Lean Six Sigma for Production Operations "Analyze"

3 Days

Audience and Purpose:
This course is designed for those individuals working directly on Six Sigma projects and serving as Black Belts or Green Belts. It is assumed they come from a variety of backgrounds and disciplines and will be working on a variety of projects across the company. Tools and examples are in direct support of manufacturing and production operations.

Course Objectives:
Upon completion of the course, the participants will be able to:

1. Benchmark best practices to research potential solutions
2. Analyze a variety of data types and summarize the X factors by effect size and their practical and statistical significance
3. Identify the factors with the highest potential impact and estimate their ability to be controlled
4. Determine root cause(s) for the problem in your project
5. Discuss methods for root cause validation
6. Link process map and simulation data to JMP for analysis

Course Outline:

Section I **Benchmark the Process or Product**

Determine the Area to Benchmark
Identify Benchmarking Candidates
Prepare for the Visit
Draw Conclusions

Section II **Establish Causal Relationships Using Data**

Nominal X and Continuous Y
- t test – one sample
- t test – two sample
- t test – paired
- One-way ANOVA and F test
- Test for differences in variances
- Nonparametric tests (optional)
- N way ANOVA

Continuous X and Continuous Y
- Simple Linear Regression
- Correlation
- Multiple Regression
- ANCOVA

Nominal X and Nominal Y
- Test probabilities
- Contingency Analysis

Continuous X and Nominal Y
- Logistic regression

Summarize the factors that are related to the root cause of the problem
Summarize the mechanism of how the factors influence the response

Section III **Analyze the Process Map**

Theory of constraints
Lean thinking
Continuous Flow
Non-value added activities
Cycle time reduction
Review the process flow and associates data
Highlight the relationship of the project problem and the process map
Summarize how the current process map is related to the root cause of the problem

Section IV **Visual the Problem**

Review all visual data
Summarize how the visual data is related to the root cause of the problem

Section V **Determine Root Cause**

Develop a Cause and Effect Diagram
Determine the 5 Whys
List and prioritize all root cause summary findings
Identify the ease of control and percent contribution to the root cause
Validate the root cause

Section VI **Link Process Simulation Data to JMP for Analysis**

Moving data to JMP from iGrafx
Generating custom reports in iGrafx