

## COURSE DESCRIPTION

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This four-day course introduces lead appraisers, lead assessors, lead evaluators, engineering process group (e.g., SEPG, EPG) members, and other engineering professionals focused on appraising or improving engineering processes to the software engineering and management practices of high maturity organizations as rated against the CMM for Software and CMMI models. The concepts and practices underlying maturity level 4 and the application of statistical process control (SPC) are a powerful combination that enables organizations to achieve excellent software engineering practice. This course is designed to cover the concepts and issues that lie behind classical statistical process control and the steps associated with effectively implementing and using SPC to manage and improve software processes.

The course is composed of lectures and exercises with ample opportunity for participant questions and discussions. Exercises are oriented toward understanding strengths and weaknesses of specific practices, but detailed implementation is not covered. After attending the course, participants will understand the concepts and issues that lie behind the higher maturity levels of the SW-CMM and CMMI models from both a theoretical and empirical perspective.

## AUDIENCE

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- Lead appraisers, lead assessors, and lead evaluators
- Engineering process group (e.g., SEPG, EPG) members
- Other engineering professionals focused on appraising or improving engineering processes

## PREQUISITES

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Before registering for this course, participants must have attended either the **Introduction to CMM or an Introduction to CMMI course.**

TOPICS

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- Placing CMM-based improvement in context: TQM, best practices, people issues
- Deploying repeatable, defined processes: customer-supplier relationship, project management, support processes
- Measurement and statistical thinking: operational definitions, organizational process capability basics
- Interpreting maturity level 4: quantitative process management, statistical process control
- Basic tools: scatter diagrams, run charts, regression analysis, analysis of variance, test of hypotheses, etc.
- Analyzing process behavior: control charts
- Process behavior charts for software:  $\bar{X}$ barR,  $\bar{X}$ barS,  $\bar{X}$ mR, u, and Z charts
- More about process behavior charts: homogeneity, rational sub grouping, aggregation
- Three paths to process improvement
- Challenges for using SPC for software: high visibility, dysfunctional behavior
- New insights into maturity level 4: product lines, reuse, process modeling
- Interpreting maturity level 5
- New insights into maturity level 5: change management models

## OBJECTIVES

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This course will help participants to

- Place CMM-based process improvement in context: TQM, best practices, and people issues
- Deploy repeatable, defined processes
- Understand and interpret maturity level 4 of the SW-CMM and CMMI models
- Use basic tools such as scatter diagrams, run charts, regression analysis, analysis of variance, and test of hypotheses
- Analyze process behavior with control charts
- Understand and interpret maturity level 5 of the SW-CMM and CMMI models

For More Information : [HTTP://WWW.SEL.CMU.EDU/PRODUCTS/COURSES/HIGH-MATURITY-STATISTICS.HTML](http://www.sel.cmu.edu/products/courses/high-maturity-statistics.html)