Midlands Technical College
CONTINUING EDUCATION

Six Sigma Green Belt Fast Track

CEQAL 563

MTC's Six Sigma program provides Green Belt candidates with strong training in the Six Sigma methodology along with the core tools and methods used within the methodology to drive cost reductions and improvement in customer satisfaction. Participants receive ten days of intensive, workshop-focused instruction.

Who Should Attend: Individuals who wish to utilize Six Sigma Green Belt tools to drive improvements in quality, productivity, cost reductions and customer satisfaction.

Prerequisite: A basic knowledge of algebra

CEU's Credits: 8.0

Duration: 80 Hours – 10-day course

Course Content:

Introduction to Six Sigma
This section introduces the Green Belt to the fundamentals of Six Sigma. It creates an understanding of the Six Sigma framework within the organization and the framework of a Six Sigma project.

- Benefits of Six Sigma programs
- Six Sigma Integrated Model – how Six Sigma drives process improvement
- How to effectively implement Six Sigma in an organization
  - Cultural issues
  - Strategic issues
  - Tools issues
- Six Sigma Project Methodology Overview
  - Define

    - Measure
    - Analyze
    - Improve
    - Control
- Project Selection
    - How to select appropriate projects
    - How to avoid inappropriate projects
- Project Scoping
    - Avoiding scope creep
    - Aligning resources

Define
This section details the initial phase of the Six Sigma methodology.

- Developing a comprehensive Project Charter
    - Problem statement, goal statement, objectives, business case and milestones
    - Base lining the process
- Developing a Process Map
    - Process flow charts
    - Process maps
- Project Plan

Project Management
This section provides the participant with a general overview of project management techniques and tools that increase their effectiveness in leading and managing Six Sigma projects.

- Project management fundamentals
- Creating an effective project plan
- Using Project Management software to increase efficiency

Measure
This topic provides coverage of measurement assessment and data collection. Key concepts include understanding measurement systems as processes. Core tools center on the assessment of measurement system accuracy, precision and linearity.

- Identifying Measurements
    - Input/Output matrices

        - Data collection planning tools and check sheets
- Measurement System Assessment
    - Variables data
        - Gage R&R
        - Bias studies
        - Linearity studies
    - Attribute Data
        - 2x2 matrices
        - Long Method (with underlying measurements)
- Collecting Data – propriety of data collection
- Long-term assessment - control chart concepts for measurement systems

Analyze

This statistically intensive section of the Green Belt training provides the participant with a comprehensive array of tools used to drive to root causes and optimize processes. Participants receive a firm grounding in basic core tools as well as detailed instruction in advanced tools such as designed experiments and applied statistics.

- Core Quality Tools
    - Pareto charts
    - Trend charts
    - Brainstorming and affinity diagrams
    - Prioritization tools
    - Force field analysis
    - Cause and effect diagrams
    - Check sheets
- Statistical Process Control
    - Control chart concepts (process vs. product revisited)
    - Key variation concepts
    - Variables data control charting
        - Advantages of variables data
        - X-bar and R charts
        - X and Rm charts
    - Attribute data charts
        - Shortcomings of attribute data
        - p chart
        - np chart
        - c chart
        - u chart
    - Rational sampling

        - Process capability
            - Use of Z values
            - Capability indices
- Applied Statistics
    - Describing a single process
        - Confidence intervals for mean, spread and proportion
        - One sample t-test
        - Paired data and the paired t-test
        - Testing for normality
            - Plotting techniques
            - Skewness and kurtosis
            - Other normality tests
- Comparing parallel processes
        - 2 sample t-test for means
        - f test for variances
        - z test for proportion
        - ANOVA
    - Relating inputs to outputs
        - Correlation coefficient and the coefficient of determination
        - Regression
            - Simple regression
            - Multiple regression
            - Analysis of residuals
        - Testing for significance
            - Quadrant sum test
- Design of Experiments
    - DOE fundamentals
        - Terms
        - The DOE process
    - Planning an experiment

Improve

This phase of the Six Sigma process is focused on selecting and implementing process improvements to achieve or exceed project goals.

- Selecting improvements
    - Utilization of data
    - Brainstorming
    - Prioritization tools
- Risk assessment
    - Force field analysis
- Key improvement tools
    - Mistake proofing overview

Control
Participants receive multiple methodologies to ensure that the project gains remain effective and in place to maximize benefit to the organization.

- Document Control
  - Quality system documents
  - FMEAs
  - Other documents
- Control plans and reaction plans
- Control Charts

Each participant will receive a comprehensive manual and a Certificate of Completion at the close of the seminar.