



### Phase 1: Fundamentals (Scratch)

Duration: 1-2 weeks



#### *HTML, CSS & JS Basics (Brush-up)*

- HTML5, CSS3
- JavaScript ES6+ (let/const, arrow functions, template literals)
- DOM Manipulation
- Fetch API
- Array & Object methods (map, filter, reduce)



#### *Introduction to React*

- What is React?
- SPA vs MPA
- Installation (create-react-app, Vite)
- Folder Structure
- JSX and Babel
- Functional vs Class Components
- Props and State



#### *React Basics*

- Handling Events
- Conditional Rendering
- List Rendering (.map)
- Forms and Controlled Components
- useState Hook



### Phase 2: Intermediate Concepts

Duration: 2-3 weeks



#### *Component Deep Dive*

- Component Composition
- Lifting State Up
- Reusability and DRY Principles

## ✓ *React Router*

- `react-router-dom` setup
- `Route`, `Link`, `NavLink`
- `useParams`, `useNavigate`
- Nested Routes
- Route protection (basic auth guard)

## ✓ *useEffect Hook*

- `useEffect` for side effects
- Dependency arrays
- Cleanup function

## ✓ *Forms (Advanced)*

- Input validations
- Custom hooks for forms
- Libraries: `Formik` + `Yup`



## Phase 3: Advanced React

Duration: 3-4 weeks

## ✓ *State Management*

- Props Drilling Problem
- Context API
- `useReducer`
- Redux Toolkit (RTK)
- Zustand (modern alternative)

## ✓ *HTTP Requests*

- Axios vs Fetch
- REST API Integration
- `useEffect` + async calls
- Error Handling & Loading States

## ✓ *Custom Hooks*

- What & Why
- Writing your own hooks

### ✓ *Performance Optimization*

- React.memo
- useCallback
- useMemo
- Lazy loading (React.lazy, Suspense)
- Code splitting

### ✓ *Testing*

- Unit Testing with Jest
  - Component Testing with React Testing Library
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## 📱 Phase 4: Ecosystem & Mastery

Duration: 2-4 weeks

### ✓ *React with TypeScript*

- Why TypeScript?
- Props & State types
- Typing events and hooks

### ✓ *Next.js (BONUS for Mastery)*

- File-based routing
- SSR, SSG, ISR
- API routes
- App Router (Next 13+)

### ✓ *Animations*

- Framer Motion
- React Transition Group

### ✓ *PWA & Deployment*

- Hosting: Vercel / Netlify / Firebase
  - Lighthouse Performance checks
  - Convert React App into PWA
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## Projects (At Every Stage)

### Stage

### Project Ideas

Beginner	Portfolio, Calculator, To-Do App
Intermediate	Blog App, Weather App, Notes App
Advanced	E-commerce, Chat App (Socket.io + MERN), Admin Dashboard
Master	Full-stack App (MERN), Next.js SaaS-style App

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