Professional Mean-Stack Web Development Course Outline

Module 1: Introduction to MEAN Stack Development

- What is MEAN Stack? (MongoDB, Express.js, Angular, Node.js)
- Understanding Full-Stack Development
- Overview of RESTful APIs & MVC Architecture
- Setting Up the Development Environment (VS Code, Git, Node.js, MongoDB, Angular CLI)

Module 2: Front-End Development with Angular

Angular Basics

- Introduction to Angular & TypeScript
- Components, Modules, and Directives
- Data Binding & Event Handling
- Angular Forms (Template-Driven & Reactive Forms)

Advanced Angular Features

- Services & Dependency Injection
- Angular Routing & Lazy Loading
- State Management with NgRx
- HTTP Client for API Integration
- RxJS & Observables for Reactive Programming

Module 3: Styling & UI Development in Angular

- CSS Frameworks (Bootstrap, Tailwind CSS, Material UI)
- Angular Material Components
- Responsive Web Design (Flexbox, Media Queries)

Module 4: Back-End Development with Node.js & Express.js

- Introduction to Node.js & npm
- Building an Express.js Server
- Middleware & Routing in Express
- Handling HTTP Requests & Responses
- Error Handling & Logging

Module 5: Database Management with MongoDB & Mongoose

- Introduction to MongoDB & NoSQL Databases
- CRUD Operations (Create, Read, Update, Delete)
- Connecting MongoDB with Express using Mongoose
- Data Modeling & Schema Design
- Indexing & Performance Optimization

Module 6: RESTful API Development

- Creating APIs with Express & Node.js
- Handling Requests & Responses (GET, POST, PUT, DELETE)
- Authentication & Authorization (JWT & OAuth)
- Uploading & Storing Files (Multer, Cloudinary, AWS S3)
- Implementing Role-Based Access Control (RBAC)

Module 7: Full-Stack Integration

- Connecting Angular Front-End with Node.js & Express Back-End

- Fetching & Displaying Data from MongoDB
- Handling Forms & User Inputs
- Deploying a Full-Stack MEAN Application

Module 8: Authentication & Security

- User Authentication (JWT, OAuth, Session-Based Auth)
- Hashing Passwords with bcrypt.js
- Securing APIs & Preventing Attacks (XSS, CSRF, SQL Injection)
- Implementing Secure Cookies & HTTPS

Module 9: Real-Time Features & WebSockets

- Introduction to WebSockets & Socket.io
- Building a Real-Time Chat Application
- Notifications & Live Updates in MEAN Stack
- Implementing Push Notifications

Module 10: Deployment & DevOps

- Hosting Front-End & Back-End (Vercel, Netlify, Heroku, AWS)
- Connecting to a Remote MongoDB Database (MongoDB Atlas)
- CI/CD Pipeline Setup (GitHub Actions)
- Environment Variables & Deployment Security

Module 11: Advanced MEAN Stack Development

- GraphQL vs. REST API
- Microservices & Serverless Architecture
- Progressive Web Apps (PWAs)
- Performance Optimization (Lazy Loading, Code Splitting)

Module 12: Final Project & Career Preparation

- Developing a Full-Stack MEAN Application (E-commerce, Dashboard, Blog, Social Media App)
- Debugging & Performance Optimization
- Preparing for MEAN Stack Developer Job Interviews
- Portfolio Building & Resume Optimization