15 Days - Fundamentals of Backend Development

Module 1: Introduction to Backend Development (1 Day)

- Role of Backend in Web Development
- Introduction to Server, Client, and APIs
- Overview of Backend Technologies (Node.js, Python, PHP, etc.)

Module 2: Setting up the Environment (2 Days)

- Installing and configuring Node.js
- Introduction to Postman for API Testing

Module 3: Basics of Node.js and JavaScript for Backend (4 Days)

- Core concepts: Modules, Events, and Streams
- Creating a basic server with Node.js

Module 4: Introduction to Databases (3 Days)

- Basics of Databases: SQL vs NoSQL
- Setting up MongoDB and MySQL

Module 5: Building Simple APIs (5 Days)

- Creating RESTful APIs with Node.js and Express.js
- Handling routes and requests

30 Days - Intermediate Backend Development

Includes All 15-Day Modules

Module 6: Advanced Node.js Concepts (5 Days)

- Middleware in Express.js
- Error Handling and Logging

Module 7: Database Operations (5 Days)

- Advanced CRUD operations in MongoDB
- MySQL joins and queries

Module 8: Authentication and Authorization (5 Days)

- Session-based Authentication
- JWT (JSON Web Tokens)

Module 9: Deployment Basics (2 Days)

- Hosting on Platforms like Heroku and AWS
- Environment Variables and Config Management

Module 10: Intermediate Project (5 Days)

- Build an API-based application with a connected database

45 Days - Advanced Backend Development

Includes All 30-Day Modules

Module 11: Advanced Database Concepts (5 Days)

- Indexing and Query Optimization in MongoDB/MySQL
- Database Schema Design Principles

Module 12: RESTful API Design Principles (5 Days)

- Best practices for designing scalable APIs
- Versioning and Pagination

Module 13: File Handling and Uploads (5 Days)

- Managing file uploads with Multer
- Storing files in cloud storage (AWS S3)

Module 14: WebSockets and Real-Time Communication (5 Days)

- Introduction to WebSockets with Socket.io
- Building a basic real-time chat application

Module 15: Advanced Project (10 Days)

- Develop a fully functional backend system with real-time features

60 Days - Comprehensive Backend Development

Includes All 45-Day Modules

Module 16: API Security and Optimization (5 Days)

- Securing APIs against SQL Injection, XSS, and CSRF
- Rate Limiting and API Throttling

Module 17: Advanced Deployment Techniques (5 Days)

- Setting up CI/CD pipelines (GitHub Actions, Jenkins)
- Docker Basics for Containerization

Module 18: Microservices Architecture (5 Days)

- Introduction to Microservices
- Building a simple microservice

Module 19: Comprehensive Project (10 Days)

- Building a complete backend for a scalable web application