MoreSteam Master Black Belt Body of Knowledge

Fields of Study

The five overarching topics within MoreSteam.com's Master Black Belt Body of Knowledge are:

1. Project Management, Team Leadership & Coaching
2. Design and Innovation
3. Advanced Statistics
4. Advanced Lean and Process Modeling
5. Lean Finance and Accounting

For more information on the MoreSteam Master Black Belt Development Program, visit:
http://www.moresteam.com/lean-six-sigma/master-black-belt.cfm

Project Management, Team Leadership, and Coaching

The overarching learning objective is to develop an understanding of the important elements comprising the discipline of Project Management.

After completing the Master Black Belt Program, you should be able to **DO** the following:

- Evaluate the impact of your organization's structure on project execution
- Develop and apply criteria for project selection
- Select, charter, and initialize projects
- Assess and review projects
- Conduct effective tollgate reviews
- Prepare for and conduct a Project Portfolio Risk Assessment
- Understand what characteristics, traits and skills are needed by project managers
- Understand the practice of leadership and draft a plan of actions to improve your leadership practice
- Employ the "4 Conversations" to more effectively lead teams and coach individuals to higher performance levels
- Close projects

Design and Innovation

The overarching learning objective of this topic is to introduce a set of best practices and methodologies essential for developing designs that meet customer requirements at the highest possible level of quality.

After completing the Master Black Belt Program, you should be able to **DO** the following:

- Communicate using Design for Lean Six Sigma and TRIZ concepts and language.
- Identify unsolved problems or projects that warrant a design solution.
- Integrate DFLSS into your existing design/development process.
- Gather and analyze the voice of the customer to define stated and unstated requirements.
- Select optimal product or process design concepts.
- Use analytical and experimental methods to develop robust and reliable designs.
- Modify designs for optimal performance based on variability of the inputs and desired outputs.
- Verify that the designs meet the requirements at the desired level of performance.
- Employ your Design for Lean Six Sigma skills to lead a successful development project delivering meaningful results to the organization.

Advanced Statistics

The overarching learning objective of this topic is to introduce a set of advanced statistical tools beyond the Black Belt BOK essential for applying on complex problems and data sets, as well as, further master the statistical tools part of the GB and BB BOK to support the proper application of statistical methods.

After completing the Master Black Belt Program, you should be able to **DO** the following:

- Decide whether to use simulation or RSM for optimization.
- Use advanced experimental designs (Response Surface Methods) to examine model curvature and determine the factor levels that produce the optimal result.
- Recognize when to use Designed Experiments for robustness testing.
- Make a design insensitive to variation from uncontrollable factors.
- Construct, interpret and perform calculations for the following advanced control charts - CUSUM, EWMA and control charting for rare events.
- Understand and apply the use of nonparametric alternatives to the one-sample t-test and two-sample t-test (Wilcoxon and Mann-Whitney).
- Understand and apply advanced ANOVA tools – GLM, Analysis of Covariance, nested ANOVA, MANOVA.
- Understand and apply the various forms of Logistic Regression.
- Design and analyze and experiment with hard-to-change factors
- Understand the use of trend, decomposition, and smoothing models in time series analysis.

Advanced Lean and Process Modeling

The overarching learning objective of this topic is to introduce a set of advanced lean tools and methodologies beyond the Black Belt BOK essential for applying on complex processes and systems.

After completing the Master Black Belt Program, you should be able to **DO** the following:

- Understand what it means to be a Lean manager and how does that differ from traditional, 'business school' management techniques
- Understand the impacts of complexity of processes and how the lean tools manage and solve complexity issues.
- Apply dynamic process modeling techniques, including Monte Carlo analysis and discrete event simulation to build predictive process models that incorporate variation.
- Use Little's Law to calculate starvation boundaries and impacts of excess inventory.
- Understand and apply Core Process Pull – also known as WIP CAP, CONWIP, or generic pull.
- Create a strategic buffer strategy.
- Use queuing theory to model and then experiment with different queue management concepts.
- Construct and model a Replenishment Pull System. Understand and calculate the basic equations for implementation.
- Understand and apply the math and statistics behind the standard formula for calculating Safety Stock. Expand on the basic formula to a blended, heuristic approach to Safety Stock.
- Understand the various forces at work in determining optimal, feasible batch sizes. Additionally develop an optimal batch size strategy.
- Translate the application of layout and continuous flow to service environments.
- Understand and apply the basics of optimization modeling (linear, integer and non-linear programing). Specifically resource allocation, staff planning & scheduling, cross training, sequence dependent setup reduction, capacity planning and optimal batch sizing.

Lean Finance and Accounting

The overarching learning objective of this topic is to develop an understanding between process improvement initiatives and corporate financial valuation.

After completing the Master Black Belt Program, you should be able to **DO** the following:

- Value the benefits of an improvement project against the costs of the project
- Understand how project savings roll into the valuation of a company
- Calculate how risk and weight average cost of capital impact project valuation
- Discount future cash flows appropriately to calculate the present value of project benefits
- Understand the impact corporate accounting techniques on continuous improvement initiatives
- Communicate more effectively with financial professionals by understanding the potential short term P&L impact of inventory reduction efforts