

IEE Blended Black Belt Curriculum Content

Project Define

- Project definition statements
- SIPOC process diagramming
- Planning the project schedule and participation

Project Measure

- Identifying primary metric performance (predictability and capability)
 - Control charting of business level metrics (high level outputs of continuous and attribute data)
 - Distribution analysis and transformations of data
 - Capability assessments (continuous and attributes)
 - Rolled Throughput Yield
 - Pareto chart
- Identification of Quick Fix (Low Hanging Fruit) issues
- Process flow charting
 - High level charting
 - Detailed process charting
- Lean assessment tools
 - Value Stream Map
 - Spaghetti diagrams
 - Combination work charts
 - Work Flow Analysis
 - Physical flow maps
 - Transaction flow analysis
 - 5S
 - General Lean concepts
 - Value added/ Non-value added analysis
 - Time value mapping
 - Logic flow diagrams
 - Takt time analysis
- Theory of Constraints analysis
- Data collection and sampling methods
 - Conducting surveys
- Measurement System Analysis
 - Attribute gauge analysis
 - Decision system analysis
 - Continuous gauge analysis
- Wisdom of the Organization
 - Process mapping
 - Benchmarking
 - Affinity diagrams
 - Brainstorming (Cause and Effect Diagram)
 - Why-Why diagrams (fault tree diagrams)
 - Prioritization matrixes (Cause and Effect Matrix)
 - Failure Modes and Effects Analysis (FMEA)
- Measure Phase Coaching/Mentoring Session reviewing Measure Phase topics and project progress.

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Project Analyze Phase

- Basic Statistics (t, z, f... testing)
- Extensive Minitab charting techniques for insight into performance data
Box plots, Dot plots, Time Series plots, Individual Value plots
- Simple regression
- Multiple regression
- Simple one way Analysis of Variance (ANOVA) for comparing multiple groups
- Multiple factor ANOVA
- Distribution analysis
- Logistic regression (attribute or pass/fail response)
- Analyze Phase coaching/mentoring session reviewing Analyze Phase topics and project progress.

Project Improve Phase

- Factorial and fractional factorial Design of Experiments (DOE)
- DOE for variation reduction
- DOE for data collection (as part of analyze effort)
- Solution selection methods
- Lean improvement methods
 - Kaizen improvement events
 - 5S improvements
 - Pull systems
 - Future Value Stream Mapping
 - Visual controls
 - Cellular flow
 - Process flow improvement (pull, supermarkets, pace maker management)
 - Kanban implementation
 - Flow leveling (balancing)
 - Constraint analysis
 - Total Productive Maintenance (TPM) issues
- Improvement plan development
- TRIZ method for innovation
- Reliability analysis
- Improve Phase coaching/mentoring session reviewing Improve Phase topics and project progress.

Project Control Phase

- Control plan development
 - Documentation and deployment issues
 - Reaction plans
 - Continuous performance assessment methods
- Statistical Process Control methods (SPC)
- Implementation planning
- Deployment of improvement
- Control Phase coaching/mentoring session reviewing Control Phase topics and project progress.

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Other Topics

- Non-parametric statistics
- Capability metrics (Cp, Cpk, Pp, Ppk)