deerwalk training center

DTA-DMA-101

Quality Assurance (QA)

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Program Information

Nature of the Course
Theory + Practical

Total Hours per Day
2 hours

Course Duration
30 Days

Course Summary

This course provides a strong foundation in Software Quality Assurance (QA), covering manual testing, test automation, API testing, database testing, performance testing, and introductory AI-assisted testing. Students will gain both theoretical understanding and practical experience using industry-relevant tools such as JIRA, Postman, Selenium / Playwright, JMeter, SQL, Python/JAVA, AI-assisted development/testing tools.

By the end of the course, participants will be able to analyze requirements, design test cases, execute tests, report defects, automate test scenarios, validate APIs, work with test data, and understand modern QA practices including AI-assisted testing workflows.

Key Areas Covered

- Software Quality Assurance Fundamentals (QA, SDLC, Agile & STLC)
- Manual Testing, Test Planning & Test Case Design
- Software Testing Models & Types of Testing
- Bug Tracking and Defect Management using JIRA
- API Testing with Postman
- Database Testing and SQL Basics
- Test Automation using Selenium/Playwright with Python/JAVA
- AI-Assisted Testing, Performance Testing (JMeter) & QA Career Preparation

Completion Criteria

After fulfilling all of the following criteria, the student will be deemed to have finished the Module:

- Has attended 90% of all classes held
- Has received an average grade of 80% on all assignments
- Has received an average of 60% in assessments
- The tutor believes the student has grasped all of the concepts and is ready to go on to the second module.

Required Textbooks

There is no required textbooks for this course.

Prerequisites

There is no prior educational level requirement for this course.

Course Details

UNIT I: Introduction to Quality Assurance

Topics

- Understanding software testing concepts
- Introduction to SDLC
- Agile methodology
- Standup, Sprint, Sprint Planning, Sprint Retrospective
- Why choose a career in QA
- Roles and responsibilities of a QA tester
- Importance of software testing in SDLC
- Quality Assurance vs Quality Control

UNIT II: Software Test Life Cycle (STLC)

Topics

- Requirement analysis
- Test planning
- Test case development
- Test environment setup
- Test execution
- Test closure activities

UNIT III: The V-Model

Topics

- Concept and workflow of the V-Model
- Advantages of the V-Model
- Disadvantages of the V-Model

UNIT IV: Types of Testing

Topics

- Based on phase: Unit, Integration, System, Acceptance
- Based on nature: Functional, Non-functional
- Based on method: Manual, Automation
- Based on purpose: Smoke, Sanity, Regression, Exploratory
- Based on user involvement: Alpha, Beta, UAT

Practical

- Categorize testing types based on real-world scenarios

UNIT V: Test Planning

Topics

- Test scope and objectives
- Testing approach and strategy
- Test deliverables
- Test environment planning
- Suspension, resumption, and exit criteria
- QA resources and role allocation

Practical

- Draft a test plan for a sample project

UNIT VI: Test Cases, Test Data, and Test Results

Topics

- Elements of a good test case
- Writing effective test cases
- Test data preparation and properties
- Test result documentation and reporting

Practical

- Create test cases, execute them, and record results in Excel or JIRA /TestMo/TestRails

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UNIT VII: Test Environment Setup

Topics

- Understanding environments: Development, QA, UAT, Production
- Importance of a stable test environment
- Test accounts, test devices, and test data readiness

UNIT VIII: Bug Life Cycle

Topics

- Defect identification and logging
- Defect life cycle and workflow
- Defect severity vs priority
- Bug reporting guidelines and standards
- Bug triage, bug fixes, and hotfixes

Practical

- Report and track bugs using Excel and JIRA

UNIT IX: Test Closure

Topics

- Roles of QA Manager, QA Lead, and Release Engineer
- Understanding QA team hierarchy
- Release notes and sign-off process
- Test summary reporting

UNIT X: API Testing

Topics

- Introduction to APIs and endpoints
- HTTP methods and status codes
- Request headers and request body
- API testing using Postman
- Response validation and assertions
- Introduction to collections and environment variables in Postman

Practical

- Perform CRUD operations using Postman on a demo API

UNIT XI: Database Testing and SQL Basics

Topics

- Importance of database testing in QA
- Introduction to SQL
- SELECT, INSERT, UPDATE, DELETE
- Filtering, sorting, joins, and validations
- Using SQL for backend verification and data-driven testing

Practical

- Validate application data using SQL queries

UNIT XII: Test Automation Fundamentals

Topics

- Introduction to automation testing
- Manual testing vs automation testing
- When to automate
- Automation testing lifecycle
- Popular automation tools: Selenium, Cypress, Playwright
- Overview of framework concepts
- BDD basics and examples

UNIT XIII: Python/JAVA for Test Automation

Topics

- Why Python/JAVA for QA automation
- Coding basics for testers
- Variables, data types, conditions, loops, functions
- Working with files and reusable scripts
- Installing packages and using pip
- Writing simple automation scripts in Python/JAVA
- Using Python/JAVA with Selenium or Playwright
- Introduction to Unit Testing framework: pytest/Junit/TestNG

Practical

- Write a automation script for UI validation

UNIT XIV: UI/API Test Automation

Topics

- Introduction to Selenium for UI testing
- Rest assured for API Testing
- Browser automation concepts
- Locators and web elements
- Basic automation flow: open browser, login, validate result

- Overview of Playwright/Selenium for modern test automation
- Cross-browser automation basics
- Introduction to VS Code/AntiGravity/Intellij for automation scripting

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Practical

- Automate UI and API test cases using Selenium/RestAssured/Playwright

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UNIT XV: AI Testing with Popular AI Agents

Topics

- Introduction to AI in software testing
- How AI is changing QA roles
- AI-assisted test case generation
- AI-assisted bug analysis and debugging
- Using AI tools in VS Code
- Introduction to Antigravity / AI coding assistants for testers
- Prompting basics for QA tasks
- Generating test cases, assertions, and XPath/CSS locators with AI
- Reviewing AI-generated test scripts safely
- Risks of AI in testing: incorrect assertions, false confidence, shallow coverage

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Practical

- Use AI in VS Code or Antigravity to generate: sample test cases ,bug report drafts, simple automation code snippets.

UNIT XVI: Performance Testing Using JMeter

Topics

- Introduction to performance testing
- Load testing basics
- JMeter interface overview
- Creating and running test plans in JMeter
- Analyzing performance reports

Partical

- Run a basic performance test scenario using Apache JMeter

UNIT XVII: Career Preparation and QA Best Practices

Topics

- QA best practices and tester mindset
- Effective communication in QA
- Common mistakes to avoid as a QA professional
- Career paths in QA
- Manual testing
- Automation testing
- API testing
- Performance testing
- AI-assisted testing
- Resume preparation tips
- Interview preparation tips for QA roles

Practical

- Build a beginner QA portfolio and resume

Course Outcomes

- By the end of this course, participants will be able to:
- Understand the foundations of Quality Assurance
- Apply QA best practices in real-world scenarios
- Write and execute effective test cases
- Use JIRA for bug tracking and reporting
- Perform API testing using Postman
- Validate backend data using SQL
- Understand and implement basic UI automation
- Use Python/JAVA for test automation fundamentals
- Use VS Code and AI tools to support QA work
- Understand the basics of AI testing
- Conduct basic performance testing using JMeter
- Build confidence to start a career in QA

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