Apache Maven Course Syllabus

1. Introduction to Maven

- What is Apache Maven?

- Importance and benefits of Maven

- Comparing Maven with other build tools

- Setting up Maven:

  o Installing Maven

  o Configuring environment variables

  o Verifying Maven installation

2. Maven Basics

- Understanding Maven build lifecycle

- POM (Project Object Model) file:

  o Overview of POM

  o Key components: Group ID, Artifact ID, Version

- Dependency management:

  o Adding dependencies to POM

  o Understanding the dependency hierarchy

  o Resolving conflicts

  o Using Maven Central Repository

3. Build and Execution

- Maven goals and phases

- Building Java projects using Maven:

  o Compile, test, package, and install

- Running Maven commands:
  - mvn clean, mvn package, mvn install, etc.
- Using the Maven Surefire Plugin for test execution

4. Maven Plugins

- Overview of Maven plugins
- Commonly used plugins:
  - Compiler Plugin
  - Surefire Plugin
  - Jar Plugin
  - War Plugin
  - Shade Plugin
  - Dependency Plugin
- Adding and configuring plugins in POM

5. Maven Repositories

- Types of repositories:
  - Local, central, and remote
- Configuring and managing repositories
- Deploying artifacts to repositories

6. Maven Profiles

- What are Maven profiles?
- Configuring and using profiles in POM
- Activating profiles from the command line

7. Advanced Topics in Maven

- Multi-module projects:
  - Creating and managing multi-module builds

- o Parent and child POM configurations

- Customizing the Maven build lifecycle

- Using properties in Maven POM

- Integrating Maven with version control (e.g., Git)

8. Integrating Maven with Other Tools

- Maven and Continuous Integration (CI/CD):

  - o Integrating Maven with Jenkins

- IDE support for Maven:

  - o Using Maven in Eclipse/IntelliJ IDEA

- Generating and managing documentation with Maven Site Plugin