

Enterprise API Development & Web Services Architecture

Course Duration: 40 Hours

Course code: API-EWSA-ENT-01

1. Course Overview

This course provides in-depth knowledge of designing, developing, and managing enterprise-level APIs and web services. It covers RESTful and SOAP services, API security, microservices architecture, and cloud-based API deployment to help organizations build scalable and secure integrations.

2. What you'll learn?

By the end of the course, you will be able to:

- Understand API architecture and design principles
- Build RESTful and SOAP web services
- Work with JSON, XML, and data exchange formats
- Implement API security using OAuth2, JWT, and API keys
- Use API gateways and management platforms
- Design microservices-based systems
- Integrate enterprise and third-party applications
- Test, document, and version APIs
- Deploy APIs in cloud environments
- Manage the full API lifecycle

3. Target Audience

- Software Developers
- Backend Developers
- API Engineers
- Cloud Engineers
- DevOps Professionals

- Solution Architects
- IT Professionals involved in integrations

4. Pre-Requisites

Before taking this course, you should have:

- Basic programming knowledge (Python, Java, or Node.js)
- Understanding of HTTP/HTTPS protocols
- Basic knowledge of databases (SQL/NoSQL)
- Familiarity with web applications

5. Course content

Module 1: Course Introduction

- Course overview and objectives
- Real-world use cases of APIs
- Industry demand and career scope

Module 2: API Fundamentals

- What is an API?
- Types of APIs (Public, Private, Partner)
- Web services overview
- REST vs SOAP comparison

Module 3: API Design Best Practices

- RESTful design principles
- URI and resource design
- HTTP methods and status codes
- Error handling strategies

Module 4: Data Formats & Exchange

- JSON and XML fundamentals

- Serialization and parsing
- Data validation techniques

Module 5: Building RESTful APIs

- Creating APIs using frameworks
- CRUD operations
- Request handling and routing
- Middleware implementation

Module 6: SOAP Web Services

- SOAP architecture
- WSDL and service contracts
- Building SOAP APIs
- SOAP security basics

Module 7: API Security

- Authentication vs Authorization
- API Keys, OAuth2, JWT
- Encryption and HTTPS
- Securing endpoints

Module 8: API Gateway & Management

- API Gateway concepts
- Rate limiting and throttling
- API monitoring and analytics
- Managing API traffic

Module 9: Microservices Architecture

- Monolithic vs Microservices
- Service communication

- Docker and containerization basics
- Introduction to Kubernetes

Module 10: API Integration

- Third-party API integration
- Enterprise system integration
- Event-driven architecture
- Message brokers (Kafka, RabbitMQ)

Module 11: API Testing

- Testing with Postman
- Automated API testing
- Debugging APIs
- Performance testing basics

Module 12: API Documentation

- Swagger/OpenAPI
- Creating API documentation
- API usability best practices

Module 13: API Versioning

- Versioning strategies
- Maintaining backward compatibility
- API lifecycle updates

Module 14: Deployment & Cloud

- Deploying APIs to cloud (AWS, Azure, GCP)
- CI/CD for APIs
- Serverless APIs
- Monitoring and logging

Module 15: Capstone Project

- Build a complete enterprise API
- Apply security, testing, and deployment
- Real-world implementation

