

Presented By:



Software  
Quality  
Engineering

[www.sqe.com](http://www.sqe.com)

# SOFTWARE TESTING EDUCATION

JANUARY-JUNE 2002

TRAINING ■ CONFERENCES ■ PUBLICATIONS



## IT'S ALL ABOUT TESTING

Systematic Software Testing

Test Management

Web/eBusiness Testing

Testing Object-Oriented Software

Writing Testable Requirements

Mastering Test Design

Web Performance and Security Testing

Automated Test Suites

Test Process Improvement

Performance, Load, and Stress Testing

Managing the Test Process

Acceptance Testing

Creative Software Testing

Technical Reviews & Inspections

Model-Based Design of Software Tests

# HEIGHTEN THE VALUE WITH TESTING TRAINING

“Work smarter, spend wiser.” This is a mantra you've heard often. But how do you *do* it?

Companies need an edge, and one way to get that edge is to train employees. Education leads to better processes, and better processes lead to better products. Plus, training contributes greatly to employee satisfaction and it increases your internal talent pool. You know you can't afford to sacrifice quality, and good testing training lets you aim even higher.

To help you reach your software quality goals, Software Quality Engineering has taken a good, long look at what's been going on in and around our industry. We've taken this opportunity to re-evaluate everything from course offerings to how we determine training locations. Using this information, we've made some adjustments that better meet the training needs of customers like you. So far, we've been able to:

- Select training cities that are central to technology centers.
- Add more take-home industry books to course materials.
- Expand existing courses based on what you've told us you want to learn.
- Create new courses or content based on industry changes.
- Make more on-site training options available.

And there's more to come. While we continue to maintain the highest standards in testing training and education, we appreciate your continued business and hope you'll take a few minutes to review our course offerings for 2002.

We look forward to helping you make the most of your training dollars.

## Training Spotlight

**On-Site Services.** Travel-free training offers convenience and team building to employees. All of the SQE courses listed in this brochure can be taught at your location. **See pages 16–17** for details and additional on-site course options.

**Test Weeks and beyond.** Test Weeks are a great way to get a week's worth of training in one convenient location — and save money while doing it. However, some of SQE's courses are also offered at many other times and locations. To see a comprehensive course listing, **see page 15.**

## ABOUT SQE

Software Quality Engineering (SQE) has been at the forefront of software testing and quality engineering from the beginning. Our seminars are developed by testing experts with years of specialized, hands-on experience. The techniques we cover are being used at software organizations worldwide, ensuring that our content remains viable and current. Our training expertise helps companies — large and small — improve testing practices, gain measurable control over software projects, and ultimately deliver better software.

[www.sqe.com](http://www.sqe.com)



# SQE SOFTWARE TESTING EDUCATION

## Table of Contents

SQE offers its training on a regular basis to fit your schedule. Each course has a number of dates and locations to choose from.

**PAIR TWO COURSES AT ANY TEST WEEK AND SAVE**

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## Take Advantage of Test Weeks

Test Weeks are a great way to augment your training. During a Test Week event, SQE offers all of its public training courses in one convenient location. This means you can pair two seminars to create a full week of specialized training. Plus, you'll SAVE \$200 on your tuition fees.

**March 11–15, 2002** | **May 6–10, 2002** | **June 3–7, 2002**  
*San Diego, CA* | *Boston, MA* | *Chicago, IL*

Look for course dates with a "TW" indicating it's part of a Test Week event.

## Additional Test Seminars

See page 15 for a comprehensive list of software test training and conference events.

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# SYSTEMATIC SOFTWARE TESTING

*STEP™: The Proven Software Test Process*

## Topical Outline: 3 Day

### Foundations of Modern Testing

Testing Defined  
Testing Lifecycle  
Modern Themes: Understanding risk, test engineering, preventive testing

### Introduction to STEP™

STEP Overview: Phases, activities, roles  
Process Summary  
STEP dataflow  
Process timing  
STEP vs. industry practice

### Test Planning

Planning Test Fundamentals  
Master Test Planning  
Detailed Planning Issues  
Acceptance level, system level, build level, unit level

### Test Analysis

Understanding Test Objectives  
Requirements Analysis  
Design Analysis  
Testing Changes and Modifications

### Testware Design

Understanding Design  
Testware Architectural Design  
Case, Data & Procedure Design

### Testware Implementation & Tools

Implementing Testware  
Evaluating the Testware

### Test Execution and Measurement

Executing Tests  
Tracking and Evaluating Results

### Perspective & Test Management Issues

Review of Learned Principles  
Setting Priorities  
Measuring Results

- How to systematically test software effectively and efficiently every time
- How to develop better testing strategies and plans, and measure the results

### Systematize Your Software Testing Practices and Prevent Software Defects and Failures

This seminar teaches the techniques necessary to shift from ad hoc, uncoordinated efforts to systematic, integrated software testing. It details a process that produces measurable results that can be incrementally improved. Testing is handled as an integral part of the development process (resulting in testware), using the same systems engineering discipline as software development.

The process of test development itself reveals problems in software specifications, resulting in cleaner code. The testing process illustrated in this seminar focuses on prevention as well as detection of coding defects.

### Have Clear Knowledge of WHAT You've Done (and WHEN You're Done)

Risk analysis helps you focus on the important testing issues. Trace your tests back to requirements, design, and code to reveal what has been tested and what remains to be tested. This seminar leads you through test planning, test analysis, and test design, showing you how to set and then effectively satisfy your testing goals.

### Take-Home Bonus:

Each participant takes home a copy of *The Systematic Software Testing Handbook* in addition to other course materials. Order additional copies by calling 800-423-8378 or 904-278-0707.



<b>Tampa, FL</b>	January 28–30, 2002	
<b>Austin, TX</b>	February 4–6, 2002	
<b>Seattle, WA</b>	February 18–20, 2002	
<b>San Diego, CA</b>	March 11–13, 2002	<b>TW</b>
<b>Arlington, VA</b>	April 15–17, 2002	
<b>Anaheim, CA</b>	April 29–May 1, 2002	
<b>Boston, MA</b>	May 6–8, 2002	<b>TW</b>
<b>Chicago, IL</b>	June 3–5, 2002	<b>TW</b>
<b>Salt Lake City, UT</b>	June 17–19, 2002	
<b>Baltimore, MD</b>	June 24–26, 2002	

*TW denotes Test Week locations.*



**Dale Perry** has over 25 years of experience in information technology. He has been a developer, DBA, project manager, tester, and test manager. Project experience includes large system conversion, distributed systems, on-line applications, client/server, and Web applications. He's a seasoned instructor with over 10 years of instruction experience on subjects including software development, application design, testing and reviews, and software management.

*Additional instructors for this seminar include Rick Craig, Claire Lohr, and Lee Copeland.*

# TEST MANAGEMENT

## What Every Test Manager Needs to Know

- How to identify critical strategy issues in specific test situations and approaches to handling these issues
- How to monitor the status of testing activities and software work products
- How to work productively with users, developers, and support staff

### The Importance of Strategy and Feedback

If you develop and implement an effective test strategy, you can successfully manage software test efforts. Successful test management requires the same approach as successful project management: 1) develop a sound strategy; 2) keep in close touch with the situation; 3) identify and aggressively manage the critical issues; and 4) modify the strategy as needed, based on situational feedback. The “trick” to test management is knowing the components of an effective test strategy, including feedback mechanisms, and recognizing the critical issues as they surface.

### A Management Framework

This course provides the essential framework for successful test management. It focuses on two key areas: (1) the development and management of a successful testing organization and team; and (2) the development of an effective test strategy. This strategy is built around the development of two key documents: a comprehensive test plan and corresponding test report.

*"I've been in the test industry for over twenty years and I thought I knew it all until I attended the Test Management class. I highly recommend this training."*

Charlie Williams, Compaq Computer Corporation

### For Anyone Responsible for Software Test Efforts

This course is intended to provide the information necessary for a test manager, supervisor, or senior tester to lead a testing effort. It also provides you with an outline of good testing methods from the viewpoint of a test manager. (This complements the *Systematic Software Testing* seminar that provides a similar outline of good testing methods from the viewpoint of the test engineer). Participants should have at least six months of leadership experience and two years of test experience.



**Rick Craig** is a frequent speaker at testing conferences and is well-received worldwide as a test and evaluation instructor. He has implemented and managed testing efforts on large-scale, traditional and embedded systems, and co-authored a study that benchmarked industry-wide processes. Rick is also co-author of *The Systematic Software Testing Handbook*.

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## Topical Outline: 3 Day

### Testing & Quality

Goals vs. Priorities  
Testing Philosophy  
Preventive Testing and the STEP™ Methodology

### The Test Manager

The Roles of a Test Manager  
Leadership Guidelines  
Ways to Obtain Buy-In

### Test Teams

Team Organization  
Retaining Staff  
Staff Development

### Configuration Management

Library Management  
Change Control Board  
Defect Analysis

### Master Test Plan

Risks and Contingencies  
Testing Strategy  
Scheduling/Estimating

### TestWare Design

The Influence of Risk  
Design Approaches  
Handling No Requirements

### Execution Management

Assessing Test Effectiveness  
Predicting Release Dates  
Reporting

### Tools

What to Automate  
Tool Issues  
Manager's Role in Tool Implementation

### Metrics Primer

Basic Definitions  
Measurement Paradigms  
Implementing a Metrics Program

### Process Benchmarks and Baselines

What is Process Assessment  
ISO, CMM, TQM, TPI  
Benchmarking

# WEB/eBUSINESS TESTING

*Functional, Usability, Navigation, and Compatibility Test Issues*

## Topical Outline: 3 Day

### Course Introduction

#### Web Basics

Browsers, Proxy Servers, ISPs, HTTP/HTTPS, TCP/UDP, IP, Routers, Web Servers, URLs  
Web site categories "Brochureware," Intranet, VPI, and Extranet

#### Code Quality Assurance (Unit Testing)

What checks should be included in a Unit Testing test plan?  
The HTML language and proprietary extensions CSS, XML, and XSL

#### Compatibility

Review of the different client-side browsers, O/S's and H/W  
How to determine the appropriate client-side configurations for testing

#### Navigation

External, Internal, Relative, Fully-Pathed, Absolute and Anchor links  
What Web site checking tools can (and cannot) do for you  
Suggested test cases for internal search engines  
What are the testing issues associated with framesets?

#### Client-Side Functionality

Testing tables, forms, JavaScript, VBScript, DHTML, cookies and shopping carts  
Issues with maintaining sessions  
Sample scripting tools

#### Server-Side Functionality

How can you test SSI, ASP, or JSP-generated content?  
The challenges of testing Web application interfaces to legacy systems  
Testing Com/ActiveX or CORBA/EJB environments

#### Usability and Accessibility

How to develop usability, readability, and accessibility tests  
Testing support for multiple languages  
What are assurance seals?

#### Performance Overview

What are the different categories of performance tests?  
Typical performance testing test lab configurations

#### Post Implementation

Sample post-implementation activities that a tester needs to do

#### Risk Management

How to conduct a software risk analysis  
Building a risk inventory

#### Strategies and Organization

The Master Test Plan  
Collecting metrics  
How to perform a root cause analysis

#### Course Wrap-Up

- Discover proven tips and techniques on how to handle the most common and vexing issues that affect Web testers and managers
- Learn about the test tools available for Web testing
- Save time — and money — by learning from the mistakes made by others
- Discover what's different about testing Web and eBusiness applications

While many of the traditional concepts of software testing still hold true, Web and eBusiness applications have a different risk profile than more mature environments. Gone are the days of measuring release cycles in months or years; Web applications sometimes have release cycles measured in days or even hours! A typical Web tester now has to deal with shorter release cycles, constantly changing technology, fewer mature testing tools, and an anticipated user base that may run into the millions on the first day of the site's launch.

Many testers and test managers are being asked to make the transition from testing traditional client/server, PC, and/or mainframe environments to testing rapidly changing Web sites. This seminar seeks to help those making this transition by explaining these new technologies and suggesting test cases and techniques that can be included in a Web site's navigation, functionality, usability, and compatibility test plans.

#### Take-Home Bonus:

Students who attend the *Web/eBusiness Testing* or *Web Performance and Security Testing* training course will take home a copy of *The Web Testing Handbook* by Steven Splaine and Stefan P. Jaskiel.

(A student attending both courses will receive one book).

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<b>Boston, MA</b>	May 6–8, 2002	<b>TW</b>
<b>Denver, CO</b>	May 20–22, 2002	
<b>Chicago, IL</b>	June 3–5, 2002	<b>TW</b>
<b>Baltimore, MD</b>	June 24–26, 2002	

*TW* denotes Test Week locations.

Using the experiences of SQE's own internal Web Testing Team and its consultants' testing experience, SQE has developed a Web testing seminar aimed at assisting organizations that are testing Web sites that range in complexity from initial "BrochureWare" sites to those handling full blown eBusiness.

#### Who Should Attend

This course is intended for testers, developers, content managers, Web masters, project managers, test managers, quality analysts, project leaders, and business analysts whose jobs involve an understanding of Web/eBusiness testing.

This course provides an introduction to Web performance issues. This topic, along with others, are covered thoroughly in the companion course, *Web Performance and Security Testing: Performance, Scalability, Reliability, and Security*. Pair both courses in select locations for a full week of specialized training!



*Lee Copeland* has more than 25 years' experience as an information system professional. He has held a number of technical and managerial positions with commercial and non-profit organizations in the areas of software development and process improvement. He has taught object-oriented seminars and consulted extensively throughout the U.S. and internationally.

Additional instructors for this seminar include Steve Splaine, Dale Perry, and Claire Lohr.

# TESTING OBJECT-ORIENTED SOFTWARE

## How to Plan & Execute Object-Oriented Testing

- How to apply systematic testing to object-oriented software systems
- Ways to test system designs in object-oriented systems
- Specific techniques for the selection and construction of test cases, and how to convert use cases into test cases

### Integrate and Improve Object-Oriented Development and Testing

In the highly iterative environment characteristic of many object-oriented projects, developers are called upon to develop system-level tests and system testers are expected to support and review the component-level testing process. This course helps integrate the development and testing processes to support object-oriented projects.

### Practical Insight and Techniques

Students learn how to create and execute effective tests — both component-level and system-level — for object-oriented software systems. The course provides an overview of object-oriented concepts and covers organizational issues for the testing process introduced by the iterative, incremental nature of most object-oriented projects.

Exercises and case studies convey specific techniques for testing object components and entire systems — including ways to accommodate the information hiding and polymorphic properties of objects and to exploit the inheritance relationships between classes.

### For Software Developers and System Testers

This course is appropriate for experienced software developers and systems testers. No prior knowledge of object-oriented concepts and iterative development is necessary.

***“This seminar is full of practical ideas — a must for every programmer going into the object-oriented programming paradigm.”***

Elizabeth Hubbard, NBC



*Timothy Korson is a senior partner of Korson-McGregor, and the Dean of the School of Computing at Southern Adventist University. Dr. Korson has extensive industrial experience in applying object-oriented techniques. Dr. Korson is co-author*

*of the book Object Centers of Excellence and is a frequent tutorial speaker at major conferences worldwide.*

*Lee Copeland is an additional instructor for this seminar.*

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## Topical Outline: 3 Day

### Object-Oriented Concepts

Basic definitions – class, object, inheritance, polymorphism  
UML notation  
Integration testing with object-oriented development  
Testing within the iterative/incremental process

### Testing Object-Oriented Models

Object-oriented models – class and sequence diagrams  
Guided inspection for use cases and models

### Testing Components

Functional and structural testing  
Interaction testing  
Testing in a superclass/subclass relationship  
Orthogonal array testing  
Testing frameworks

### Testing State-Based Components

State/transition diagrams  
Testing strategies

### Creating System Test Cases

Converting use cases to test cases  
Test allocation strategies  
Testing non-traditional requirements

### Measuring the Effectiveness of System Testing

Good and bad metrics  
Measuring testing effectiveness

### Tools for System Testing

Managing test cases  
Automating test case execution

### Distributed Component-Based Systems

Concurrency tests  
Test patterns  
Testing distributed call backs

### Planning and Organizing for Testing

Analyzing organizational approaches  
Developing overall test strategies

# WRITING TESTABLE REQUIREMENTS

*Producing Requirements that Reduce Effort & Cost*

## Topical Outline: 3 Day

### Why Good Requirements Are Critical

Impact on costs of development  
Impact on schedules

### Characteristics of Good Requirements

### Key Characteristics for Testability

### Industry Guidelines for Requirements

IEEE STD-830-1998  
UML

### Defining Clear Objectives and Problem Statements

### Ensuring Commonality

Common Expectations  
Common Language  
Common "World View"

### Writing Style Guidelines for Describing Processes/Use Cases

Style suggestions for readability  
Describing decision logic and transforms  
Impact of physical design  
Structured English vs. pseudo code

### Process Packaging Guidelines

### Writing Style Guidelines for Describing Data

### Guidelines for Naming Processes and Data

### Automated Requirements Management

- Techniques to produce requirements documents that are concise, accurate, modular, and highly testable
- How to identify and correct ambiguities in specifications
- How to ensure that your requirements documents conform to standard industry guidelines

### Focus Up Front on Problem Avoidance

Inferior requirements significantly increase the cost of system development and the time required to deliver an application. Writing Testable Requirements focuses on problem avoidance — how to write requirements accurately the first time.

The seminar furnishes guidelines for describing software specifications of processes and data, ensuring that requirements have the detail needed to produce test cases. This same information is critical to designers, developers, and technical writers. The techniques can be applied to requirements written to various company or industry standards. The seminar also addresses compliance with common industry guidelines and the effects of automated repositories on requirements writing styles.

The course is student-paced and participants are encouraged to bring samples from their own projects to work on and evaluate during class.

### For Analysts, Testers, Developers, and Managers

This seminar is intended to help those who write detailed functional specifications and those who must develop and test systems based on those requirements. The intended audience includes testing staff, systems analysts, developers, and project managers. No specific prerequisites are assumed, but attendees are expected to be "software knowledgeable" with at least basic test or software development experience.

*"The course was excellent. If we [worked with] anything that looked like testable requirements, all of our projects would be successful!"*

Delegate from Norwest Technical Services



**Richard Bender** has been involved in test and evaluation since 1969. He has authored and/or co-authored books and courses on quality assurance and test, software development lifecycles, analysis and design, software maintenance, and project management. He has worked with international clientele from a wide range of industries from financial to academic.

Additional instructors for this seminar include Bill Lewis and Gary Mogyorodi.

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# MASTERING TEST DESIGN

## The Art and Science of Creating Test Cases

- How to design effective and efficient test cases using both formal and informal techniques
- How to choose an appropriate test case documentation format for your project
- Practice each test case design technique using an integrated Web case study or your own project

### The Practical “How-To’s” of Creating Test Cases

This course picks up where most methodology courses end — test plans are written, test teams are formed, and test tools are selected. Then what? Testing everything is impossible. Test design is about wisely choosing an appropriate slice of the infinite continuum of possible test combinations. This course provides many techniques for picking a “smart” slice.

### Hands-On Practice with All Techniques

The case study begins with the selection or design of a format for recording test cases and then continues throughout the class with students practicing each technique as it is presented. Students can use instructor provided Web pages or user’s manual describing a case study, or bring their own project for use in class.

***“This course is a must for everyone — from people just entering the field to experienced testers!”***

Software Engineer, Intellution

### For Software Developers and System Testers

This course is appropriate for both novice and experienced software developers and system testers. Test and development managers can also benefit from the course. A background of basic development processes and test levels is helpful but not required.



**Claire Lohr** has been an active professional in the computer field for 30 years, with the last 15 years focused on software process improvement to companies including GTE, Motorola, Westinghouse, SAIC, Boeing, Aetna, and others. Claire currently provides training and consulting services for a wide variety of both government and commercial clients. She is a Certified Software Quality Engineer, an SEI CMM Software Capability Evaluator, and a Lloyd’s Register ISO 9000 Lead Auditor.

*Lee Copeland is an additional instructor for this seminar.*

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## Topical Outline: 2 Day

### Global Issues

The impossibility of testing everything  
The importance of testing wisely  
Selecting a test design documentation format

### Black Box Science: Requirements-Based Testing

What is black box testing?  
Levels of coverage  
What does black box testing mean at the unit, integration, and system levels?  
Tests for each software requirement using Equivalence Class Partitioning, Boundary Value Testing, Domain Analysis, and more  
Test cases for system software requirements using the Trace Matrix, Cross-functional Testing, Decision Tables, and more  
Test cases for system integration for configurations, manual operations, etc.

### White Box Science: Structure-Based Testing

What is white box testing?  
Levels of coverage — statement, branch, path  
What does white box testing mean at the unit, integration, and system levels?  
McCabe’s Design Predicate approach for choosing tests

### Black Box Art: Exploratory Testing

Why science is not enough  
Hunches, group insights, and more

### Maintenance of Test Cases

Regression test cases  
Implementing the test case changes

### The Inevitable: Defects

Capturing, reporting, tracking, and analyzing defects  
Useful defect metrics

### Wrap-Up

Summary of major topics  
Action plan for improving your testing process

# WEB PERFORMANCE AND SECURITY TESTING

*Performance, Scalability, Reliability, and Security*

## Topical Outline: 2 Day

### Course Introduction

#### Performance

Sample performance testing objectives  
Single-shot, smoke, load, stress, spike, hot-spot, bounce and integrity testing  
Web user profiles  
Example performance graphs  
Ways to improve performance

#### Scalability

Capacity planning techniques: Simulation, Guesstimates, and Modeling  
APIs versus CGIs, MTS, EJB, Caching, Server Farms, and Mirror Sites  
Tool configuration and calibration  
White-box measurements versus black-box measurements  
Representative performance testing tools and services

#### Reliability and Availability

Low resource, endurance, volume, peak loading, and failover testing  
Representative monitoring tools and services  
Strategies for diagnosing performance problems

#### Site Security

Scoping the security testing  
Why firewalls are only part of the solution  
The different types of intruder detection systems

#### Application Security

Security breach points of a Web application  
ActiveX, code signing, and the Java sandbox  
Testing client-side security settings and illicit navigation paths  
How secure is the applications data?

#### Security Penetration

What is social engineering and how can you test for it?  
Testing the physical protection of a Web site  
What are ethical hackers and why would you use them?

#### Course Wrap-Up

- Learn about performance and other specialized testing tools available to assist you in system testing your site before — and after — it goes live
- Find out the differences between load testing, stress testing, integrity testing, and endurance testing
- Gain insight into the different attack points that a hacker could seek to exploit
- Learn how to check a Web server for open ports and why a Firewall should not be your only line of defense

Many organizations are seeking to deploy mission-critical Web sites and applications that are intended to attract large numbers of visitors, often with significant revenue associated with the activity. This course seeks to help developers and test managers already experienced in testing small-scale Web sites understand the technologies needed to make Web sites more scalable, secure, and reliable.

PREREQUISITE: SQE's Web/eBusiness Testing course or equivalent knowledge and experience.

<b>Tampa, FL</b>	January 31–February 1, 2002	
<b>Austin, TX</b>	February 7–8, 2002	
<b>Seattle, WA</b>	February 21–22, 2002	
<b>San Diego, CA</b>	March 14–15, 2002	<b>TW</b>
<b>Boston, MA</b>	May 9–10, 2002	<b>TW</b>
<b>Denver, CO</b>	May 23–24, 2002	
<b>Chicago, IL</b>	June 6–7, 2002	<b>TW</b>
<b>Baltimore, MD</b>	June 27–28, 2002	

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### Who Should Attend

This course is intended for testers, developers, content managers, Web masters, project managers, test managers, quality analysts, project leaders, and business analysts whose jobs involve an understanding of Web/eBusiness testing.

### Take-Home Bonus:

**Students who attend the *Web Performance and Security Testing* or *Web/eBusiness Testing* training course will take home a copy of *The Web Testing Handbook* by Steven Splaine and Stefan P. Jaskiel. (A student attending both courses will receive one book).**



**Lee Copeland** has more than 25 years' experience as an information system professional. He has held a number of technical and managerial positions with commercial and non-profit organizations in the areas of software development and process improvement. He has taught object-oriented seminars and consulted extensively throughout the U.S. and internationally.

*Additional instructors for this seminar include Dale Perry, Claire Lohr, and Steve Splaine.*

# AUTOMATED TEST SUITES

## How to Build & Manage Automated Test Suites

- Three ways to approach test script development
- How to plan for change
- A method for organizing your test team

### How to Automate Software Testing

Why aren't automated tests a reality for most organizations? In an age of rapid development and increasingly complex environments, automation is the only real hope for achieving an acceptable level of test coverage. Yet, even with all of the tools and technology available, an overwhelming amount of testing is still done manually.

Software test automation reaps huge rewards. But if you've never done it before, you often must learn through trial and error. But who has time to make mistakes? The stakes are too high, and you can't afford technology that won't save you time and money. Now you can benefit from the experiences of many companies who have implemented automated testing — what worked, what didn't, and why.

### For Testers, Developers, Quality Consultants, and Software Managers

If you have an on-line application that requires testing; if you have a testing tool or are considering the purchase of one; or if you are seeking ways to organize your team and test approach, this course provides the practical techniques and methods to help you get the job done effectively.

*“Worthwhile. [The instructor] has a wealth of knowledge and is very enthusiastic about software quality and testing processes.”*

Steve Goff, BancTec, Inc.

*“The breadth of Linda's virtuosity in the software industry made her material valuable to everybody in the room. This course literally has a lot to offer everybody, regardless of platform or background.”*

Georgia Cotrell, BMC Software



*Linda G. Hayes is the founder of three software companies including AutoTester, where she pioneered automated test tools for the PC. Her new company, WorkSoft, offers the next generation of enterprise-level test automation. A frequent industry speaker and award-winning author, she publishes the monthly “Quality Quest” column for Datamation, wrote The Automated Testing Handbook, and co-edited Dare to be Excellent with Alka Jarvis on best practices in the software industry.*

<b>San Diego, CA</b>	March 14–15, 2002	<b>TW</b>
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<b>Chicago, IL</b>	June 6–7, 2002	<b>TW</b>

*TW denotes Test Week locations.*

## Topical Outline: 2 Day

### What it Takes to Automate Testing and Why

Essential elements of test automation  
How to avoid common mistakes  
Setting realistic expectations

### What Tools Can and Can't Do

When to use what kind of approach  
When manual testing is better  
When automated testing is critical

### Automated Test Development and Maintenance

How to build a test framework  
How to design test scripts and data  
Example architecture and scripts  
How to manage and maintain your test library

### How to Manage a Test Automation Project

How it fits into the organization  
Team members and skill sets  
Tasks and responsibilities

### What Metrics Matter to Management and Why

How to know where you stand  
How to measure product readiness  
How to obtain and maintain commitment

### Take-Home Bonus:

Included in your course materials is a copy of *The Automated Testing Handbook*, by speaker Linda G. Hayes. This handbook guides you, step-by-step, through your own test automation effort and provides practical examples, checklists, templates, and techniques to get you started.

# TEST PROCESS IMPROVEMENT

*A Practical Guide to Optimize Your Testing Using the TPI® Model*

## Topical Outline: 2 Day

### Introduction

Testing in the real world  
Why testing  
What to test  
The aims of testing  
Required structure  
Quality management and testing  
Software and Test Process Improvement

### Context and Buy-in of TPI®

The evolution of testing  
The future challenges of testing  
The need for improvement  
Available models (e.g. CMM, SPICE, etc.)  
The need for a dedicated TPI® model  
The model requirements

### Test Process Improvement Model

Characteristics of the TPI® model  
Key areas  
Levels  
Checkpoints  
Improvement suggestions  
Test Maturity Matrix  
TPI in relation to SPI models (e.g. CMM)

### Application of the Model

Process of change  
Awareness  
Goal, scope, and approach  
Assessment  
Improvement definition  
Implementation plan  
Improvement actions  
Evaluation  
The change team  
Dealing with resistance  
Metrics  
Do's and don'ts

### Improving in a Web/eBusiness Environment

Focus on short delivery cycles  
Skills required  
Dealing with time pressure

### Workshop

TPI® application using a real-world case

- **TPI®-model overview**
- **Practical guidelines for assessing the maturity level of testing in an organization and a step-by-step improvement of the process**
- **Case study on applying TPI®**

Testing is often experienced as a troublesome and uncontrollable process. Testing takes too much time, costs a lot more than planned for, and offers insufficient insight into the quality of the testing process — and therefore the quality of the information system under test. Many organizations realize that improving the testing process can solve these problems. However, in practice it is difficult to define what steps to take (and in which order) to improve the process.

### TPI®-Model Overview

This course deals with the TPI® model, which is based on current state-of-the-art test process improvement practices. This model provides practical guidelines for assessing the maturity level of testing in an organization and for step-by-step improvement of the process. The TPI® model consists of 20 key areas, each with different levels of maturity. The levels of all key areas are set out in a maturity matrix. Each level is described by several checkpoints. Improvement suggestions, which help to reach a desired level, are part of the model.

The model will be explained in detail: scope, characteristics, key areas, requirements

(checkpoints) for the different levels of maturity, test maturity matrix, assessment, relation between the key areas and how to select priorities, improvement suggestions, change process, etc. Dedicated attention will be paid to the required test process changes for eBusiness applications.

*This course provides a real-life case study to practice a change process in which students will learn how to apply TPI®.*

### Who Should Attend

This class is intended for test management, test consultants, TPI consultants, SPI/CMM consultants, QA management, IT management, and testers involved in the TPI processes.

### Take-Home Bonus:

Students will receive a copy of the book, *Test Process Improvement: A Practical Step-by-Step Guide to Structured Testing*, by Tim Koomen and Martin Pol.



**Martin Pol** has played a significant role in helping to raise the awareness and improve the performance of testing in Europe. He is the co-author of the TMap® method that has become a standard approach for structured testing and the Test Process Improvement (TPI®) method. Martin provides international test consultancy services through Polteq IT Services BV.

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# PERFORMANCE, LOAD, AND STRESS TESTING

## Issues and Solutions for Environmental Testing

- How to test system performance, response time, and throughput
- How to test the ability to handle load and stress
- How to evaluate whether system resources are being utilized efficiently
- How to test system robustness and capability to recover from errors
- How to test across different configurations or versions
- How to test systems for scalability (Gee, it worked in the lab ...)
- How to automate performance, load, and stress testing

### Powerful Techniques for Testing System Characteristics

You've made an heroic effort to test a system under unreasonable deadlines with only limited test staff and equipment. You scrupulously ensure the features work as expected, and system performance seems fine in the test lab. So you release the system. A few days later, you receive a call from a senior user. You're expecting words of appreciation, but he can only moan about what you've done to him.

The features do work, but response time is slow in live operation. Or the system can't handle peak loads and stresses. Or the system isn't robust, and cannot routinely recover from errors. Whether you've already been there or you don't want to go there, this seminar is for you! It goes beyond the basics of feature testing to assure that your software works in its "live" production environment before users discover problems.



**Ross Collard** is a consultant currently working on testing and quality assurance projects for American Express, Citibank, Dell, General Electric, and Nortel. He has a master's degree in computer science from California Institute of Technology and an

MBA from Stanford. He has also taught courses on testing for the University of California Berkeley and Harvard University.

### In the Real World

This workshop includes a real-world case study where you're appointed team leader on a project to test the performance, load, and stress characteristics of a mission-critical system. The application uses a mix of Web, client/server, database, wireless, and telephone technology. The managers who appointed you expect an in-depth presentation on how you'll proceed. Working through a series of exercises in small teams, you will develop a workable strategy for the project.

### Who Should Attend

System testers, quality assurance professionals, project leaders, system designers, system tuners, software engineers, and users who are involved in systems testing. A working knowledge of system testing and quality assurance fundamentals is assumed. No specific technical background (e.g., UNIX, TCP/IP) is assumed.

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## Topical Outline: 2 Day

### Introduction to Performance Testing

The Problems We're Trying to Solve  
Basic Definitions  
Major Issues

### Determining What to Measure

Analyzing Performance Specifications for Testability  
Developing the Performance Metrics  
Service Level Agreements (SLAs)  
Measurement Logistics and Project Planning  
Performance Test Plan Outline and Checklists

### Developing the Test Workload

Building the Operational Profile  
Benchmark Design  
Determining the Peak and Stress Loads

### Test Automation

Load Testing Tools  
Resource Usage Monitoring Tools  
Developing the Automated Test Facilities

### Managing the Test Environment

Designing, Building, and Maintaining the Test Environment  
Handling the Scalability Issues  
Data Gathering Considerations  
Assessing Resource Utilization

### System Performance Pressures

Load, Stress and Volume Testing  
Endurance and Robustness Testing  
Designing Systems for Performance

### The Relationship of Measurement to Tuning

What the Tuners Need to Know  
The Interplay: Repeated Iterations of Tuning and Measurement

### Analyzing, Interpreting, and Presenting Findings

Finding Meaning in the Data  
Validating the Findings and Conclusions  
Guiding the Ongoing Measurement Efforts

### Recap of Key Points

# MANAGING THE TEST PROCESS

*Practical Tools and Techniques for Managing Hardware and Software Testing*

## Topical Outline: 3 Day

Overview of Test Project Management  
Defining the Scope of the Test Effort  
Case Study: File Security Software Failure Mode and Effects Analysis  
Developing Test Plans  
Case Study: A Banking Application Test Plan  
The Test System  
Bug (Defect) Tracking  
In-Class Exercise: Bug Reporting  
Managing Test Cases  
Case Study: A Home Equity Loan Application Test Tracking Spreadsheet  
Managing Complex Test Configurations  
Staffing and Managing a Test Team  
In-class Exercise: Interviewing  
Test Management Politics  
In-class Exercise: Bearer of Bad News  
Test Execution Management Challenges  
Case Study: One Cycle of Test Execution  
Distributed Testing  
The Economics of Testing  
In-class Exercise: Presenting and Defending a Budget  
Testing Integrated Hardware/Software Systems  
Managing a Testing Lab  
Hardware Testing Fundamentals  
Case Study: Testing a Telephony Server and an Information Appliance  
Glossary  
Bibliography

To review the full course outline, visit our Web site at [www.sqe.com](http://www.sqe.com).

- Analyze quality risks, determine test project scope, and prepare a budget and schedule
- Develop test plans and cases that address the important customer needs
- Prepare for the challenges of test execution
- Build and retain an effective, loyal test team
- Work and communicate effectively with managers and peers
- Manage a test lab

## Powerful Techniques for Testing System Characteristics

Based on his book, *Managing the Testing Process*, and nearly two decades of software, hardware, and systems experience, Rex Black covers the essential tools, important techniques, critical processes, significant considerations, and fundamental management skills for people who lead or manage development and maintenance test efforts.

In this three-day training seminar, learn about the development and use of the test plan, the test system, the bug tracking database, and the test tracking spreadsheet. Gain insight into the “people skills” needed to define your test team, hire the appropriate people, manage that team’s relationships with peers and managers, and

distribute test work to other participants. Explore contextual issues of test projects such as the economics of testing, the test effort within the project, hardware resource management, the test lab, and what test managers should know about testing hardware components.

## Who Should Attend

Hardware, software, system test managers, lead test engineers, development managers, and project managers should attend this seminar.



**Rex Black** is the president and principal consultant of Rex Black Consulting Services, Inc., an international software and hardware testing and quality assurance consultancy. He and his consulting associates help clients like Bank One, Dell, Netpliance, Reef, and others with implementation, consulting, training, and staffing for testing and quality assurance projects. His current book, *Managing the Testing Process*, was published in June 1999, by Microsoft Press. His next book, tentatively titled *Critical Testing Processes*, will be published in 2002.

Seattle, WA	March 18–20, 2002
Philadelphia, PA	April 22–24, 2002
Denver, CO	May 20–22, 2002

# JANUARY-JUNE 2002 CALENDAR

\*Denotes Test Week locations. Build a specialized week of training by pairing one M-W course with a T-F course in select locations and SAVE \$200!

Software Testing Seminars	Jan.	Feb.	Mar.	Apr.	May	June
<b>Systematic Software Testing</b> <i>Instructors: Dale Perry, Rick Craig, Claire Lohr, Lee Copeland</i>	1/28-1/30 Tampa	2/4-2/6 Austin 2/18-2/20 Seattle	3/11-3/13* San Diego	4/15-4/17 Arlington, VA 4/29-5/1 Anaheim	5/6-5/8* Boston	6/3-6/5* Chicago 6/17-6/19 Salt Lake City 6/24-6/26 Baltimore
<b>Test Management</b> <i>Instructor: Rick Craig</i>			3/11-3/13* San Diego		5/6-5/8* Boston	6/3-6/5* Chicago
<b>Web/eBusiness Testing</b> <i>Instructors: Lee Copeland, Steve Splaine, Dale Perry, and Claire Lohr</i>	1/28-1/30 Tampa	2/4-2/6 Austin 2/18-2/20 Seattle	3/11-3/13* San Diego		5/6-5/8* Boston 5/20-5/22 Denver	6/3-6/5* Chicago 6/24-6/26 Baltimore
<b>Testing Object-Oriented Software</b> <i>Instructors: Timothy Korson and Lee Copeland</i>			3/11-3/13* San Diego		5/6-5/8* Boston	6/3-6/5* Chicago
<b>Writing Testable Requirements</b> <i>Instructors: Richard Bender, Bill Lewis, Gary Mogyorodi</i>			3/11-3/13* San Diego		5/6-5/8* Boston	6/3-6/5* Chicago
<b>Mastering Test Design</b> <i>Instructors: Claire Lohr and Lee Copeland</i>			3/14-3/15* San Diego		5/9-5/10* Boston	6/6-6/7* Chicago
<b>Web Performance and Security Testing</b> <i>Instructors: Lee Copeland, Dale Perry, Claire Lohr, Steve Splaine</i>	1/31-2/01 Tampa	2/7-2/8 Austin 2/21-2/22 Seattle	3/14-3/15* San Diego		5/9-5/10* Boston 5/23-5/24 Denver	6/6-6/7* Chicago 6/27-6/28 Baltimore
<b>Automated Test Suites</b> <i>Instructor: Linda G. Hayes</i>			3/14-3/15* San Diego		5/9-5/10* Boston	6/6-6/7* Chicago
<b>Test Process Improvement</b> <i>Instructor: Martin Pol</i>			3/14-3/15* San Diego		5/9-5/10* Boston	6/6-6/7* Chicago
<b>Performance, Load, and Stress Testing</b> <i>Instructor: Ross Collard</i>			3/14-3/15* San Diego		5/9-5/10* Boston	6/6-6/7* Chicago
<b>Managing the Test Process</b> <i>Instructor: Rex Black</i>			3/18-3/20 Seattle	4/22-4/24 Philadelphia	5/20-5/22 Denver	
Conferences						
<b>SM/ASM 2002</b>		2/11-2/15 Anaheim				
<b>Software Test Automation Spring 2002</b>			3/25-3/28 San Jose			
<b>STAREAST 2002</b>					5/13-5/17 Orlando	

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# ON-SITE COURSES

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## Creative Software Testing

It seems there's never enough time to do all the testing we'd like, yet we worry that even if we do all the testing planned, we still won't find the serious bugs that will affect users. Creative Software Testing offers techniques to expand our ideas of testing, then reduces them to a manageable set of tests.

For novices and experienced testers alike, this course shows you how to be more creative in designing tests, negotiating the scope of testing, and finding the best use of your testing time. It teaches you creative ways to analyze the software to be tested, imagine how customers might use it, examine how it might affect the rest of the system, and predict what could go wrong in the process.

- Discover how business and technical contexts impact testing
- Learn creative techniques to enhance the power of your tests
- Explore strategies for reducing the amount to test to a manageable level
- Get methods designed to reduce the set of tests while reducing risk



**Elisabeth Hendrickson** is an independent consultant who specializes in software quality assurance and management. She has more than 12 years of experience working with leading software companies and is the founder of Quality Tree Software, Inc. An award-winning author, she has published more than 20 articles and is a frequently invited speaker at major software quality and software management conferences.

## Technical Reviews & Inspections

This seminar demonstrates effective techniques for efficient, productive reviews. It provides students an opportunity to practice and gain valuable experience in various types of review and roles including moderator, presenter, tester, and reviewer. Students leave with a fresh insight about what good reviews mean and a complete set of supporting material including sample procedures, checklists, and standards.

- A powerful inspection technique for early detection and correction of faults in requirements, designs, and other workproducts
- The scope, objectives, and activities of the review process
- How to prepare for review meetings
- How to perform different review roles
- Ways to incorporate test information into reviews



**Dale Perry** has over 25 years of experience in information technology. He has been a developer, DBA, project manager, tester, and test manager. His project experience includes large system conversion, distributed systems, online applications, client/server, and Web applications.

## Acceptance Testing

Acceptance testing is often treated as a phase located between programming and implementation. But testing is an activity necessary in all phases of a development or maintenance project. Responsibility for testing at different points in the project has to be clearly assigned with adequate resources committed. Analysts and designers must work closely with users in the acceptance testing of a system to ensure a quality product.

This course includes a complete case study that follows a project from initial appraisal through computer systems design with extensive teamwork. The project is part of an enhancement to the existing system of a major organization with both online and batch processing. No specific development methodology is used.

- Create a breakdown of user, analyst, and programmer responsibilities for system and acceptance testing
- Learn function-based, component-based, and structure-based testing techniques
- How to develop an acceptance test plan using data models, process specs, and data dictionaries
- Discover ways to improve quality through acceptance testing



**Geoff Quentin's** career in information technology spans nearly three decades. An accomplished speaker and lecturer on software testing and related topics, he is a member of ISEB (Information Systems Examinations Board) and Founder Chairman of the British Computer Society Specialist Interest Group in Software Testing.

## Model-Based Design of Software Tests

This seminar enables attendees to understand and explore a set of powerful, pragmatic techniques for modeling software function, structure, and usage and then develop tests from these models both manually and automatically. Test design techniques based on statistical models as well as automatic result validation are also discussed.

- Over a dozen pragmatic techniques for modeling product function, structure, and usage — and for deriving test suites from these models
- The many uses of grammars and state models for generating tests and evaluating results
- Eight ways to automatically validate test results both inside and outside the software
- Over three dozen commercial tools identified for support of model construction and test generation



**David Gelperin** has more than 30 years' experience in software engineering, including as lead verification manager on a large automatic test equipment project. He also chaired development of the ANSI and IEEE standards on software testing. He is chief architect of the STEP™ testing methodology.

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- How to Manage Multiple Iterative Projects
- Integrating Risk Management into the Project Plan

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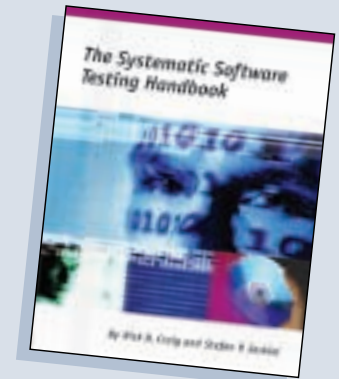
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| <input type="checkbox"/> Project Leader      | <input type="checkbox"/> Software Manager  | <input type="checkbox"/> Test Manager    |

#### Job Interest:

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Embedded, Real-Time     | <input type="checkbox"/> Programming         | <input type="checkbox"/> Software Management   |
| <input type="checkbox"/> Development/Engineering | <input type="checkbox"/> Project Management  | <input type="checkbox"/> Software Testing      |
| <input type="checkbox"/> Measurement             | <input type="checkbox"/> Quality Assurance   | <input type="checkbox"/> Test Automation       |
| <input type="checkbox"/> Objects & Components    | <input type="checkbox"/> Quality Engineering | <input type="checkbox"/> Web/eBusiness Testing |
| <input type="checkbox"/> People & Teams          | <input type="checkbox"/> Requirements        |  |

#### Seminar Fees\* Include

- Seminar Tuition
- Course Notebook
- Refreshment Breaks
- Luncheons
- Certificate of Completion

#### Seminar Schedule

- |                      |  |
|----------------------|--|
| 7:30 a.m.-8:30 a.m.  | <b>Registration</b><br>(Mon. & Thurs.) |
| 8:30 a.m.-12:00 p.m. | <b>Seminar</b>                         |
| 12:00 p.m.-1:00 p.m. | <b>Lunch</b>                           |
| 1:00 p.m.-5:00 p.m.  | <b>Seminar</b>                         |

\*\$59 of your registration fee includes a one-year subscription to STQE magazine (\$75 value). If you are a current subscriber, your subscription will be extended an additional six issues.

**SQE Public Training Policies:** SQE reserves the right to make changes in seminar schedules, dates, locations, and accommodations and will make every effort to notify students within a reasonable period of time. However, SQE is not responsible for personal travel, accommodations, or other incidental expenses in connection with changes to a seminar.

**Cancellation Policy:** Attendee substitutions are permitted. Registrants who fail to attend are subject to the full fee if they have not obtained a cancellation code from SQE at least six business days prior to the event start date. To obtain a cancellation code, call (904) 278-0707.

## TEST WEEKS: SEMINAR LOCATIONS AND DATES

- San Diego, CA: March 11–15, 2002  
*Doubletree Golf Resort*
- Boston, MA: May 6–10, 2002  
*Crowne Plaza Boston-Natick*
- Chicago, IL: June 3–7, 2002  
*Hilton Oak Lawn*

Select the course(s) for which you are registering:

#### SEMINARS

**Monday – Wednesday \$1,345**

- Systematic Software Testing
- Test Management
- Web/eBusiness Testing
- Testing Object-Oriented Software
- Writing Testable Requirements

**Thursday – Friday \$1,145**

- Mastering Test Design
- Web Performance and Security Testing
- Automated Test Suites
- Test Process Improvement
- Performance, Load, and Stress Testing

#### ADDITIONAL SEMINARS

See specific seminar pages for course outlines, dates, and locations.

Seminar	Location	Dates	Amount

(Three-day seminars – \$1,345; two-day seminars – \$1,145)

**SAVE: Attend two courses and save \$200.** Build a week of specialized training. Pair one Monday – Wednesday course with one Thursday – Friday course for \$2,290

Note: An additional \$50 discount is offered for groups of three or more registering simultaneously for the same city.

**Confirmation:** After payment, you will receive a confirmation notice containing seminar details (hotel, accommodations, etc.). Bring the letter to the seminar for admittance.

**Payment** by credit card, check, or company purchase order is required before seminar reservation is confirmed.

Payment included: \$ \_\_\_\_\_  Check  Purchase Order # \_\_\_\_\_

VISA/MC/AMEX # \_\_\_\_\_ Exp. Date \_\_\_\_\_

Signature \_\_\_\_\_

Cardholder's Name (Print): \_\_\_\_\_

**100% Guarantee:** SQE is proud to offer a 100% satisfaction guarantee. If our training fails to provide you with usable insight, we will refund the seminar fee.

**REGISTER EARLY:** The number of students per seminar is limited, and many seminars fill to capacity. Register early to ensure your space in a given seminar. See left for cancellation policies.

**REGISTER ONLINE: [WWW.SQE.COM](http://WWW.SQE.COM)**

# SOFTWARE TESTING EDUCATION

JANUARY-JUNE 2002

TRAINING ■ CONFERENCES ■ PUBLICATIONS

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## IT'S ALL ABOUT TESTING

Systematic Software Testing

Test Management

Web/eBusiness Testing

Testing Object-Oriented Software

Writing Testable Requirements

Mastering Test Design

Web Performance and Security Testing

Automated Test Suites

Test Process Improvement

Performance, Load, and Stress Testing

Managing the Test Process

Acceptance Testing

Creative Software Testing

Technical Reviews & Inspections

Model-Based Design of Software Tests

### SAVE TIME AND MONEY WITH ON-SITE TRAINING

**Less travel.** Limited travel budgets don't supplant the need for training. Plus, you'll get a bigger return on your training dollar by making instruction convenient.

**Manageable workloads.** Schedule training around your projects, not the other way around.

**Customizable content.** Offer your team a training curriculum that adheres to your corporate goals, technology environment, and business needs.

**Consulting services.** Augment your training programs with SQE consulting services.

**Small groups.** Focused training allows your team members to receive individual attention as well as ask plenty of questions. Class sizes can range from 6-25 people.

**Employee development.** Don't keep looking outside your team for new talent; develop what you've got. This saves company dollars and increases employee satisfaction.

**SEE PAGES 16-17 FOR DETAILS.**



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