



## Structured Software Testing

This course presents how to test software based on requirements in a risk-driven approach regardless of project type. It discusses all necessary documents to be used as inputs to software testing and the documents to be developed within the testing processes. Techniques and approaches to test case development are discussed in detail. This course includes practical skills necessary to effectively comprehend requirements documented in a systems requirements specification to be used as one of the inputs in writing test plans and test cases.

### Training Objectives

At the end of the course, the participants will be able to:

1. Define basic testing concepts based on the new ISO/IEC/IEEE 29119 test standard.
2. Develop a focused, risk-based test plan to prioritize what to test and manage the test project.
3. Develop test cases based on functional and non-functional requirements.
4. Use the new ISO/IEC/IEEE 29119 standard in writing test plans, test cases and test procedures.
5. Apply verification and validation strategies.

**Duration** 2 days

### Training Outputs

1. Quality Risk Analysis (using Failure Mode and Effect Analysis)
2. Test Plans
3. Test Cases
4. Test Procedures

### Topics

- I. Software Testing Concepts
  - a) What is Testing?
  - b) Why Do We Need To Test?
  - c) Goals of Testing
  - d) Static vs. Dynamic Testing
  - e) Verification vs. Validation
  - f) Exhaustive Testing
  - g) Testing as a Heuristic
- II. The Test Process Based on ISO/IEC/IEEE 29119
  - a) The Test Process Model
  - b) Organizational Test Process
  - c) Test Management Process
  - d) Dynamic Test Process
  - e) Test Development Lifecycle
  - f) Relationship Between Project and Test Sub-Project
- III. Risk-Based Testing: Quality Risk Analysis
  - a) What is a Quality Risk
  - b) What To Do With Quality Risks as it Relates to Testing?
- IV. Test Planning
  - a) Introduction to Test Planning
  - b) What is the ISO/IEC/IEEE Standard 29119?
  - c) Roles in Software Testing
  - d) Allocating Testing Resources: The Test System
  - e) Levels of Test and Types of Tests
  - f) Aligning Testing in the Overall Quality Directions
  - g) Re-testing and Regression Testing
- V. Test Strategies and Tactics
  - a) Analytical Test Strategies
  - b) Model-Based Test Strategies
  - c) Methodical Test Strategies
  - d) Process-Oriented Test Strategies
  - e) Dynamic Test Strategies
  - f) Philosophical Test Strategies
  - g) Regression Test Strategies
  - h) Common Testing Challenges/Problems
- VI. Test Design Concepts
  - a) What is a Test Case?
  - b) Elements of a Test Case
  - c) Test Case Specifications
  - d) Test Procedure Specifications
  - e) Writing Effective Test Cases
  - f) Fundamental Testing strategies
    - i. Black-box Testing
    - ii. White-box Testing
    - iii. Gray-box Testing
- VII. Test Case Design Approaches/Techniques
  - a) Validation Methods
  - b) Equivalence Partitioning
  - c) Boundary Value Analysis
  - d) Scenario Based Testing
- VIII. Preparing Test Data
  - a) Test Data Set Categories
  - b) Dummy Data vs. Business Data