

ISTQB® Certified Tester

Advanced Level

Overview of Syllabi

Test Analyst Technical Test Analyst

Version 2019

International Software Testing Qualifications Board



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Certified Tester Advanced Level Core Overview 2019



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Revision History

Version	Date	Remarks
2019 Beta	July 22, 2019	Beta 2019 review version
2019 V1.0	October 18, 2019	GA release for 2019 version
2019 V1.1	December 19, 2019	Launch version. Minor typographical corrections Remove reference to release notes Course durations stated in hours (section 0.7)

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0. Introduction to the Advanced Level

This overview document is intended for anyone with an interest in the ISTQB® Advanced Level who wants a high-level introduction to its leading principles and an overview of the following Advanced Level Syllabi:

1. Test Analyst (TA)
2. Technical Test Analyst (TTA)

An overview of the current Advanced Level Test Manager module may be obtained in the 2012 version of the Advanced Level overview document.

In this document the TA and TTA modules are 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 one or more of the above-mentioned Advanced Level Certifications, and will particularly benefit companies that are considering the development of specific skills at this level.

0.1 The Advanced Level 2019 Version

In general, the changes introduced in the 2019 Advanced Level Test Analyst and Technical Test Analyst syllabi result from the following factors:

- Changes to software development practices, in particular the use of iterative software development lifecycles such as Agile.
- Introduction of different standards, in particular ISO/IEC 25010
- Feedback obtained from an extensive survey of ISTQB® stakeholders conducted in 2018.
- Release of the 2018 version of the Foundation Level Core certification syllabus which required scoping with the Advanced Level
- Release of ISTQB® Specialist Level modules (e.g., performance testing, usability testing) which required scoping with the Advanced Level Test Analyst and Technical Test Analyst modules.

For stakeholders who are already familiar with or use the 2012 version of the Advanced Level TA and TTA Syllabi, a summary of the main changes is provided.

A separate release note provides a comparison between the learning objectives in the 2012 version the 2019 version and shows which business outcomes and learning objectives have been added, updated, or removed.

0.2 Career Paths for Testers

The ISTQB® scheme provides support for the definition of career paths in testing by offering a 3-tiered certification scheme starting with the Foundation Level and continuing with the Advanced Level and Expert Level. These are supported by a collection of Specialist Level and Agile modules which enable additional specialist skills to be developed in certain subjects (e.g. performance testing).

The Advanced Level builds on the Foundation Level and establishes a platform from which further skills and knowledge may be acquired at other levels (e.g., Expert or Specialist).

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

0.3 Intended Audience

The Advanced Level Test Analyst and Technical Test Analyst qualifications are suitable for anyone who is involved in testing as well as anyone interested in further developing their software testing knowledge. This includes people performing activities such as test analysis, test consulting and software development.

The syllabi provide testing knowledge for anyone working with Agile or sequential software development lifecycles. Although the syllabi are presented for distinct roles, the knowledge may also be applied in a context where these roles are not distinctly identified.

0.4 Learning Objectives

The knowledge levels of the specific learning objectives at K2, K3 and K4 levels are shown at the beginning of each chapter and are classified as follows:

- K2: Understand
- K3: Apply
- K4: Analyze

The definitions of all terms listed as keywords just below the chapter headings shall be remembered (K1), even if not explicitly mentioned in the learning objectives.

0.5 Entry Requirements

The entry criterion for taking the ISTQB® Certified Tester Advanced Level Test Analyst and Technical Test Analyst exams is that candidates have acquired the ISTQB® Certified Tester Foundation Level certification.

0.6 Exam Structure

The Advanced Level Core certification exam is defined in the document “Certified Tester Advanced Level Syllabus Exam Structure and Rules Test Analyst Technical Test Analyst which can be found on www.istqb.org

The TA and TTA Advanced Level modules have the following attributes:

- The format of the exam is multiple choice.
- Exam duration is 120 minutes. If the candidate’s native language is not the examination language, the candidate is allowed an additional 25%.
- To pass the exam, at least 65% of the total sum of points must be answered correctly.

For TA

- There are 40 questions.
- The total number of points for the TA exam should be set at 80 points. Therefore, a minimum of 52 points is required to achieve a passing score.

For TTA

- There are 45 questions.
- The total number of points for this exam should be set at 76 points. Therefore, a minimum of 49 points is required to achieve a passing score.

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.

0.7 Course Duration

For accredited training courses, a minimum amount of instruction time is required:

- Test Analyst: 20 hours and 30 minutes
- Technical Test Analyst: 21 hours and 15 minutes

Individual training times for the chapters of each course are provided in the module-specific chapters which follow.

0.8 Handling of Standards

There are standards referenced in the Advanced Level Core syllabi (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 the syllabi are using the standard documents as a reference. The standards documents are not intended for examination.

1. The Advanced Level Test Analyst Syllabus

1.1 Structure and Course Duration

The Advanced Level Test Analyst syllabus contains six chapters covering the knowledge necessary to be a test analyst. The top-level heading for each chapter specifies the minimum time for the chapter; timing is not provided below chapter level. For accredited training courses, the syllabus requires a minimum of 20 hours and 30 minutes of instruction, distributed across the six chapters as follows:

- Chapter 1: The Test Analyst's Tasks in the Test Process (150 minutes)
- Chapter 2: The Test Analyst's Tasks in Risk-Based Testing (60 minutes)
- Chapter 3: Test Techniques (630 minutes)
- Chapter 4: Testing Software Quality Characteristics (180 minutes)
- Chapter 5: Reviews (120 minutes)
- Chapter 6: Test Tools & Automation (90 minutes)

1.2 Business Outcomes

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

An Advanced Level Test Analyst can:

TA1	Perform the appropriate testing activities based on the software development lifecycle being used
TA2	Determine the proper prioritization of the testing activities based on the information provided by the risk analysis
TA3	Select and apply appropriate test techniques to ensure that tests provide an adequate level of confidence, based on defined coverage criteria.
TA4	Provide the appropriate level of documentation relevant to their testing activities
TA5	Determine the appropriate types of functional testing to be performed
TA6	Work effectively in a usability testing team
TA7	Effectively participate in requirements / user story reviews with stakeholders, applying knowledge of typical mistakes made in work products
TA8	Improve the efficiency of the test process with the use of tools

1.3 Content

Chapter 1: The Test Analyst's tasks in the Test Process

- Testing in the software development lifecycle
- Test analysis
- Test design
- Test implementation
- Test execution

Chapter 2: The Test Analyst's tasks in Risk-Based Testing

- Risk identification
- Risk assessment

- Risk mitigation

Chapter 3: Test Techniques

- Black-box test techniques
- Experience-based test techniques
- Applying the most appropriate technique

Chapter 4: Testing Software Quality Characteristics

- Quality characteristics for business domain testing:
- Aspects of functionality testing
- Interoperability testing
- Usability testing
- Portability testing

Chapter 5: Reviews

- Using checklists in reviews
- Requirements reviews
- User story reviews

Chapter 6: Test tools & Automation

- Keyword-driven automation
- Types of test tools

1.4 Further Development Opportunities

The knowledge acquired from the Test Analyst module may be further developed by the following ISTQB® modules:

ISTQB® Specialist Level:

- Usability Testing (Foundation Level) [CTFL_UT]
- Mobile Application Tester (Foundation Level) [CTFL_MAT]
- Acceptance Testing (Foundation Level) [CTFL-AcT]
- Test Automation Engineering (Advanced Level) [CTAL_TAE]

ISTQB® Foundation Level

- Certified Tester Foundation Agile Software Testing [ISTQB_AGILE_SYL]

The ISTQB® Certified Tester Foundation Level Certificate is required before taking the exams for these modules. Please visit www.istqb.org for the latest overview of ISTQB®'s modules.

1.5 Business Outcomes Traceability Matrix with Learning Objectives

The following tables show information about Learning Objectives and their coverage of the Business objectives. The tables contain the following information>

- Section of syllabus (number and title)
- LO number
- K-Level
- Description of LO
- Mapping of LO to Business Objectives.

				Minutes	Mapping to TA Business Objectives							
					TA1	TA2	TA3	TA4	TA5	TA6	TA7	TA8
1. The Test Analyst's Tasks in the Test Process				150								
1.2 Testing in the Software Development Lifecycle												
TA-1.2.1		2	Explain how and why the timing and level of involvement for the Test Analyst varies when working with different software development lifecycle models	15	1							
1.3 Test Analysis												
TA-1.3.1		2	Summarize the appropriate tasks for the Test Analyst when conducting analysis and design activities.	15	1							
1.4 Test Design												
TA-1.4.1		2	Explain why test conditions should be understood by the stakeholders	15	1							
TA-1.4.2		4	For a given project scenario, select the appropriate design level for test cases (high-level or low-level)	60	1				1			
TA-1.4.3		2	Explain the issues to be considered in test case design	15								
1.5 Test Implementation												
TA-1.5.1		2	Summarize the appropriate tasks for the Test Analyst when conducting test implementation activities.	15			1	1				
1.6 Test Execution												
TA-1.6.1		2	Summarize the appropriate tasks for the Test Analyst when conducting test execution activities.	15			1	1				
2. The Test Analyst's Tasks in Risk-Based Testing				60								
TA-2.1.1		3	For a given situation, participate in risk identification, perform risk assessment and propose appropriate risk mitigation	60		1						
3. Test Techniques				630								
3.2 Black-box Test Techniques												
TA-3.2.1		4	Analyze a given specification item(s) and design test cases by applying equivalence partitioning.	60			1	1				
TA-3.2.2		4	Analyze a given specification item(s) and design test cases by applying boundary value analysis.	60			1	1				
TA-3.2.3		4	Analyze a given specification item(s) and design test cases by applying decision table testing.	60			1	1				
TA-3.2.4		4	Analyze a given specification item(s) and design test cases by applying state transition testing.	60			1	1				
TA-3.2.5		2	Explain how classification tree diagrams support test techniques	15			1	1				
TA-3.2.6		4	Analyze a given specification item(s) and design test cases by applying pairwise testing.	90			1	1				
TA-3.2.7		4	Analyze a given specification item(s) and design test cases by applying use case testing.	60			1	1				
TA-3.2.8		4	Analyze a system, or its requirement specification, in order to determine likely types of defects to be found and select the appropriate black-box test technique(s)	60			1					
3.3 Experience-Based Test Techniques												
TA-3.3.1		2	Explain the principles of experience-based test techniques, and the benefits and drawbacks compared to black-box and defect-based test techniques	15			1					
TA-3.3.2		3	Determine exploratory tests from a given scenario.	60			1					
TA-3.3.3		2	Describe the application of defect-based test techniques and differentiate their use from black-box test techniques	15			1					
3.4 Applying the Most Appropriate Technique												
TA-3.4.1		4	For a given project situation, determine which black-box or experience-based test techniques should be applied to achieve specific goals	75			1					

(continued)

				Minutes	Mapping to TA Business Objectives							
					TA1	TA2	TA3	TA4	TA5	TA6	TA7	TA8
4. Testing Software Quality Characteristics				180								
4.2 Quality Characteristics for Business Domain Testing												
TA-4.2.1		2	Explain what test techniques are appropriate to test functional completeness, correctness and appropriateness.	15					1			
TA-4.2.2		2	Define the typical defects to be targeted for the functional completeness, correctness and appropriateness characteristics .	15					1			
TA-4.2.3		2	Define when the functional completeness, correctness and appropriateness characteristics should be tested in the software development lifecycle.	15					1			
TA-4.2.4		2	Explain the approaches that would be suitable to verify and validate both the implementation of the usability requirements and the fulfillment of the user's expectations	30					1	1		
TA-4.2.5		2	Explain the role of the test analyst in interoperability testing including identification of the defects to be targeted.	15					1			
TA-4.2.6		2	Explain the role of the test analyst in portability testing including identification of the defects to be targeted.	15					1			
TA-4.2.7		4	For a given set of requirements, determine the test conditions required to verify the functional and/or non-functional quality characteristics within the scope of the Test Analyst.	75					1	1		
5. Reviews				120								
5.2 Using Checklists in Reviews												
TA-5.2.1		3	Identify problems in a requirements specification according to checklist information provided in the syllabus	60							1	
TA-5.2.2		3	Identify problems in a user story according to checklist information provided in the syllabus	60							1	
6. Test tools and Automation				90								
6.2 Keyword-Driven Automation												
TA-6.2.1		3	For a given scenario, determine the appropriate activities for a Test Analyst in a keyword-driven automation project	60								1
6.3 Types of test tools												
TA-6.3.1		2	Explain the usage and types of test tools applied in test design, test data preparation and test execution	30								1

1.6 Main Changes in the 2019 Syllabus

The following principal changes have been made to the Test Analyst 2012 syllabus:

Subject/Chapter	Description of Change
Course duration	The overall course duration is reduced from 4 days to 3 days as a result of the changes listed below.
The Test Analyst's tasks in the Test Process Chapter 1	Scoping and consistency with the Foundation Core syllabus (Version 2018) [CTFL]. Some sections removed and others modified.
Test management activities	Scoping and consistency with the Foundation Core syllabus (Version 2018) [CTFL] and Advanced Level Core Test Manager. Some sections removed.
Test techniques Chapter 3	Some techniques removed as a result of feedback from the stakeholder survey.
Testing Software Quality characteristics Chapter 4	Adoption of ISO 25010 as the principal standard referred to. Scoping and consistency with specialist module on usability testing [CTFL_UT]
Test Tools & Automation Chapter 6	Scoping and consistency with the ISTQB® Test Automation Engineer Advanced Level module
Defect Management	This chapter is deleted. It is covered in adequate detail in the Foundation Core syllabus (Version 2018) [CTFL].

2. The Advanced Level Technical Test Analyst Syllabus

2.1 Structure and Course Duration

The Advanced Level Technical Test Analyst syllabus contains six chapters covering the knowledge necessary to be a technical test analyst.

The top-level heading for each chapter specifies the minimum time for the chapter; timing is not provided below chapter level. For accredited training courses, the syllabus requires a minimum of 21 hours and 15 minutes of instruction, distributed across the six chapters as follows:

- Chapter 1: The Technical Test Analyst's Tasks in Risk-Based Testing (30 minutes)
- Chapter 2: White-Box Test Techniques (345 minutes)
- Chapter 3: Analytical Techniques (210 minutes)
- Chapter 4: Quality characteristics for Technical Testing (345 minutes)
- Chapter 5: Reviews (165 minutes)
- Chapter 6: Test Tools & Automation (180 minutes)

2.2 Business Outcomes

This section lists the Business Outcomes expected of a candidate who has achieved the Advanced Level Technical Test Analyst certification.

An Advanced Level Technical Test Analyst can:

TTA1	Recognize and classify the typical risks associated with the performance, security, reliability, portability and maintainability of software systems.
TTA2	Provide technical elements to the planning, design and execution of tests for mitigating performance, security, reliability, portability and maintainability risks.
TTA3	Select and apply appropriate white-box test techniques to ensure that tests provide an adequate level of confidence, based on design coverage.
TTA4	Effectively participate in reviews with developers and software architects applying knowledge of typical defects in the code and architecture.
TTA5	Improve the quality characteristics of code and architecture by making use of different analysis techniques
TTA6	Outline the costs and benefits to be expected from introducing particular types of test automation.
TTA7	Select appropriate tools to automate technical testing tasks.
TTA8	Understand the technical issues and concepts in applying test automation.

2.3 Content

Chapter 1: The Technical Test Analyst's Tasks in Risk-Based Testing

- Risk identification
- Risk assessment
- Risk mitigation

Chapter 2: White-Box Test Techniques

- White-Box test techniques
- Selecting a white-box test technique

Chapter 3: Analytical Techniques

- Static analysis
- Dynamic analysis

Chapter 4: Quality Characteristics for Technical Testing

- General planning issues
- Security testing
- Reliability testing
- Performance efficiency testing
- Maintainability testing
- Portability testing
- Compatibility testing

Chapter 5: Reviews

- Using checklists in reviews
- Architectural reviews
- Code Reviews

Chapter 6: Test Tools & Automation

- Defining the test automation project
- Specific test tools

2.4 Further Development Opportunities

The knowledge acquired from the Technical Test Analyst may be further developed by the following ISTQB® Specialist Level modules:

ISTQB® Specialist Level:

- Performance Testing (Foundation Level) [CTFL_PT]
- Security Testing (Advanced Level) [CTAL_SEC]
- Mobile Application Testing (Foundation Level) [CTFL_MAT]
- Test Automation Engineering (Advanced Level) [CTAL_TAE]
- Model-based Tester (Foundation Level) [CTFL_MBT]

ISTQB® Foundation Level

- Certified Tester Foundation Agile Software Testing [ISTQB_AGILE_SYL]

The ISTQB® Certified Tester Foundation Level Certificate is required before taking the exams for these modules. Please visit www.istqb.org for the latest overview of ISTQB®'s modules.

2.5 Business Outcomes Traceability Matrix with Learning Objectives

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- Section of syllabus (number and title)
- LO number
- K-Level
- Description of LO
- Mapping of LO to Business Objectives.

			Mapping to TTA Business Objectives								
			TTA1	TTA2	TTA3	TTA4	TTA5	TTA6	TTA7	TTA8	
1. The Technical Test Analyst's Tasks in Risk-Based Testing			Mins	30							
1.3 Risk Assessment											
TTA-1.2.1	K2	Summarize the generic risk factors that the Technical Test Analyst typically needs to consider	15	1							
TTA-1.2.2	K2	Summarize the activities of the Technical Test Analyst within a risk-based approach for testing activities	15	1							
2. White-box Test Techniques			Mins	345							
2.2 Statement Testing											
TTA 2.2.1	K3	Write test cases from a given specification item by applying the Statement testing test technique to achieve a defined level of coverage.	30			1					
2.3 Decision Testing											
TTA 2.3.1	K3	Write test cases from a given specification item by applying the Decision testing test technique to achieve a defined level of coverage.	45			1					
2.4 Modified Condition/Decision Coverage (MC/DC) Testing											
TTA 2.4.1	K3	Write test cases from a given specification item by applying the Modified Condition/Decision Coverage (MC/DC) test technique to achieve coverage	60			1					
2.5 Multiple Condition Testing											
TTA 2.5.1	K3	Write test cases from a given specification item by applying the Multiple Condition testing test technique to achieve a defined level of coverage	60			1					
2.6 Basis Path Testing											
TTA 2.6.1	K3	Write test cases from a given specification item by applying McCabe's Simplified Baseline Method	60			1					
2.7 API Testing											
TTA 2.7.1	K2	Understand the applicability of API testing and the kinds of defects it finds	15			1					
2.8 Selecting a White-Box Test Technique											
TTA 2.8.1	K4	Select an appropriate white-box test technique according to a given project situation.	75			1					
3. Analytical Techniques			Mins	210							
3.2 Static Analysis											
TTA-3.2.1	K3	Use control flow analysis to detect if code has any control flow anomalies	60					1			
TTA-3.2.2	K2	Explain how data flow analysis is used to detect if code has any data flow anomalies	15					1			
TTA-3.2.3	K3	Propose ways to improve the maintainability of code by applying static analysis	60					1			
TTA-3.2.4	K2	Explain the use of call graphs for establishing integration testing strategies	15								
3.3 Dynamic Analysis											
TTA-3.3.1	K3	Apply dynamic analysis to achieve a specified goal	60					1			

(continued)

			Mapping to TTA Business Objectives								
			TTA1	TTA2	TTA3	TTA4	TTA5	TTA6	TTA7	TTA8	
4 Quality Characteristics for Technical Testing			Mins	345							
4.2 General Planning Issues											
TTA-4.2.1	K4	For a particular project and system under test, analyze the non-functional requirements and write the respective sections of the test plan	75	1							
TTA-4.2.2	K3	Given a particular product risk, define the particular non-functional test type(s) which are most appropriate	60	1							
TTA-4.2.3	K2	Understand and explain the stages in an application's lifecycle where non-functional tests should be applied	15	1	1						
TTA-4.2.4	K3	For a given scenario, define the types of defects you would expect to find by using non-functional testing types	60	1	1						
4.3 Security Testing											
TTA-4.3.1	K2	Explain the reasons for including security testing in a test strategy and/or test approach	15		1						
TTA-4.3.2	K2	Explain the principal aspects to be considered in planning and specifying security tests	15		1						
4.4 Reliability Testing											
TTA-4.4.1	K2	Explain the reasons for including reliability testing in a test strategy and/or test approach	15		1						
TTA-4.4.2	K2	Explain the principal aspects to be considered in planning and specifying reliability tests	15		1						
4.5 Performance Efficiency Testing											
TTA-4.5.1	K2	Explain the reasons for including performance testing in a test strategy and/or test approach	15		1						
TTA-4.5.2	K2	Explain the principal aspects to be considered in planning and specifying performance efficiency tests	15		1						
4.6 Maintainability Testing											
TTA-4.6.1	K2	Explain the reasons for including maintainability testing in a testing strategy and/or test approach	15		1						
4.7 Portability Testing											
TTA-4.7.1	K2	Explain the reasons for including portability tests in a testing strategy and/or test approach	15		1						
4.8 Compatability Testing											
TTA-4.8.1	K2	Explain the reasons for compatibility testing in a testing strategy and/or test approach	15		1						
5. Reviews			Mins	165							
5.1 Introduction											
TTA-5.1.1	K2	Explain why review preparation is important for the Technical Test Analyst	15				1				
5.2 Using Checklists in Reviews											
TTA-5.2.1	K4	Analyze an architectural design and identify problems according to a checklist provided in the syllabus	75				1				
TTA-5.2.2	K4	Analyze a section of code or pseudo-code and identify problems according to a checklist provided in the syllabus	75				1				
6. Test Tools & Automation			Mins	180							
6.1 Defining the Test Automation Project											
TTA-6.1.1	K2	Summarize the activities that the Technical Test Analyst performs when setting up a test automation project	15							1	
TTA-6.1.2	K2	Summarize the differences between data-driven and keyword-driven automation	15					1		1	
TTA-6.1.3	K2	Summarize common technical issues that cause automation projects to fail to achieve the planned return on investment	15							1	
TTA-6.1.4	K3	Construct keywords based on a given business process	60							1	
6.2 Specific Test Tools											
TTA-6.2.1	K2	Summarize the purpose of tools for fault seeding and fault injection	15					1			
TTA-6.2.2	K2	Summarize the main characteristics and implementation issues for performance testing tools	15					1		1	
TTA-6.2.3	K2	Explain the general purpose of tools used for web-based testing	15					1	1		
TTA-6.2.4	K2	Explain how tools support the practice of model-based testing	15					1	1		
TTA-6.2.5	K2	Outline the purpose of tools used to support component testing and the build process	15					1	1		
TTA-6.2.6	K2	Outline the purpose of tools used to support mobile application testing	15					1	1		

2.6 Main Changes in the 2019 Syllabus

The following principal changes have been made to the 2012 Technical Test Analyst syllabus:

Subject/Chapter	Description of Change
White-box Test Techniques Chapter 2	Techniques covered are: Statement testing, Decision testing, MC/DC testing, Multiple condition testing, Basis Path testing, API testing
Quality characteristics Chapter 4	Adoption of ISO 25010 as the principal standard referred to. Scoping and consistency with specialist modules on performance testing [CTFL_PT] and security testing [CTAL_SEC]
Test automation Chapter 6	Scoping and consistency with the ISTQB® Test Automation Engineer Advanced Level module

3. References

3.1 ISTQB® Documents

ID	Document name
[CTFL]	Certified Tester Foundation Level Syllabus, Version 2018
[ISTQB_AGILE_SYL]	Certified Tester Foundation Agile Software Testing, Version 2014
[CTFL-AcT]	Foundation Level Specialist Syllabus Acceptance Testing, Version 2019
[CTFL_MAT]	Foundation Level Specialist Syllabus Mobile Application Testing, Version 2019
[CTFL_MBT]	Foundation Level Specialist Syllabus Model-Based Tester, Version 2015
[CTFL_PT]	Foundation Level Specialist Syllabus Performance Testing, Version 2018
[CTFL_UT]	Foundation Level Specialist Syllabus Usability Testing, Version 2018
[CTAL_SEC]	Advanced Level Specialist Syllabus Security Tester, Version 2016
[CTAL_TAE]	Advanced Level Specialist Syllabus Test Automation Engineer, Version 2016
[CTEL_TM]	Certified Tester Expert Level Syllabus Test Management, Version 2011
[CTEL_ITP]	Certified Tester Expert Level Syllabus Improving the Testing Process (Implementing Improvement and Change), Version 2011