



## Lean Master Black Belt

### Module 1 – Leadership

- Course Introduction
- Impact of Six Sigma to the Organization
- Organizational Structures for Deployment of Six Sigma
- Competitive Intelligence and Industry Benchmarks
- Transitioning Goals/Objectives into Actionable Projects
- Project Identification and Prioritization
- Change Management Leadership Skills
- Overcoming Organizational Resistance
- Developing Quality Policies
- Using Financial Measures to Analyze Performance
- Calculating the Cost of Poor Quality
- Aligning Quality Initiatives

### Module 2 – Design for Six Sigma

- DMAIC – Review
- DFSS – Overview of DMADV and DMADOV
- DMADV – Define Phase
- DMADV – Measure Phase
- DMADV – Analyze Phase
- DMADV – Design Phase
- DMADV – Verify Phase
- Pilot Testing New Products/Services
- Advanced FMEA

### Module 3 – Optimizing Process Efficiency

- Review of Lean Basics
- Applied Value Stream Mapping – Part 1
- Applied Value Stream Mapping – Part 2
- Kaizen – Part 1
- Kaizen – Part 2
- Applied TRIZ
- Review – The Basics of Theory of Constraints
- Advanced Identification of Capacity Constraints

### Module 4 – Analyze

- Force Field Analysis
- GAP Analysis
- Statistical Normality Tests
- Control Charting Continuous Data
- Control Charting Attribute Data
- Time-Weighted Control Charts
- Multivariate Control Charts
- Advanced Interpretation of Control Charts
- Developing a Process Control Plan

## Module 5 – Advanced Inferential Statistics

- Review of Hypothesis Testing
- Confidence Intervals and Point Interval Estimates
- Review of Most Commonly Used Distributions
- Review of Other Advanced Distributions
- Hypothesis Testing for Proportions
- Mann-Whitney Test
- Levene's Test
- Mood's Median Test
- Friedman's Test
- Review of Simple Regression
- Method of Least Squares
- Multiple Regression
- One Way ANOVA
- Two Way ANOVA

## Module 6 – Design of Experiments – Part 1

- KPIV and KPOV
- Review of Basic Design of Experiments
- Review of Main Effects Plots and Interaction Plots
- Design of Experiments Setup
- Selecting the Optimal Design
- Design of Experiments Strategy
- Screening Designs
- Fold-Over Design

## Module 7 – Design of Experiments – Part 2

- Response Surface Methods
- Use of Replication to Estimate Error
- DOEs with Two or More Response Variables
- Mixture Designs
- Review of Taguchi Designs
- Blocking
- Nested Designs and Difficult to Change Variables
- Problems to Avoid in Design of Experiments
- Developing Optimal Project Metrics
- Data Mining
- Measurement Systems Analysis
- Gage Repeatability and Reproducibility
- Data Collection and Training
- Attribute Gage Study and Kappa Statistic
- Sampling Strategies

## Module 9 – Minitab Application

- Introduction to Minitab
- Minitab Statistics
- Design of Experiment – Part 1
- Design of Experiment – Part 2
- Minitab Control Charts for Variables and Attributes
- Minitab Quality Tools
- Minitab Graphs
- Minitab Project Application

Module 10 – Training, Coaching, and Development

Idea Generation/Creativity Techniques

Resource Allocation – Managing Black Belts

Decision Making Solutions – Evaluating Alternatives

Decision Making Tools

Training Needs Assessment

Technique for Evaluating Training Effectiveness

Employee Empowerment and Motivation Techniques

Rewards and Recognition

Module 11 – Customers and Suppliers

Applied VOC and CTQ – A Review

House of Quality

Customer Retention and Loyalty

Supplier Relationships

Strategies for Supplier Selection

Negotiation Techniques

Supplier QA and Performance

Cultural Issues in Cross-Cultural Deployments of LSS

Module 12 – Industry Leadership and Professionalism

Malcolm Baldrige National Quality Program

ISO 9001

The Shingo Prize Model

Major Industry Awards

Developing and Utilizing a Professional Network

Advanced Presentation Skills

Career Path for MBBs Within the Organization

Course Wrap-up