Advanced Test Manager
Course Outline

General Description

This course provides test managers with advanced skills in test estimation, test planning, test monitoring, and test control. Attendees will learn how to define the overall testing goals and strategy for the systems being tested. They will gain hands-on experience in planning, scheduling, and tracking these tasks. The attendees will be able to describe and organize the necessary activities. They will return to work able to select, acquire and assign adequate resources for testing tasks. They will know how to form, organize, and lead testing teams. Test manager attendees will be able to organize communication between the members of the testing teams, and between the testing teams and all the other stakeholders. Further, they'll learn how to justify their decisions and provide adequate reporting information where applicable.

Created by Rex Black, President of the International Software Testing Qualifications Board (www.istqb.org), immediate past President of the American Software Testing Qualifications Board (www.astqb.org), and co-author of the International Software Testing Qualifications Board Advanced Syllabus, this course is also ideal for testers and test teams preparing for certification. It covers the International Software Testing Qualifications Board Advanced Syllabus 2007, and is in the process of accreditation by an ISTQB-recognized National Board.

Learning Objectives

Through presentation, discussion, and hands-on exercises, attendees will learn to:

- Describe how testing is a part of any software development and maintenance activity
- Analyze software lifecycle models and outline the most appropriate tasks and test activities to be executed within the context of those models
- Explain the specifics of testing systems of systems
- Explain how, when testing safety critical systems, to demonstrate compliance to regulations

- Describe and compare typical testing-related metrics
- Monitor testing activities by measuring the test object(s) and the test process
- Describe how test strategies affect test planning
- Compare the test work products and explain the relationship between development and testing work products
- Classify test control activities that can help determine if the test mission, strategies, and objectives have been achieved
- Explain the pre-conditions for test execution
- Explain the advantages and disadvantages of early test implementation considering different testing techniques
- Explain the reasons why users and customers might be included in test execution
- Describe how the degree of test documentation might vary depending on test level
- Summarize the information to collect during the test process to support accurate reporting and evaluation against exit criteria
- Summarize important test closure activities
- Generalize lessons learned in the test closure phase to discover areas to improve or repeat
- Outline test management documents such as the test plan, test design specification, and test procedure specification
- Describe important elements of a test strategy/approach and which documents according to IEEE 829 contain elements of test strategy
- Illustrate how and why deviations from the test strategy are managed in the other test management documents
- Summarize the IEEE 829 structure of a master test plan
- Paraphrase and interpret the topics covered in the standard IEEE 829 structure of a test plan, tailoring it to an organization, the risks to a product, and risk, size and formality of a project
- Estimate testing effort using a metrics-based and an experience-based approach, considering the factors that influence cost effort and duration
- Understand and give examples of factors that can lead to inaccuracies in estimates

- Explain the benefits of early and iterative test planning, and support the explanation with examples
- Compare the different procedures for controlling test progress
- Give at least five conceptually different examples of how test progress findings can influence the course of the test process
- Use findings related to the test progress observed during monitoring and control activities and measures in order to outline an action plan to improve the current test process. Suggest improvements
- Analyze test results and determine test progress, documenting a monitoring report and a final test summary report covering the test reporting dimensions of product risks, defects, tests, coverage, and confidence
- Give examples for each of the four categories of costs in cost of quality: prevention, detection, internal failure, and external failure
- Explain the different ways that risk-based testing allows a test team to respond to risks
- Identify risk within a project and product, and determine an adequate test strategy and test plan based on these risks
- Perform risk analysis for a product from a tester's perspective, following the failure mode and effect analysis approach
- Describe how to summarize concerns about project and product risk typically held by key project stakeholders, and how to use their collective judgment to outline test activities to mitigate risks
- Describe characteristics of risk management that require it to be an iterative process
- Translate a given risk-based test strategy to test activities and monitor the risks during the testing
- Analyze and report test results, including determining residual risks, to enable project managers to make intelligent release decisions
- Describe the concept of failure mode and effect analysis, explaining its application to projects and benefits for projects
- Compare test management issues for exploratory testing, testing of systems of systems, and testing of safety-critical systems, including elements of strategy, benefits and disadvantages, and adequacy, and considering their impact on planning, coverage, and monitoring and control

- Explain the benefits of reviews compared to dynamic testing and other static testing techniques
- Compare review types with each other and show their relative strengths, weaknesses, and applicable situations
- Lead a review team through a formal review following a formalized process
- Outline a review plan as part of a quality/test plan for a project, taking into account defects to be found, available skills of staff, and aligned with appropriate dynamic testing approaches
- Explain the risks that can jeopardize reviews based on technical, organizational, and people factors
- Process a defect following the incident management life cycle procedure in IEEE Standard 1044-1993
- Evaluate defect reports against IEEE Standard 1044-1993 and apply that standard's defect taxonomy in order to improve their quality
- Analyze defect reports created in terms of trends and causes
- Summarize various software standards and explain their usefulness for software testing
- Write a test improvement plan using generic steps
- Summarize the testing improvement process as defined by TMM, TPI, CTP, STEP, and the process areas verification and validation in CMMI, and explain the evaluation criteria of each
- Describe why and when it is important to create a test tool strategy or road-map for your test tool
- Understand the different phases in test tool implementation
- Summarize the test tool categories by objectives, intended use, strengths, risks and examples
- Summarize specific requirements for test tools and open source test tools used for testing safety critical systems
- Describe important aspects and consequences of different test tools and their implementation, usage and effects on the test process.
- Describe when and why implementing your own tool is an option and its benefits, risks and consequences.
- Use a given questionnaire in order to determine strengths and weaknesses of team members related to use of software systems, domain and business

knowledge, areas of systems development, software testing and interpersonal skills

- Perform a gap analysis in order to determine the required technical and soft skills for open positions in an organization.
- Characterize the various organizational options for testing, comparing them with insourcing, outsourcing, and distributed options, and comparing and contrasting distributed, outsourced, and insourced testing options
- Provide examples of motivating and demotivating factors for testers
- Describe, using examples, professional, objective, and effective communication in a project from the tester's perspective, considering risks and opportunities.

Course Materials

This course includes the following materials:

Name	*Description*
Course Outline	A general description of the course along with learning objectives, course materials and an outline of the course topics, including approximate timings for each section.
Noteset	A set of approximately 600 PowerPoint slides covering the topics to be addressed.
Text book	*Managing the Testing Process, 2 ed.* an instructional guide that demonstrates how to develop essential tools and how to apply them to your test project.
ISTQB Foundation Syllabus	The Certified Tester Foundation Level Syllabus which forms the basis for the International Software Testing Qualification at the Foundation Level.
Foundation Sample Exam Questions	A set of approximately 150 pages of review materials for the Foundation level covering every learning objective in the ISTQB Foundation Syllabus.
Foundation Mock Exam	A practice exam containing 40 questions and answers to provide a review of the ISTQB Foundation exam.
ISTQB Advanced Syllabus	The Certified Tester Advanced Level Syllabus which forms the basis for the International Software Testing Qualification at the Advanced Level.

Name	*Description*
ISTQB Glossary	The latest glossary of terms used in Software Testing produced by member of the ISTQB.
Standard for Software Testing	Standards used in testing which are referenced by the course materials.
Advanced Test Manager Sample Exam Questions	A complete set of questions for every learning objective in the Test Manager module of the ISTQB Advanced Syllabus.
Exercise Solutions	A set of approximately 100 pages of detailed solutions for all exercises in the course.
Advanced Test Manager Mock Exam	A practice exam containing questions and answers to assess your readiness for the ISTQB Advanced exam.
Project Source Documents for Course Exercises	Specifications used in the realistic example project used in exercises for the course.
Bibliography and resources	A set of further readings, Web sites, tools and other resources to help implement the concepts.

The printed course materials are provided in a binder in a way which makes it convenience for course attendees to remove portions as needed for reference; e.g., during exercises.

Session Plan

The course runs for five days, with two hours set aside on the fifth day for the ISTQB Advanced Test Manager exam if desired. Each day is about 360 minutes of class time, from 9:00 to 5:00. For accredited course offerings, material is covered as described. For custom courses, material may be deleted, added, or expanded upon as needed.

Please note that timings are approximate, depending on attendee interest and discussion. All of the lectures include exercises and/or knowledge-check questions except as noted.

The following shows this session plan in relationship to the chapters and sections of the ISTQB Advanced Syllabus.

Introduction and Review (60 minutes)

1.0 Basic Aspects of Software Testing (150 minutes)

1.2 Testing in the software lifecycle (110 minutes)

1.3 Specific systems (20 minutes)

1.4 Metrics and measurement (20 minutes)

2.0 Testing Processes (120 minutes)

2.3 Test planning and control (20 minutes)

2.5 Test implementation and execution (25 minutes)

2.6 Evaluating exit criteria and reporting (15 minutes)

2.7 Test closure activities (60 minutes)

3.0 Test Management (1120 minutes)

3.1 Test management documentation (105 minutes)

3.2 Test plan documentation (90 minutes)

3.4 Test estimation (120 minutes)

3.5 Scheduling test planning (30 minutes)

3.6 Test progress and control (195 minutes)

3.7 Business value of testing (15 minutes)

3.8 Distributed, outsourced and insourced testing (15 minutes)

3.9 Risk-based testing (475 minutes)

3.10 Failure mode and effects analysis (30 minutes)

3.11 Test management issues (45 minutes)

4.0 Test Techniques (15 minutes)
[Note: This is an overview only. For a course that focuses on test techniques, see Advanced Test Analyst and Advanced Technical Test Analyst.]

5.0 Tests of Software Characteristics (210 minutes)

6.0 Reviews (120 minutes)

6.2 The principles of reviews (15 minutes)

6.3 Introducing reviews (90 minutes)

6.4 Success factors for reviews (15 minutes)

7.0 Incident Management (80 minutes)

8.0 Test Process Improvement (120 minutes)

8.1 Standards consideration (15 minutes)

8.4 Improving the test process (105 minutes)

9.0 Test Tool and Automation (90 minutes)

9.2 Test tool concepts (40 minutes)

9.3 Test tool categories (50 minutes)

10.0 People Skills and Team Composition (240 minutes)

10.2 Individual skills (60 minutes)

10.3 Test team dynamics (60 minutes)

10.4 Fitting testing with an organization (15 minutes)

10.5 Motivation (15 minutes)

10.6 Communication (30 minutes)

Recommended Readings

The class materials include a bibliography of books related to software testing, project management, quality, and other topics of interest to the test professional.

