Certified Tester

Foundation Level 2018 Overview

Released Version 2018

International Software Testing Qualifications Board

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0.5	January 16th 2018	Initial version based on the Certified Tester Advanced Level Overview 2012
0.6	January 18th 2018	Updated text in the introduction, the content, and the appendix
1.0	January 19th 2018	Technical edits and ready for cross-review
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1.2	April 10th, 2018	Updated after Beta review
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At the time the Foundation Level Syllabus 2018 was completed the Foundation Level Working Group had the following membership: Klaus Olsen (chair), Tauhida Parveen (vice chair), Rex Black (project manager), Corne Kruger, Dani Almog, Ebbe Munk, Eric Riou du Cosquer, Eshraka Zakaria, Debra Friedenberg, Hans Schaefer, Igal Levi, Johan Klintin, Judy McKay, Kenji Onishi, Marie Walsh, Meile Posthuma, Mike Smith, Radoslaw Smilgin, Rashed Karim, Stephanie Ulrich, Stevan Zivanovic, Steve Toms, Sunny Kwon, Thomas Müller, Vipul Kocher, and Yaron Tsubery.

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1. Introduction to the Foundation Level

This overview document is intended for anyone with an interest in the ISTQB Foundation Level who wants a high-level introduction to its leading principles and an overview of the Foundation Level Syllabus.

In this document the Foundation Level Syllabus is described in summary form and the business outcomes are stated. These provide a specific statement of what can be expected from a person who achieves the Foundation Level, and will particularly benefit companies that are considering the development of specific skills at this level.

For stakeholders who are already familiar with or use the 2011 version of the Foundation Level Syllabus, a summary of the principal changes is provided in the appendix section of the syllabus. Additionally, in a separate release notes document, ISTQB provides a document with the traceability between the learning objectives in the 2011 version of the Foundation Level Syllabus and the learning objectives in the 2018 version of the Foundation Level Syllabus, showing which have been added, updated, or removed.

1.1 Career Paths for Testers

The ISTQB scheme provides support for the definition of career paths for professional testers by offering a 3-tiered certification scheme starting with the Foundation Level and continuing with the Advanced Level and Expert Level. The Foundation Level syllabus has an add-on, which is the Agile Tester syllabus, and this ISTQB Agile track continues with further specialized topics within the ISTQB Specialist track, e.g. the Model-Based Tester syllabus.

A person with the Foundation Level certification can extend his/her broad understanding of testing by continuing at the Advanced Level.

The Advanced Level establishes a platform from which further skills and knowledge may be acquired at the Expert Level. After achieving experience as a test manager, for example, a person may choose to develop his/her testing career further by acquiring Expert Level certifications in the subjects of test management and improving the test process.

Please visit www.istqb.org for the latest overview of ISTQB´s career paths.

1.2 Intended Audience

The Foundation Level qualification is suitable for anyone who is involved as well as interested in software testing. This includes people in roles such as testers, test analysts, test engineers, test consultants, test managers, user acceptance testers and software developers. This Foundation Level qualification is also appropriate for anyone who wants a basic understanding of software testing, such as project managers, quality managers, software development managers, business analysts, IT directors and management consultants.

1.3 Learning Objectives

In general all contents of the Foundation Level syllabus are examinable at a K1 level, except for the Introduction and Appendices. That is, the candidate may be asked to recognize, remember, and recall a term or concept mentioned in any of the six chapters of the syllabus.

The relevant Learning Objectives at K1, K2 and K3 levels are shown at the beginning of each chapter within the Foundation Level syllabus.

1.4 Entry Requirements

The entry criterion for taking the ISTQB Certified Tester Foundation Level Software Testing exam is that candidates have an interest in software testing. However, it is strongly recommended that candidates also:

- Have at least a minimal background in either software development or software testing, such as six months experience as a system or user acceptance tester or as a software developer
- Take a course that has been accredited to ISTQB standards (by one of the ISTQB-recognized member boards).

1.5 Handling of Standards

There are standards referenced in the Foundation Syllabus (e.g., (IEEE, ISO, etc.). The purpose of these references is to provide a framework (as in the references to ISO 25010 regarding quality characteristics) or to provide a source of additional information if desired by the reader. Please note that they syllabus is using the standard documents as reference. The standards documents are not intended for examination.

1.6 Keeping It Current

The software industry changes rapidly. To deal with these changes and to provide the stakeholders with access to relevant and current information, the ISTQB working groups have created links on the www.istqb.org website, which refer to supporting documents and changes to standards. This information is not examinable under the Foundation syllabus.

1.7 Structure and Course Duration

The Foundation Level syllabus contains 6 chapters covering the basic knowledge and skills necessary to be a tester. The top-level heading for each chapter specifies the time for the chapter; timing is not provided sub-chapter level. The syllabus specifies a total of 16.75 hours.

- Chapter 1: 175 minutes Fundamentals of Testing
- Chapter 2: 100 minutes Testing Throughout the Software Development Lifecycle
- Chapter 3: 135 minutes Static Testing
- Chapter 4: 330 minutes Test Techniques
- Chapter 5: 225 minutes Test Management
- Chapter 6: 40 minutes Tool Support for Testing

1.8 Exam structure

The Foundation Level Certificate Exam is defined in the document “ISTQB CTFL 2018 Exam Structure and Rules” which can be found on www.istqb.org

The format of the exam is multiple choice. There are 40 questions. To pass the exam, at least 65% of the questions (i.e., 26 questions) must be answered correctly.

Exams may be taken as part of an accredited training course or taken independently (e.g., at an exam center or in a public exam). Completion of an accredited training course is not a pre-requisite for the exam.

2. Overview of Foundation Level Syllabus

2.1. Business Outcomes

This section lists the Business Outcomes expected of a candidate who has achieved the Foundation Level certification.

A Foundation Certified Tester can…

FL-BO1	Promote efficient and effective communication by using a common vocabulary for software testing
FL-BO2	Understand fundamental concepts of software testing
FL-BO3	Demonstrate understanding of how different development and testing practices, and different constraints on testing may apply in optimizing testing to different contexts
FL-BO4	Contribute effectively in reviews
FL-BO5	Use established techniques for designing tests at all test levels
FL-BO6	Interpret and execute tests from given test specifications. Report on test results.
FL-BO7	Understand test management principles for resources, strategies, planning, project control, and risk management
FL-BO8	Write and communicate clear and understandable defect reports
FL-BO9	Understand the project factors that drive the test priorities and the test approach
FL-BO10	Understand the value that software testing brings to stakeholders
FL-BO11	Appreciate how testing activities and work products align with project objectives, measures and targets
FL-BO12	Assist in the selection and implementation process of testing tools

2.2 Content

Chapter 1: Fundamentals of Testing

- The tester learns the basic principles related to testing, the reasons why testing is required, what test objectives are, and the principles of successful testing.
- The tester understands the test process, the major activities, and work products.

Chapter 2: Testing Throughout the Software Development Lifecycle

- The tester learns how testing is incorporated in every step of a software development lifecycle.
- The tester learns about the different test levels, test types, and impact analysis when working with maintenance testing.

Chapter 3: Static Techniques

- The tester learns the various static techniques of testing such as static analysis and reviews (i.e., informal reviews, walkthroughs, technical reviews, and inspections).
- The tester learns how to apply a review technique to a work product to find defects.

Chapter 4: Test Techniques

- The tester learns how to apply test techniques to derive test cases from other software work products.
- Black-box, white-box, and experience-based test techniques are covered.

Chapter 5: Test Management

- Test management is covered from a perspective where the tester can work with test managers, focusing on risk based testing, test execution and defect reporting and handling.
- The tester learns what could be included in the various test documentation work products, such as test plans and reports.
- The tester learns to report defects in a clear and understandable way.

Chapter 6: Tool Support for Testing

- The tester learns to classify tools, the risks and benefits connected with tools, and aspects of selecting and introducing tools.

2.3 Business Outcomes traceability matrix with Learning Objectives

This section lists the traceability between Foundation Level Business Outcomes and Foundation Level Learning Objectives.

Business Outcomes: CTFL			FL-BO 1	FL-BO 2	FL-BO 3	FL-BO 4	FL-BO 5	FL-BO 6	FL-BO 7	FL-BO 8	FL-BO 9	FL-BO 10	FL-BO 11	FL-BO 12
BO1	Promote efficient and effective communication by using a common vocabulary for software testing		27											
BO2	Understand fundamental concepts of software testing			12										
BO3	Demonstrate understanding of how different development and testing practices, and different constraints on testing, may apply in optimizing testing to different contexts				13									
BO4	Contribute effectively in reviews					10								
BO5	Use established techniques for designing tests at all test levels						15							
BO6	Interpret and execute tests from given test specifications. Report on test results.							8						
BO7	Understand test management principles for resources, strategies, planning, project control and risk management								9					
BO8	Write and communicate clear and understandable defect reports									3				
BO9	Understand the project factors that drive the test priorities and test approach										12			
BO10	Understand the value that software testing brings to stakeholders											8		
BO11	Appreciate how testing activities and work products align with project objectives, measures and targets												11	
BO12	Assist in the selection and implementation process of testing tools													6

Business Outcomes: CTFL			FL-BO 1	FL-BO 2	FL-BO 3	FL-BO 4	FL-BO 5	FL-BO 6	FL-BO 7	FL-BO 8	FL-BO 9	FL-BO 10	FL-BO 11	FL-BO 12
Unique LO	**LO in Version 2018**	**K-Level 2018**												
Chapter 1	**Fundamentals of Testing**													
1.1	**What is Testing?**													
FL-1.1.1	Identify typical objectives of testing (K1)	K1		x								x		
FL-1.1.2	Differentiate testing from debugging (K2)	K2	x											
1.2	**Why is Testing Necessary?**													
FL-1.2.1	Give examples of why testing is necessary (K2)	K2	x									x		
FL-1.2.2	Describe the relationship between testing and quality assurance and give examples of how testing contributes to higher quality (K2)	K2		x										
FL-1.2.3	Distinguish between error, defect, and failure (K2)	K2	x							x				
FL-1.2.4	Distinguish between the root cause of a defect and its effects (K2)	K2								x				
1.3	**Seven Testing Principles**													
FL-1.3.1	Explain the seven testing principles (K2)	K2			x						x			
1.4	**Test Process**													
FL-1.4.1	Explain the impact of context on the test process (K2)	K2		x				x					x	
FL-1.4.2	Describe the test activities and respective tasks within the test process (K2)	K2	x					x			x		x	
FL-1.4.3	Differentiate the work products that support the test process (K2)	K2				x		x			x	x	x	

Business Outcomes: CTFL			FL-BO 1	FL-BO 2	FL-BO 3	FL-BO 4	FL-BO 5	FL-BO 6	FL-BO 7	FL-BO 8	FL-BO 9	FL-BO 10	FL-BO 11	FL-BO 12
FL-1.4.4	Explain the value of maintaining traceability between the test basis and the test work products (K2)	K2										x	x	
1.5	**The Psychology of Testing**													
FL-1.5.1	Identify the psychological factors that influence the success of testing (K1)	K1		x							x			
FL-1.5.2	Explain the difference between the mindset required for test activities and the mindset required for development activities (K2)	K2		x							x			
Chapter 2	**Testing Throughout the Software Development Lifecycle**													
2.1	**Software Development Lifecycle Models**													
FL-2.1.1	Explain the relationships between software development activities and test activities in the software development lifecycle (K2)	K2			x						x			
FL-2.1.2	Identify reasons why software development lifecycle models must be adapted to the context of project and product characteristics (K1)	K1			x						x			
2.2	**Test Levels**													
FL-2.2.1	Compare the different test levels from the perspective of objectives, test basis, test objects, typical defects and failures, and approaches and responsibilities (K2)	K2	x			x					x		x	
2.3	**Test Types**													
FL-2.3.1	Compare functional, non-functional and white-box testing (K2)	K2	x				x							

Business Outcomes: CTFL			FL-BO 1	FL-BO 2	FL-BO 3	FL-BO 4	FL-BO 5	FL-BO 6	FL-BO 7	FL-BO 8	FL-BO 9	FL-BO 10	FL-BO 11	FL-BO 12
FL-2.3.2	Recognize that functional, non-functional and white-box tests occur at any test level (K1)	K1					x							
FL-2.3.3	Compare the purposes of confirmation testing and regression testing (K2)	K2	x					x						
2.4	**Maintenance Testing**													
FL-2.4.1	Summarize triggers for maintenance testing (K2)	K2			x									
FL-2.4.2	Describe the role of impact analysis in maintenenace testing (K2)	K2			x						x			
Chapter 3	**Static Testing**													
3.1	**Static Testing Basics**													
FL-3.1.1	Recognize types of software work product that can be examined by the different static testing techniques (K1)	K1		x		x								
FL-3.1.2	Use examples to describe the value of static testing (K2)	K2				x								
FL-3.1.3	Explain the difference between static and dynamic techniques, considering objectives, types of defects to be identified, and the role of these techniques within the software lifecycle (K2)	K2	x			x						x		
3.2	**Review Process**													
FL-3.2.1	Summarize the activities of the work product review process (K2)	K2				x								
FL-3.2.2	Recognize the different roles and responsibilities in a formal review (K1)	K1	x			x								
FL-3.2.3	Explain the differences between different review types: informal review, walkthrough, technical review and	K2				x								

Business Outcomes: CTFL			FL-BO 1	FL-BO 2	FL-BO 3	FL-BO 4	FL-BO 5	FL-BO 6	FL-BO 7	FL-BO 8	FL-BO 9	FL-BO 10	FL-BO 11	FL-BO 12
	inspection (K2)													
FL-3.2.4	Apply a review technique to a work product to find defects (K3)	K3				x								
FL-3.2.5	Explain the factors that contribute to a successful review (K2)	K2				x								
Chapter 4	**Test Techniques**													
4.1	**Categories of Test Techniques**													
FL-4.1.1	Explain the characteristics, commonalities, and differences between black-box test techniques, white-box test techniques and experience-based test techniques (K2)	K2	x				x							
4.2	**Black-box Test Techniques**													
FL-4.2.1	Apply equivalence partitioning to derive test cases from given requirements (K3)	K3					x							
FL-4.2.2	Apply boundary value analysis to derive test cases from given requirements (K3)	K3					x							
FL-4.2.3	Apply decision table testing to derive test cases from given requirements (K3)	K3					x							
FL-4.2.4	Apply state transition testing to derive test cases from given requirements (K3)	K3					x							
FL-4.2.5	Explain how to derive test cases from a use case (K2)	K2					x							
4.3	**White-box Test Techniques**													
FL-4.3.1	Explain statement coverage (K2)	K2	x				x							

Business Outcomes: CTFL			FL-BO 1	FL-BO 2	FL-BO 3	FL-BO 4	FL-BO 5	FL-BO 6	FL-BO 7	FL-BO 8	FL-BO 9	FL-BO 10	FL-BO 11	FL-BO 12
FL-4.3.2	Explain decision coverage (K2)	K2	x				x							
FL-4.3.3	Explain the value of statement and decision coverage (K2)	K2	x				x							
4.4	**Experience-based Test Techniques**													
FL-4.4.1	Explain error guessing (K2)	K2	x				x	x						
FL-4.4.2	Explain exploratory testing (K2)	K2	x				x	x						
FL-4.4.3	Explain checklist-based testing (K2)	K2	x				x	x						
Chapter 5	**Test Management**													
5.1	**Test Organization**													
FL-5.1.1	Explain the benefits and drawbacks of independent testing (K2)	K2			x							x	x	
FL-5.1.2	Identify the tasks of a test manager and tester (K1)	K1	x		x				x					
5.2	**Test Planning and Estimation**													
FL-5.2.1	Summarize the purpose and content of a test plan (K2)	K2		x	x				x				x	
FL-5.2.2	Differentiate between various test approaches (K2)	K2		x	x				x				x	
FL-5.2.3	Give examples of potential entry and exit criteria (K2)	K2					x						x	
FL-5.2.4	Apply knowledge of prioritization, and technical and logical dependencies, to schedule test execution for a given set of test cases (K3)	K3	x					x	x					
FL-5.2.5	Identify factors that influence the effort related to testing (K1)	K1	x	x	x				x		x			
FL-5.2.6	Explain the difference between two estimation techniques: the metrics-based technique and the expert-based technique (K2)	K2	x						x		x			

Business Outcomes: CTFL			FL-BO 1	FL-BO 2	FL-BO 3	FL-BO 4	FL-BO 5	FL-BO 6	FL-BO 7	FL-BO 8	FL-BO 9	FL-BO 10	FL-BO 11	FL-BO 12
5.3	**Test Monitoring and Control**													
FL-5.3.1	Recall metrics used for testing (K1)	K1	x						x					
FL-5.3.2	Summarize the purposes, contents, and audiences for test reports (K2)	K2	x	x										
5.4	**Configuration Management**													
FL-5.4.1	Summarize how configuration management supports testing (K2)	K2	x	x	x				x					
5.5	**Risks and Testing**													
FL-5.5.1	Define risk level by using likelihood and impact (K1)	K1	x											
FL-5.5.2	Distinguish between project and product risks (K2)	K2	x		x								x	
FL-5.5.3	Describe, by using examples, how product risk analysis may influence thoroughness and scope of testing (K2)	K2	x		x				x			x	x	
5.6	**Defect Management**													
FL-5.6.1	Write a defect report, covering defects found during testing (K3)	K3								x				
Chapter 6	**Tool Support for Testing**													
6.1	**Test tool considerations**													
FL-6.1.1	Classify test tools according to their purpose and the test activities they support (K2)	K2	x	x										x
FL-6.1.2	Identify benefits and risks of test automation (K1)	K1									x			x
FL-6.1.3	Remember special considerations for test execution and test management tools (K1)	K1												x
6.2	**Effective use of tools**													
FL-6.2.1	Identify the main principles for	K1												x

Business Outcomes: CTFL			FL-BO 1	FL-BO 2	FL-BO 3	FL-BO 4	FL-BO 5	FL-BO 6	FL-BO 7	FL-BO 8	FL-BO 9	FL-BO 10	FL-BO 11	FL-BO 12
	selecting a tool (K1)													
FL-6.2.2	Recall the objectives for using pilot projects to introduce tools (K1)	K1												x
FL-6.2.3	Identify the success factors for evaluation, implementation, deployment and on-going support of test tools in an organization (K1)	K1										x		x

3. Appendix: Main Changes in the 2018 Syllabi

ISTQB Foundation syllabus 2018 is a major update and rewrite of the 2011 version of the syllabus. For this reason, there are no detailed release notes per chapter and section. However, a summary of the principal changes is provided in this document. Additionally, in a separate release notes document, ISTQB provides a document with the traceability between the learning objectives in the 2011 version and the learning objectives in the 2018 versions, showing what have been added, updated, or removed.

At the beginning of 2017 more than 550,000 people in more than 100 countries have taken the foundation exam, and more than 500,000 are certified testers worldwide. With the expectation that all of them have read the Foundation syllabus to be able to pass the exam, this makes the Foundation syllabus likely to be the most read software testing document ever!

This major update is made considering this heritage and to improve the next 500,000 people's view of the level of quality ISTQB delivered to the global testing community.

In this version all learning objectives (LO) have been edited to make them atomic, and to create one-to-one traceability from learning objectives to content, and not having content without also having a learning objective.

The goal is to make this version easier to read, understand, learn, and translate, focusing on increasing practical usefulness and the balance between knowledge and skills.

This major release has made the following changes:

- Fewer K1 Learning Objectives (LO) in general,
  - 15 LO in 2018 compared with 27 LO in 2011.
- Less focus on chapter 5 Test Management,
  - 15 LO in 2018 compared with 24 LO in 2011.
- More emphasis on review, a K3 LO has been added to chapter 3.
  - Static Analysis by Tools section is removed, and will be covered in other syllabi.
- More emphasis on test techniques in chapter 4.
  - Section 4.1 of 2011 moved and merged with section 1.4 of chapter 1.
- Agile is mentioned in the content of the syllabus.
  - But not included in the wording of any LO.
- White-box techniques are downgraded.
  - K4 and K3 removed – they will be covered in other syllabi.

Additional changes made to the 2018 Foundation Syllabus are:

1. ISO/IEC/IEEE 29119 is now used for reference instead of IEEE Standard 829.
2. ISO/IEC 25010 is now used for reference instead of ISO 9126.
3. ISO/IEC 20246 is now used for reference instead of IEEE 1028.

The Code of Ethics has been moved from chapter one to ISTQB.ORG web site.