

Software Testing Course Syllabus

1. Introduction to Software Testing

(Learning Objectives - In this module, you will be introduced to the world of software testing, its principles and why we should test software.)

- What is Software Testing?
- Why do we test software?
- What is a Defect?
- Verification vs Validation
- Quality Assurance vs Quality Control vs Testing
- Principles of Software Testing

2. Introduction to SDLC and STLC

(Learning Objectives - In this module, you will learn the fundamental testing concepts. You will also understand the typical Software Development Life Cycle (SDLC), Software Testing Life Cycle (STLC) and different types of models involved.)

- Overview on SDLC
- Different Life Cycle models
- Overview on STLC
- AGILE Testing

3. Types & Levels of Testing

(Learning Objectives - In this module, you will learn the different types, levels and methods used in software testing)

- Types of testing - manual and automation
- Introduction to testing methods - white-box, black-box and grey-box
- Introduction to functional testing
- Introduction to non-functional testing
- Introduction to levels of testing - Unit Testing, Integration Testing, System Testing, User Acceptance Testing
- Introduction to types of testing - Regression Testing, Smoke Testing, Database Testing, Usability Testing, Load Testing, Stress Testing, Performance Testing, Compatibility Testing, Security Testing, Internationalization Testing, Localization Testing

4. Test Planning

(Learning Objectives - In this module, you will learn all about Test Management activities. You will also understand the roles and responsibilities of the developers and your involvement/contribution in each activity.)

- Test Strategy
- Test Planning
- Overview on Budgeting
- Scheduling
- Configuration Management

- Risk Management

5. Testing Techniques

(Learning Objectives - In this module, you will learn the importance of Reviews in Testing. Writing effective test cases is the skill of a good tester. This module will give you an in-depth study to understand Dynamic Test Case Writing Technique for Maximum Test Coverage with minimum Test Cases.)

- Static Testing Techniques
 - Importance of reviews in STLC
 - Review Activities
 - Roles and Responsibilities during Review
- Dynamic Testing Techniques
 - Specification-based or black-box techniques
 - Boundary Value Analysis
 - Decision Table Testing
 - Equivalence Partitioning
- Experience-based Testing Techniques
 - Error Guessing
 - Exploratory Testing

6. Test Design

(Learning Objectives - In this module, you will learn to create Test Scenarios, develop Test cases, identify appropriate test data. At the end of this module, you will be able to write test cases on your own for sample apps. Traceability Matrix helps to bridge the Test coverage gaps.)

- Test Scenarios
- Test Cases
- Test Data
- Test Coverage - Traceability Matrix
- Test Reporting
- Defect Management
- Defect Severity and Priority
- Defect Life Cycle

Assignment / Lab

- Create a test plan for a sample project
- Create test case document
- Create a sample traceability matrix
- Create a defect report

7. Introduction to Automation Testing

(Learning Objectives - In this module, you will learn the basics of automation testing, how to effectively use automation testing and about different types of functional and non-functional automation testing tools.)

- Basics of automation testing
- Why, when and how to perform automation testing
- An overview for the major functional testing tools
- An overview for the major non-functional testing tools
- Overview of Test management and defect tracking tools

8. Introduction to Selenium Web Driver

(Learning Objectives - In this module, you will learn about Selenium Web Driver, understand the architecture, its features, commands and methods of interactions. At the end of this module, you will be able to write Selenium test scripts on your own for sample apps.)

- Understanding Architecture - JSON wire protocol
- Introduction to Selenium Web Driver (use Eclipse IDE)
- Load Selenium Web Driver
 - Feature, classes and interfaces, different browser invocation methods
- Create Selenese commands
 - Types of Locators - by ID, name, class, tag name, Xpath
 - How to identify different types of locators
 - How to work with multiple attributes
 - How to create with multiple conditions
 - Xpath creation
- Add Interactions
 - Text box - how to read any value from textbox
 - Radio button selection - identification of radio button and current values
 - Check box selection
 - Drop down item selection - select and list
 - Keyboard actions - single key or multiple keys / robot class
 - Mouse actions
 - Multi-select selection

Assignment / Lab

- Download and configure Selenium - with jar and with maven
- Add commands and interactions

9. Introduction to TestNG

(Learning Objectives - In this module, you will learn about TestNG, understand the different annotations and reporting features. At the end of this module, you will be able to create a TestNG test suite on your own for sample apps.)

- Introduction to TestNG
- Introduction to TestNG annotations
 - BeforeSuite, AfterSuite, BeforeClass, AfterClass, BeforeTest, AfterTest
 - BeforeGroups, AfterGroups, BeforeMethod, AfterMethod
 - DataProvider, Factory, Parameters, Test
 - How to run tests parallelly
 - How to include or exclude any group of test cases
 - How to ignore any test cases
 - How to prioritise any test cases
 - How to add dependencies on test
 - How to retry in case of failure
- HTML test result reporting

Assignment / Lab

- Download and configure TestNG
- Create a test suite

10. Introduction to Jmeter

(Learning Objectives - In this module, you will understand the basics of Performance testing and learn about Jmeter. At the end of this module, you will be able to automate scripts and run load tests with JMeter.)

- Introduction to Jmeter
 - Basic concepts on automation and load simulation
 - Introduction to HTTP
 - Debugging with Fiddler
 - First look at Jmeter's interface
 - Main building blocks
 - Recording a Script with JMeter
 - Analyzing the Script
- How to use Jmeter?
 - Http Cookie Manager
 - Assertions in JMeter
 - User defined variables in JMeter
 - Introduction to Regular Expressions
 - Regular Expression Extractor
 - Variable correlation in JMeter

Assignment / Lab

- Download and configure Jmeter
- Create test suite
- Add Jmeter tests
- Run performance testing using Jmeter