

Course 11: Real-Time Applications with MERN

■ Overview

Build collaborative, live apps.

■ Prerequisites

- Express / React

■ Outcomes

Socket.IO, scaling, auth, UX.

■ Benefits

This course equips learners with the ability to design and deploy real-time applications that support collaboration, live updates, and interactive user experiences. Students will learn the fundamentals of WebSockets and Socket.IO, including namespaces, rooms, and broadcast patterns for presence and typing indicators. They will integrate real-time state synchronization in React with robust reconciliation strategies, implement reliable notification systems with acknowledgments and retries, and build live dashboards using batching techniques. The course emphasizes production readiness with scaling approaches like sticky sessions and Redis adapters, enforcing security through auth tokens, quotas, and rate limiting. Learners will also explore offline and sync strategies with reconnection logic and an introduction to event sourcing. By the end, participants will be able to deliver highly interactive, resilient, and scalable real-time applications.

■ Training Key Features

- WebSocket and transport fundamentals
- Socket.IO setup with namespaces and rooms
- Broadcast patterns, presence, and typing indicators
- Real-time React state synchronization
- Notifications with reliability (acks/retries)
- Real-time charts and dashboards with batching updates
- Scaling strategies: sticky sessions, Redis adapter
- Security with tokens, quotas, and rate limiting
- Offline/sync strategies and event sourcing primer
- Deployment with reverse proxies and timeouts

■ Module Breakdown

- Module 1 – WebSocket Fundamentals ::: protocols && transports
- Module 2 – Socket.IO Setup ::: namespaces && rooms && configuration
- Module 3 – Broadcast Patterns ::: presence && typing indicators && messaging
- Module 4 – Real-Time React ::: state sync && reconciliation strategies
- Module 5 – Notifications ::: reliability && acknowledgments && retries

- Module 6 – Real-Time Dashboards ::: charts && batching updates && visualization
- Module 7 – Scaling ::: sticky sessions && Redis adapter && horizontal scaling
- Module 8 – Security ::: auth tokens && rate limiting && quotas
- Module 9 – Offline/Sync ::: reconnection logic && event sourcing primer
- Module 10 – Deployment ::: reverse proxies && timeouts && production setup