



Students entering this training will gain a detailed understanding of six sigma principals and project-applicable best practices. The program includes intensive training and hands-on exercises that will train each participant how to deploy and lead process improvement strategies effectively within the enterprise. The training will conclude with two coached projects wherein each trained Black belt must demonstrate the ability to lead and implement process improvement using six sigma tools and integrated strategies.

**Who Should Attend:** Individuals with diverse technical, operations and/or transactional backgrounds will find this course invaluable. Participants are selected because of their project roles in leading and facilitating process improvement through their employment. Participants work on real world process improvement projects. A Green Belt Certification is required.

**Objective:** At the end of the course, participants will understand the Six Sigma strategies and tools, the relationship of the transformation components of Lean Six Sigma, how to lead process improvement projects and how to lead and deploy Six Sigma process improvement tools effectively. Black belts typically apply their Six Sigma skills beyond their functional area and are expected to train, lead, and coach Green Belts through their projects. Certified Black Belts are also expected to lead a team in broadly scoped projects of significant value to the organization's mission under the coaching and mentoring of a Master Black Belt.

Black Belts build on their Green Belt knowledge and experience through additional training and experiential learning. Each Black Belt will expand their Green Belt abilities to:

- Understand critical organizational success factors
- Develop high level Balanced Score Card (BSC) metrics
- Identify, prioritize, and select projects
- Establish tollgates to monitor projects
- Provide positive leadership energy to accomplish project goals through people
- Systematically plan and execute project work activities
- Apply change management techniques to accomplish project objectives
- Employ Quality Function Deployment (QFD) to develop the internal process parameters to meet customer requirements
- Apply advanced graphical and statistical software to analyze data
- Design and conduct Measurement Systems Analysis (MSA) studies to graphically and statistically evaluate the precision and accuracy of quantitative data (Gage R&R)
- Design and conduct Measurement Systems Analysis (MSA) studies to graphically and statistically evaluate the consistency of decision-making of attribute data (Ex. visual inspection)
- Apply Statistical Process Control (SPC) Charts to monitoring processes and evaluate common cause and special cause variation.
- Recognize situations where a formal statistical hypothesis test is warranted
- Conduct statistical hypothesis tests to determine statistical significance using advances statistical software
- Evaluate correlation between input and output variables
- Conduct linear (and multiple) regression analysis to evaluate and model input/output relationships
- Conduct 1 sample t, 2 sample t, ANOVA analyses to statistically compare means
- Conduct Equal Variance tests to compare variances

- Evaluate and select appropriate statistical distributions to model processes
- Compare medians and variances using non-parametric tests
- Conduct Logistic Regression tests to test for statistical significance between input and output variables.
- Conduct Chi-Square tests to test for dependencies between input/output variables (compare proportions)
- Design, conduct and analyze Design of Experiment (DOE) Screening (Fractional Factorial designs) to understand and model input and output relationships
- Design, conduct and analyze Design of Experiment (DOE) Response Surface Designs (RSD) to understand and model input and output relationships
- Design and test general models for understanding input/output relationships
- Prioritize, evaluate, and resolve potential risks using Failure Mode and Effects Analysis (FMEA)
- Generate solutions using Theory of Inventive Problem Solving (TRIZ) techniques

Credit for this course is CEU based on the Clock Hour system as determined by the institution. Additional, participants completing this course may be eligible for academic credit as determined by the institution.

### **Lean Six Sigma Black Belt**

Black Belt certification delivers in depth-depth training preparing participants to lead, train and mentor Lean Six Sigma efforts and project teams. This class includes 30 hours of e-learning modules, 30 hours of guided practice using tools with advanced statistical software, and 10 hours of individual/group coaching. The successful Black Belt candidate for certification will complete two real world projects and pass the Body of Knowledge Exam with a score of at least eighty per cent correct.