Software Quality Engineering
Training Course Offered by The Westfall Team

Software Quality Engineering is a 5-day course designed to provide a comprehensive knowledge base and practical skills for anyone interested in implementing or improving Software Quality Engineering techniques and practices in their organization.

This course starts with an overview of software quality engineering basics, including the benefits of software quality, a discussion of defect prevention vs. detection techniques, an overview of software quality related standards and models, and a review of quality team tools.

Course attendees will learn how to establish software quality goals and objectives, document their quality management systems, track the cost of quality and perform quality system audits. This course will review the strengths and weakness of various life cycle models and review major activities in the software development life cycle.

This course discusses basic software project management principles and techniques as they relate to software project planning, monitoring and control, and risk management. Attendees will learn how to select, define and implement software metrics to understand, evaluate, control and predict their software process, product and services.

This course covers the basics of software verification and validation planning with an emphasis on software peer reviews and software testing techniques. The course ends with an overview of software configuration management, including configuration identification, control, status accounting and auditing.

Method of Instruction: This course is taught through lecture and interactive discussion and learned skills are practiced using team exercises. Actual examples from the software industry are utilized to make the information relevant. The emphasis is on techniques that allow the attendees to transition the skills learned in this course to their own work environments.

Target Audience: Software quality engineers, developers, testers, project managers, functional managers, requirements analyst, and other software stakeholders who will be involved in planning and managing software projects, developing software and/or assuring its quality.

Course Objectives: Upon successful completion of this course attendees will be able to:

- Understand the basics of software quality engineering, including its benefits, related models and standards, and quality team tools
- Plan, implement and audit a Software Quality Management program for their organization
- Assist in defining and tailoring software engineering life cycles and processes
- Understand the basic software project management principles and techniques as they relate to software project planning, tracking, control and risk management
- Select, define, and apply software measurement, metrics, and analytical techniques to their software products, processes and services
- Participate in peer reviews, and assist in the planning, implementation and evaluation of software testing activities
- Understand the fundamentals of the configuration management process to include configuration identification, configuration control, status accounting, and audits.

Other Software Quality Engineering Courses:

Building Software Quality Skills: This 3-day course is a subset of the Software Quality Engineering design to provide a fundamental knowledge base and practical skills for anyone interested in implementing or improving Software Quality Engineering techniques and practices in their organization.

Software Quality Techniques: This 2-day course is a subset of the Software Quality Engineering designed to provide an overview of Software Quality Engineering techniques and practices.

Customized Software Quality Courses: These software quality courses are modularized so that they can be easily customized for in-house course offerings that focus on the specific content and topics needed to meet your organization's exact training requirements.

For more information about these and other course offered by The Westfall Team:

Visit our website at: www.westfallteam.com

Send an email to: lwestfall@westfallteam.com

Or call: 972-867-1172

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Partnering for Software Excellence

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Detailed Outlines:

I: Basics of Software Quality Engineering	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
1. Benefits of Software Quality	Included	Included	Included
▪ Quality Defined	Included	Included	Included
▪ Benefits of Software Quality	Included	Included	Included
▪ Increasing Costs of Fixing Defects	Included	Included	Included
▪ Kano Model	Included	Included	---
▪ Mistakes, Faults & Failures	Included	Included	Included
▪ Testing, Debugging & Root Cause Analysis	Included	Included	Included
▪ Prevention vs. Detection	Included	Included	Included
2. Standards & Models	Included	Included	Included
▪ Definitions	Included	Included	---
▪ Importance of Standards	Included	Included	---
▪ ISO 9000 Family of Standards	Included	Included	---
▪ ISO 9001 – Quality Management System	Included	Included	Included
▪ IEEE Software Engineering Standards	Included	Included	Included
▪ IEEE/EIA 12207	Included	Included	---
▪ SEI SW-CMM® vs. SEI CMMI® Staged	Included	Included	Included
▪ SEI CMMI® Specific Goals & Practices	Included	---	---
▪ SEI CMMI® Generic Goals & Practices	Included	---	---
▪ SEI CMMI® Staged Representation	Included	---	---
▪ SEI CMMI® Continuous Representation	Included	---	---
3. Quality Team Tools	Included	---	---
▪ Brainstorming	Included	---	---
▪ Nominal Group Techniques	Included	---	---
▪ Affinity Diagram	Included	---	---
▪ Multi-Voting Techniques	Included	---	---
▪ Nominal Group Technique – Exercise	Included	---	---
▪ Prioritization Matrices	Included	---	---
▪ Prioritization Graph	Included	---	---
▪ Force Field Analysis	Included	---	---
II: Software Quality Management	**Software Quality Engineering**	**Building Software Quality Skills**	**Software Quality Techniques**
1. Quality Management System Defined	Included	Included	Included
a. Purpose of a QMS	Included	Included	Summarized
▪ Quality Goals	Included	Included	---
▪ Examples of Quality Goals – Deming's 14 Points	Included	---	---
▪ Quality Objectives	Included	Included	---

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II: Software Quality Management (cont.)	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
▪ Software QMS Documentation Hierarchy	Included	Included	Included
▪ Benefits of Standardized Documentation	Included	Included	Included
▪ ETVX Process Definition	Included	Included	Included
▪ Entry & Exit Criteria - Examples	Included	Included	Included
▪ Process Definition Critical Attributes	Included	Included	Included
▪ Process Documentation – Example	Included	Included	Included
▪ Process Documentation – Exercise	Included	Included	---
▪ Process Architecture	Included	Included	Included
▪ Standardized Work Instructions	Included	Included	Included
▪ Project-Level Quality Plans	Included	Included	Included
▪ Software Quality Plan	Included	Included	Included
▪ Project Specific & Tailored Processes	Included	Included	Included
b. Customers & Other Stakeholders	Included	Included	Included
▪ Product Stakeholders	Included	Included	Included
▪ Project Stakeholders	Included	Included	Included
▪ Process Stakeholders	Included	Included	Included
▪ Benefits of Identifying Stakeholders	Included	Included	Included
▪ Prune Stakeholder List	Included	---	---
▪ Stakeholder Participation Strategy	Included	---	---
▪ Stakeholder Conflict Management	Included	---	---
▪ Decision Criteria Alternatives	Included	---	---
c. Outsourcing	Included	---	---
▪ Ways to Outsource	Included	---	---
▪ Benefits of Outsourcing	Included	---	---
▪ Risks of Outsourcing	Included	---	---
▪ Acquisition Process	Included	---	---
2. Methodologies (for Quality Management)	Included	---	---
a. Cost of Quality			
▪ Cost of Quality Categories	Included	---	---
▪ Classic Model of Optimized Cost of Quality	Included	---	---
▪ Modern Model of Optimized Cost of Quality	Included	---	---
b. Process Improvement Models	Included	---	---
▪ Plan-Do-Check-Act (PDCA) Model	Included	---	---
▪ Six Sigma	Included	---	---
▪ Lean Techniques	Included	---	---
▪ Seven Wastes	Included	---	---

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II: Software Quality Management (cont.)	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
c. Corrective Action Procedures	Included	---	---
▪ Product Problem Resolution	Included	---	---
▪ Corrective Action Process	Included	---	---
d. Defect Prevention	Included	---	---
▪ Correction vs. Prevention	Included	---	---
▪ Training & Mentoring	Included	---	---
▪ Technical Reviews	Included	---	---
▪ Tools & Techniques	Included	---	
3. **Audits**	Included	Included	Included
▪ Audit Defined	Included	Included	Included
▪ Audit Objectives	Included	Included	Included
a. Audit Types	Included	Included	Included
▪ Types of Audits	Included	Summarized	Summarized
▪ Internal Audits	Included	---	---
▪ External Audits	Included	---	---
▪ Quality System Audits	Included	---	---
▪ Product Audits	Included	---	---
▪ Process Audits	Included	---	---
▪ Project Audits	Included	---	---
▪ Supplier Audits	Included	---	---
▪ Follow-up Audits	Included	---	---
▪ Desk Audits	Included	---	---
b. Audit Roles & Responsibilities	Included	Summarized	Summarized
▪ Participant Roles	Included	---	---
▪ Client	Included	---	---
▪ Auditor Management	Included	---	---
▪ Lead Auditor	Included	---	---
▪ Auditors	Included	---	---
▪ Auditee Management	Included	---	---
▪ Auditee	Included	---	---
▪ Escort	Included	---	---
c. Audit Process	Included	Included	Included
▪ Audit Steps	Included	Included	Included
▪ Audit Initiation	Included	Included	Included
▪ Audit Plan	Included	Included	Included
▪ Prepare for the Audit	Included	Included	Included
▪ Audit Execution	Included	Included	Included
▪ Opening Meeting	Included	Included	Included
▪ Gathering Objective Evidence	Included	Included	Included

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▪ Checklists	Included	Included	---
▪ Interviewing	Included	Included	---
▪ Tracing	Included	Included	---
▪ Sampling	Included	Included	---
▪ Daily Meetings	Included	Included	---
▪ Closing Meeting	Included	Included	---
▪ Audit – Exercise	Included	Included	---
▪ Turning Requirements into Audit Results	Included	Included	Included
▪ Audit Report	Included	Included	Included
▪ Corrective Action	Included	Included	Included
▪ Corrective Action Plan	Included	Included	Included
▪ Evaluating the Corrective Action Plan	Included	Included	Included
▪ Verification Follow-up	Included	Included	Included
III: Software Engineering Processes	**Software Quality Engineering**	**Building Software Quality Skills**	**Software Quality Techniques**
1. Life Cycles & Process Models	Included	Summarized	Summarized
▪ Waterfall Model	Included	---	---
▪ V Model	Included	---	---
▪ W Model	Included	---	---
▪ Spiral Model	Included	---	---
▪ Iterative	Included	---	---
▪ Test Driven Development	Included	---	---
▪ Feature Driven Development	Included	---	---
▪ Incremental Development	Included	---	---
▪ Iterative Model & Incremental Development	Included	---	---
▪ Rapid Application Development	Included	---	---
▪ Evolutionary Development	Included	---	---
▪ Choosing a Model	Included	Included	Included
2. Requirements Engineering	Included	Included	Included
▪ Requirements Defined	Included	Included	Included
▪ Why are Requirements Important	Included	Included	Included
▪ Requirements Engineering Process	Included	Included	Included
▪ Incremental Requirements Development	Included	Included	Included
a. Types of Requirements	Included	Included	Included
▪ Levels & Types of Requirements	Included	Included	Included
▪ Quality Attributes	Included	Included	Included
b. Requirements Elicitation	Included	Included	Summarized
▪ Requirements Elicitation Techniques	Included	Included	---
▪ Focus Groups	Included	Included	---
▪ Quality Functional Deployment	Included	Included	---

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III: Software Engineering Processes (cont.)	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
▪ Facilitated Requirements Workshops	Included	Included	---
▪ Use Cases	Included	Included	---
▪ Story Boards	Included	Included	---
▪ Human Focus Studies	Included	Included	---
c. Requirements Analysis	Included	Summarize	Summarize
▪ Data Flow Diagram	Included	---	---
▪ Entity Relationship Diagram	Included	---	---
▪ State Transition Diagram	Included	---	---
▪ Class Diagrams	Included	---	---
▪ Sequence Diagrams	Included	---	---
▪ Activity Diagrams	Included	---	---
▪ Event/Response Tables	Included	---	---
d. Requirements Specification	Included	Included	Summarize
e. Requirements Verification	Included	Included	---
▪ Requirements Peer Reviews	Included	Included	---
▪ Evaluating Requirements Checklist	Included	Included	---
▪ Test Matrix - Example	Included	Included	---
3. Requirements Management	Included	Included	Included
a. Purpose of Requirements Management	Included	Included	Included
b. Bi-Directional Traceability	Included	Included	Included
c. Traceability Matrix	Included	Included	Included
▪ Traceability Tagging	Included	Included	Included
4. **Software Design & Development**	Included	Included	Included
a. Software Design	Included	Included	Included
▪ Purpose of Design Activities	Included	Included	Included
▪ Steps in Software Design	Included	Included	Included
▪ Design Checklist	Included	Included	Included
b. Software Development	Included	Included	Included
▪ Purpose of Development Activities	Included	Included	Included
▪ Reuse	Included	Included	---
▪ Reengineering	Included	Included	---
▪ Reverse Engineering	Included	Included	---
▪ Agile Methods	Included	Included	---
▪ XP Values	Included	Included	---
▪ XP Principles	Included	Included	---
▪ XP Primary Practices	Included	Included	---
▪ XP Corollary Practices	Included	Included	---

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III: Software Engineering Processes (cont.)	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
5. Software Maintenance	Included	Included	Included
▪ Types of Maintenance	Included	Included	Included
▪ Maintenance Process Implementation	Included	Included	---
▪ Retirement	Included	Included	Included
IV: Project Management	**Software Quality Engineering**	**Building Software Quality Skills**	**Software Quality Techniques**
1. Planning, Scheduling & Deployment	Included	Included	---
a. Project Management Basics	Included	Included	---
▪ Project Defined	Included	Included	---
▪ Project Management Process	Included	Included	---
▪ Project Life Cycle Phases	Included	Included	---
▪ Cost/Schedule/Product	Included	Included	---
▪ Project Success	Included	Included	---
b. Project Planning	Included	Included	---
▪ Goals of Software Project Planning	Included	Included	---
▪ Project Planning	Included	Included	---
▪ Project Charter	Included	Included	---
▪ Project Objectives	Included	Included	---
▪ Environmental Factors & Process Assets	Included	Included	---
▪ PMI Planning Process Group	Included	Included	---
▪ Software Project Management Plan	Included	Included	---
▪ Work Breakdown Structure	Included	Included	---
▪ Types of Work Breakdown Structures	Included	Included	---
▪ Include Everything	Included	Included	---
▪ Breaking the Project into Tasks	Included	Included	---
▪ Long-Term vs. Near-Term	Included	Included	---
▪ Work Breakdown Structure – Exercise	Included	Included	---
c. **Project Estimation & Scheduling**	Included	Summarized	---
▪ Project Estimates & Forecasts	Included	Summarized	---
▪ Estimation Methods – Expert Judgment	Included	---	---
▪ PERT Method	Included	---	---
▪ Expert Judgment – Strengths & Weaknesses	Included	---	---
▪ Estimation Methods – Model Based	Included	---	---
▪ Model Based – Strengths & Weaknesses	Included	---	---
▪ Activity Networks	Included	Included	---
▪ Activity Network Relationships	Included	---	---

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IV: Project Management (cont.)	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
▪ Critical Path	Included	Included	---
▪ Schedule Duration	Included	Included	---
▪ Staff & Resource Allocation	Included	---	---
▪ Costs	Included	---	---
d. Scrum	Included	---	---
▪ Scrum Characteristics	Included	---	---
▪ Scrum Roles	Included	---	---
▪ Scrum Processes	Included	---	---
e. Project Deployment	Included	Included	---
▪ PMI Executing Process Group	Included	Included	---
2. **Tracking & Control**	Included	Included	---
▪ Project Tracking & Control	Included	Included	---
▪ PMI Monitoring & Control Process Group	Included	Included	---
a. Tracking Tools & Metrics	Included	Summarized	---
▪ Verifying Entry & Exit Criteria	Included	---	---
▪ Quality Gates	Included	---	---
▪ Gantt Charts	Included	---	---
▪ Earned Value	Included	---	---
▪ Earned Value Tracking	Included	---	---
▪ Staff & Resource Tracking	Included	---	---
▪ Productivity Tracking	Included	---	---
b. Project Reviews	Included	Included	---
▪ Project Team Status Reviews	Included	Included	---
▪ Senior Management Reviews	Included	Included	---
▪ Phase Transition & Milestone Reviews	Included	Included	---
▪ Post Project Reviews	Included	Included	---
c. Project Control	Included	Included	---
▪ Corrective Action	Included	Included	---
3. **Risk Management**	Included	---	---
a. Risk Management Basics	Included	---	---
▪ Risk Defined	Included	---	---
▪ Risk / Reward Balance	Included	---	---
▪ Types of Risk	Included	---	---
▪ Risk Management Process	Included	---	---
b. Risk Identification & Analysis	Included	---	---
▪ Risk Identification	Included	---	---
▪ Risk Statement	Included	---	---
▪ Communicating Risks	Included	---	---

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IV: Project Management (cont.)	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
▪ Risk Analysis	Included	---	---
▪ Risk Context	Included	---	---
▪ Risk Probability	Included	---	---
▪ Loss Analysis	Included	---	---
▪ Risk Exposure	Included	---	---
▪ Risk Timeframe	Included	---	---
c. Risk Planning	Included	---	---
▪ Techniques for Handling Risks	Included	---	---
▪ Obtain Information	Included	---	---
▪ Avoid Risks	Included	---	---
▪ Transfer the Risk	Included	---	---
▪ Control the Risk: Containment Plans	Included	---	---
▪ Assume the Risk – Contingency Plans	Included	---	---
▪ Risk Reduction Leverage	Included	---	---
▪ Adjust Project Plans	Included	---	---
d. Taking Action & Risk Tracking	Included	---	---
▪ Taking Action	Included	---	---
▪ Track Risks	Included	---	---
V: Software Metrics & Analysis	**Software Quality Engineering**	**Building Software Quality Skills**	**Software Quality Techniques**
1. Metrics & Measurement Theory	Included	Included	Included
▪ Software Metrics Defined	Included	Included	Included
▪ Measurement Defined	Included	Included	Included
▪ Entities & Attributes	Included	Included	Included
▪ Mapping System	Included	Included	Included
▪ Roles of Measurement	Included	Included	Included
2. **12 Steps to Useful Software Metrics**	Included	Included	Included
a. ISO/IEC 15939	Included	Included	Included
b. The 12 Step Process	Included	Included	Summarized
c. Selecting Metrics	Included	Included	Summarized
▪ Two Schools of Thought	Included	Included	Summarized
▪ Step 1 – Identify Metrics Customer	Included	Included	Summarized
▪ Goal/Question/Metrics Paradigm	Included	Included	Summarized
▪ Step 2 – Target Goals	Included	Included	Summarized
▪ Step 3 - Ask Questions	Included	Included	Summarized
▪ Drilling Down to Lower-Level Goals	Included	Included	Summarized
▪ Step 4 - Select Metrics	Included	Included	Summarized
▪ Metric Selection - Exercise	Team Exercise	Class Exercise	---
▪ Selecting Metrics for Implementation	Included	Included	Summarized

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V: Software Metrics & Analysis (cont.)	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
▪ Evaluate Existing Metrics	Included	Included	---
▪ Metrics Requirement Statement	Included	Included	---
▪ Metrics Requirement Statement - Exercise	Team Exercise	Class Exercise	---
d. Designing Metrics	Included	Included	Summarized
▪ Why Standardization is Important	Included	Included	---
▪ Step 5 – Standardize Definitions	Included	Included	Summarized
▪ Standardize Definitions - Example	Included	Included	---
▪ Step 6 – Choose a Measurement Function	Included	Included	Summarized
▪ Selecting a Measurement Function	Included	Included	---
▪ Tailoring a Measurement Function	Included	Included	---
▪ Step 7 – Establish a Measurement Method	Included	Included	Summarized
▪ Types of Measurement Methods	Included	Included	---
▪ Measurement Functions & Method - Examples	Included	Included	---
▪ Measurement Functions & Method - Exercise	Included	Class Exercise	---
▪ Step 8 – Defining Decision Criteria	Included	Included	Summarized
▪ Decision Criteria for Control Type Metrics	Included	Included	---
▪ Decision Criteria for Evaluate Type Metrics	Included	Included	---
▪ Decision Criteria for Understand & Predict Type Metrics	Included	Included	---
▪ Confidence Level	Included	Included	---
▪ Decision Criteria - Example	Included	Included	---
▪ Step 9 – Design Reporting Mechanisms	Included	Included	Summarized
▪ Report Timing	Included	Included	---
▪ Report Delivery	Included	Included	---
▪ Design Reporting Mechanisms - Example	Included	Included	---
▪ Design Reporting Mechanisms - Exercise	Included	Class Exercise	---
▪ Step 10 – Determine Additional Qualifiers	Included	Included	Summarized
e. Collecting Data	Included	Included	Summarized
▪ Step 11 – Collect Data	Included	Included	Summarized
▪ Who Collects the Data?	Included	Included	Summarized

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V: Software Metrics & Analysis (cont.)	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
▪ Data Collection Training	Included	Included	Summarized
▪ Data Collection Objectives	Included	Included	Summarized
▪ How to Collect Data	Included	Included	Summarized
▪ Defining Data Collection - Example	Included	Included	---
f. Considering Human Factors	Included	Included	Summarized
▪ Step 12 - Consider Human Factors	Included	Included	Summarized
▪ Human Factor – What Not to Do	Included	Included	Summarized
▪ Human Factor – What to Do	Included	Included	Summarized
3. **Process & Product Measurement**	Included	Included	---
a. Commonly Used Metrics	Included	Included	---
▪ Structural Complexity	Included	---	---
▪ Size – Lines of Code	Included	Included	---
▪ Size – Function Points	Included	Included	---
▪ Size – Other Size Metrics	Included	Included	---
▪ Defect Density	Included	Included	---
▪ Problem Report Arrival Rate	Included	Included	---
▪ Problem Report Closure Metrics	Included	Included	---
▪ Completeness of Test Coverage	Included	Included	---
▪ Requirements Volatility	Included	Included	---
▪ System Performance	Included	Included	---
▪ Reliability	Included	Included	---
▪ Customer Satisfaction	Included	Included	---
▪ Defect Escapes	Included	Included	---
▪ Phase Containment Effectiveness	Included	---	---
▪ Defect Removal Efficiency	Included	---	---
▪ Defect Prevention	Included	---	---
▪ Project Performance	Included	Included	---
▪ Process Capability	Included	Included	---
▪ Cycle Time	Included	Included	---
4. **Analytical Techniques**	Included	---	---
▪ Sampling	Included	**---**	---
▪ Flow Charts	Included	---	---
▪ Pareto Charts	Included	---	---
▪ Cause & Effect Diagrams	Included	---	---
▪ Check Sheets	Included	---	---
▪ Checklists	Included	---	---
▪ Scatter Diagrams	Included	---	---
▪ Run Charts	Included	---	---
▪ Control Charts	Included	---	---

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V: Software Metrics, Measurement & Analytical Methods (cont.)	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
▪ Histograms	Included	---	---
▪ Root Cause Analysis	Included	---	---
▪ Tree Diagram	Included	---	---
▪ Matrix Diagram	Included	---	---
▪ Interrelationship Digraph	Included	---	---
VI: Software Verification & Validation	**Software Quality Engineering**	**Building Software Quality Skills**	**Software Quality Techniques**
1. Verification & Validation Planning	Included	Included	Included
▪ Verification & Validation Defined	Included	Included	Included
▪ Verification & Validation	Included	Included	Included
▪ V&V Methods – Static Analysis	Included	Included	Included
▪ V&V Methods – Dynamic Analysis	Included	Included	Included
▪ V&V Throughout the Life Cycle	Included	Included	Included
▪ V&V Plan	Included	Included	Included
▪ V&V Task Iteration	Included	Included	Included
▪ V&V Sufficiency	Included	Included	Included
▪ Risk Based V&V	Included	Included	Included
2. Peer Reviews	Included	Included	Included
a. Types of Peer Reviews	Included	Included	Included
▪ What Can You Peer Review?	Included	Included	Included
▪ Benefits of Peer Reviews	Included	Included	Included
▪ Informal vs. Formal Peer Reviews	Included	Included	Included
▪ Peer Reviews & Formality	Included	Included	Included
▪ Types of Peer Reviews	Included	Included	Included
▪ Risk-Based Peer Reviews	Included	Included	Included
b. Peer Review Processes	Included	Included	Included
▪ Desk Checking Process	Included	Included	Included
▪ Walkthrough & Inspection Roles	Included	Included	Included
▪ Walkthrough Process	Included	Included	Included
▪ Inspection Process	Included	Included	Included
▪ Common-Defects Checklists	Included	Included	---
▪ Factors Affecting Peer Review Quality	Included	Included	---
▪ Inspection – Exercise	Included	---	---
3. **Testing**	Included	Included	Included
a. Testing Defined	Included	Included	Included
▪ Testing Principles	Included	Included	Included
▪ Levels of Testing	Included	Included	Included
▪ Testing Activities	Included	Included	Included
▪ Testing Activities – Peer Reviews	Included	Included	Included

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VI: Software Verification & Validation (cont.)	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
▪ Testing Activities – Test Planning & Design	Included	Included	Included
▪ Testing Activities – Test Execution	Included	Included	Included
▪ Test Documentation	Included	Included	Included
b. White Box Testing	Included	Included	Summarized
▪ Condition/Decision Coverage	Included	Included	---
▪ Loop Testing	Included	Included	---
▪ Basis Path Testing	Included	---	---
c. Grey Box (Integration) Testing	Included	Included	Summarized
▪ Top Down Integration Strategy	Included	Included	---
▪ Stubs	Included	Included	---
▪ Bottom Up Integration Strategy	Included	Included	---
▪ Drivers	Included	Included	---
▪ Design Predicate Approach	Included	---	---
d. Black Box Testing	Included	Included	Summarized
▪ Testing Functions	Included	Included	Summarized
▪ Equivalence Class Partitioning	Included	Included	Summarized
▪ Boundary Value Testing	Included	Included	Summarized
▪ Fault-Error Handling	Included	Included	---
▪ State Testing	Included	Included	---
▪ Testing Use Case Scenarios	Included	Included	Summarized
▪ Operational Profile Testing	Included	Included	Summarized
▪ Threads	Included	Included	---
▪ Exploratory Testing	Included		Summarized
▪ Testing Non-Functional Requirements	Included	Included	Summarized
▪ Load, Volume & Stress	Included	Included	Summarized
▪ Internationalization (Localization) Testing	Included	Included	Summarized
e. Regression Testing	Included	Included	Included
f. Test Execution	Included	Included	Included
▪ Test Bed	Included	Included	Included
▪ Risk-Based Testing	Included	Included	Included
▪ Time-Boxed Testing	Included	Included	Included
▪ Good Enough Testing	Included	Included	Included
▪ Factors Affecting Quality of Testing	Included	Included	Included

Software Quality Engineering
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VII: Software Configuration Management	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
1. Configuration Infrastructure	Included	Included	Included
a. Configuration Management	Included	Included	Included
▪ Configuration Management Defined	Included	Included	Included
▪ Software Configuration Management Goals & Practices	Included	Included	Included
▪ Software Configuration Management activities	Included	Included	Included
▪ Software Configuration Management Plans	Included	Included	Included
▪ Software Configuration Management Plans	Included	Included	Included
b. Library Processes	Included	Included	Included
▪ Library Functions	Included	Included	Included
▪ SCM Library Types	Included	Included	Included
▪ SCM Library Procedures – Creating a New Module	Included	Included	---
▪ SCM Library Procedures – Testing a Build	Included	Included	---
▪ SCM Library Procedures – Modifying a Controlled Module	Included	Included	---
▪ SCM Library Procedures – Releasing a Build	Included	Included	---
▪ SCM Library Procedures – Backup	Included	Included	---
2. Configuration Identification	Included	Included	Included
a. Configuration Items	Included	Included	Included
▪ Configuration Identification Activities	Included	Included	Included
▪ What Are Configuration Items?	Included	Included	Included
▪ Software System Decomposition	Included	Included	Included
b. Baselines	Included	Included	Included
▪ Baselines Defined	Included	Included	Included
▪ Types of Baselines	Included	Included	Included
▪ Acquisition	Included	Included	Included
▪ Version, Releases & Revisions	Included	Included	Included
c. Configuration Identification Methods	Included	Included	Included
▪ Unique Identifiers	Included	Included	Included
▪ Build Identification Scheme – Example	Included	Included	Included
▪ Document Identification Scheme – Example	Included	Included	Included
3. Configuration Control	Included	Included	Included
a. Configuration Control	Included	Included	Included
▪ Controlled Software Artifacts	Included	Included	Included
▪ Configuration Control Procedures	Included	Included	Included

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VII: Software Configuration Management (cont.)	Software Quality Engineering	Building Software Quality Skills	Software Quality Techniques
▪ Change Control Process	Included	Included	---
▪ Document Control Process	Included	Included	Included
b. Configuration Control Boards	Included	Included	Included
▪ Multiple Levels of CCBs	Included	Included	---
▪ CCB Membership - Example	Included	Included	---
▪ CCB Change Control Process - Example	Included	Included	Included
▪ CCB Document Control Process - Example	Included	Included	Included
▪ Impact Analysis	Included	Included	Included
▪ Backward Traceability & Impact Analysis	Included	Included	Included
▪ Forward Traceability & Impact Analysis	Included	Included	Included
c. Version Control	Included	Included	---
▪ Version Control - Example	Included	Included	---
▪ Supporting Multiple Version	Included	Included	---
▪ Version Control & Impact Analysis	Included	Included	---
▪ Controlling Patches	Included	Included	---
d. Configuration Item Interfaces	Included	Included	---
▪ Interfaces	Included	Included	---
▪ Interface Control Activities	Included	Included	---
▪ Hardware & Software Dependencies	Included	Included	---
4. **Configuration Status Accounting**	Included	Included	Included
▪ Status Accounting	Included	Included	Included
▪ Status Reporting	Included	Included	Included
▪ Change Requests	Included	Included	Included
5. **Configuration Audits**	Included	Included	Included
▪ Functional Configuration Audits	Included	Included	Included
▪ Physical Configuration Audits	Included	Included	Included