

MERN Stack (3 Months)

Duration: 3 Months (~120 Hours)

Mode: Live Online / Classroom

Role after completion: Full Stack Developer (MERN)

Certifications prepared: MongoDB University (M001/M220), Full Stack MERN (academy)

Tools & Technologies: MongoDB, Mongoose, Express.js, Node.js, React, JWT, bcrypt, Multer, GridFS/S3, Postman, Jest, Docker (intro), Git & GitHub

Syllabus

Week 1: Backend Foundations

- Node.js runtime, npm/yarn scripts
- Express app structure, routers, middleware
- MongoDB & Mongoose models, schema design
- Assignment

Week 2: RESTful APIs

- CRUD endpoints, validation, error handling
- Pagination, sorting, filtering patterns
- Postman collections & tests
- Assignment

Week 3: Data Modeling & Security

- Relationships (1–1, 1–N, N–N), refs vs embeds
- Aggregation pipelines & indexes
- Security: validation, helmet, rate limits, CORS
- Assignment

Week 4: React Integration

- Connect React frontend to Express API
- Auth-aware routes & protected UI
- Patterns for forms and tables
- Assignment
- Mock Interview 1

Week 5: Auth & Authorization

- JWT auth flow, refresh tokens
- RBAC (admin/user), route guards
- Password hashing (bcrypt), reset flows

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- Assignment

Week 6: Files & Media

- File uploads with Multer, validation
- GridFS or S3 storage integration
- Serving images securely
- Assignment

Week 7: Testing & Deployment

- API tests (Jest/Supertest) & basic component tests
- Env configs, Docker basics
- Deploy: backend (Render/EC2) + frontend (Vercel/Netlify)
- Assignment

Week 8: Observability & Hardening

- Logging (winston), health checks, metrics
- Error tracking & uptime monitoring
- DB performance tips & indexing
- Assignment
- Mock Interview 2

Projects

- MERN E-commerce (products, cart, checkout, admin)
- MERN Blog/CMS (posts, comments, tags, roles)
- MERN Issue Tracker (projects, issues, Kanban board)