

MEAN STACK DEVELOPER – FULL SYLLABUS

(Developer View / Professional Edition)

Duration: 3–4 Months

Technology Stack: MongoDB + Express.js + Angular + Node.js

Mode: Full Practical, Project-Based

MODULE 1:

Web & JavaScript Foundations

1. Internet & Web Basics

- **How the web works (HTTP/HTTPS)**
- **Client–Server architecture**
- **REST APIs**
- **MVC vs MVVM**

2. HTML5

- **Semantic elements**
- **Forms, media, tables**
- **SEO tags**

3. CSS3

- **Flexbox**
- **Grid**
- **Responsive design**
- **Bootstrap / Tailwind basics**

4. JavaScript (ES6+)

- **Variables, functions, scope**
- **Arrow functions, destructuring**
- **Promise, async/await**
- **Array/object methods**
- **Error handling**
- **DOM manipulation**

MODULE 2: TypeScript (Core for Angular Developers)

- **Types & Interfaces**
- **Classes & objects**
- **Generics**
- **Modules & namespaces**
- **Decorators (Intro)**
- **TypeScript configuration**

MODULE 3: Angular Development (Frontend)

1. Angular Basics

- **Architecture overview**
- **Components**

- **Modules**
- **Templates**
- **Data binding**
- **Directives (structural & attribute)**

2. Angular Advanced

- **Services & Dependency Injection**
- **Routing & Navigation**
- **Route guards (AuthGuard)**
- **HTTP Client module**
- **Interceptors**
- **Observables & RxJS**
- **Pipes (built-in & custom)**

3. Angular Forms

- **Template-driven forms**
- **Reactive forms**
- **Validation (built-in & custom validators)**

4. Angular UI Integration

- **Angular Material**
- **Bootstrap / Tailwind**
- **Reusable components**

5. Angular Optimization

- **Lazy loading**
- **Code splitting**
- **ChangeDetection strategies**

MODULE 4: Node.js (Backend Development)

Node.js Fundamentals

- **Event-driven architecture**
- **Modules**
- **NPM packages**
- **Asynchronous programming**

Core Modules

- **fs**
- **path**
- **crypto**
- **http**

Building REST APIs

- **Routing**
- **Controllers**
- **Middleware**

- **Error handling**
- **Logging**

API Security

- **JWT authentication**
- **bcrypt hashing**
- **Role-based access control**

MODULE 5: Express.js (Backend Framework)

- **Basic & advanced routing**
- **Middleware architecture**
- **File upload (Multer)**
- **Validation (express-validator)**
- **Session & cookies**
- **CORS setup**
- **Pagination**
- **Rate limiting**

MODULE 6: MongoDB (Database Layer)

MongoDB Basics

- **Documents & collections**
- **CRUD operations**

- **Indexing**
- **Aggregation pipeline**
- **Joins using \$lookup**

Mongoose

- **Schemas**
- **Models**
- **Validation**
- **Populate (relationships)**
- **Pre & post hooks**

Advanced

- **Transactions**
- **Performance optimization**

MODULE 7: MEAN Stack Integration

- **Connecting Angular ↔ Node.js**
- **Consuming REST APIs**
- **Handling CORS**
- **JWT-based authentication**
- **Guarding Angular routes**
- **File upload end-to-end**

- **Environment management**
- **Form to Database full workflow**

MODULE 8:

Deployment & DevOps (Developer Level)

Frontend Deployment

- **Angular build & production configs**
- **Deploy on Firebase / Netlify / Vercel**

Backend Deployment

- **Express & Node deployment on**
 - **Render**
 - **Railway**
 - **EC2**
 - **cPanel**

Database Deployment

- **MongoDB Atlas (cloud DB)**

DevOps Basics

- **Git / GitHub**
- **PM2 process manager**
- **NGINX reverse proxy**

- **CI/CD basics**

MODULE 09:

Real-World Projects

Mini Projects

Angular CRUD App

Authentication App (JWT + Angular Guards)

File Upload System

Blog App (MEAN)

Major Full-Stack Projects

E-Commerce MEAN App (Cart, Admin, Payment Gateway)

HR Management System

School/College ERP (MEAN)

Hospital Management System

Job Portal MEAN Stack

Inventory Management System

Online Course Platform

MODULE 09: Resume & Interview Training

- **GitHub project portfolio**
- **Architecture explanations**
- **200+ MEAN Stack interview questions**

- **Best practices for developer resumes**