



# FRONTEND DEVELOPMENT (REACT)

DURATION  
**90 Days**

## COURSE OVERVIEW

This Frontend Development with React Training Program is designed to help learners build modern, responsive, and high-performance web applications using HTML, CSS, JavaScript, and React. The course focuses on real-world projects, industry best practices, and hands-on learning.

## COURSE CURRICULUM

### MODULE 1: WEB FUNDAMENTALS

#### HTML5

- Structure of a web page
- Semantic HTML elements
- Forms, inputs, validations
- Audio, video, and media elements
- Accessibility best practices

#### CSS3

- CSS syntax and selectors
- Box model and positioning
- Flexbox and Grid layout systems
- Responsive design principles
- Media queries
- Animations and transitions

## BOOTSTRAP / TAILWIND CSS

- Grid system and components
- Responsive utilities
- Custom styling and theming
- UI consistency and layout optimization

## MODULE 2: JAVASCRIPT ESSENTIALS

### CORE JAVASCRIPT

- Variables and data types
- Operators and expressions
- Control flow (if, switch, loops)
- Functions and scope
- Arrays and objects

### ADVANCED JAVASCRIPT

- ES6+ features (let/const, arrow functions, spread/rest)
- Destructuring and template literals
- Promises and async/await
- Error handling
- Event handling and DOM manipulation

## MODULE 3: REACT FUNDAMENTALS

- Introduction to React
- React architecture and workflow
- JSX syntax
- Components (functional components)
- Props and state
- Event handling in React

## MODULE 4: REACT HOOKS & STATE MANAGEMENT

- useState and useEffect
- useContext
- useRef and useMemo
- Custom hooks

- Lifting state up
- State management best practices

## MODULE 5: ROUTING & NAVIGATION

- Introduction to React Router
- Route configuration
- Nested routes
- Dynamic routing
- Protected routes
- Programmatic navigation

## MODULE 6: FORMS & USER INPUT HANDLING

- Controlled and uncontrolled components
- Form validation techniques
- Handling errors and user feedback
- Using libraries (Formik / React Hook Form)

## MODULE 7: API INTEGRATION & DATA HANDLING

- REST API concepts
- Fetch API and Axios
- Handling asynchronous data
- CRUD operations
- Authentication & authorization basics
- Token-based authentication (JWT)

## MODULE 8: UI COMPONENTS & STYLING

- Component-based UI design
- Reusable components
- Conditional rendering
- Dynamic styling
- CSS Modules and Styled Components
- Material UI / Ant Design overview

## MODULE 9: PERFORMANCE OPTIMIZATION

- React rendering lifecycle
- Memoization techniques
- Code splitting and lazy loading
- Avoiding unnecessary re-renders
- Best practices for scalable apps

## MODULE 10: TESTING & DEBUGGING

- Debugging React applications
- React Developer Tools
- Unit testing with Jest
- Component testing with React Testing Library
- Error boundaries

## MODULE 11: BUILD TOOLS & DEPLOYMENT

- Node.js and npm basics
- Project structure and environment variables
- Webpack and Vite overview
- Production build process
- Deployment on Netlify, Vercel, and AWS S3

## MODULE 12: MODERN FRONTEND PRACTICES

- Responsive & mobile-first design
- Accessibility (ARIA, WCAG basics)
- SEO basics for frontend
- Progressive Web Apps (PWA)
- Code quality and linting

## MODULE 13: CAPSTONE PROJECTS

### HANDS-ON PROJECTS

- Responsive Portfolio Website
- E-commerce Frontend Application
- Admin Dashboard with API Integration
- Real-time Data Display Application

## TOOLS & TECHNOLOGIES COVERED

- HTML5, CSS3, JavaScript (ES6+)
- React.js
- Bootstrap / Tailwind CSS
- Axios / Fetch
- Git & GitHub
- VS Code

## CAREER OUTCOMES

- Frontend Developer
- React Developer
- UI Developer
- Web Application Developer