STALC– Selenium-Based Automation Life Cycle

Course Duration: 5 Days
Prerequisite: Knowledge of Automation/ Software Testing

Day 1 – Software Testing & STLC Fundamentals

Module 1: Introduction to Software Testing

- What is Software Testing?
- SDLC vs STLC
- Principles of Software Testing
- Manual vs Automation Testing

Module 2: Software Testing Life Cycle (STLC)

- Phase 1: Requirement Analysis
    - Understanding Business Requirements
    - Identifying testable components
    - Automation feasibility with Selenium
- Phase 2: Test Planning
    - Test Strategy vs Test Plan
    - Resource & Risk Planning
    - Automation Planning Inputs

Labs & Activities:

- Identify testable features from a sample spec
- Evaluate Selenium feasibility checklist

Day 2 – Test Design, Environment & Execution

Module 2 (continued): STLC Phases

- Phase 3: Test Case Design
    - Manual Design Techniques
    - Selenium-compatible test cases
    - Mapping manual to automation
- Phase 4: Test Environment Setup
    - Selenium WebDriver Setup (local & grid)
    - Browser Drivers, Java, Maven/Gradle
    - CI/CD Infrastructure (Jenkins)

Module 3: Introduction to STALC

- What is STALC and Why It Matters
- How Automation integrates into STLC
- STLC vs STALC vs SDLC

Labs & Activities:

- Design manual and automated test cases
- Configure Selenium environment (WebDriver, Maven)

Day 3 – Framework & Scripting

Module 4: Designing Selenium Automation Framework

- Framework Types: Data, Keyword, Hybrid, BDD
- Building Hybrid Framework in Selenium
- Page Object Model (POM)
- Assertions, Waits, Exception Handling
- Automation Best Practices

Module 5: Hands-On Selenium Automation

- Environment Setup (Java, IntelliJ/Eclipse, TestNG)
- Writing Selenium Scripts (Login, Search, etc.)
- Assertions & Validations
- XPath, CSS, WebElement Locators
- Reporting using Extent Reports

Labs & Activities:

- Build POM-based framework
- Create login/search test script with validations

Day 4 – Test Management, CI/CD & Metrics

Module 6: Test Management & CI/CD Integration

- Mapping Test Cases with JIRA/Xray
- Jenkins Execution
- Git & Version Control
- Maven for Automation Runs

Module 7: Metrics, Reporting & Maintenance

- Test Coverage, Defect Density
- ROI from Automation
- Script Maintenance Strategy
- Refactoring and Improvement

Labs & Activities:

- Setup CI job in Jenkins
- Generate automation metrics
- Configure Git and automate Maven builds

Day 5 – Capstone Project & Optional Add-ons

Module 8: Capstone Project – End-to-End STALC

- Full Automation Flow: Requirement to Closure
- Present Framework, Strategy & Execution
- Create Reports, Summarize Results

Labs & Activities:

- Execute final capstone scenario
- Present framework design and execution strategy