Software Testing & Test Management Courses
Offered by The Westfall Team

Software Functional (Black-Box) Testing and Test Management

is a 3-day course designed to provide an excellent knowledge base and practical skills for anyone interested in improving Software Functional (Black Box) Testing and Test Management techniques and practices in their organization. This course starts with an overview of software testing basics, including discussions of the importance of software testing, the different levels of testing and basic testing principles. Basic testing terminology is defined. Techniques for ensure test coverage of requirements, different types of testing documentation and various test activities are discussed.

Course attendees will explore various techniques for performing functional testing of individual functions, user scenarios and of the operational profile. This course will also explore various issues involved in testing the software's nonfunctional requirements. This course also teaches the basics of software regression test analysis.

The overview of test planning and management includes a discussion of how basic project management techniques apply to testing. Methods for performing test planning and risk management are explored. The discussion on test management includes an overview of reviews and metrics for monitoring the testing activities and product quality. This course ends with an overview of the elements involved in documenting the testing process and metrics to measure the success of those processes.

Method of Instruction: This course is taught through lecture and interactive discussion. Actual examples from the software industry are utilized to make the information relevant. Throughout this course, learned skills are practiced using team exercises. The emphasis of this course is on techniques that allow the attendees to transition the skills learned in this course to their own work environments.

Target Audience: Software testers, quality engineering, developer, project managers, functional managers and other software project stakeholders

involved in test design, execution, planning and management, and who are interested in improving software testing practices in their organization.

Course Objectives: Upon successful completion of this course attendees will be able to:

- Understand the basic concepts of software testing
- Perform effective and efficient functional testing of software
- Select the appropriate tests to regression test your software after changes have been made
- Plan, track and control the software testing effort

Other Software Testing Courses Include:

Software Testing and Test Management: is a 5-day course designed to provide an excellent knowledge base and practical skills for anyone interested in improving Software Testing and Test Management techniques and practices in their organization.

Software Functional (Black-Box) Testing: a 2-day course consisting of chapters 1, 4 and 5 from our standard Software Testing and Test Management course.

Software Test Management: a 1-day course consisting of chapter 6 from our standard Software Testing and Test Management course.

Customized Software Testing Courses: Our software testing courses are modularized so that they can be easily customized for in-house course offerings that focus on the specific content and topics needed to meet your organization's exact training requirements. For in-house courses, class exercises can also be tailored to include actual examples from your organization in order to make the training even more relevant to your environment.

Software Testing & Test Management Courses
Offered by The Westfall Team

Detailed Outline:

I: Software Testing – The Basics	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
1. Why, When, What, & How of Testing	Included	Included	Included	---
a. Why Test?	Included	Included	Included	---
▪ Testing Defined	Included	Included	Included	---
▪ Testing Software Products	Included	Included	Included	---
▪ Why is Testing Important?	Included	Included	Included	---
▪ Conformance to Requirements	Included	Included	Included	---
▪ Testing Finds Defects	Included	Included	Included	---
▪ Assess Quality & Reliability	Included	Included	Included	---
▪ Defect Prevention & Process Improvement	Included	Included	Included	---
▪ Common-Defect Checklists	Included	Included	Included	---
b. When to Test?	Included	Included	Included	---
▪ Levels of Testing	Included	Included	Included	---
▪ Testing Activities	Included	Included	Included	---
▪ Increasing Cost of Fixing Issues	Included	Included	Included	---
c. What to Test?	Included	Included	Included	---
d. How to Test?	Included	Included	Included	---
▪ Testing Principles	Included	Included	Included	---
▪ Factors Affecting Quality of Testing	Included	Included	Included	---
2. Testing Terminology	Included	Included	Included	---
▪ Standardizing Testing Terminology	Included	Included	Included	---
▪ Mistakes, Faults & Failures	Included	Included	Included	---
▪ Testing, Debugging & Root Cause Analysis	Included	Included	Included	---
▪ Verification & Validation Defined	Included	Included	Included	---
▪ Software Verification & Validation	Included	Included	Included	---
▪ V&V Techniques – Static Analysis	Included	Included	Included	---
▪ V&V Techniques – Dynamic Analysis	Included	Included	Included	---
▪ Types of Testing	Included	Included	Included	---
▪ Test Bed	Included	Included	Included	---
3. Test Coverage of Requirements	Included	Included	Included	---
▪ Where to Find Requirements	Included	Included	Included	---
▪ Traceability	Included	Included	Included	---
▪ Testability	Included	Included	Included	---
▪ Attributes of Testable Requirements	Included	Included	Included	---
▪ Test Matrix	Included	Included	Included	---

Software Testing & Test Management Courses
Offered by The Westfall Team

I: Software Testing – The Basics (cont.)	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
4. Test Documentation	Included	Included	Included	---
▪ Benefits of Formal Test Documentation	Included	Included	Included	---
▪ Types of Testing Documentation	Included	Included	Included	---
5. Test Activities	Included	Included	Included	---
a. Test Activities	Included	Included	Included	---
b. Participate in Peer Reviews	Included	Included	Included	---
c. Test Planning & Design	Included	Included	Included	---
▪ Test Case Specification	Included	Included	Included	---
▪ Test Procedure Specification	Included	Included	Included	---
d. Test Execution	Included	Included	Included	---
▪ Test Log	Included	Included	Included	---
▪ Test Incident Report	Included	Included	Included	---
▪ Test Summary Report	Included	Included	Included	---
6. Standards & Models Related to Testing	Included	Included	Included	---
▪ Why Standards are Important	Included	Included	Included	---
▪ IEEE Standards Related to Testing	Included	Included	Included	---
▪ ISO Standards on Testing	Included	Included	Included	---
▪ CMMI® on Testing	Included	Included	Included	---
II: Structural (White Box) Testing	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
1. What is Structural Testing?	Included	---	---	---
▪ Structural Testing Defined	Included	Included	Included	---
▪ Strengths of Structural Testing	Included	Included	Included	---
▪ Focus of Structural Testing	Included	Included	Included	---
▪ Benefit of Structural Testing	Included	Included	Included	---
▪ Weaknesses of Structural Testing	Included	Included	Included	---
▪ The Challenge of Structural Testing	Included	---	---	---
▪ Structural Testing Techniques	Included	---	---	---
2. Condition/Decision Testing	Included	---	---	---
▪ Types of Condition/Decision Testing	Included	---	---	---
▪ Statement Coverage	Included	---	---	---
▪ Decision Coverage	Included	---	---	---
▪ Condition Coverage	Included	---	---	---
▪ Condition/Decision Coverage	Included	---	---	---
▪ Multiple Condition Coverage	Included	---	---	---
▪ Exercise – Condition/Decision Testing	Included	---	---	---

II: Structural (White Box) Testing (cont.)	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
3. Loop Testing	Included	---	---	---
▪ Testing Different Classes of Loops	Included	---	---	---
▪ Common Loop Defects	Included	---	---	---
▪ Exercise – Testing Loops	Included	---	---	---
4. Basis Path Testing	Included	---	---	---
▪ Independent Path Coverage	Included	---	---	---
▪ Step 1: Draw a Control Flow Graph	Included	---	---	---
▪ Step 2: Calculate Cyclomatic Complexity	Included	---	---	---
▪ Uses of Cyclomatic Complexity	Included	---	---	---
▪ Step 3: Choose a Basis Set of Paths	Included	---	---	---
▪ Step 4: Generate Test Cases	Included	---	---	---
▪ Exercise – Basis Path Testing	Included	---	---	---
5. Testing Exception Handling	Included	---	---	---
III: Integration (Grey Box) Testing	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
1. What is Integration Testing?	Included	---	---	---
▪ Incremental Integration	Included	---	---	---
▪ Interfaces	Included	---	---	---
▪ External Interfaces	Included	---	---	---
▪ Internal Interfaces	Included	---	---	---
▪ Cross-Reference Tools	Included	---	---	---
▪ Cohesion	Included	---	---	---
▪ Coupling	Included	---	---	---
▪ Component Level Structural Complexity	Included	---	---	---
2. Unit / Component Integration Testing	Included	---	---	---
a. Top-Down Integration & Testing	Included	---	---	---
▪ Stubs	Included	---	---	---
▪ When to Choose Top-Down	Included	---	---	---
b. Bottom-Up Integration & Testing	Included	---	---	---
▪ Drivers	Included	---	---	---
▪ When to Choose Bottom-Up	Included	---	---	---
c. Basis Path Testing	Included	---	---	---
▪ Basis Path Testing During Integration	Included	---	---	---
▪ Exercise - Basis Path Testing During Integration	Included	---	---	---

III: Integration (Grey Box) Testing (cont.)	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
3. System Integration	Included	---	---	---
▪ Hardware/Software Integration Testing	Included	---	---	---
▪ Data Flow Testing	Included	---	---	---
▪ Common Data Flow Defects	Included	---	---	---
4. Integration Test Execution	Included	---	---	---
IV: Functional (Black Box) Testing	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
1. What is Functional Testing?	Included	Included	Included	---
▪ Functional Testing Defined	Included	Included	Included	---
▪ Strengths of Functional Testing	Included	Included	Included	---
▪ Weaknesses of Functional Testing	Included	Included	Included	---
▪ Types & Levels of Requirements	Included	Included	Included	---
2. Testing the Functional Requirements	Included	Included	Included	---
a. Testing Each Function	Included	Included	Included	---
▪ Create a Function List	Included	Included	Included	---
▪ Function List - Exercise	Included	Included	Included	---
▪ Function's Environment & Capability	Included	Included	Included	---
▪ Function's Environment	Included	Included	Included	---
▪ Understanding the Function's Capability	Included	Included	Included	---
▪ Environment & Capability - Example	Included	Included	Included	---
▪ Environment & Capability - Exercise	Included	Included	Included	---
▪ Equivalence Class Partitioning	Included	Included	Included	---
▪ Boundary Value Testing	Included	Included	Included	---
▪ Human/Hardware – Input Testing Checklist	Included	Included	Included	---
▪ Input Testing	Included	Included	Included	---
▪ Testing Outputs	Included	Included	Included	---
▪ Human/Hardware – Output Testing Checklist	Included	Included	Included	---
▪ Input & Output Testing - Exercise	Included	Included	Included	---
▪ Example Solution – Input & Output Testing Exercise	Included	Included	Included	---
▪ Forms for Input & Output Testing Exercise	Included	Included	Included	---
▪ Data Testing	Included	Included	Included	---
▪ Data Testing Checklist	Included	Included	Included	---
▪ Data Testing - Example	Included	Included	Included	---

Software Testing & Test Management Courses
Offered by The Westfall Team

IV: Functional (Black Box) Testing (cont.)	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
▪ Computation Testing	Included	Included	Included	---
▪ Computation Testing Checklist	Included	Included	Included	---
▪ File System Interface Checklist	Included	Included	Included	---
▪ Software/OS Interface Testing	Included	Included	Included	---
▪ Testing for Memory Faults Checklist	Included	Included	Included	---
▪ Testing for Network Faults Checklist	Included	Included	Included	---
b. Usage Scenario Testing	Included	Included	Included	---
▪ Steps to Defining Use Cases	Included	Included	Included	---
▪ Develop a Use Case for Each Interaction	Included	Included	Included	---
▪ Use Case - Example	Included	Included	Included	---
▪ Turning Use Cases into Test Scripts	Included	Included	Included	---
▪ Creating Tests from Use Cases – Exercise	Included	Included	Included	---
c. Operational Profile Testing	Included	Included	Included	---
▪ Operational Profile - Example	Included	Included	Included	---
▪ Threads	Included	Included	Included	---
▪ Testing to the Operational Profile	Included	Included	Included	---
3. Testing Non-Functional Requirements	Included	Included	Included	---
a. Usability Testing	Included	Included	Included	---
▪ Usability Characteristics	Included	Included	Included	---
▪ Usability Testing - Exercise	Included	Included	Included	---
b. Software Reliability	Included	Included	Included	---
c. Performance Testing	Included	Included	Included	---
▪ Race Conditions & Time Dependencies	Included	Included	Included	---
▪ Resource Utilization Testing	Included	Included	Included	---
▪ Normal Load, Volume & Stress Testing Compared	Included	Included	Included	---
▪ Load – Volume Testing	Included	Included	Included	---
▪ Load – Stress Testing	Included	Included	Included	---
▪ Performance Testing - Exercise	Included	Included	Included	---
d. Safety Testing	Included	Included	Included	---
▪ Hazard Analysis	Included	Included	Included	---
e. Security Testing	Included	Included	Included	---
▪ Security Testing - Exercise	Included	Included	Included	---
f. Configuration Testing	Included	Included	Included	---
▪ Configuration Testing Matrix	Included	Included	Included	---
▪ Client/Server Architecture Testing	Included	Included	Included	---

Software Testing & Test Management Courses
Offered by The Westfall Team

IV: Functional (Black Box) Testing (cont.)	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
g.　Localization Testing	Included	Included	Included	---
▪　Localization Checklist	Included	Included	Included	---
4.　Functional Test Case Design	Included	Included	Included	---
a.　Cause & Effect Graphing	Included	Included	Included	---
▪　Step 1 – Break Down the Specification	Included	Included	Included	---
▪　Step 2 – Identify Causes & Effects	Included	Included	Included	---
▪　Step 3 – Create Cause-Effect Graphs	Included	Included	Included	---
▪　Step 4 – Annotate Graphs with Constraints	Included	Included	Included	---
▪　Step 5 – Convert Graphs into Limited-Entry Decision Table	Included	Included	Included	---
▪　Step 6 – Convert Decision Table into Test Cases	Included	Included	Included	---
b.　State Transition Testing	Included	Included	Included	---
▪　State Transition Diagram – Examples	Included	Included	Included	---
▪　State Transition Testing	Included	Included	Included	---
c.　Event/Response Table Testing	Included	Included	Included	---
▪　Event/Response Table – Example	Included	Included	Included	---
▪　Event/Response Table – Exercise	Included	Included	Included	---
d.　Pairwise Testing	Included	Included	Included	---
▪　Pairwise Testing	Included	Included	Included	---
▪　Orthogonal Arrays	Included	Included	Included	---
e.　Exploratory Testing	Included	Included	Included	---
5.　Functional Test Execution	Included	Included	Included	---
a.　Unit/Component Functional Testing	Included	Included	Included	---
b.　Testing Third Party Software	Included	Included	Included	---
▪　Commercial Off The Shelf (COTS) Software	Included	Included	Included	---
▪　Advantages & Disadvantages of COTS	Included	Included	Included	---
▪　COTS Usage	Included	Included	Included	---
▪　COTS Testing	Included	Included	Included	---
▪　Vendor Supplied Software	Included	Included	Included	---
c.　System Testing	Included	Included	Included	---
d.　Alpha Testing	Included	Included	Included	---
e.　Beta Testing	Included	Included	Included	---
f.　Acceptance Testing	Included	Included	Included	---
g.　Installation Testing	Included	Included	Included	---
▪　Compatibility & Conversion Testing	Included	Included	Included	---

Software Testing & Test Management Courses
Offered by The Westfall Team

V: Regression Testing	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
1. Regression Analysis & Testing	Included	Included	Included	---
▪ Regression Analysis Defined	Included	Included	Included	---
▪ Determining Impacts & Possible Side Effects	Included	Included	Included	---
▪ Regression During Development	Included	Included	Included	---
▪ Regression for Releases Systems	Included	Included	Included	---
▪ Regression Testing Step 1 – Test What Changed	Included	Included	Included	---
▪ Regression Testing Step 2 – Test What Was Affected	Included	Included	Included	---
▪ Regression Testing Step 3 – Execute the Regression Test Suite	Included	Included	Included	---
2. Maintenance Testing	Included	Included	Included	---
▪ Software Maintenance	Included	Included	Included	---
▪ Maintenance Testing	Included	Included	Included	---
▪ Patching Issues	Included	Included	Included	---
▪ Testing Patches	Included	Included	Included	---
▪ Maintenance Release Testing	Included	Included	Included	---
▪ Testing Ported Software	Included	Included	Included	---
3. Test Automation	Included	Included	Included	---
▪ Regression Test Library	Included	Included	Included	---
4. Regression Test Execution	Included	Included	Included	---
VI: Test Planning & Management	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
1. Project Management – The Basics	Included	Included	---	Included
▪ Project Defined	Included	Included	---	Included
▪ Software Project Management Process	Included	Included	---	Included
▪ Goals of Software Project Planning	Included	Included	---	Included
▪ Goals of Software Project Management	Included	Included	---	Included
▪ Cost/Schedule/Product Trilogy	Included	Included	---	Included
▪ Successful Projects	Included	Included	---	Included
▪ Test Planning & Management	Included	Included	---	Included
▪ Test Manager	Included	Included	---	Included
2. Test Planning	Included	Included	---	Included
a. V&V Plan	Included	Included	---	Included
b. Test Plans	Included	Included	---	Included
c. Test Design Specification	Included	Included	---	Included

Software Testing & Test Management Courses
Offered by The Westfall Team

VI: Test Planning & Management (cont.)	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
d. Work Breakdown Structure	Included	Included	---	Included
▪ Product Type Work Breakdown Structure	Included	Included	---	Included
▪ Process Type Work Breakdown Structure	Included	Included	---	Included
▪ Hybrid Type Work Breakdown Structure	Included	Included	---	Included
▪ Long-term & Near-term Planning	Included	Included	---	Included
▪ How Far to Break It Down	Included	Included	---	Included
▪ Testing WBS – Exercise	Included	Included	---	Included
▪ Test Deliverables	Included	Included	---	Included
e. Test Estimation	Included	Included	---	Included
▪ Estimating Size	Included	Included	---	Included
▪ Estimating Effort & Cost	Included	Included	---	Included
▪ Test Productivity Metrics	Included	Included	---	Included
▪ Include Everything	Included	Included	---	Included
▪ Test Schedule & Resources	Included	Included	---	Included
▪ Activity Network	Included	Included	---	Included
▪ Schedule Duration	Included	Included	---	Included
f. Test Staffing & Training	Included	Included	---	Included
▪ Approaches to Organizing the Test Function	Included	Included	---	Included
▪ Staff & Resource Allocation	Included	Included	---	Included
▪ Qualities Beneficial to a Tester	Included	Included	---	Included
▪ Skill Gap Analysis	Included	Included	---	Included
g. Test Environment	Included	Included	---	Included
▪ Test Tools	Included	Included	---	Included
▪ Test Data	Included	Included	---	Included
3. Risk Management	Included	Included	---	Included
▪ Risk Defined	Included	Included	---	Included
▪ Risk/Reward Balance	Included	Included	---	Included
▪ Types of Risk	Included	Included	---	Included
▪ Risk Management Process	Included	Included	---	Included
▪ Risk Identification Techniques	Included	Included	---	Included
▪ Techniques for Handling Risks	Included	Included	---	Included
▪ Exercise – Risk Management	Included	Included	---	Included
▪ Risk Based Testing	Included	Included	---	Included
4. Test Management	Included	Included	---	Included
a. Test Implementation	Included	Included	---	Included

Software Testing & Test Management Courses
Offered by The Westfall Team

VI: Test Planning & Management (cont.)	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
a. Test Tracking	Included	Included	---	Included
▪ Evaluating the Testing Effort	Included	Included	---	Included
▪ Technical Peer Reviews	Included	Included	---	Included
▪ Managerial Reviews	Included	Included	---	Included
▪ Managerial Reviews - Test Team Status Reviews	Included	Included	---	Included
▪ Managerial Reviews - Test Team Status Reviews	Included	Included	---	Included
▪ Managerial Reviews - Senior Management Reviews	Included	Included	---	Included
▪ Managerial Reviews - Phase Transition/Milestone Reviews	Included	Included	---	Included
▪ Post Project Reviews	Included	Included	---	Included
▪ Audits	Included	Included	---	Included
▪ Test Management Metrics	Included	Included	---	Included
▪ Test Management Metrics – Schedule Tracking	Included	Included	---	Included
▪ Test Management Metrics – Staff & Resource Tracking	Included	Included	---	Included
▪ Test Management Metrics – Requirements Churn Metric	Included	Included	---	Included
▪ Test Completeness Metrics	Included	Included	---	Included
▪ Defect Tracking Metrics	Included	Included	---	Included
▪ Defect Tracking Metrics – Defect Arrival Rare	Included	Included	---	Included
▪ Defect Tracking Metrics – Cumulative Defects by Status	Included	Included	---	Included
▪ Defect Tracking Metrics – Defect Closure Rate	Included	Included	---	Included
▪ Defect Tracking Metrics – Defect Backlog by Severity	Included	Included	---	Included
▪ Defect Tracking Metrics – Reliability Predictions	Included	Included	---	Included
▪ Cost of Quality Metrics	Included	Included	---	Included
b. Test Control	Included	Included	---	Included
▪ Corrective Action	Included	Included	---	Included
▪ Minimizing Testing Costs	Included	Included	---	Included
▪ Ship Still Happens – More Tradeoffs	Included	Included	---	Included
▪ Test Sufficiency	Included	Included	---	Included

VI: Test Planning & Management (cont.)	Software Testing	Functional (Black-Box) Testing & Test Management	Functional (Black-Box) Testing	Software Test Management
2. Test Processes	Included	Included	---	Included
a. Test Process Definition	Included	Included	---	Included
▪ Process Architecture	Included	Included	---	Included
▪ Test Process Definition	Included	Included	---	Included
▪ System Test Process - Example	Included	Included	---	Included
b. Test Process Metrics	Included	Included	---	Included
▪ Test Optimization Metrics	Included	Included	---	Included
▪ Test Optimization Metrics – Test Effectiveness	Included	Included	---	Included
▪ Test Optimization Metrics - Escapes	Included	Included	---	Included
▪ Test Optimization Metrics – Phase Containment	Included	Included	---	Included
▪ Test Optimization Metrics – Defect Detection Efficiency	Included	Included	---	Included
▪ Test Process Effectiveness Metrics	Included	Included	---	Included
▪ Test Process Effectiveness Metrics – Defect Arrival Rate	Included	Included	---	Included
▪ Test Process Effectiveness Metrics – Defect Density	Included	Included	---	Included
▪ Test Process Effectiveness Metrics – Reliability Actuals	Included	Included	---	Included

For more information about these and other course offered by The Westfall Team:
Visit our website at: www.westfallteam.com
Send an email to: lwestfall@westfallteam.com
Or call: 972-867-1172

the WestfallTeam
Partnering for Software Excellence