

TOTAL SYSTEMS EDUCATION, LTD.

TSE030

STRUCTURED TESTING TECHNIQUES (for Managers, Analysts, Developers and Customers)



Course Description:

This two-day program is designed for those Systems and Business Analysts, Liaisons, Project Leaders, Support and Testing Teams, who want to find errors. The course offers techniques to locate errors during the expensive Implementation, Programming and Testing Phases (*Although the early phase errors of Analysis and Design are also addressed.*).

Testing is frequently a frustrating aspect of any project. **The purpose of testing is not to create specifications**, but rather to ensure that the system being developed, meets the agreed upon business requirements. This course assists participants to save time and money, and receive more effective, **quality** systems.

Upon completion, participants involved with PMI[®], The Project Management Institute's Project Management Professional – PMP program, are awarded 14 PDUs. Our R.E.P. number is 1270.

Upon completion of this module of training, participants will be able to:

- ◆ Identify and Use proper testing techniques during various phases of the system life cycle (*including maintenance and development*).
- ◆ Identify and Understand the testing responsibilities of the Client (users), Test Team, Quality Assurance and Systems Developers.
- ◆ Design, develop, and use applicable Test Data and Test Scripts for an application.
- ◆ Design and develop System Testing and User Acceptance Test (UAT) plans.
- ◆ Understand and use multiple static testing techniques.
- ◆ Plan and perform functional testing.
- ◆ Plan and perform structural testing.
- ◆ Plan and perform system and user acceptance testing.
- ◆ Plan and perform testing for Structured and Object Oriented, OO Systems.
- ◆ Plan and perform Network Testing.

The course employs lectures, discussions, and hands-on exercises. In-house Standards and Policies, developmental methodologies, the CMM, and available software tools will be discussed where applicable. Participants also receive handouts and worksheets for on the job use. *The course is frequently 'tuned' to meet specific client test requirements.*



TOTAL SYSTEMS EDUCATION, LTD.

TSE030

STRUCTURED TESTING TECHNIQUES (for Managers, Analysts, Programmers and Customers)

Course Outline:

I. Introduction and Course Objectives

II. Testing and Its Purpose

- A. Test Definition
- B. Costs of Errors
- C. The Many Skills of Testing
- D. The Routine
- E. Cost of Quality
- F. Quality Types
- G. Characteristics of Quality

III. Definitions and Terms

- A. Testing and Debugging
- B. Levels of Testing
 - 1. Unit
 - 2. Integration
 - 3. System
 - 4. User Acceptance
- C. Entry and Exit Criteria
- D. Regression Testing
- E. The Test Plan
 - 1. Test Bed
 - 2. Test Script
 - 3. Test Case
 - 4. Test Data
- F. Error Classifications
- G. Test Types
 - 1. Static Testing
 - 2. Dynamic Testing
 - 3. Functional Tests (Black Box)
 - 4. Structural Tests (White or Glass Box)



TOTAL SYSTEMS EDUCATION, LTD.

TSE030

STRUCTURED TESTING TECHNIQUES (for Managers, Analysts, Programmers and Customers)

Course Outline:

IV. The Product and Process

- A. Project Life Cycle
- B. Static Test Plans
- C. Functional Roles
- D. Managing the Testing Process
- E. Test Strategy
- F. Phase Test Plan
- G. Deliverable Test Plan
- H. The CMM (Capability Maturity Model) and Testing
 - 1. KPA
- I. Record Keeping on Results
- J. The V-Model of Testing
 - 1. Verification
 - 2. Validation

V. Static Testing Techniques

- A. Static Test Types
 - 1. Structured Walkthrough
 - 2. Desk Checking
- B. Benefits, When and Why
- C. Structured Walkthrough
 - 1. Roles
 - 2. Rules

VI. Testing the Analysis

- A. What is Analysis
- B. The Tools
 - 1. Data Flow Diagram
 - 2. Data Dictionary
 - 3. Entity Relationship Diagram
 - 4. Prototypes



TOTAL SYSTEMS EDUCATION, LTD.

TSE030

STRUCTURED TESTING TECHNIQUES (for Managers, Analysts, Programmers and Customers)

Course Outline:

VII. Testing the Design

- A. What is a Design?
- B. The Tools
 - 1. HIPO Diagram
 - 2. Structure Charts
 - 3. Action Diagrams
 - 4. Pseudo Code
- C. Coupling and Cohesion

VIII. The Data

- A. How much is Enough
 - 1. Exhaustive
 - 2. Equivalence
- B. General Data Types
- C. Sources of Test Data
- D. Test Data based on Type of Test
- E. Decision Tables, Decision Trees
- F. Traceability Matrix

IX. Unit Testing

- A. Definition
- B. Who?
- C. Path testing
 - 1. Cyclomatic Complexity
- D. Boundary Testing
- E. Loop Testing
- F. Special Test Cases
- G. Unit Test Plan



TOTAL SYSTEMS EDUCATION, LTD.

TSE030

STRUCTURED TESTING TECHNIQUES (for Managers, Analysts, Programmers and Customers)

Course Outline:

X. Integration Testing

- A. Approaches
- B. Creation of Integration Test Data
- C. Integration Test Plan

XI. The System Test

- A. Objectives
- B. Who?
- C. Tasks
 - 1. Management
 - 2. Tester
- D. Approach
- E. System Test Plan Outline
 - 1. General
 - 2. Test Script - General
 - 3. Test Script - Detailed
 - 4. Problem Log
- F. Creation of System Test Data
- G. Categories of Systems Tests
 - 1. Functional correctness
 - 2. Adherence to Input / Output Specification
 - 3. Usability
 - 4. Performance and Stress
 - 5. Integrity
 - 6. Restart / Recovery
 - 7. Security
 - 8. Start-Up and Initialization
 - 9. Installation
 - 10. Maintainability
 - 11. Hardware Configuration



TOTAL SYSTEMS EDUCATION, LTD.

TSE030

STRUCTURED TESTING TECHNIQUES (for Managers, Analysts, Programmers and Customers)

Course Outline:

XII. User Acceptance Test

- A. Goals and Who
- B. What the Users should find
- C. How to Create and execute User Acceptance Testing
- D. What to Test
- E. Use Case Scenario
- F. Traceability Matrix Scenario
- G. Sample User Acceptance Test Plan
- H. Other Testing Methods

XIII Object Testing

- A. Basic Object concepts
 - 1. Objects
 - 2. Classes
 - 3. States
 - 4. Operations
 - 5. Methods
 - 6. Messages
 - 7. Encapsulation
 - 8. Inheritance
- B. Testing Object Orientated Systems
 - 1. General Features of Object Orientated Testing
 - 2. The Testing Hierarchy
 - 3. Object Testing
 - a. Control Flow
 - b. Data Flow
 - 4. Class Testing
 - 5. Integration Testing
- C. System / User Acceptance Testing

XIV. Inter / Intranet Testing

- A. Website architecture
 - 1. Navigation
 - 2. Object Mode
 - 3. Server Response
 - 4. Interaction and Feedback
 - 5. Concurrent Users
- B. Functionality Testing
 - 1. Functional testing
 - 2. Operational testing
 - 3. Content Validation



TOTAL SYSTEMS EDUCATION, LTD.

TSE030

STRUCTURED TESTING TECHNIQUES (for Managers, Analysts, Programmers and Customers)

Course Outline:

XV. Testing Implementation

- A. Actual Environment Testing
 - 1. Functional correctness
 - 2. Adherence to Input / Output Specification
 - 3. Usability
 - 4. Performance and Stress
 - 5. Integrity
 - 6. Restart / Recovery
 - 7. Security
 - 8. Start-Up and Initialization
 - 9. Installation
 - 10. Maintainability
 - 11. Hardware Configuration
- B. Statistics for Quality
- C. Regression Testing Requirements

XVI. Conclusion

- A. Review Materials
- B. Summary of class effort
- C. Statistics
- D. How to set up in your environment
- E. Participants Critique Class

