



SOFTWARE QUALITY ASSURANCE

COURSE OUTLINE

TITLE: SOFTWARE QUALITY ASSURANCE (SQA)

Provided by: S2Strategies

Description:

This course aims to develop proficient SQA professionals capable of testing software through manual and automated approaches. It covers from basic to advanced software testing methodologies including the SDLC, Agile-Scrum processes, Java programming for Selenium automation, TestNG and Cucumber Framework, database, and API testing.

Objective:

To equip students with comprehensive skills in software testing, making them job-ready SQA professionals.

Duration: 14 weeks, 3 classes and 1 help session per week.

WEEK 01-04: MANUAL TESTING

Week 01: Introduction to Software Testing

Class 01: Software Testing Concepts - What is software? Types of software, software quality, project vs product, why testing is necessary.

Class 02: Introduction to errors, bugs, and failures, and why software has bugs; SDLC models (Waterfall, V-Model, Agile).

Class 03: QA, QC, & QE; Different levels of software testing (Unit Testing, Integration Testing, System Testing, User Acceptance Testing).

Week 02: Deep Dive into Testing Techniques

Class 04: Static & Dynamic Testing, Verification & Validation, GUI and System Testing Types.

Class 05: Functional & Non-Functional Testing, Test Design Techniques.

Class 06: Re-testing & Regression testing, Exploratory Testing, Adhoc Testing, End to End testing, Sanity & Smoke Testing.

Week 03: The Software Testing Life Cycle (STLC)

Class 07: Introduction to STLC, Test Planning and the first steps in STLC.

Class 08: Test Design - Creating and managing test cases and test scenarios.

Class 09: Test Execution - Executing test plans and managing test activities.

Week 04: Agile Testing, Jira Tool, and Project Work

Class 10: Agile/Scrum Process - What is Agile? Roles in a Scrum team, Overview of Sprints and User Stories.

Class 11: Detailed activities in Agile: Sprint Planning, Backlog Refinement, Sprint Review, Sprint Retrospective.

Class 12: Jira Tool - Installing and configuring Jira, creating EPICs/user stories in Jira, managing sprints, test cycles, and executing test cases in Jira.

Project Work:

Introduction to the software testing project, understanding functional requirements from FRS, creating and executing test scenarios and cases, bug reporting and tracking, test sign-off.

WEEK 05-11: AUTOMATION TESTING WITH SELENIUM

Week 05: Java Foundations for Selenium

Class 01: Environment Setup, Overview of Java Architecture (JVM, JRE, JDK), and IDEs.

Class 02: Understanding Java basics: Data Types, Variables, Operators, and Type Casting.

Class 03: More Java Basics: Conditional Statements (if, else, switch) and loops (for, while).

Week 06: Advanced Java Concepts

Class 04: Methods and Exception Handling: Writing methods, parameters, return types, and managing exceptions.

Class 05: Advanced Data Handling: Arrays, ArrayLists, and introduction to Java Collections.

Class 06: Object-Oriented Programming: Classes and Objects, Constructors, and static blocks.

Week 07: Deep Dive into Object-Oriented Programming

Class 07: Encapsulation and Access Modifiers: Implementing getters and setters and understanding different access levels.

Class 08: Inheritance and Polymorphism: Using super and this keywords, method overloading and overriding.

Class 09: Abstract Classes and Interfaces: Understanding and implementing abstract methods and interfaces.

Week 08: Selenium and Page Object Model

Class 10: Introduction to HTML and DOM: Understanding web page structure for Selenium testing.

Class 11: Selenium Setup and Basic Operations: Installing Selenium, writing first test, understanding Selenium WebDriver.

Class 12: Page Object Model: Implementing POM for better test maintenance, using Page Factory.

Week 09: TestNG and Advanced Selenium Techniques

Class 13: Advanced Selenium Operations: Creating dynamic XPath, using CSS selectors, handling web elements.

Class 14: TestNG for Selenium: Setting up TestNG, writing tests with annotations, understanding test suites and reports.

Class 15: Data-Driven Testing: Integrating Apache POI for handling Excel files, using TestNG's DataProvider.

Week 10: Behavior Driven Development with Cucumber

Class 16: Introduction to Cucumber: Setting up Cucumber, writing feature files and step definitions.

Class 17: Advanced Cucumber Techniques: Integrating Page Object Model, managing scenario outlines and hooks.

Class 18: Extended Selenium Testing: Applying advanced techniques and tools, refining testing strategies.

Week 11: Version Control and Advanced Git Operations

Class 19: Introduction to Git: Basic Git operations, setting up a repository, commits, branches, and merges.

Class 20: Advanced Git Operations: Conflict resolution, using Git in a team environment.

Class 21: Final Project Review: Preparing for real-world application, discussing project management in testing.

WEEK 12: DATABASE TESTING

Class 01: Basics of Database Operations and SQL

- Introduction to databases: Understanding different types of databases and their applications.
- Basics of SQL: Key SQL statements for performing CRUD operations (Create, Read, Update, Delete).
- Creating and managing tables: Data types, adding, dropping columns, and setting primary keys.

Class 02: Advanced SQL Queries

- Constructing complex SQL queries: Use of SELECT, WHERE, ORDER BY, and aggregate functions (MIN, MAX, AVG, SUM, COUNT).
- Using wildcards, and operators like IN, BETWEEN, LIKE.
- Grouping data using GROUP BY and filtering with HAVING.

Class 03: Joining Tables and Ensuring Data Integrity

- Joining tables: Understanding INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL JOIN, and CROSS JOIN.
- Ensuring data integrity: Importance of primary and foreign keys in maintaining relationships between tables.
- Data validation techniques: Using SQL for validating data integrity.

WEEK 13: API TESTING

Class 01: Introduction to REST APIs and Postman

- Overview of APIs and REST principles.
- Understanding REST API architecture and methods (GET, POST, PUT, DELETE).
- Introduction to Postman: Setting up and making initial API requests.

Class 02: Advanced API Testing with Postman

- Deep dive into using Postman for API testing.
- Creating and managing complex API requests.

- Validating API responses and understanding HTTP status codes.

Class 03: Automation of API Testing with REST Assured

- Introduction to REST Assured and setting up the environment.
- Writing automation scripts for REST API testing.
- Handling parameters, headers, and authentication in automated tests.

WEEK 14: INTERVIEW PREPARATION

Disclaimer: *The content of this training program is subject to change to stay aligned with industry standards and technological advancements. For the most current and detailed information, please contact S2 Strategies at info@s2strategies.com or call us at 703-868-6605. We are committed to providing the most relevant and up-to-date training to our participants.*