with APIs for dynamic content

Deploying the project

Project presentation and review