## **🔥 Module 6: Advanced React Roadmap**

### **Unit 1: Redux – State Management**

* Introduction to Redux and when to use it
* Redux store, actions, and reducers
* Connecting Redux to React using Provider and connect / useSelector / useDispatch
* Asynchronous actions with:   
  + Redux Thunk
  + Redux Saga (overview + use cases)

### **Unit 2: React Testing Library – Component Testing**

* Introduction to React Testing Library (RTL)
* Writing basic and advanced component tests
* Testing user interactions and form behavior
* Mocking API calls and async components
* Writing meaningful and maintainable test cases

### **Unit 3: Performance Optimization**

* Memoization with React.memo, useMemo, and useCallback
* Code splitting using dynamic import()
* Lazy loading components with React.lazy and Suspense
* List virtualization (e.g., react-window or react-virtualized)

### **Unit 4: Server-Side Rendering (SSR)**

* Why SSR: SEO benefits and first paint performance
* Understanding how SSR works in React
* Introduction to frameworks that support SSR (e.g., Next.js)
* Building an SSR-enabled component or page

### **Capstone Project**

**Build a complete advanced React application** Examples:

* Social media feed with likes/comments functionality
* E-commerce site with product filters, cart, and checkout
* Dashboard with authenticated routes

Focus areas:

* Use of Redux for state
* Component testing with RTL
* Performance optimization