

# Certified Tester AI Testing (CT-AI)

## Overview

The ISTQB® AI Testing (CT-AI) certification extends understanding of artificial intelligence and/or deep (machine) learning, most specifically testing AI-based systems and using AI in testing.

## Audience

The Certified Tester AI Testing certification is aimed at anyone involved in testing AI-based systems and/or AI for testing. This includes people in roles such as testers, test analysts, data analysts, test engineers, test consultants, test managers, user acceptance testers, and software developers. This certification is also appropriate for anyone who wants a basic understanding of testing AI-based systems and/or AI for testing, such as project managers, quality managers, software development managers, business analysts, operations team members, IT directors, and management consultants.

To gain this certification, candidates must hold the **Certified Tester Foundation Level** certificate.

## Contents

The following image demonstrates the contents of the AI Testing syllabus which is part of the ISTQB® Specialist stream:

ISTQB® Certified Tester - AI Testing (CT-AI)										
Introduction to AI	Quality Characteristic for AI-Based Systems	Machine Learning (ML) - Overview	ML - Data	ML Functional Performance Metrics	ML Neural Networks and Testing	Testing AI-Based Systems - Overview	Testing AI-Specific Quality Characteristics	Methods and Techniques for the Testing of AI-Based System	Test Environments for AI-Based Systems	Using AI for Testing
Definition of AI and AI Effect	Flexibility and Adaptability	Forms of ML	Data Preparation as Part of the ML Workflow	Confusion Matrix	Neural Networks	Specification of AI-Based Systems	Challenges Testing Self-Learning Systems	Adversarial Attacks and Data Poisoning	Test Environments for AI-Based Systems	AI Technologies for Testing
Narrow, General and Super AI	Autonomy	ML Workflow	Training, Validation and Test Datasets in the ML Workflow	Add ML Functional Performance Metrics for Classification, Regression and Clustering	Coverage Measures for Neural Networks	Test Levels for AI-Based Systems	Testing Autonomous Self-Learning Systems	Pairwise Testing	Virtual Test Environments for Testing AI-Based Systems	Using AI to Analyze Defect Reports
AI-based and Conventional Systems	Evolution	Selecting a Form of ML	Dataset Quality Issues	Limitations of ML Functional Performance Metrics		Test Data for testing AI-Based Systems	Testing for Algorithmic, Sample and Inappropriate Bias	A/B Testing		Using AI for Test Case Generation
AI Technologies	Bias	Factors Involved in ML Algorithm Selection	Data Quality and Its Effect on the ML Model	Selecting ML Functional Performance Metrics		Testing for Automation Bias in AI-Based Systems	Challenges Testing Probabilistic and Non-Deterministic AI-Based Systems	Back-to-Back Testing		Using AI for the Optimization of Regression Test Suites
AI Development Frameworks	Ethics	Overfitting and Underfitting	Data Labelling for Supervised Learning	Benchmark Suites for ML Performance		Documenting an AI Component	Challenges Testing Complex AI-Based Systems	Metamorphic Testing (MT)		Using AI for Defect Prediction
Hardware for AI-Based Systems	Side Effects and Reward Hacking					Testing for Concept Drift	Testing Transparency Interpretability and Explainability of AI-Based Systems	Experience-based Testing of AI-based Systems		Using AI for Testing User Interfaces
AI as a Service (AIaaS)	Transparency, Interpretability and Explainability					Selecting a Test Approach for an ML System	Test Oracles for AI-Based Systems	Selecting Test Techniques for AI-based System		
Pre-Trained Models	Safety and AI						Test Objectives and Acceptance Criteria			
Standards, Regulations and AI										

## Exam Structure

🕒No. of Questions:40

🕒Total Points:47

🕒Passing Score:31

🕒Exam Length (mins):60 (+25% Non-Native Language)

Business Outcomes

Individuals who hold the ISTQB® Certified Tester- AI Testing certification should be able to accomplish the following business outcomes:

- Understand the current state and expected trends of AI
- Experience the implementation and testing of a ML model and recognize where testers can best influence its quality
- Understand the challenges associated with testing AI-Based systems, such as their self-learning capabilities, bias, ethics, complexity, non-determinism, transparency and explainability
- Contribute to the test strategy for an AI-Based system
- Design and execute test cases for AI-based systems
- Recognize the special requirements for the test infrastructure to support the testing of AI-based systems
- Understand how AI can be used to support software testing

More Information

- The other AI relates syllabi from A4Q, AiU and CSTQB/KSTQB will be valid to **October 12th 2022**
- Accredited courses **require accreditation** of training materials, as described in the ISTQB® Accreditation Process
- Holders of the A4Q, AiU and KSTQB & CSTQB AIT previous versions continue to hold a valid certification

Training is available from Accredited Training Providers (classroom, virtual, and e-learning). We highly recommend attending accredited training as it ensures that an ISTQB® Member Board has assessed the materials for relevance and consistency against the syllabus.

Self-study, using the syllabus and recommended reading material, is also an option when preparing for the exam.