

COURSE DESCRIPTION

This five-day course takes a hands-on, problem-solving approach to data analysis, providing participants with a toolkit of analysis methods and leveraging industry best practices such as Six Sigma and Goal-Driven Software Measurement. Key concepts in data analysis - including statistical thinking, the 7 Basic Tools, and root cause analysis, are introduced through lectures and extensive practice sessions using real-life case studies and project data. Participants learn a framework—in the form of tools, methods, and practices—for analyzing data to make more informed business decisions about project and process performance, quality, schedule, and cost. The ways in which these quality measurement practices relate to improvement models such as Capability Maturity Model® Integration (CMMI®) are also discussed.

AUDIENCE

- Software engineering process group members
- Process improvement working group members
- Software measurement team members
- Six Sigma black belts, green belts, or belt candidates
- Professionals seeking better ways to analyze quantitative data in support of process improvement within organizations and projects
- Project managers and process managers

PREQUISITES

- Be familiar with measurement projects or processes from their home organization
- Be familiar with establishing a measurement infrastructure, particularly using Goal-Driven Measurement
- **Install their student license of Minitab and confirm that the software opens and functions**
- **Read the background material on earned value measurement, Goal-Driven Measurement, and the SEI's Goal-Question-(Indicator)-Metric (GQ[I]M) methodology sent to them**

TOPICS

- Methodology for defining problems and navigating data, including Six Sigma DMAIC methodology
- Statistical thinking paradigm
- Understanding variation
- Root cause analysis
- Connections to CMMI process areas
- Case studies based on customer satisfaction for a call center, software development defect containment, and systems development cost & schedule variation reduction
- Analytical methods
 - ✓ Basic tools: cause & effect diagram, histogram, scatter plot, run chart, flow chart, Pareto chart, Statistical Process Control (SPC) charts, descriptive statistics, box plots, multi-vari charts
 - ✓ Process mapping
 - ✓ Measurement system evaluation (determining error in measurements)
 - ✓ Comparisons via hypothesis testing and analysis of variance (ANOVA)
 - ✓ Box-Cox transformation of data to normality
 - ✓ Regression analysis to model and predict relationships
 - ✓ Probability distributions
 - ✓ Pugh solution selection matrix
 - ✓ Process Failure Modes & Effects Analysis (PFMEA)
 - ✓ Management by fact
- Hands-on practice using the Minitab toolset
- Practical tips for transferring classroom skills to the workplace

OBJECTIVES

Successful completion of this course will enable participants to

- Explore and navigate data to understand project, process, and product behavior, relationships and trends
- Use analysis methods to remove special causes of variation and stabilize processes
- Apply course concepts to CMMI to drive business benefit
- Select appropriately from among the data analysis methods learned in class
- Apply effective measurement & analysis techniques within a CMMI implementation

For More Information : <http://www.sei.cmu.edu/products/courses/p49.html>