

Program Outline



Control Practices

Run Time (h:mm:ss)

Global Concepts

11:07:36

Training Orientation

1:29:43

Excel Orientation	Explore the Excel software package	0:29:01
Minitab Orientation	Explore the Minitab software package	0:31:42
Simulator Orientation	Explore the Process Simulator	0:29:00

Breakthrough Vision

1:31:26

Deterministic Reasoning	Describe a basic cause-and-effect relationship in terms of $Y=f(X)$	0:52:57
Leverage Principle	Relate the principle of leverage to an improvement project	0:38:29

Process Management

8:06:27

Performance Yield	Explain why final yield is often higher than first-time yield	1:14:06
Hidden Processes	Describe the non-value added component of a process	0:40:57
Measurement Power	Describe the role of measurement in an improvement initiative	0:33:38
Establishing Baselines	Explain why performance baselines are essential to realizing improvement	0:45:52
Defect Opportunity	Understand the nature of a defect opportunity and its role in metrics reporting	1:01:18
Process Models	Define the key features of a Six Sigma performance model	1:11:11
Process Capability	Identify the primary indices of process capability	1:21:53
Design Complexity	Describe the impact of complexity on product and service quality	1:17:32

General Practices

31:52:32

Quality Tools

9:32:59

Variable Classifications	Define the various types of variables commonly encountered during quality improvement	0:08:32
Measurement Scales	Describe each of the four primary scales of measure and their relative power	0:50:01
Problem Definition	Characterize the nature of a sound problem statement	0:35:25
Focused Brainstorming	Explain how focused brainstorming is used to facilitate improvement efforts	0:11:57
Process Mapping	Understand how to define the flow of a process and map its operations	0:24:20
Performance Sampling	Explain how to design and implement a sampling plan	0:20:17
Check Sheets	Understand how check sheets can be used for purposes of data collection	0:12:59
Analytical Charts	Identify the general range of analytical charts that can be used to assess performance	0:20:02
Pareto Charts	Explain how Pareto charts can be used to isolate improvement leverage	0:24:25
Run Charts	Utilize run charts to assess and characterize time-based process data	0:10:59
Correlation Charts	Utilize a correlation chart to illustrate the association between two variables	1:01:24
Frequency Tables	Explain how to construct and interpret a frequency table	0:14:42
Performance Histograms	Construct and interpret a histogram and describe several purposes	1:14:40
Basic Probability	Understand basic probability theory and how it relates to process improvement	0:29:16

Pre-Control Charts	<i>Describe the fundamental rules that guide the operation of a standard pre-control plan</i>	0:41:25
Control Charts	<i>Explain the purpose of statistical process control charts and the logic of their operation</i>	1:41:11
Score Cards	<i>Understand the purpose of Six Sigma score cards and how they are deployed</i>	0:31:24

Basic Statistics

9:05:33

Performance Variables	<i>Identify and describe the types of variables typically encountered in field work</i>	0:10:26
Statistical Notation	<i>Recognize and interpret the conventional forms of statistical notation</i>	0:44:53
Performance Variation	<i>Explain the basic nature of variation and how it can adversely impact quality</i>	0:22:24
Normal Distribution	<i>Describe the features and properties that are characteristic of a normal distribution</i>	0:49:36
Distribution Analysis	<i>Explain how to test the assumption that a set of data is normally distributed</i>	1:21:06
Location Indices	<i>Identify, compute, and interpret the mean, median, and mode</i>	0:42:05
Dispersion Indices	<i>Identify, compute, and interpret the range, variance, and standard deviation</i>	1:16:37
Quadratic Deviations	<i>Understand the nature of a quadratic deviation and its basic purpose</i>	0:24:47
Variation Coefficient	<i>Compute and interpret the coefficient of variation</i>	0:07:17
Deviation Freedom	<i>Explain the concept of degrees-of-freedom and how it is used in statistical work</i>	0:29:47
Standard Transform	<i>Describe how to transform a set of raw data into standard normal deviates</i>	0:47:51
Standard Z-Probability	<i>Describe how to convert a standard normal deviate into its corresponding probability</i>	0:40:58
Central Limit	<i>Understand that the distribution of sampling averages follows a normal distribution</i>	0:17:29
Standard Error	<i>Recognize that the dispersion of sampling averages is described by the standard error</i>	0:13:32
Student's Distribution	<i>Understand that the T distribution applies when sampling is less than infinite</i>	0:06:07
Standard T-Probability	<i>Describe how to convert a T value into its corresponding probability</i>	0:15:26
Statistics Simulation	<i>Employ basic statistics to analyze data generated by the process simulator</i>	0:15:12

Continuous Capability

8:32:11

Performance Specifications	<i>Explain the basic nature and purpose of performance specification limits</i>	0:14:39
Rational Subgrouping	<i>Explain how to form rational subgroups and describe their purpose in Six Sigma work</i>	1:19:00
Capability Study	<i>Understand the concept of process capability and how it applies to products and services</i>	1:32:55
Instantaneous Capability	<i>Understand the concept of instantaneous capability in relation to Six Sigma work</i>	0:47:58
Longitudinal Capability	<i>Understand the concept of longitudinal capability in relation to Six Sigma work</i>	0:47:30
Cp Index	<i>Compute and interpret Cp</i>	0:11:57
Cpk Index	<i>Compute and interpret Cpk</i>	0:19:53
Pp Index	<i>Compute and interpret Pp</i>	0:13:41
Ppk Index	<i>Compute and interpret Ppk</i>	0:24:10
Process Shifting	<i>Understand the impact of process centering error on short-term capability</i>	0:29:10
Process Qualification	<i>Determine the required level of short-term capability necessary to qualify a process</i>	1:39:20
ConcaP Simulation	<i>Apply continuous indices of capability to the process simulator</i>	0:31:58

Discrete Capability

4:41:49

Defect Metrics	<i>Identify and describe the defect metrics commonly used in Six Sigma work</i>	0:11:26
Defect Opportunities	<i>Understand the nature and purpose of defect opportunities in terms of quality reporting</i>	0:43:08
Binomial Distribution	<i>Describe the features and properties that are characteristic of a binomial distribution</i>	0:59:19
Poisson Distribution	<i>Describe the features and properties that are characteristic of the Poisson distribution</i>	0:39:31
Throughput Yield	<i>Compute and interpret throughput yield in the context of Six Sigma work</i>	0:08:53
Rolled Yield	<i>Compute and interpret rolled-throughput yield in the context of Six Sigma work</i>	0:20:42
Metrics Conversion	<i>Convert yield and defect metrics to the sigma scale of measure</i>	1:32:19
DiscaP Simulation	<i>Apply discrete indices of capability to the process simulator</i>	0:06:31

Technical Practices

14:32:42

Hypothesis Testing

6:05:49

Statistical Inferences	<i>Explain the concept of a statistical inference and its primary benefits</i>	0:23:00
Statistical Questions	<i>Explain the nature and purpose of a statistical question</i>	0:20:35
Statistical Problems	<i>Understand why practical problems must be translated into statistical problems</i>	0:10:43
Null Hypotheses	<i>Define the nature and role of null hypotheses when making process improvements</i>	0:31:29
Alternate Hypotheses	<i>Define the nature and role of alternate hypotheses when making process improvements</i>	0:18:03
Statistical Significance	<i>Explain the concept of statistical significance versus practical significance</i>	0:56:05
Alpha Risk	<i>Explain the concept of alpha risk in terms of the alternate hypothesis</i>	0:24:18
Beta Risk	<i>Define the meaning of beta risk and how it relates to test sensitivity</i>	0:38:41
Criterion Differences	<i>Explain the role of a criterion difference when testing hypotheses</i>	0:15:49
Decision Scenarios	<i>Develop a scenario that exemplifies the use of hypothesis testing</i>	0:17:09
Sample Size	<i>Define the statistical elements that must be considered when computing sample size</i>	1:49:57

Confidence Intervals

2:47:17

Mean Distribution	<i>Comprehend and characterize the distribution of sampling averages</i>	0:04:21
Mean Interval	<i>Compute and interpret the confidence interval of a mean</i>	0:54:29
Variance Distribution	<i>Comprehend and characterize the distribution of sampling variances</i>	0:21:10
Variance Interval	<i>Compute and interpret the confidence interval of a variance</i>	0:35:52
Proportion Distribution	<i>Comprehend and characterize the distribution of sampling proportions</i>	0:07:22
Proportion Interval	<i>Compute and interpret the confidence interval of a proportion</i>	0:27:02
Frequency Interval	<i>Describe how frequency of defects is related to confidence intervals</i>	0:17:01

Control Methods

4:23:52

Statistical Control	<i>Explain the meaning of statistical control in terms of random variation</i>	0:31:37
Control Logic	<i>Explain the logic that underpins the application of a control chart</i>	0:16:21
Control Limits	<i>Reconcile the difference between specification limits and control limits</i>	0:25:34
Chart Selection	<i>Explain how to rationally select a control chart</i>	0:08:07
Chart Interpretation	<i>Interpret an SPC chart in terms of its control limits</i>	0:30:30
Zone Testing	<i>Explain the concept of zone tests and their application to SPC charts</i>	0:43:18
Variables Chart	<i>Characterize the role and purpose of a variables chart</i>	0:08:38
Attribute Chart	<i>Characterize the role and purpose of an attribute chart</i>	0:04:37
Individuals Chart	<i>Construct and interpret an individuals control chart</i>	0:09:58
IMR Chart	<i>Construct and interpret an individual moving range control chart</i>	0:09:01
Xbar Chart	<i>Construct and interpret a control chart for subgroup averages</i>	0:06:33
Range Chart	<i>Construct and interpret a control chart for subgroup ranges</i>	0:10:27
Proportion Chart	<i>Construct and interpret a control chart for sampling proportions</i>	0:11:15
Defect Chart	<i>Construct and interpret a control chart for defect occurrences</i>	0:13:09
Other Charts	<i>Describe several other types of control charts used in Six Sigma work</i>	0:02:00
Capability Studies	<i>Explain the role of capability studies when making process improvements</i>	0:22:00
Control Simulation	<i>Apply common SPC methods to the process simulator</i>	0:10:47

Measurement Analysis

1:15:44

Measurement Uncertainty	<i>Understand the concept of measurement uncertainty</i>	0:15:43
Measurement Components	<i>Describe the components of measurement error and their consequential impact</i>	0:15:42
Measurement Studies	<i>Explain how a measurement systems analysis is designed and conducted</i>	0:44:19

Total Video Run Time 57:32:50