Develop Web Services and Microservices with Java

Course Duration: 24 Hours **Course Code: JAVA-MICRO-WS**

1. Course Overview

The **Develop Web Services and Microservices with Java** course is designed to help participants master the concepts of building scalable, secure, and efficient web services and microservices using Java. This course covers SOAP and RESTful web services, along with advanced microservice architectures, Spring Boot, containerization, and integration with modern deployment platforms. By the end of the training, learners will be able to design, implement, and deploy microservices-based applications for real-world enterprise needs.

2. What You'll Learn?

- Fundamentals of web services (SOAP & REST) in Java
- Microservices architecture and its benefits over monolithic systems
- Implementing microservices using **Spring Boot**
- API design, development, and documentation with Swagger/OpenAPI
- Inter-service communication, discovery, and load balancing
- Securing web services and microservices (OAuth2, JWT, Spring Security)
- Containerization using **Docker** and orchestration with **Kubernetes**
- Best practices for scaling, monitoring, and maintaining microservices

3. Target Audience

This course is ideal for:

- Java Developers who want to transition into microservices and cloud-native application development
- Software Engineers & Architects working on enterprise-level distributed systems
- Backend Developers aiming to design scalable APIs and services
- Students and professionals preparing for careers in **Java development and cloud-native architectures**

4. Pre-Requisites

To get the most out of this course, learners should have:

- Basic to intermediate knowledge of **Java programming**
- Understanding of **OOP (Object-Oriented Programming)** concepts
- Familiarity with **SQL/Databases**
- Exposure to basic **web technologies** (HTTP, JSON, XML) is helpful

5. Course Content

Module 1: Introduction to Web Services

- Overview of Web Services
- SOAP vs REST architecture
- Building RESTful APIs with Java

Module 2: Microservices Fundamentals

- Monolithic vs Microservices architecture
- Advantages & challenges of microservices

- Designing microservice-based applications

Module 3: Implementing Microservices with Spring Boot

- Spring Boot essentials
- Building, testing, and deploying microservices
- API documentation with Swagger

Module 4: Communication and Service Discovery

- Synchronous vs asynchronous communication
- Service registry and discovery with **Eureka**
- API Gateway and load balancing

Module 5: Security in Web Services and Microservices

- Authentication & Authorization mechanisms
- Implementing JWT and OAuth2
- Securing APIs with Spring Security

Module 6: Containerization and Deployment

- Introduction to Docker
- Creating Docker images for microservices
- Orchestrating microservices with Kubernetes

Module 7: Monitoring and Best Practices

- Logging and monitoring microservices
- Resilience patterns (Circuit Breaker, Retry, Fallback)
- Best practices for scalability and performance optimization