

MERN Stack Development Course

Course Duration: 3 Months

The MERN Stack Development course is designed to train learners in building powerful and modern full-stack web applications using MongoDB, Express.js, React.js, and Node.js. This course covers both front-end and back-end development, API design, and database integration with real-world project experience.

Module 1: Introduction to MERN Stack

- Understanding Full Stack Development Concepts
- Overview of MongoDB, Express.js, React.js, and Node.js
- Setting up the Development Environment (VS Code, Node.js, npm)
- Basic Git and GitHub Workflow

Module 2: Front-End Development with React.js

- Introduction to React and JSX
- Components, Props, and State Management
- React Hooks (useState, useEffect, useContext)
- Routing using React Router
- Forms and Validation
- Connecting React with APIs using Axios / Fetch

Module 3: Back-End Development with Node.js & Express.js

- Introduction to Node.js Architecture and NPM
- Building RESTful APIs with Express.js
- Routing and Middleware
- Handling Requests and Responses
- Error Handling and Logging
- Authentication with JWT and Middleware Security

Module 4: Database Management with MongoDB

- Introduction to NoSQL and MongoDB
- Collections, Documents, and CRUD Operations
- Data Modeling and Schema Design using Mongoose
- Relationships and Data Validation
- Connecting MongoDB with Node.js

Module 5: Integration & State Management

- Integrating Front-End and Back-End APIs
- Global State Management using Redux / Context API
- Managing Asynchronous Operations with Thunk / Saga
- Role-Based Authentication and Authorization

Module 6: Deployment & DevOps Basics

- Environment Variables and Configuration
- Deploying MERN Apps to Render / Vercel / AWS / Heroku
- Introduction to Docker for MERN Applications
- CI/CD Overview and Version Control with Git

Module 7: Real-Time Project

- Developing a Complete MERN Application (e.g., Job Portal / E-Commerce App)
- Front-End + Back-End + Database Integration
- Testing and Debugging
- Final Deployment and Presentation

