

# Syllabus for Diploma in Software Testing

## Course Duration For Software Testing Training Course :

- ✓ 10 Weeks (Weekday Batches) or 12 Weekends (Weekend batches)

## Objective For Software Testing Training Course :

- ✓ To become a Professional Software Tester
- ✓ To enable the students to become Employable

## Eligibility For Software Testing Training Course :

- ✓ Bsc, BCS, BCA, BE, B.Tech, MSc, MCS, MCA, M.Tech
- ✓ No Previous Programming Experience necessary



## Manual Testing

### Fundamental of Testing

- ✓ What is software testing?
- ✓ Why is testing necessary?
- ✓ Testing Participants
- ✓ Testing Principles
- ✓ Best Practices in Testing
- ✓ Skills For Testing

### Software Development Life Cycle

- ✓ Introduction of Software Process
- ✓ The PDCA cycle
- ✓ Phases in SDLC
- ✓ Waterfall Model
  - Phases of Waterfall Model
  - Advantages & Disadvantages
- ✓ Spiral Model
  - Phases of Spiral Model
  - Spiral Model Strengths & Weaknesses
  - When should you use Spiral Model
- ✓ Incremental Model
  - Phases
  - Advantages & Disadvantages
- ✓ Agile Model
  - Scrum methodology
  - Sprints in Scrum
  - Scrum Roles
  - Scrum Artifacts & Ceremonies
- ✓ V shaped Model
  - Steps in the V-shaped Model
  - V-shaped Strengths & Weaknesses
- ✓ CMMI Model
  - CMMI Levels & KPAs

### Software Testing Life Cycle

- ✓ Requirements Analysis
- ✓ Test Planning
- ✓ Test Analysis
- ✓ Test Design
- ✓ Construction and verification
- ✓ Testing Cycles
- ✓ Final Testing and Implementation
- ✓ Post Implementation

### Verification

- ✓ The V-V Model
- ✓ Inspections
- ✓ Walk through
- ✓ Peer reviews
- ✓ Technical Reviews
- ✓ Audits
- ✓ Verification Benefits

### Mobile Testing

- ✓ Overview of Mobile Devices
- ✓ Types of Mobile Devices
- ✓ Mobile Application Testing
- ✓ Different Mobile Platforms
- ✓ Types of Mobile Applications
  - Native App
  - Web App
  - Hybrid App

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## Validation

- ✓ Introduction of Validation
- ✓ Unit Testing
- ✓ Integration Testing
- ✓ Functional Testing
- ✓ System Testing
- ✓ User Acceptance Testing
  - Alpha Testing
  - Beta Testing
- ✓ Accessibility Testing
- ✓ Manual Support Testing
- ✓ User Interface Testing
- ✓ Bottom-Up Approach
- ✓ Top-Down Approach
- ✓ Hybrid Approach
- ✓ Stub v/s Driver
- ✓ Big Bang Approach & its Issues

## Performance Testing

- ✓ Performance Testing Concepts
- ✓ Pre-requisites of Performance Testing
- ✓ Performance Test Types
  - Load Testing
  - Stress Testing
  - Soak Testing
  - Spike Testing
  - Volume Testing
  - Scalability Testing
- ✓ Common Performance Problems
- ✓ Performance Testing Process

## Quality

- ✓ What is Quality?
- ✓ Quality Views
- ✓ Quality – Productivity
- ✓ Software Quality
- ✓ Quality Control (QC)
- ✓ Quality Assurance (QA)

## Risk Analysis

- ✓ What is Risk?
- ✓ Risk Analysis
- ✓ Risk Analysis Graph
- ✓ Risk Management
- ✓ Risk Mitigation
- ✓ Risk Mitigation Graph

## Black Box

- ✓ What is Black Box testing
- ✓ Test Case Design Methods
- ✓ Equivalence Partitioning
- ✓ Decision Tables
- ✓ Boundary value Analysis
- ✓ State Transition Testing
- ✓ Error guessing
- ✓ Use-case Based Testing
- ✓ Advantages & Disadvantages of Black Box Testing

## White Box

- ✓ Statement Coverage
- ✓ Decision Coverage
- ✓ Condition Coverage
- ✓ Cyclomatic Complexity
- ✓ Advantages & Disadvantages of WBT
- ✓ Gray Box Testing

## Other Types of testing

- ✓ Mutation Testing
- ✓ Progression Testing
- ✓ Re-Testing
- ✓ Regression Testing
- ✓ Sanity v/s Smoke Testing
- ✓ Ad-hoc Testing
  - Monkey Testing
  - Buddy Testing
  - Exploratory Testing
- ✓ Ad-hoc Testing Methods
  - Pair Testing
  - Defect Seeding
- ✓ Mutation Testing v/s Defect Seeding

## Test management

- ✓ Test Organization
- ✓ Test Strategy
- ✓ Test Plan
- ✓ Estimates
- ✓ Test progress monitoring and control

## Web Application Testing

- ✓ Sample Paper 1
- ✓ Sample Paper 2
- ✓ Practice Session

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## RTM (Requirements Traceability Matrix)

- ✓ Generating a Traceability Matrix
- ✓ Types Of Traceability Test Matrix

## Mobile Applications Test Types

- ✓ Mobile Testing Types
- ✓ Testing for the devices
- ✓ Testing for the connectivity
- ✓ Functional Testing
- ✓ Usability Testing
- ✓ Installation Testing
- ✓ Security Testing
- ✓ Mobility Testing Process

## Web Application Testing

- ✓ Threats & Risks
- ✓ Testing Range
- ✓ Testing Strategies
- ✓ Test Planning
- ✓ Test Cases, Scripts & Suites
- ✓ Load and Stress testing
- ✓ Security Testing
- ✓ Test For Navigation

## Automation Testing

### Overview of Automation Testing

- ✓ Disadvantages Of Manual Testing
- ✓ Benefits Of Automation Testing
- ✓ What & When To Automate
- ✓ Selection Of An Automation Tool
- ✓ Types of Tools & Vendors

### Quick Test Professional (QTP) Overview

- ✓ The QTP IDE
- ✓ First QTP Script
- ✓ Object Identification
- ✓ Keyword & Expert Views
- ✓ Capture and playback principle
- ✓ Test Results
- ✓ Parameterization
- ✓ Standard Check points
- ✓ Object Repository
- ✓ Actions
- ✓ Recording modes

### Test Management with TestLink

#### Test Administration

- ✓ Test Planning and Customization of the Test Process
- ✓ Budgeting & Scheduling

#### Create the Test Plan

- ✓ Prerequisites to test planning
- ✓ Understand the Characteristics of the Software Being Developed
- ✓ Building and Writing the Test Plan
- ✓ Editing and Executing Test Cases
- ✓ Test Reports

#### Test Results

- ✓ Evaluating Test Plan Results
- ✓ Query Metrics
- ✓ Blocked Test Cases
- ✓ Failed Test Cases
- ✓ Test Report
- ✓ Metrics and Measurement: Types of Metrics, Project Metrics, Progress and Productivity Metrics

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## Selenium 2.0

### Selenium Introduction

- ✓ What is Selenium and Why Selenium?
- ✓ Selenium Components
  - Introduction of selenium Components
- ✓ Java in Selenium?

### OOPs concepts and Core Java Introduction

- ✓ OOPs concepts
- ✓ Setup Java environment–Download JDK and Setup eclipse
- ✓ Java programming concepts
  - Class, Object, Variables, Methods, Packages
  - Conditions and loops
  - Access and non access modifiers
- ✓ Advanced Java Programming
  - Interfaces, Inheritance
  - Collections, Exceptions

### Selenium IDE and RC Introduction

- ✓ Introduction to Selenium IDE
- ✓ "Selenese" – Selenium Commands
  - Actions, Asserts, Assesors
- ✓ Developing Test Cases & Test Suites With Selenium-IDE
- ✓ Introduction to Selenium RC

### Selenium WebDriver

- ✓ Selenium WebDriver Introduction
- ✓ WebDriver Vs RC
- ✓ Simple Testcase
  - Open and Close Browser
  - Cross Browser Testing – Firefox, IE, Chrome, HtmlUnitDriver, Headless Drivers
- ✓ UI elements
- ✓ Locators
  - Identifying WebElements using id, name, link text, Class, XPATH, CSS
- ✓ Handling various WebElement using WebDriver

### Testing Framework and Tools

- ✓ Introduction of Testing framework
- ✓ Types of frameworks–Data Driven, Keyword Driven, Hybrid
- ✓ TestNG introduction with eclipse
- ✓ TestNG Annotations and Data Providers
- ✓ Creating Test Suit with TestNG

### Develop Data Driven Framework

- ✓ Developing data driven Framework for Web Application using WebDriver /TestNG
- ✓ Use external Data for Testing (Using XML files, Property file)
- ✓ Reading and understanding reports
- ✓ Screenshots for failed Test case

## Mantis Bug Tracker

- ✓ Introduction of Mantis
- ✓ Creating User Accounts
  - Users, Roles and Permissions
- ✓ Managing project, Modules and Submodules
- ✓ Bug Life Cycle and Bug Tracking
- ✓ Logging , Resolving and Reporting a Bugs
- ✓ Reporting Bugs
- ✓ Bug / Defect Report writing
- ✓ Search functionality

## JMeter (Performance Testing)

- ✓ JMeter Fundamentals
  - Introduction to JMeter
  - Features of JMeter
  - Executing a test script
  - Viewing & analyzing Test Results
  - Creating & using user-defined variables
- ✓ Creating & Using Test Plans
- ✓ Thread Groups & user threads
- ✓ Sending Server Requests using Samplers
- ✓ Analyzing test results using Listeners
- ✓ Verifying Results using Assertions
- ✓ Pausing threads in JMeter
  - Constant Timer
  - Uniform Random Timer
- ✓ Using a Test Script Recorder
  - HTTP(S) Test Script Recorder
  - Recording Controller
  - Viewing & importing Certificates
- ✓ JMeter Functions & Variables
  - Using JMeter in-built functions
  - Using user-defined variables with functions
- ✓ Pre-processors & Post-processors
- ✓ Record login test using Blazemeter plugin
- ✓ Execution order of test elements
- ✓ Hands-on session
  - Create test scripts with samplers & listeners
  - Verify, analyze & pause results using Listeners, Assertions & Timers
  - Record script using test script recorder
  - Use Blazemeter plugin to record login test

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## JIRA (Issue tracking)

- ✓ Introduction to JIRA
- ✓ Advantages of JIRA
- ✓ JIRA installation & registration
- ✓ Dashboards
- ✓ Creating projects in JIRA
- ✓ Introduction to Issues
- ✓ Create, prioritize and assign issues
- ✓ Configuring Fields of Issues
- ✓ Components in JIRA
- ✓ What is a Workflow?
- ✓ Default JIRA Workflow
- ✓ Status & Transitions
- ✓ Time Tracking & Colour Codes
- ✓ Hands-on session on JIRA
  - Creating projects
  - Creating, assigning & prioritizing issues
  - Issue tracking & reportage

## Structured Query language (SQL)

- ✓ Introduction to RDBMS
- ✓ Introduction to SQL
- ✓ Basic Terminologies in SQL
  - Table
  - Field
  - Row
  - Column
- ✓ Data Types in SQL
- ✓ Concept of Primary, Unique and Foreign Key
- ✓ Types of SQL statements
  - Data Definition Language (DDL)
  - Data Manipulation Language (DML)
  - Data Control Language (DCL)
  - Data Query Language (DQL)
- ✓ Functions in SQL
- ✓ SQL UNIQUE Constraint
- ✓ Null Values in SQL
- ✓ SQL Join Operator
- ✓ Types of Join operator in SQL
  - Inner Join
  - Outer Join
    - Left Outer Join or Left Join
    - Right Outer Join or Right Join
    - Full Outer Join or Full Join

## Software Testing Project

- ✓ Case Study
- ✓ Understanding Business Requirement
- ✓ Creating Test Case
- ✓ Executing Test Cases
- ✓ Logging defects
- ✓ Mobile testing of websites
- ✓ Mobile Testing Of Live App