# API Automation Testing Using Rest Assured & Java

## 📌 Module 1: Introduction to API Testing

- What is an API?

- Importance of API Testing

- Differences Between Web UI & API Testing

- Understanding REST vs SOAP APIs

- HTTP Methods (GET, POST, PUT, DELETE, PATCH)

- Understanding HTTP Status Codes

- Request & Response Structure (Headers, Body, Params)

## 📌 Module 2: Core Java for API Automation

**Java Basics**

- Java Setup & Installation

- Data Types, Variables & Operators

- Control Statements (Loops, If-Else, Switch)

**Object-Oriented Programming (OOP)**

- Classes and Objects

- Constructors

- Inheritance & Polymorphism

- Encapsulation & Abstraction

- Method Overloading & Overriding

**Advanced Java Concepts**

- Exception Handling

- Collections Framework (List, Set, Map)

- File Handling (JSON, XML, CSV)

- Multi-Threading Basics

- Java 8 Features (Lambdas, Streams API, Functional Interfaces)

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📌 **Module 3: Introduction to REST Assured**

- What is REST Assured?

- Setting Up REST Assured in a Java Project (Maven, Dependencies)

- Understanding Given-When-Then Structure

- Writing First API Test with REST Assured

- Sending API Requests using REST Assured

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📌 **Module 4: Handling API Requests & Responses**

- Performing GET, POST, PUT, DELETE, PATCH Requests

- Sending Query Parameters & Path Parameters

- Working with Request & Response Headers

- Validating Response Status Codes

- Extracting Data from API Responses

- Logging API Requests & Responses

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📌 **Module 5: JSON & XML Handling in API Automation**

- Introduction to JSON & XML

- Parsing JSON Responses with JSONPath

- Parsing XML Responses with XPath

- Validating JSON Schema using JSON Schema Validator

- Dynamic JSON Payload Handling

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📌 **Module 6: API Request Authentication**

- Types of API Authentication:

  - Basic Authentication

  - Digest Authentication

   o OAuth 1.0, OAuth 2.0

   o Bearer Token Authentication

   o API Key Authentication

- Implementing Authentication in REST Assured Tests

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📌 **Module 7: API Test Assertions & Validations**

- Validating Response Data

- Validating Headers & Cookies

- Validating Response Time

- Using Hamcrest Matchers for Assertions

- Soft Assertions vs Hard Assertions

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📌 **Module 8: Data-Driven Testing for APIs**

- Parameterizing API Tests Using TestNG

- Reading Test Data from Excel (Apache POI)

- Using Properties Files for Configurations

- Handling Dynamic Test Data in API Requests

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📌 **Module 9: API Chaining & Workflow Testing**

- What is API Chaining?

- Extracting Data from API Responses for Subsequent Requests

- Implementing API Chaining in REST Assured

- Validating Multi-Step API Workflows

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📌 **Module 10: Logging & Reporting in API Automation**

- Logging API Request & Response Details

- Integrating Log4j for API Automation Logs

- Generating HTML Reports with Extent Reports

- Capturing Screenshots for Failed API Tests

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📌 **Module 11: Running API Tests in CI/CD Pipelines**

- Introduction to CI/CD for API Testing

- Integrating REST Assured Tests with Jenkins

- Running API Tests in GitHub Actions

- Automating API Tests in CI/CD Pipelines

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📌 **Module 12: API Performance Testing**

- Introduction to Performance Testing

- Load Testing APIs with JMeter

- Stress Testing APIs with REST Assured

- Validating API Response Times

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📌 **Module 13: Mocking APIs & Contract Testing**

- What is API Mocking?

- Using WireMock to Simulate APIs

- Contract Testing with Postman & Pact

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📌 **Module 14: Database Testing with API Automation**

- Introduction to Database Testing

- JDBC Connection in Java

- Validating API Responses with Database Data

- Running SQL Queries in API Tests

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📌 **Module 15: Behavior-Driven Development (BDD) with REST Assured**

- Introduction to BDD

- Writing Gherkin Scenarios for API Tests

- Implementing Cucumber Step Definitions

- Running API Tests Using Cucumber

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📌 **Module 16: Real-Time API Testing Project**

- Setting Up API Automation Framework from Scratch

- End-to-End API Automation for a Web Application

- Best Practices in API Automation

- Debugging & Optimizing API Automation Tests

- Interview Preparation & Commonly Asked API Testing Questions