

MERN Stack Training – Course Catalog

Duration: 2 Months

Main Concepts:

- **Introduction to MongoDB:**
NoSQL Database, Document Structure, CRUD Operations, Indexing, Aggregation, Data Modeling
- **Node.js:**
JavaScript Runtime Environment, Event-Driven Architecture, Non-blocking I/O, Express.js Framework, Asynchronous Programming
- **Express.js:**
Web Application Framework, Routing, Middleware, Error Handling, RESTful API Development, Authentication
- **MongoDB Integration with Node.js:**
Mongoose ORM, CRUD Operations with MongoDB, Data Validation, Schema Design, MongoDB Atlas
- **JavaScript ES6+:**
Modern JavaScript Syntax, Arrow Functions, Promises, Async/Await, Destructuring, Template Literals
- **React.js:**
Component-Based Architecture, JSX Syntax, Virtual DOM, React State, React Router, Hooks, Functional Components
- **State Management with Redux:**
Store, Actions, Reducers, Middleware, Dispatching Actions, Redux DevTools, React-Redux Integration
- **REST API Development:**
Building RESTful APIs with Express.js, HTTP Methods (GET, POST, PUT, DELETE), Authentication (JWT, Passport.js)
- **Database Integration:**
MongoDB with Mongoose, Data Modeling, Aggregation Pipeline, Population, Query Optimization
- **Frontend Development with React:**
React Components, Props, State, Event Handling, React Lifecycle Methods, Conditional Rendering, Forms Handling
- **Routing in React:**
React Router, Dynamic Routing, Nested Routes, Route Parameters, Redirects, Navigation Guards
- **User Authentication & Authorization:**
JWT Authentication, Passport.js, User Login, Registration, Token Management, Secure Routes
- **Frontend Styling with CSS & Bootstrap:**
Responsive Design, CSS Flexbox & Grid, Bootstrap Framework, Material-UI, Styling Components
- **Deployment & Version Control:**
Git and GitHub for Version Control, Deployment on Heroku, Vercel, or AWS, Continuous Deployment
- **Testing:**
Unit Testing, Jest Framework, Testing React Components, API Testing with Postman

- **Web Security:**
HTTPS, CORS, Authentication Security, Data Validation, Prevention of Common Attacks (XSS, CSRF)
- **Real-Time Web with WebSockets:**
Building Real-Time Applications, Socket.io for Chat Apps, Real-Time Data Updates
- **Performance Optimization:**
Code Splitting, Lazy Loading, Optimizing React Applications, Server-Side Caching, Database Indexing
- **Building Full-Stack Applications:**
Frontend-Backend Integration, Deploying Full-Stack Apps, Environment Variables, Handling CORS in Full Stack Apps

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