



## **Software Development Engineer in Testing (SDET)**

### **\*\*\*Syllabus\*\*\***

### **Module 1: Manual Testing**

*Description:* Introduction to software testing concepts, methodologies, and execution.

#### **Topics Include:**

- **SDLC - STLC**
  - Waterfall Model
  - V-Model
  - Agile Methodologies
- **Test Scenario**
- **Test cases understanding**
- **Test Scenario Design Techniques**
  - Boundary Value Analysis
  - Equivalence Partitioning Method
  - Error guessing
- **Test Scenario Execution**
- **Test cases writing and execution**
- **Bug Logging**

- How To Write Bugs
  - Defect Life Cycle
  - Test Management Tools
- Jira Tool
- Loop Testing
- Statement Coverage
- Conditional Testing
- **Greybox Testing**
- **Types of Testing**
- Functional & Non-Functional Testing
- **Feature Testing**
- Smoke Testing
- Sanity Testing
- Integration Testing
- Regression Testing
- Compatibility Testing
- UI Testing
- Automation Testing
- User Acceptance (Alpha & Beta) Testing
- Adhoc Testing
- **Testing Artifacts**

- RTM Document
  - Test Strategy
  - Test Plan
  - Defect Triage Report
  - Release Notes
  - **Agile Overview**
    - ScrumSprint
    - Kanban
  - **Blackbox Testing**
  - **Whitebox Testing**
    - Path Testing
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## Module 2: AI-Driven Software Testing

*Description:* How to use AI (ChatGPT, Microsoft Copilot & DeepSeek) to solve business problems

- **AI in Excel**
  - Data Analysis and Insights
    - Analyze Data
    - Power Query
    - Forecasting
  - Data Types
  - Dynamic Array Functions
  - Natural Language Queries

- Insert Data from Pictures
- **AI in PowerPoint**
  - Data Analysis and Insights
    - Design Ideas
    - Smart Formatting
  - Content Generation
- - Visual Enhancements
  - Data Visualization
  - AI-Powered Presentation Makers
- **For Software Testing**
  - AI Prompting Practice
  - Test case and scenarios generation using AI
  - AI-Powered Code Generation and Debugging
  - Test Automation using AI-powered tools
  - AI visual testing
  - Continuous testing with the help of AI

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## Module 3: API Testing

*Description:* Understanding API testing techniques, methods, and automation

- **API Testing and complete overview**
  - What is API

- Purpose of API Testing
- Things need to be considered in API Testing.

- **API Methods**

- GET
- POST
- PUT
- DELETE
- PATCH

- **Postman tools**

- **Request - Response Validation checking**

- Status Code Interpretation, Validation & Testing etc.
- Assertion - Test Snippet
- cURL execution
- Authorization**
  - Basic
  - Bearer Token
  - API Key
  - JWT
  - AWS Signature
- Data Parameterization**
  - Text File Handling
  - Excel File Handling
  - JSON Input
- API Automation**

- Rest Assured
  - Jenkins
  - NewMan
  - API Automation via Google Apps Script
  - **API Automation Framework**
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## **Module 4: Automation Testing**

*Description:* Learning Selenium, TestNG, and CI/CD for test automation

- **Installations & Configurations with Java basics**
  - Java Installation
  - Eclipse Installation, configuration
  - Selenium Jars download/Configuration
- **Basic Concepts for first WebDriver program**
  - WebDriver Interface explanation & Invoking Browser
  - Basic Methods of WebDriver
  - How to run tests in Google Chrome
  - How to run tests in Internet Explorer
  - How to run tests in Safari Browser
- **Locator Techniques & Tools used**
  - Locator Techniques
  - **xpath identification using :**
    - Firepath

- Name
- ID
- ClassName
- LinkText

- **ADVANCED WAYS-locating objects**

- Writing Customized xpath Using Attributes
- Writing customized xpath Using Tag names Traversing
- Css Selectors locators

- **Web UI Automation**

- Handle Dynamic dropdowns with WebDriver API
- Handling Static dropdowns with Select WebDriver API
- Handling Checkboxes with WebDriver API
- Handling Radio buttons with Customized xpath
- Handling Radio button dynamically- real time examples
- Types of Alerts present and Methods to handle them
- Handling Java Alerts using WebDriver API
- Web Elements Validation

- **Techniques to automate ADVANCED Web UI**

- Handling Ajax/Mouse Interactions
- Actions class-real time examples
- Handling Multiple Windows
- Window Handle concepts
- Child windows Handling

- How to handle Frames?

- **Practical problems & Methods to Handle them with Selenium**

- How to handle table Grids in webpage
- How to overcome Synchronization problems
- Maximizing window and deleting cookies
- Handling HTTPS certifications
- Killing the Process and Cookies using Selenium
- How to take Screenshots in Selenium

- **Data driving from Excel**

- What is Apache POI API / JXL API
- Excel API Methods explanation
- Program for Retrieving data from excel
- Program for Updating data back to excel

- **TestNG Framework**

- Why TestNG and Its Advantages
- TestNG Installation and Setup in Eclipse
- TestNG Annotations
- Prioritizing the tests using TestNG
- Disabling Enabling the Testcases & putting Timeout
- Importance of TestNG xml file
- Including & excluding the Testcases from Execution with TestNG xml file



- Data driving Testing with TestNG
  - Data Provider Annotation - Parameterizing Testcases
  - Parameterizing from TestNG xml file
  - **Data driven Framework**
    - Why should not hard code the data?
    - How to write Global parameters with Java
    - Data driving parameterization from Properties file
  - **MAVEN - Build Management Tool**
    - What is a Build Management tool?
    - Installing & configuring MAVEN
    - Understanding pom.xml file
  - **Generating Reports**
    - Downloading and Configuring XSLT reports
    - Generating Excellent HTML reports for tests
  - **Jenkins - CI Tool**
    - Why Jenkins?
    - Installing & Configuring Jenkins with Java
    - Creating Jenkins Project
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## **Module 5: Domain Knowledge**

*Description:* Gaining industry-specific testing knowledge

**Domains Covered:**

- Healthcare
  - Banking & Finance
  - E-commerce
  - People Management
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## **Module 6: Performance Testing**

*Description:* Understanding performance testing tools and metrics

- **Introduction to Performance Testing**
  - Performance Testing Tools
  - Load Testing
  - Stress Testing
  - Scalability Testing
- **JMeter & Test Plans**
  - JMeter Setup
  - Creating Test Plans
  - Monitoring & Analyzing Test Results
- **Performance Metrics**
  - Benchmarking
  - Identifying Bottlenecks