Course 308: Software Quality Assurance
(4 days)

Course Description…

In the face of high profile software development failures and questions about the integrity and effectiveness of software development processes, Software Quality Assurance (SQA) has taken on a new and important prominence in the IT and business communities. This course presents the basics of SQA along with techniques and processes for assuring that the software developed in your organization will be of the highest quality possible.

Learning Objectives…

- Create and apply a software quality assurance plan for all software projects
- Create and manage a software quality assurance team
- Conduct and facilitate inspections, product reviews, walk-throughs and audits
- Create and maintain appropriate metrics to measure and maintain quality
- Apply a software quality assurance program in an agile environment involving iterative and incremental development

Who should attend…

Project managers, personnel interested in participating in quality project delivery, quality assurance personnel.

Prerequisites…

There are no prerequisites for this course.

See next page for a detailed course outline…

Course Outline…

Introduction and Overview

Course Objectives

Unit 1: Introduction

- The Need for Software Quality Assurance
  - Deming's principle
  - Definition of quality
  - SQA vs. software quality control (testing)
- SQA Scope
  - Process definition and improvement
  - Auditing
  - Metrics
- Organizational Relationships
  - Where SQA fits in the organization
  - Relationships of SQA to engineering, management, support
  - SQA practitioner skills
  - SQA budget for a given project
- Project Quality Management
  - Quality Planning
  - Quality Assurance
  - Quality Control
- SQA Standards
  - ISO Std. 12207
  - IEEE Std. 730
  - SQA Process Area in the CMMI

Unit 2: Process Definition

- Anatomy of a Software Process
  - Inputs and sources
  - Outputs and destinations
  - Resources needed to implement a process
- Typical Life Cycle Phases
  - Requirements definition and analysis
  - Design
  - Construction
  - Testing
  - Maintenance
- Life Cycle Models (aggregations of phases)
  - Components of a life cycle definition (phases, sequences, dependencies)
  - Sequential models (waterfall, etc.)
  - Iterative models (spiral, Unified Process, etc.)
  - Criteria for choosing a model
- SQA Role
  - Process expert
  - Process definition facilitator
  - Life cycle model facilitator
  - Focal point for process improvement

Unit 3: Inspections

- Inspection Concepts
  - Review procedures
  - What is an inspection?
  - Benefits of early inspection
  - Hypothetical example
  - Inspection costs
- Inspection Procedures
  - Inspection steps
  - Inspection meetings
- Inspection Tips
- Individual Checking
  - Traceability matrix
  - Tracing the requirements
  - Traceability example
  - Multi-level traceability
    - Inspection checklists
      - Software requirements checklist
      - Design checklist
      - Coding checklist
      - Test case checklist
      - Test procedures checklist
      - Test plan checklist
- SQA Role
  - Inspection process champion
  - Moderator
  - Liaison to process improvement activities
  - Inspector training facilitator

Unit 4: Audits

- Need for Auditing
  - Ensure processes are being followed
  - Basis for addressing non-conformance
  - Basis for determining usefulness of metrics
- Auditing Process
  - Obtaining management commitment
  - Planning the audit
  - Pre-audit meeting
  - Conducting the audit
  - Documenting and reporting findings
  - Re-audits for non-conformances
- SQA Role
  - Auditing expert
  - Audit organizer
  - Audit participant
  - Focal point for follow-up based on audit findings
- Comparing Peer Reviews and Inspections

Unit 5: Metrics

- The Need for Metrics
  - Objective basis for process improvement
  - Objective basis for product improvement
- Typical Product Metrics and Their Use
  - Size (lines of code, pages)
  - Defect density
  - Complexity (cyclomatic, design, essential)
  - Customer satisfaction
- Typical Process Metrics and Their Use
  - Function points
  - Defect density
  - Actual vs. estimated productivity
  - Actual vs. estimated cost (or effort)
  - Actual vs. estimated duration
- How to Define a Metric
  - Goal
  - Question
  - Metric
- SQA Role
  - Metrics expert
  - Focal point for metrics definition and use
  - Owner of the metrics repository
  - Metrics analyst for product and process improvement

Unit 6: Building the SQA Team

- Where Does SQA Fit in?
- When Does SQA Take Place?
- Authority and Responsibility
- Quality Planning
- Quality Assurance
- Quality Control

Unit 7: The Bottom Line

Ideas to use
Where to go for more information

Please contact your ROI representative to discuss course tailoring!!!