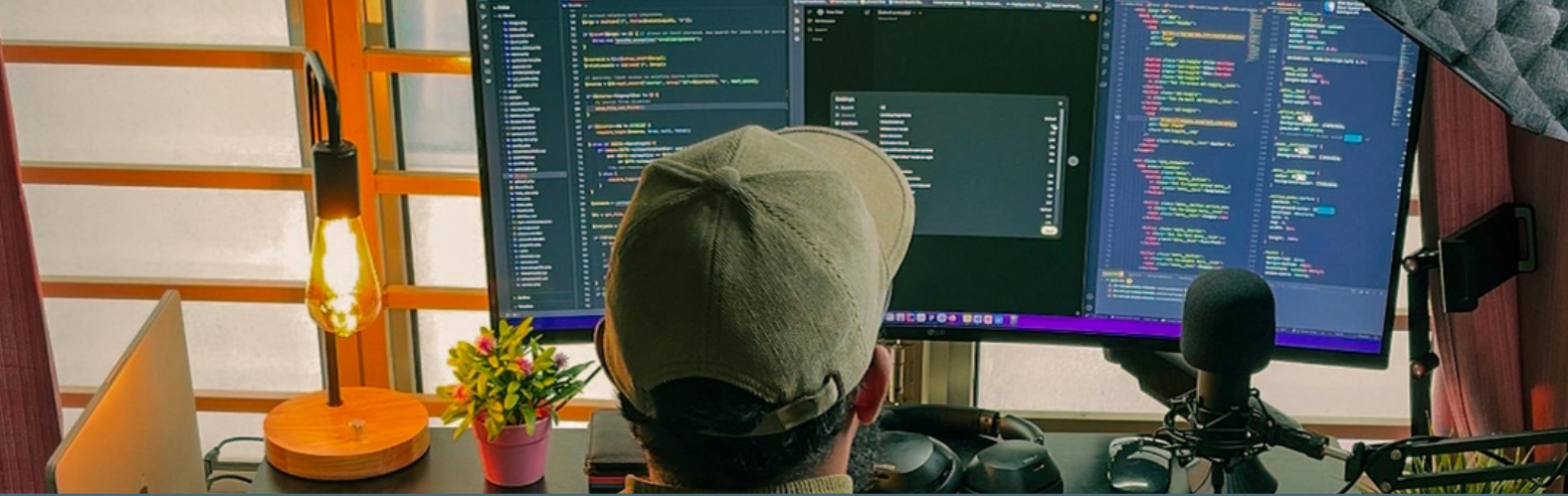




MERN Stack Development Curriculum

Course Duration

- 3–6 Months (Beginner to Advanced)
- Mode: Classroom / Online / Hybrid
- Eligibility: Students, Freshers, Working Professionals, Entrepreneurs

Module 1: Web Development

Fundamentals

- How Internet Works
- Client–Server Architecture
- HTTP/HTTPS & REST APIs
- Web Browsers & Rendering
- Introduction to MERN Stack

Module 2: HTML5 & CSS3

- HTML5 Basics & Semantic Tags
- Forms & Validations
- CSS Selectors & Box Model
- Flexbox & Grid
- Responsive Web Design
- Animations & Transitions

Module 3: JavaScript (Core + ES6)

- Variables, Data Types & Operators
- Functions & Scope
- Loops & Conditions
- DOM Manipulation
- Events Handling
- ES6 Features
- Error Handling

Module 4: Front-End Framework

– React.js

- React Introduction & Setup
- JSX & Components
- Props & State
- Hooks (useState, useEffect, useContext)
- React Router
- Form Handling & Validation
- API Integration
- Performance Optimization

Module 5: Version Control (Git & GitHub)

- Git Basics
- Repositories
- Branching & Merging
- GitHub Collaboration Workflow

Module 6: Backend Development –

Node.js

- Node.js Architecture
- Modules & NPM
- File System
- Event Loop
- Creating Server with Node.js

Module 7: Backend Framework –

Express.js

- Express Basics
- Routing
- Middleware
- REST API Development
- Authentication & Authorization
- Error Handling

Module 8: Database – MongoDB

- NoSQL Concepts
- MongoDB CRUD Operations
- Schema Design
- Indexing
- Relationships

- MongoDB Atlas

Module 9: Mongoose (ODM)

- Schemas & Models
- Validation
- Middleware
- Population
- Aggregation Basics

Module 10: Authentication & Security

- JWT Authentication
- Password Hashing (bcrypt)
- Role-Based Access Control
- API Security Best Practices
- Environment Variables

Module 11: Full Stack Integration

- Connecting React with Node & MongoDB
- RESTful APIs
- State Management
- Error Handling
- Deployment Ready Code

Module 12: Deployment & DevOps Basics

- Deployment on Vercel / Netlify (Frontend)
- Backend Deployment

- MongoDB Atlas
- Environment Setup
- CI/CD Basics

Module 13: Real-World Projects

- Full Stack CRUD Application
- User Authentication System
- E-Commerce Web App
- Admin Dashboard
- Real-Time Chat App (Optional)

Module 14: Interview & Placement Preparation

- Front-End Interview Questions
- Live Coding Practice
- Resume & Portfolio Building
- Mock Interviews
- Industry Use-Cases

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