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Certified Six Sigma Black Belt



Course Description:

- Six Sigma is a quality improvement methodology structured to reduce product or service failure rates to a negligible level. Six Sigma companies typically spend less than five percent of their revenues addressing and repairing quality problems. To achieve these levels, the Six Sigma process encompasses all aspects of a business: including management, service delivery, and design, production, and customer satisfaction. As a philosophy, Six Sigma drives business culture and requires a nearly flawless execution of key processes, making Six Sigma a high standard for companies and individuals to achieve. By reducing process variation, Six Sigma frees an organization to focus on improving process capability. As sigma levels increase, the cost of poor-quality decreases and profitability increases. This is why Six Sigma is highly associated with the delivery of consistent, world-class quality. Black Belts are at the core of every Six Sigma implementation. Motorola used the term "Black Belt" to describe "an individual who has developed a synergistic proficiency between his or her technical discipline and the Six Sigma strategies, tactics, and tools. These individuals will continually work towards institutionalizing the effective use of these tools throughout the corporation, its clients, and its suppliers."



The Training Course will highlight:

- This course is complying with the requirements of the International Association for Six-Sigma Certification.

Course Duration

- 10 days

Tools Used

- Excel 2013 and Minitab 16

Book Reference

- Introduction to Materials Management - 6th edition - 2008 - J. R. Tony Arnold, Stephen N. Chapman, and Lloyd M. Clive - Prentice Hall
- How to Implement Lean Manufacturing - 2010 - Lonnie Wilson - McGraw-Hill
- Implementing Six Sigma - 2nd Edition - 2003 - Forrest W. Breyfogle iii - John Wiley & Sons
- Learning To See - Version 1.2 - 1999 - Mike Rother and John Shook - Lean Enterprise Institute
- Six Sigma Quality Improvement with Minitab - 2nd edition - 2011 - G. Robin Henderson - John Wiley & Sons

Course Objective:

- **By the end of this course delegates will be able to:**
- Application of Six Sigma; Six Sigma tool kit to deploy.
- Value-stream process mapping; tracking process defects
- DPU, DPMO and Sigma level exercise
- Statistical process control, principles, and applications
- Variable control charts, attribute control charts
- Discipline problem solving
- Identifying and verifying root cause
- Permanent corrective action (PCA); preventing recurrence.
- DMAIC Methodology -Define, measure, analyze, improve, control DMAIC checklists.
- Failure mode and effects analysis

WHO Should attend?

- Senior Managers & Team Leaders
- Project Managers
- Quality Assurance Professionals
- Software Professionals

Training Methods:

- This interactive Training will be highly interactive, with opportunities to advance your opinions and ideas and will include.
- Lectures
- Workshop & Work Presentation
- Case Studies and Practical Exercise
- Videos and General Discussions



Course outline

- Why Six Sigma?
- Definition of Six Sigma
- Comparisons between typical TQM and Six Sigma Programs
- Origins and Success Stories
- How to Deploy Six Sigma
- Organizational Metrics and Dashboards
- Data-driven Decision Making
- Description of the Roles and Responsibilities
- Leadership Responsibilities
- **DEFINE: Project Definition**
 - Tasks
 - B. Work Breakdown Structure
 - C. Pareto Diagrams
 - Matrix Diagrams
 - Project Charters

Course outline

- **DEFINE: Change Management Teams**
- Problems with Change
- Achieving Buy-in
- Team Formation, Rules, and Responsibilities
- Stages of Team Development
- Overcoming Problems
- Consensus Building
- Affinity Diagram _
- Prioritization Matrix
- **MEASURE: Tools and Objectives**
- Measure Stage Objectives
- Flowcharts
- SIPOC
- Rolled Throughput Yield
- Process Mapping
- Process C&E
- Minitab Review
- Descriptive Statistics review

Course outline

- **MEASURE: Establishing Process Baseline**
 - Interpretation
 - Benefits of Control Charts
 - Requirements vs. Control
 - Control Chart Interpretation
 - X-Bar Charts and Individuals Charts
- **MEASURE: Process Capability**
 - Histograms
 - Probability Plots
 - Capability and Performance Indices
 - Relative to Process Control
 - Interpretation

Course outline

- **ANALYZE: Introduction to Linear Regression Analysis**
- Scatter Diagrams
- Linear Model
- Interpreting the ANOVA Table
- Overview of Multiple Regression Tools
- Testing Variances
- Testing Means
- General Linear Model
- Main effects and Interactions
- Non-Linear Regression
- Confidence Intervals
- Non-Normal Distribution Analysis
- Non-Parametric tests
- **ANALYZE: Lean Thinking**
- Definition of Waste
- Analyzing Process for NVA
- Lead Time and Velocity
- Methods to Increase Velocity
- Standardization
- Optimization
- 5S
- VSM
- Lean Controls
- Kanban
- Poka-Yoke

Course outline

- **IMPROVE: Tools and Objectives**
 - Improve Stage Objectives
 - Tools to Prioritize Improvement Opportunities
 - Tools to Define and Mitigate Failure Modes
 - FMEA
 - Introduction to DOE
 - Full Factorial Experiments
 - Full Factorial Simulations
 - 2K Factorials
 - DOE Sample Size Selection
 - Fractional Factorials
 - Statapult Exercise
- **CONTROL: Tools and Objectives**
 - Control Stage Objectives
 - Training
 - Measuring Improvement
 - EVOP / Plex
 - Response Surface Designs
 - Control Charts review
 - Shewhart tests for stability
 - Lean & Six Sigma Synergy
 - Process Control Plans
 - Project Planning & Deliverables