KOENIG SOLUTIONS · COURSE OUTLINE

MEAN Angular Full Stack Web Developer

Learn to build full stack web applications with HTML5, CSS3, JavaScript, TypeScript, Angular, Node.js, Express, MongoDB and MySQL, from design to deployment.

15 Days	15	73	43
DURATION	MODULES	TOPICS	HANDS-ON LABS

COURSE OVERVIEW

This course covers front-end foundations including HTML5, CSS3 responsive design and JavaScript essentials through ES6+, followed by TypeScript and Angular topics such as components, forms, routing, services, HTTP, observables, pipes, directives and guards. It then moves to back-end development with Node.js and Express, data persistence with MongoDB and Mongoose, and relational data with MySQL and Sequelize. Later modules address JWT authentication and role-based access, connecting Angular to Express APIs, and deploying applications to platforms such as Vercel, Netlify, Render, Heroku and MongoDB Atlas. The course concludes with a capstone project combining a MongoDB and MySQL backend with an Angular frontend, including authentication, dashboards and deployment.

WHO THIS COURSE IS FOR

- **Front-End Developers**
- **Back-End Developers**
- **Full Stack Developers**
- **Web Developers**
- **Software Engineers**

PREREQUISITES

- Knowledge of Web Development and any programming language.

TOOLS AND REQUIREMENTS

- VSCode
- Git
- Node
- Angular CLI
- MongoDB Compass
- MySQL Workbench

LEARNING OBJECTIVES

What You Will Learn

- Describe full stack web development concepts and the MEAN stack
- Apply HTML5 and CSS3 to build responsive page layouts
- Implement JavaScript features such as closures, DOM and events
- Apply ES6+ features including async/await and array methods
- Build Angular applications with components, forms and routing
- Implement Angular services, HTTP calls and RxJS observables
- Develop RESTful APIs with Node.js, Express and middleware
- Configure authentication using JWT, bcrypt and role-based access

COURSE SYLLABUS

15 Modules, 73 Topics

DAY 1 Introduction to Full Stack & HTML5 Basics

01 — 3 Labs

TOPICS

- Full Stack Web Development Overview
- MEAN Stack vs Other Stacks
- **Developer Tools:** VSCode, Git, Node, Angular CLI, MongoDB Compass, MySQL Workbench
- **HTML5 Elements:** Forms, Semantic Tags, Multimedia, Accessibility

DAY 2 CSS3 & Responsive Web Design

02 — 3 Labs

TOPICS

- **CSS Fundamentals:** Selectors, Box Model, Positioning
- Flexbox & Grid Layout
- Media Queries, CSS Variables
- CSS Transitions, Animations, Pseudo-classes

DAY 3 JavaScript Essentials

03 — 3 Labs

TOPICS

Variables, Data Types, Operators, Conditions · Functions, Scope, Closures · DOM Manipulation · Event Handling · Debugging in DevTools

DAY 4 Advanced JavaScript & ES6+

04 — 3 Labs

TOPICS

- let vs const, Arrow Functions, Template Literals
- Destructuring, Spread, Rest
- Promises, Async/Await
- **Array methods:** map, filter, reduce
- Event Loop, Call Stack

DAY 5 TypeScript Essentials

05 — 3 Labs

TOPICS

Type Annotations, Enums, Interfaces · Classes, Inheritance · Generics, Union & Intersection Types · tsconfig.json & Compilation

DAY 6 Angular Basics

06 — 3 Labs

TOPICS

Angular Architecture, CLI, Project Structure · Components, Modules, Templates · Property, Event, Two-way Binding (ngModel) · Lifecycle Hooks

DAY 7 Angular Forms & Routing

07 — 3 Labs

TOPICS

- Template-driven vs Reactive Forms
- FormGroup, FormControl, Validation
- Angular Router, Route Parameters, Nested Routes
- Route Redirection & Wildcards

DAY 8 Angular Services, HTTP & Observables

08 — 3 Labs

TOPICS

- Angular Services and Dependency Injection
- HttpClient for API Calls
- Observables and RxJS Operators (map, catchError)
- HTTP Interceptors and Error Handling

DAY 9 Advanced Angular - Pipes, Directives & Guards

09 — 3 Labs

TOPICS

- Built-in Pipes & Custom Pipes
- Structural & Attribute Directives (ngIf, ngFor, ngClass)
- Custom Directives
- Route Guards (AuthGuard, CanActivate)
- Lazy Loading & Feature Modules

DAY 10 Node.js & Express.js Essentials

10 — 3 Labs

TOPICS

Node.js Architecture, Modules, npm · **Express.js:** Routing, Middleware, Body Parsing · RESTful API Design Principles · Express Validator & Error Handling

DAY 11 MongoDB & Mongoose Integration

11 3 Labs

TOPICS

MongoDB Concepts: Collections, Documents · **Mongoose:** Schema, Model, Validation · CRUD with Mongoose · Data Population (References)

DAY 12 MySQL & Sequelize ORM

12 3 Labs

TOPICS

SQL vs NoSQL Overview · **MySQL Basics:** DDL, DML, Joins, Normalization · Sequelize Setup and Configuration · Sequelize Models, Associations · CRUD Operations with Sequelize

DAY 13 JWT Authentication & Role-based Access

13 3 Labs

TOPICS

User Auth: Registration, Login · Hashing Passwords with bcrypt · JWT Token Generation & Validation · Securing Routes & Role-based Access

DAY 14 Angular + Node Integration & Deployment

14 3 Labs

TOPICS

Connecting Angular to Express APIs · Angular Environments, Proxy Configs · CORS Handling

DEPLOYMENT

Angular: Vercel/Netlify · Node.js: Render/Heroku · MongoDB Atlas & MySQL Cloud Setup

DAY 15 Final Capstone Project & Presentation

15

Lab

TOPICS

- **Capstone Project:** Inventory Management System (Mongo + MySQL)

ANGULAR FRONTEND

- Auth (JWT-based)
- Product Dashboard (CRUD)
- Order List (MySQL-based)
- Role-based Admin Panel

NODE.JS BACKEND

- MongoDB for product catalog (Mongoose)
- MySQL for user and order management (Sequelize)

TASKS

- Setup GitHub repo with README & project board
- Implement authentication flow
- Secure and deploy backend & frontend
- Present project to peers/instructors

HANDS-ON LABS

Practise What You Learn

#	MODULE	ACTIVITY
01	**Introduction to Full Stack & HTML5 Basics**	■ Create HTML resume with semantic tags ■ Design a responsive login form ■ Add media (video/audio) elements
02	**CSS3 & Responsive Web Design**	■ Layout a responsive product page with Flexbox ■ Build a grid-based portfolio site ■ Animate menu and image hover states
03	**JavaScript Essentials**	■ Dynamic form validation ■ Build a currency converter ■ JavaScript-based tab component
04	**Advanced JavaScript & ES6+**	■ Build a movie search app using Fetch API ■ Dynamic table with search/filter using array methods ■ Async image gallery loader
05	**TypeScript Essentials**	■ Create TypeScript model for a blog post ■ Build a contact form with type-safe validation ■ Convert a JS app to TypeScript
06	**Angular Basics**	■ Create product card with binding ■ Build a reusable navbar/footer ■ Lifecycle hook console logging demo

#	MODULE	ACTIVITY
07	**Angular Forms & Routing**	■ Build login form with reactive form ■ Route between home, about, and dashboard ■ Validate user input with Angular Validators
08	**Angular Services, HTTP & Observables**	■ Service to fetch external product data ■ Handle HTTP errors and display toast messages ■ Interceptor to inject auth token
09	**Advanced Angular - Pipes, Directives & Guards**	■ Create custom pipe for text formatting ■ Build directive for tooltips ■ Implement AuthGuard to protect dashboard
10	**Node.js & Express.js Essentials**	■ Build Express CRUD APIs for users ■ Apply middleware for logging and validation ■ Create error handler middleware
11	**MongoDB & Mongoose Integration**	■ Create models for users and products ■ Build routes for MongoDB-based APIs ■ Use population to link user and product data
12	**MySQL & Sequelize ORM**	■ Setup MySQL tables for users and orders ■ Build REST API using Express + Sequelize ■ **Create association (1:** M) between users and orders
13	**JWT Authentication & Role-based Access**	■ Build login/register APIs with password hashing ■ Protect routes using JWT middleware ■ Add admin/user access levels to endpoints
14	**Angular + Node Integration & Deployment**	■ Build Angular service to consume Express API ■ Configure environments for dev/prod ■ Deploy Angular + Node app live
15	**Final Capstone Project & Presentation**	Complete End-to-End Development

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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