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MHi Lean Six Sigma Certification Program

Certification Criteria

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ACHIEVING ***BREAKTHROUGH*** PERFORMANCE

2008

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Mountain Home Institute for Innovative Management (MHi)
Certification Criteria and Body of Knowledge
For Lean Six Sigma Green Belts and Black Belts

I. Background

The MHi LSS Certification Working Group was chartered by the Executive Director on February 20, 2006 to develop a standardized Lean Six Sigma Body of Knowledge (LSS BOK) and associated certification criteria. The Working Group included five individuals selected for their in-depth knowledge of process improvement, Lean innovation, and six sigma applications. These individuals also serve on the MHi Board of Advisors.

In an effort to create a more comprehensive approach to Lean Six Sigma training and certification, the working group was tasked to develop certification standards and to standardize the knowledge requirements for Green Belts and Black Belts. In developing these standards and the Body of Knowledge (BoK), the Working Group reviewed and compared existing training programs, curricula, qualification criteria and certification standards from major Quality associations (ASQ & IQF), government agencies and industry.

II. LSS Certification Requirements

MHi LSS Certification Criteria

Black Belt Certification Criteria				
TRAINING	TESTING	PROJECTS	TEACHING/ MENTORING	OTHER
Minimum 160 hrs over min 4 weeks covering MHi BOK for BBs including project work	Comprehensive (to BB BOK) Training Completion Test w/ >75% passing score and allowance for 1 retest.	Successful (signed off final tollgate) completion of: 2 Lean Six Sigma Full DMAIC minimum 3-6 month project >	Mentor 2 GBs through one project or 2 RIEs/KAIZENs for each	Certification will be granted by the Executive Director, Mountain Home Institute for Innovative Management upon verifiable completion of all required training and project work.

Green Belt Certification Criteria				
TRAINING	TESTING	PROJECTS	TEACHING/ MENTORING	OTHER
Minimum 80 hrs covering the MHi BOK for GBs including project work	Comprehensive (to GB BOK) Training Completion Test w/ >75% passing score and allowance for 1 retest	Successful (signed off final tollgate) completion of: 1 Lean Six Sigma Full DMAIC minimum 2-4 month project or facilitate 2 KAIZENs/RIEs; successful participation/ completion (signed off tollgate)	None	Certification will be granted by the Executive Director, Mountain Home Institute for Innovative Management upon verifiable completion of all required training and project work.

III. LSS Certification Project and Mentoring Requirements

A. LSS Green Belt Certification.

The intent of the project for the Green Belt Certification is to provide a venue in which the candidate can establish proficiency in the application of the key LSS concepts, techniques, and tools learned during LSS Green Belt Certification training. The candidate can select either one (1) full DMAIC project or two (2) Rapid Improvement Event (RIE) projects to satisfy this requirement.

The type of project is not as important as the outcome of the project. The candidate needs to select a project where specific goals and breakthrough objectives can be clearly established. The full DMAIC project should be of sufficient complexity that it can be comfortably completed within a 2-4 month period of time, where all five steps in the DMAIC problem solving model can be clearly observed. If an RIE project is selected, the length of the project tends to be in the five (5) to ten (10) day range. An RIE is typically focused on a single performance criterion and as the title indicates, is completed in a very short timeframe.

Each Green Belt project will require a manager within the candidate's organization to monitor and sign-off on all project work. In addition to the five "Tollgate Reviews", the organization's Point of Contact (POC) will have the final decision as to whether or not the candidate completed the required project tasks to their satisfaction. Appendix A provides a packet of information that will help in establishing the project and keeping it on track.

B. LSS Black Belt Certification.

The intent of the project for the Black Belt Certification is to provide a venue in which the candidate can establish proficiency in the application of the key LSS concepts, techniques, and tools learned during LSS Black Belt Certification training. The candidate can select either two (2) full DMAIC projects or one (1) DMAIC project and two (2) RIE projects, or any combination of the two, to satisfy this requirement. In addition, the Black Belt candidate must show competency in mentoring other members of his/her team as well as mentoring other Green Belts in the organization. This can take on the form of either leading an LSS team or through providing "peer assist" assistance to other LSS Green Belts completing individual projects.

As with the Green Belt certification, the type of project itself is not as important as the outcome of the project. The candidate needs to select projects where specific goals and breakthrough objectives can be clearly established. Each full DMAIC project should be of sufficient complexity that it can be comfortably completed within a 3-6 month period of time, where all five steps in the DMAIC problem solving model can be clearly observed. If an RIE project is selected, the length of the project tends to be in the five (5) to ten (10) day range. An RIE is typically focused on a single performance criterion and as the title indicates, is completed in a very short timeframe.

Each Black Belt project will require a manager within the candidate's organization to monitor and sign-off on all project work. In addition to the five "Tollgate Reviews", the organization's Point of Contact (POC) will have the final decision as to whether or not the candidate completed

the required project tasks to their satisfaction. Appendix A provides a packet of information that will help in establishing the project and keeping it on track.

C. Mountain Home Mentoring Assistance.

Each LSS Certification candidate (either Green or Black Belt) will be assigned a Mountain Home faculty member as their advisor during the completion of their project requirements. During this time, the candidate's advisor will provide review and feedback on project work completed and recommend continuation tasks for work that is to be completed. The Advisor's assistance will be provided through email, phone, as well as through the collaboration capabilities of the Mountain Home Student Resource Center.

Mountain Home Institute for Innovative Management (MHi)
Body of Knowledge for Lean Six Sigma Green Belts
(DoD CPI Levels I & II)

The following is the agreed upon Body of Knowledge for the Lean Six Sigma Green Belt Certification. This BOK is the foundation of the Mountain Home LSS Certification training curriculum and is, in part, based on the requirements set forth in the U.S. Department of Defense (DoD) Continuous Process Improvement (CPI) Transformation Guidebook, signed by the Deputy Secretary of Defense on 12 May 2006.

The topics in this Body of Knowledge include additional detail in the form of subtext explanations and the cognitive level of understanding. A more complete description of cognitive levels is provided at the end of this document.

I. Enterprise-wide Deployment

A. Enterprise view

1. History of organizational improvement
Identify the origin of various continuous improvement tools including lean, six sigma, theory of constraints, etc. (Remember)

2. Foundations of Lean Six Sigma
Describe the organizational value of Lean Six Sigma in terms of its philosophy and principles, and identify how lean tools, the DMAIC model, and the theory of constraints relate to each other. (Understand)

3. Business systems and processes
Identify the interrelationships between organizational structure and processes. Describe how the selection and management of value streams relates to the organizational structure and processes, and confirm the link of value streams to organizational strategic plans. (Understand)

4. Suppliers, inputs, processes, outputs, customers (SIPOC)
Describe how SIPOC can be used to identify appropriate value streams, based on how the value streams influence enterprise systems (e.g., cost, quality, schedule, financial paths, business flow, etc.). (Understand)

B. Leadership

1. Enterprise leadership
Identify the roles and responsibilities of executive leadership and how their involvement can affect the deployment of Lean Six Sigma initiatives (e.g., providing resources, accountability, etc.). (Understand)

2. Lean Six Sigma roles and responsibilities
Define the roles and responsibilities of black belt, master black belt, green belt, value stream champion, process owners, customers, and stakeholders. (Understand)

3. Linking projects to organizational goals
Describe how kaizen events or Rapid Improvement Events (RIE) are selected during the value stream analysis process. (Understand)

II. Business Processes

A. Process management and results

1. Basic process management
Identify and describe the concept of process management, from defining the mission and vision through the attributes of process ownership. (Understand)

2. Process performance metrics
Recognize the need for process performance metrics to determine how the process is performing. (Understand)

3. Benchmarking
Define and distinguish between various types of benchmarking. (Understand)

4. Supply chain management
Describe customer-supplier relationships and how these relationships and the supply chain are affected by project initiatives. (Understand)

5. Financial measures
Define and use financial measures including return on investment (ROI) to underscore potential financial results. (Apply)

6. Balanced Scorecard
Describe how balanced scorecard is used to evaluate organizational goals against customer expectations and organizational processes. (Understand)

B. Voice of the customer

1. Identify the customer
Identify and segment various customers (e.g., internal, external, long-term, loyal, etc.) that will be impacted by changes to existing value streams. (Apply)

2. Collect and validate customer data
Determine which measurement method to use to collect customer feedback (e.g., surveys, focus groups, interviews, observation, etc.) in order to understand customer needs, expectations, and requirements, and use appropriate methods to ensure measurement validity and reliability (e.g., review questions for bias, ambiguity, etc.). (Apply)
[NOTE: The collection of other types of data is included in area V.B.2.]

3. Customer data analysis
Determine which graphical, qualitative, or statistical tools are most appropriate for analyzing customer data. (Understand).
[NOTE: The application of some of these tools is included in area V.]

4. Identify critical to x (CTx) requirements
Identify and use various metrics to evaluate product and process performance in terms of critical to…quality (CTQ), cost (CTC), process (CTP), safety (CTS), and delivery (CTD). (Apply)

C. Change management

1. Organizational roadblocks
Identify the inherent structures of an organization (such as its culture and construct) and describe how they become barriers to improvement. (Understand)

2. Change agent
Describe the role of change agent. (Understand)

3. Motivation techniques
Define and apply various techniques used to support and sustain participation in process improvement efforts. (Apply)

4. Conflict resolution techniques
Use various techniques to help conflicting parties recognize common goals and ways they can work together to achieve them. (Apply)

5. Communication planning and deployment
Develop and deploy communication plans that support process improvement efforts and will help prevent rumor, false expectations, and other obstacles from interfering with successful implementation of the change. (Apply)

III. Project Team Management

A. Initial steps

1. Initiating teams
Describe and identify the elements required when launching a team (e.g., clear purpose and goals, commitment, ground rules, etc.) and how they affect the team's success (e.g., ability to gain support from management, team empowerment, team cohesion, etc.). (Apply)

2. Charter Negotiations (Chartering a team)
Determine the appropriate number and type of team members (e.g., skills sets, technical/subject-matter expertise, etc.) based on the team's charter and goals, and ensure appropriate representation of the stakeholders. (Apply)

3. Team roles
Define and describe team roles and responsibilities, including team leader, facilitator, etc. (Apply)

B. Team stages
Identify and facilitate the stages of team evolution (form-ing, storm-ing, norm-ing, perform-ing, adjourn-ing). (Apply)

C. Team-building and facilitation techniques
Apply various techniques (e.g., coaching, mentoring, intervention, etc.) to build and guide a team, and use appropriate tools to overcome common problems such as overbearing, dominant, or reluctant participants, the unquestioned acceptance of opinions as facts, groupthink, feuding, floundering, the rush to accomplish/finish, digressions, and tangents. (Evaluate)

D. Team performance evaluation
Measure team progress in relation to goals, objectives, and metrics that support team success, and recognize and reward accomplishments. (Analyze)

E. Team tools
Define, select, and apply the following creative and management and planning tools used by teams in various situations: brainstorming, nominal group technique, multi-voting, affinity diagrams, tree diagrams, etc. (Apply)

IV. Define the Problem or Opportunity

A. Documentation and Presentation

1. Documentation elements
Create data- and fact-driven process documents and determine appropriate tools for recording and using them (e.g., spreadsheets, storyboards, phased reviews, management reviews). (Create)

2. Presentation
Determine the appropriate style to use when communicating taking into account the target audience and the purpose of the presentation. (Apply)

B. Charter and plan

1. Charter and plan elements
Create a project charter and plan (including objectives, scope, boundaries, resources, transition, and closure) for a RIE. (Create)

2. Charter negotiation
Use various negotiation techniques when changes to the charter are proposed by various stakeholders and team members, and determine when it is appropriate to make changes to the charter. (Analyze)

3. Execution
Use various tools to track a RIE (e.g., TPR, newspaper, quad sheet, etc.) (Analyze)

C. Mission, vision, and problem statement
Develop a mission and vision statement for a RIE, and develop a problem statement containing a clear case for action and describing current and desired performance level of process. (Create)

D. Project scope
Identify the boundaries of a RIE using value stream maps, SIPOC, and other tools to align with the goals of the organization and to ensure that it has value to the customer. (Analyze)

E. Project metrics
Identify or establish process performance measurements that point to the critical elements of the process and can be connected to financial benefits. (Analyze)

V. Measure the Current State

A. Process analysis

1. Process inputs and outputs
Identify process input variables and output variables, and document their relationships through cause and effect diagrams and data collection and analysis. (Evaluate)

2. Process flow and effective utilization
Evaluate process flow and utilization by identifying the waste and constraints along the critical chain and analyzing work in progress (WIP), work in queue (WIQ), touch time, takt time, cycle time, and throughput. (Evaluate)

3. Tools
Develop and review both higher and lower value stream maps, process maps, written procedures, work instructions, flowcharts, spaghetti diagrams, circle diagrams, etc. (Analyze)

B. Collecting and summarizing data

1. Types of data
Identify, define, classify and compare qualitative and quantitative data. (Evaluate)

2. Methods for collecting data
Prepare data collection plans, and apply methods for collecting data using check sheets, data coding, automatic gauging, etc. (Apply)

3. Measurement scales
Define and apply nominal, ordinal, interval, and ratio measurement scales. (Apply)

4. Techniques for assuring data accuracy and integrity
Define and apply techniques for assuring data accuracy and integrity such as random sampling and stratified sampling. (Evaluate)

C. Basic statistics

1. Descriptive statistics
Define, compute, and interpret measures of dispersion and central tendency (mean, median, mode, variance, standard deviation, and z-values). (Evaluate)

2. Drawing valid statistical conclusions
Distinguish between descriptive and analytical studies, and distinguish between a population and a sample statistic. (Evaluate)

3. Graphical methods
Construct, apply, and interpret diagrams and charts such as run charts, Pareto diagrams, histograms, normal probability plots, etc. (Evaluate)

D. Measurement systems

1. Measurement methods
Describe measurement systems and identify measurement methods for continuous and discrete data. (Understand)

2. Measurement system analysis (MSA)
Determine measurement system capability by using tools such as repeatability and reproducibility studies. (Evaluate)

E. Statistical process control (SPC)

1. Objectives and benefits
Identify and explain the objectives and benefits of SPC (e.g., controlling process performance, distinguishing special from common causes). (Understand)

2. Analysis of control charts
Interpret control charts and distinguish between common and special causes. (Analyze)

VI. Analyze the Data

A. 7 Wastes
Define and apply the classic 7 wastes: overproduction, inventory, defects, over-processing, waiting, motion, and transportation. Analyze value-added and non-value-added activities, and develop metrics and evaluate data to identify constraints in value flow. (Create)

B. Tools for identifying significant or root cause
Describe, use, and interpret various root cause analysis tools, including (1) the five whys, (2) fishbone (Ishikawa) diagrams, and (3) the cause and effect matrix. (Evaluate)

VII. Improve the Process

A. Eliminating Waste
Define, describe and select the following tools and techniques for eliminating waste and improving processes: 1) Pull / Kanban, 2) 5S, 3) Flow, 4) Standard work, 5) Poka-yoke, 6) Cycle-time reduction, 7) Set-up time reduction. (Evaluate)

B. Theory of constraints
Describe and use Goldratt's process for exploiting and elevating constraints, and explain how to subordinate non-constraints in a process. (Application)

C. Critical chain project management
Define and use project buffer management, the drum-buffer-rope method, etc., and distinguish between critical chain and critical path. (Apply)

D. Implement the improved process

1. Plan the implementation
Develop a plan for implementing the improved process. Identify the issues and roadblocks that may be encountered when the plan is implemented and determine the best methods for responding to those issues. (Evaluate)

2. Conduct a pilot or a simulation
Describe and apply the concepts required to conduct a pilot and identify the steps needed for a successful pilot or simulation. (Analyze)

3. Select the optimum solution
Analyze data collected from the pilot or simulation to determine the best solution. (Analyze)

4. Roll out the optimum solution
Implement a full-scale version of the improved process and monitor results. (Evaluate)

VII. Control and Sustain the Improved Process

A. Implement and maintain controls

1. Process control plan
Develop a follow-up plan that will identify appropriate controls for ensuring the ongoing success of the improved process. (Evaluate)

2. Visual factory
Define the elements of visual factory and describe how they can help control the improved process. (Understand)

3. Measurement system reanalysis
Recognize the need to improve or revise measurement system capability as process capability improves. Evaluate the use of control measurement systems, and ensure that measurement capability is sufficient for its intended use. (Evaluate)

B. Sustain the improvement

1. Knowledge management and lessons learned
Identify and document the lessons learned and ensure that those lessons and process successes are disseminated to participants in future process improvement opportunities. Recognize how the improved process can be replicated and applied to other processes in the organization. (Apply)

2. Training plan
Determine an appropriate training plan for ensuring the continued support of the improved processes. (Analyze)

3. Monitor for new constraints
Identify the steps required to monitor the improved process for new constraints and additional opportunities for improvement. (Apply)

Levels of Cognition based on Bloom's Taxonomy – Revised (2001)

In addition to **content** specifics, the subtext for each topic in this BOK also indicates the intended **complexity level** of the test questions for that topic. These levels are based on "Levels of Cognition" (from Bloom's Taxonomy – Revised, 2001) and are presented below in rank order, from least complex to most complex.

Remember
Recall or recognize terms, definitions, facts, ideas, materials, patterns, sequences, methods, principles, etc.

Understand
Read and understand descriptions, communications, reports, tables, diagrams, directions, regulations, etc.

Apply
Know when and how to use ideas, procedures, methods, formulas, principles, theories, etc.

Analyze
Break down information into its constituent parts and recognize their relationship to one another and how they are organized; identify sublevel factors or salient data from a complex scenario.

Evaluate
Make judgments about the value of proposed ideas, solutions, etc., by comparing the proposal to specific criteria or standards.

Create
Put parts or elements together in such a way as to reveal a pattern or structure not clearly there before; identify which data or information from a complex set is appropriate to examine further or from which supported conclusions can be drawn.

Mountain Home Institute for Innovative Management (MHi)
Body of Knowledge for Lean Six Sigma Black Belts
(DoD CPI Levels II & III)

The topics in this Body of Knowledge include additional detail in the form of subtext explanations and the cognitive level used for development of the Black Belt Certification exam. The descriptor in parentheses at the end of each entry refers to the maximum cognitive level at which the topic will be tested. A more complete description of cognitive levels is provided at the end of this document.

I. Enterprise-wide Deployment [10 Questions]

A. Enterprise view

1. History of organizational improvement
Identify the origin of various continuous improvement tools including quality control, statistical process control (SPC), total quality management/leadership (including the 14 points), lean, six sigma, theory of constraints, etc. (Remember)

2. Foundations of Lean Six Sigma
Describe the organizational value of Lean Six Sigma in terms of its philosophy and principles, and identify how lean tools, the DMAIC model, and the theory of constraints relate to each other. (Understand)

3. Business systems and processes
Identify the interrelationships between organizational structure and processes. Describe how the selection and management of value streams relates to the organizational structure and processes, and confirm the link of value streams to organizational strategic plans. (Understand)

4. Suppliers, inputs, processes, outputs, customers (SIPOC)
Describe how SIPOC can be used to identify appropriate value streams, based on how the value streams influence enterprise systems (e.g., cost, quality, schedule, financial paths, business flow, etc.). (Understand)

B. Leadership

1. Enterprise leadership roles and responsibilities
Identify the roles and responsibilities of executive leadership and how their involvement can affect the deployment of Lean Six Sigma initiatives (e.g., providing resources, accountability, etc.). (Understand)

2. Lean Six Sigma roles and responsibilities
Define the roles and responsibilities of black belt, master black belt, green belt, value stream champion, process owners, customers, and stakeholders. (Understand)

3. Linking projects to organizational goals
Describe how projects or kaizen events are selected, such as identifying constraints in the value stream and knowing when to use Lean Six Sigma instead of other problem-solving approaches. (Understand)

II. Business Processes [12 Questions]

A. Process management and results

1. Basic process management
Identify and describe the nine steps of the process management, from defining the mission and vision through acknowledging the team and reporting results. (Understand)

2. Process performance metrics
Recognize the effect that process performance metrics can have on enterprise decisions, such as how metrics propagate upward and allocate downward. (Understand)

3. Benchmarking
Define and distinguish between various types of benchmarking. (Understand)

4. Supply chain management
Describe customer-supplier relationships and how these relationships and the supply chain are affected by project initiatives. (Understand)

5. Financial measures
Define and use financial measures including net present value (NPV), return on investment (ROI), cost of quality (COQ), etc., to underscore potential financial results. (Apply)

6. Balanced Scorecard
Describe how balanced scorecard is used to evaluate organizational goals against customer expectations and organizational processes. (Understand)

B. Voice of the customer

1. Identify the customer
Identify and segment various customers (e.g., internal, external, long-term, loyal, etc.) that will be impacted by changes to existing value streams. (Apply)

2. Collect and validate customer data
Determine which measurement method to use to collect customer feedback (e.g., surveys, focus groups, interviews, observation, etc.) in order to understand customers needs, expectations, and requirements, and use appropriate methods to ensure measurement validity and reliability (e.g., review questions for bias, ambiguity, etc.). (Apply)
[NOTE: The collection of other types of data is included in area V.B.2.]

3. Customer data analysis
Determine which graphical, qualitative, or statistical tools are most appropriate for analyzing customer data. (Understand).
[NOTE: The application of some of these tools is included in area V.]

4. Identify critical to x (CTx) requirements
Identify and use various metrics to evaluate product and process performance in terms of critical to…quality (CTQ), cost (CTC), process (CTP), safety (CTS), and delivery (CTD). (Apply)

5. Quality function deployment (QFD)
Define, interpret, and use a QFD chart in customer requirements analysis. (Apply)

C. Change management

1. Organizational roadblocks
Identify the inherent structures of an organization (such as its culture and construct) and describe how they become barriers to improvement. (Understand)

2. Change agent
Describe the role of change agent. (Understand)

3. Motivation techniques
Define and apply various techniques used to support and sustain participation in process improvement efforts. (Apply)

4. Conflict resolution techniques
Use various techniques to help conflicting parties recognize common goals and ways they can work together to achieve them. (Apply)

5. Communication planning and deployment
Develop and deploy communication plans that support process improvement efforts and will help prevent rumor, false expectations, and other obstacles from interfering with successful implementation of the change. (Apply)

III. Project Team Management [12 Questions]

A. Initial steps

1. Initiating teams
Describe and identify the elements required when launching a team (e.g., clear purpose and goals, commitment, ground rules, etc.) and how they affect the team's success (e.g., ability to gain support from management, team empowerment, team cohesion, etc.). (Apply)

2. Selecting team members
Determine the appropriate number and type of team members (e.g., skills sets, technical/subject-matter expertise, etc.) based on the team's charter and goals, and ensure appropriate representation of the stakeholders. (Apply)

3. Team roles
Define and describe team roles and responsibilities, including team leader, facilitator, etc. (Apply)

B. Team stages
Identify and facilitate the stages of team evolution (form-ing, storm-ing, norm-ing, perform-ing, adjourn-ing). (Apply)

C. Team-building and facilitation techniques
Apply various techniques (e.g., coaching, mentoring, intervention, etc.) to build and guide a team, and use appropriate tools to overcome common problems such as overbearing, dominant, or reluctant participants, the unquestioned acceptance of opinions as facts, groupthink, feuding, floundering, the rush to accomplish/finish, digressions, and tangents. (Evaluate)

D. Team performance evaluation
Measure team progress in relation to goals, objectives, and metrics that support team success, and recognize and reward accomplishments. (Analyze)

E. Team tools
Define, select, and apply the following creative and management and planning tools used by teams in various situations: brainstorming, nominal group technique, multi-voting, affinity diagrams, tree diagrams, various matrix diagrams and interrelationship digraphs, activity network diagrams, etc. (Apply)

IV. Define the Problem or Opportunity [15 Questions]

A. Documentation and Presentation

1. Documentation elements
Create data- and fact-driven project documents and determine appropriate tools for recording and using them (e.g., spreadsheets, storyboards, phased reviews, management reviews). (Create)

2. Presentation
Determine the appropriate style to use when communicating complex or technical issues (e.g., visual displays of data and information) taking into account the target audience and the purpose of the presentation. (Apply)

B. Charter and plan

1. Charter and plan elements
Create a project charter and plan (including objectives, scope, boundaries, resources, transition, and closure) for a kaizen event or Lean Six Sigma project. (Create)

2. Charter negotiation
Use various negotiation techniques when changes to the charter are proposed by various stakeholders and team members, and determine when it is appropriate to make changes to the charter. (Analyze)

3. Execution
Use various tools to track a Lean Six Sigma project or event (e.g., toll-gates, milestones, red flags, etc.). (Analyze)

C. Mission, vision, and problem statement
Develop a mission and vision statement for a project, and develop a problem statement containing a clear case for action and describing current and desired performance level of process. (Create)

D. Project scope
Identify the boundaries of project using value stream maps, SIPOC, and other tools to align with the goals of the organization and to ensure that it has value to the customer. (Analyze)

E. Project metrics
Identify or establish process performance measurements that point to the critical elements of the process and can be connected to financial benefits. (Analyze)

V. Measure the Current State [34 Questions]

A. Process analysis

1. Process inputs and outputs
Identify process input variables and output variables, and document their relationships through cause and effect diagrams, relational matrices, and data collection and analysis. (Evaluate)

2. Process flow and effective utilization
Evaluate process flow and utilization by identifying the waste and constraints along the critical chain and analyzing work in progress (WIP), work in queue (WIQ), touch time, takt time, cycle time, and throughput. (Evaluate)

3. Tools
Develop and review value stream maps, process maps, written procedures, work instructions, flowcharts, spaghetti diagrams, circle diagrams, etc. (Analyze)

B. Collecting and summarizing data

1. Types of data
Identify, define, classify and compare qualitative and quantitative data, continuous (variables) and discrete (attributes) data, and their types of distributions (binomial and Poisson). Identify opportunities to convert attributes data to variables measures. (Evaluate)

2. Methods for collecting data
Prepare data collection plans, and apply methods for collecting data using check sheets, data coding, automatic gauging, etc. (Apply)

3. Measurement scales
Define and apply nominal, ordinal, interval, and ratio measurement scales. (Apply)

4. Techniques for assuring data accuracy and integrity
Define and apply techniques for assuring data accuracy and integrity such as random sampling, stratified sampling, sample homogeneity, etc. (Evaluate)

C. Basic statistics

1. Central limit theorem
Define the central limit theorem and describe its significance in the application of inferential statistics for confidence intervals, control charts, etc. (Understand)

2. Descriptive statistics
Define, compute, and interpret measures of dispersion and central tendency (mean, median, mode, variance, standard deviation, and z-values), and construct and interpret frequency distributions and cumulative frequency distributions. (Evaluate)

3. Drawing valid statistical conclusions
Distinguish between enumerative (descriptive) and analytical (inferential) studies, and distinguish between a population parameter and a sample statistic. (Evaluate)

4. Graphical methods
Construct, apply, and interpret diagrams and charts such as box-and-whisker plots, run charts, scatter diagrams, histograms, normal probability plots, etc. (Evaluate)

D. Measurement systems

1. Measurement methods
Describe measurement systems and identify measurement methods for continuous and discrete data. (Understand)

2. Measurement system analysis (MSA)
Determine measurement system capability by using tools such as repeatability and reproducibility studies, correlation, bias, linearity, etc. (Evaluate)

E. Statistical process control (SPC)

1. Objectives and benefits
Identify and explain the objectives and benefits of SPC (e.g., controlling process performance, distinguishing special from common causes). (Understand)

2. Selection of variable
Identify and select critical characteristics for monitoring by control chart. (Apply)

3. Rational sub-grouping
Define and apply the principle of rational sub-grouping. (Apply)

4. Selection and application of control charts
Identify, select, construct, and use control charts, including $\overline{X} - R,\ \overline{X} - s,$ individual and moving range (ImR / XmR), p, np, c, and u. (Apply)

5. Analysis of control charts
Interpret control charts and distinguish between common and special causes using rules for determining statistical control. (Analyze)

F. Analyzing process capability

1. Designing and conducting process capability studies
Identify, describe, and apply the elements of designing and conducting process capability studies, including identifying characteristics, identifying specifications and tolerances, developing sampling plans, and verifying stability and normality. (Evaluate)

2. Calculating process performance vs. specification
Distinguish between natural process limits and specification limits, and calculate process performance metrics (e.g., percent defective, parts per million (PPM), defects per million opportunities (DPMO), defects per unit (DPU), process sigma, rolled throughput yield (RTY), activity-based costing, etc). (Evaluate)

3. Process capability indices
Define, select, and calculate C_p and C_{pk}, and assess process capability. (Evaluate)

4. Short-term and long-term capability studies
Describe the appropriate assumptions and conventions to use when only short-term data or attributes data are available. Describe the changes in relationships that occur when long-term data are used. Describe and interpret the relationships between long-term and short-term capability. (Evaluate)

5. Process capability for non-normal data
Describe the cause of non-normal data and determine when it is appropriate to use a Box-Cox or other power transformation techniques. (Apply)

6. Process capability for attributes data
Calculate the process capability and process sigma level for attributes data. (Apply)

VI. Analyze the Data [25 Questions]

A. 7 Wastes
Define and apply the classic 7 wastes: overproduction, inventory, defects, over-processing, waiting, motion, and transportation. Analyze value-added and non-value-added activities, and develop metrics and evaluate data to identify constraints in value flow. (Create)

B. Measuring and modeling relationships between variables

1. Simple and multiple least-squares linear regression
Describe and interpret the regression equation; apply and interpret hypothesis tests for regression statistics; use the regression model for estimation and prediction, and analyze the uncertainty in the estimate. (Evaluate)
[NOTE: Models that have non-linear parameters will not be tested.]

2. Simple linear correlation
Describe and interpret the correlation coefficient and its confidence interval; apply and interpret a hypothesis test for the correlation coefficient. Describe the difference between correlation and causation. (Evaluate)
[NOTE: Serial correlation will not be tested.]

3. Diagnostics
Analyze residuals of the model. (Analyze)

C. Basic hypothesis testing

1. Statistical vs. practical significance
Define, compare, and contrast statistical and practical significance. (Evaluate)

2. Significance level, power, type I and type II (Alpha and Beta) errors
Apply and interpret the significance level, power, type I, and type II errors of statistical tests. (Evaluate)

3. Sample Size
Describe the impact of sample size for any given hypothesis test. (Understand)

4. Null and alternate hypotheses
Develop the null or alternate hypothesis as required in various situations. (Create)

5. Probability (p) value
Interpret p-value in rejecting or failing to reject null hypothesis. (Evaluate)

D. Advanced hypothesis testing

1. Point and interval estimation
Define and interpret the efficiency and bias of estimators; interpret and draw conclusions from statistics such as standard error, tolerance intervals, and confidence intervals; distinguish between confidence intervals and prediction intervals. (Analyze)

2. Tests for means, variances, and proportions
Define and determine applicability of hypothesis tests for means (t-test, ANOVA, etc.), variances (F-Test, Levene's test, etc.), and proportions, and interpret results for significance of process inputs. (Evaluate)

3. Paired-comparison tests
Define, determine applicability, and interpret paired-comparison parametric hypothesis tests. (Evaluate)

4. Goodness-of-fit tests
Define, determine applicability, and interpret chi-square tests. (Evaluate)

E. Failure mode and effects analysis (FMEA)
Describe the purpose and elements of FMEA and how this tool is used for processes, products, and services. Distinguish between design FMEA (DFMEA) and process FMEA (PFMEA), and interpret data associated with each. (Analyze)

F. Tools for identifying significant or root cause
Describe, use, and interpret various root cause analysis tools, including (1) the five whys, (2) fishbone (Ishikawa) diagrams, and (3) the cause and effect matrix. (Evaluate)

VII. Improve the Process [30 Questions]

A. Design of experiments (DOE)

1. Basic terms
Define independent and dependent variables, factors and levels, response, treatment, error, repetition, and replication. (Understand)

2. Planning and organizing experiments
Describe and apply the basic elements of experiment planning and organizing, including determining the experiment objective, selecting factors, responses, and measurement methods, choosing the appropriate design, etc. (Evaluate)

3. Design principles
Define and apply the principles of power and sample size, balance, replication, order, efficiency, randomization and blocking, interaction, and confounding. (Apply)

4. Design and analysis
Construct full-factorial and fractional designs of experiments and interpret computational and graphical results. Describe the limitations of fractional factorials caused by confounding. (Evaluate)
[NOTE: Response surface methodology and evolutionary operations (EVOP) will not be tested.]

B. Eliminating Waste
Define, describe and select the following tools and techniques for eliminating waste and improving processes: 1) Pull / Kanban, 2) 5S, 3) Flow, 4) Standard work, 5) Poka-yoke, 6) Cycle-time reduction, 7) Set-up time reduction. (Evaluate)

C. Theory of constraints
Describe and use Goldratt's process for exploiting and elevating constraints, and explain how to subordinate non-constraints in a process. (Application)

D. Critical chain project management
Define and use project buffer management, the drum-buffer-rope method, etc., and distinguish between critical chain and critical path. (Apply)

E. Implement the improved process

1. Plan the implementation
Develop a plan for implementing the improved process. Identify the issues and roadblocks that may be encountered when the plan is implemented and determine the best methods for responding to those issues. (Evaluate)

2. Conduct a pilot or a simulation
Describe and apply the concepts required to conduct a pilot and identify the steps needed for a successful pilot or simulation. (Analyze)

3. Select the optimum solution
Analyze data collected from the pilot or simulation to determine the best solution. (Analyze)

4. Roll out the optimum solution
Implement a full-scale version of the improved process and monitor results. (Evaluate)

VIII. Control and Sustain the Improved Process [12 Questions]

A. Implement and maintain controls

1. Control plan
Develop a follow-up plan that will identify appropriate controls for ensuring the ongoing success of the improved process. (Evaluate)

2. Total productive maintenance (TPM)
Define TPM and its elements, and describe how it can be used as a control in the improved process. (Understand)

3. Visual factory
Define the elements of visual factory and describe how they can help control the improved process. (Understand)

4. Measurement system reanalysis
Recognize the need to improve or revise measurement system capability as process capability improves. Evaluate the use of control measurement systems, and ensure that measurement capability is sufficient for its intended use. (Evaluate)

B. Sustain the improvement

1. Knowledge management and lessons learned
Identify and document the lessons learned and ensure that those lessons and process successes are disseminated to participants in future process improvement opportunities. Recognize how the improved process can be replicated and applied to other processes in the organization. (Apply)

2. Training plan
Determine an appropriate training plan for ensuring the continued support of the improved processes. (Analyze)

3. Monitor for new constraints
Identify the steps required to monitor the improved process for new constraints and additional opportunities for improvement. (Apply)

Levels of Cognition based on Bloom's Taxonomy – Revised (2001)

In addition to **content** specifics, the subtext for each topic in this BOK also indicates the intended **complexity level** of the test questions for that topic. These levels are based on "Levels of Cognition" (from Bloom's Taxonomy – Revised, 2001) and are presented below in rank order, from least complex to most complex.

Remember
Recall or recognize terms, definitions, facts, ideas, materials, patterns, sequences, methods, principles, etc.

Understand
Read and understand descriptions, communications, reports, tables, diagrams, directions, regulations, etc.

Apply
Know when and how to use ideas, procedures, methods, formulas, principles, theories, etc.

Analyze
Break down information into its constituent parts and recognize their relationship to one another and how they are organized; identify sublevel factors or salient data from a complex scenario.

Evaluate
Make judgments about the value of proposed ideas, solutions, etc., by comparing the proposal to specific criteria or standards.

Create
Put parts or elements together in such a way as to reveal a pattern or structure not clearly there before; identify which data or information from a complex set is appropriate to examine further or from which supported conclusions can be drawn

Mountain Home Institute for Innovative Management (MHi)
Certification Criteria and Body of Knowledge
For Lean Six Sigma Green Belts and Black Belts

Addendum A
Credit for MHi BPR Certification Program Graduates

I. Background

The MHi LSS Certification Working Group was chartered by the Executive Director on December 20, 2006 to develop an addendum to the standardized Lean Six Sigma Body of Knowledge (LSS BOK) and associated certification criteria for the granting of academic credit for certification previously granted under the MHi Business Process Reengineering (BPR) Certification Program (as well as the former Department of Defense (DoD) BPR Certification Program). The Working Group included the original five members of the initial LSS BOK and Certification Criteria Working Group to ensure consistency of evaluation. These individuals were selected for their in-depth knowledge of process improvement, Lean innovation, and six sigma applications. They also serve on the MHi Board of Advisors.

In an effort to create a more comprehensive approach to Lean Six Sigma training and certification, and to take advantage of the significant academic work already completed by those who graduated the MHi BPR Certification Program, the working group was tasked to develop an additional option for certification in MHi's LSS Certification Program. This option would not only maintain the current certification standards and standardized knowledge requirements for Green Belts and Black Belts, but provide an even deeper level of understanding of enterprise process improvement than is required for current Black Belt certification. Using the current LSS Black Belt certification criteria (required Learning Objectives), the Working Group reviewed and compared the Terminal Learning Objectives (TLOs) of both the existing MHi BPR Certification Program as well as the current LSS Black Belt certification requirements to determine where each program overlapped and where they were different. The following is the result of that review and evaluation.

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Lean Six Sigma for Government Certification Curriculum (Master)

Lean Six Sigma BLACK Belt Certification Curriculum (Week 1)	MHi BPR Certification
A1: Introduction to Business Process Management & Improvement	
A1: Chapter 1: Introduction to Business Process Management & Improvement	
A11: Overview of Continuous Process Improvement & Lean Six Sigma	
A111: The Need for Change	Included
A112: A Tool for Change - Continuous Process Improvement	Included
A1121: The History of Continuous Process Improvement (e.g., Deming, Juran, Womack, Hammer, Davenport, Ishikawa).	
A1122: Continuous Process Improvement (CPI) Defined	
A11221: What is CPI?	
A11222: Two Ends of the Spectrum - Breakthroughs vs. Incremental Change	Included
A11223: The Vision for Continuous Process Improvement (CPI)	Included
A113: Overview of Lean Six Sigma & the DMAIC Methodology	
A114: The Lean Six Sigma Control Structure (Organization)	
A115: The Impact of Lean Six Sigma to the Government Enterprise	
A12: Introduction to Business Process Management (BPM)	Included
A13: The Human Side of Process Improvement (Culture Change)	Included
A131: Culture Change Defined	Included
A132: The Concept of Pain vs. Pleasure	Included
A133: Reactions to Change	Included
A134: Managing the Transition	Included
A2: Define	
A21: Define Performance Problem	Included
A211: Planning Concepts and Principles	Included
A2111: The Planning/Performance Cycle	Included
A2112: Planning and Lean Six Sigma	
A212: Strategic Planning - Defining Mission, Vision, and Performance	Included
A2121: Leaders Must Lead	Included
A2122: The Strategic Planning Process	Included
A22: LSS Project Selection	
A23: Defining the LSS Project - Scoping the Effort	
A231: Conduct Customer Needs Analysis: Identifying Customers and Defining their Requirements	
A2311: Gather Voice of the Customer	
A2312: Translate Customer Needs into Specific Requirements (CTQs)	
A232: Define the High-Level As-Is Business Process	Included
A233: Map Business Processes Against As-Is Organization Structure	Included
A234: Conduct High-Level Stakeholder Analysis (including SIPOC Analysis)	Included
A235: Develop High-Level Value Stream Map	
A24: Document Final Project Charter	
A241: Develop the Project Plan	Included
A242: Finalize the Project Charter	Included
A3: Measure	
A31: Model/Map Selected Process	Included
A311: Introduction to Process Modeling	Included
A312: Introduction to Process Mapping	Included
A313: Define Process Value Streams	
A32: Basic Statistical Analysis	
A321: Understanding Variance - Variability, Stability, and Capability	
A322: Introduction to the Central limit theorem and sampling distribution of the mean	
A3221: Overview of Sampling	
A33: Develop Measurement Plan	
A331: Define Measurement Strategy	
A3311: Determine What to Measure	
A3312: Identify Data Collection Techniques	
A33121: Understanding Data Attributes (Continuous Versus Discrete)	
A33122: Collecting, Displaying, and Evaluating Data	
A332: Document Measurement Plan	
A34: Determine As-Is Process Capability (Cp, CpK, Pp, PpK, CpM)	

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Lean Six Sigma for Government Certification Curriculum (Master)

Lean Six Sigma BLACK Belt Certification Curriculum (Week 2)	MHi BPR Certification
A4: Analyze	
A41: Perform Process Analysis	Included
A411: Update/Analyze Process Models/Maps	Included
A4111: Perform Activity Analysis	Included
A41111: Update/Analyze Process Models (Completeness and Accuracy)	Included
A411111: Determine Critical Outputs (Os)	Included
A411112: Determine Critical Inputs (I,C,Ms)	Included
A411113: Determine Critical Activities (As)	Included
A41112: Update/Analyze Process Maps (Completeness and Accuracy)	Included
A4112: Document Initial Process Analysis Findings	Included
A412: Conduct Value Analysis (Value-Added, Non-Value-Added)	Included
A4121: Value-Added/Non-Value-Added Analysis	Included
A4122: Value Stream Analysis	
A413: Calculate Process Cycle Efficiency (PCE)	
A414: Document Findings	
A42: Perform Data Analysis	
A421: Determine Process Capability (Cp, CpK, Pp, PpK, CpM) Drivers	
A422: Identify Potential Problems / Opportunities	
A43: Determine Potential Root Causes	
A431: Brainstorm Possible Causes	
A432: Introduction to Failure Modes and Effects Analysis (FMEA)	
A44: Perform Root Cause Analysis	
A441: Identify Root Causes	
A442: Verify Root Causes	
A4421: Conduct Hypothesis Testing	
A44211: Choose Statistical Tests	
A44212: Tests on the Mean	
A44213: Tests on the Median	
A44214: Tests on the Standard Deviation	
A4422: Conduct Correlation and Regression (Linear, Multiple)	
A45: Prioritize Root Causes	
A46: Determine Opportunities for Improvement	Included
A5: Improve	
A51: Generate Potential To-Be Solutions (Idea generation)	Included
A511: Introduction to Team Idea Generation Techniques (Brainstorming, Multi-Voting, Affinity Diagramming, etc.)	Included
A512: Overview of Idea Generation Support Tools (i.e., groupware, collaboration tools, etc.)	Included
A513: Complete Activity Analysis Matrix	Included
A52: Rank and Select Solutions	Included
A521: Develop To-Be Process Model	Included
A5211: Model Activities	Included
A5212: Model Cost	Included
A5213: Model Data	Included
A5214: Develop To-Be Process/Activity Maps	Included
A522: Develop To-Be Value Stream Map	
A523: Proof the Concept	Included
A5231: Introduction to Design of Experiements (DOE)	
A5232: Introduction to Prototyping	Included
A5233: Introduction to Benchmarking	Included
A5234: Introduction to Process Simulation	Included
A53: Develop Busiess Case	Included
A531: Overview of Business Case Analysis	Included
A532: Approve Final Solution	Included
A54: Plan and Implement Solution	Included
A541: Overview of an organization (culture & structure) change management plan	Included
A542: Overview of a technology change management plan	Included
A543: Deploy Solution	Included
A6: Control	
A61: Return Process to Owner/Stakeholders	
A62: Introduction to Statistical Process Control	
A621: Establishing Process Standards for Inputs, Process and Outputs	
A622: Developing a Process Control Plan	
A63: Closure and Recognition (Lessons Learned, Team Recognition)	

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Lean Six Sigma for Government Certification Curriculum (Master)

Lean Six Sigma Black Belt Certification Curriculum (Week 3)	MHi BPR Certification
A1: Project Initiation	
A11: Enterprise Planning	Included
A12: Project Integration - Juggling Multiple Projects	Included
A2: Define (Advanced)	
A21: Project Management Fundamentals	Included
A211: Develop the Project Charter	Included
A212: Building and Leading the Project Team	Included
A2121: Establishing the Project Team	Included
A2122: Creating an Environment of Team Innovation	Included
A2123: Group Facilitation Skills	Included
A2124: Measuring Team Performance	Included
A213: Technical vs. Interpersonal Skills	Included
A214: Managing by Timeline	Included
A22: Defining the Performance Problem (Advanced)	Included
A221: Advanced Tools for Conducting Mission Analysis	Included
A2211: Introduction to Quality Functional Deployment (QFD)	
A2212: Overview of the Critical Knowledge Assessment (CKnA)	Included
A222: Advanced Tools for Defining Process Performance Parameters	Included
A2221: Stakeholder Analysis	Included
A2222: Determine Process Performance Level	Included
A23: Case Study Application - Define	
A3: Measure (Advanced)	
A31: Build Process Model/Map	Included
A32: Build Value Stream Map	
A33: Measurement Systems Analysis (MSA)	
A331: Determine Types of Data to be Collected	
A332: Ensuring Data Accuracy and Integrity	
A333: Displaying Data	
A34: Analyze Process Capability	
A341: Design and Conduct Process Capability Study	
A342: Assess Process Capability	
A343: Assess Process Performance	
A35: Case Study Application - Measure	

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Lean Six Sigma for Government Certification Curriculum (Master)

Lean Six Sigma Black Belt Certification Curriculum (Week 4)	MHi BPR Certification
A4: Analyze (Advanced)	
A41: Measure and Model Data Relationships	Included
A411: Least Squares Linear Regression Analysis	
A412: Linear Correlation Analysis	
A42: Test Hypothesis	
A421: Determine Confidence Levels	
A422: Calculate Sample Size	
A423: Test for means, variances, and proportions	
A424: Goodness-of-fit Tests	
A425: Analysis of variance (ANOVA)	
A43: Case Study Application - Analyze	
A5: Improve (Advanced)	
A51: Applying Design of Experiments	
A511: Planning and Organizing Experiments	
A512: Design Principles	
A513: Design and Analyze One-Factor Experiments	
A514: Design and Analyze Full-Factorial Experiments	
A515: Design and Analyze Two-level Fractional Factorial Experiments	
A52: Develop the Business Case	Included
A53: Case Study Application - Improve	
A6: Control (Advanced)	
A61: Establish Statistical Process Control System	
A62: Analyze Control Charts	
A63: Case Study Application - Control	

II. LSS (BPR Certification Addendum) Certification Requirements

The following is the updated requirements for the LSS Black Belt Certification for those who have completed the MHi BPR Certification Program:

Requirement #1: Completion of the MHi BPR Certification Program

Requirement #2: Completion of the MHi Green Belt Certification (2-Week)

Requirement #3: Completion of the MHi Black Belt Advanced Course (3 Days)

All project and mentoring requirements remain the same as stated in the MHi Lean Six Sigma Certification Criteria and Book of Knowledge (LSS BOK) for 2007.

III. MHi LSS Black Belt Advanced Course (3 Days) Outline

Day 1

1. DEFINE (Advanced)

1.1. Defining the Performance Problem (Advanced)
- 1.1.1. Application of Quality Functional Deployment
- 1.1.2. Advanced Stakeholder Analysis
- 1.1.3. Determine Process Performance Metrics

1.2. Case Study Application - Define

2. MEASURE (Advanced)

2.1. Build Process Model/Map

2.2. Build Value Stream Map

2.3. Measurement Systems Analysis (MSA)
- 2.3.1. Determine Types of Data to be Collected
- 2.3.2. Ensuring Data Accuracy and Integrity
- 2.3.3. Displaying Data

2.4. Analyze Process Capability
- 2.4.1. Design and Conduct Process Capability Study
- 2.4.2. Assess Process Capability
- 2.4.3. Assess Process Performance

2.5. Case Study Application - Measure

DAY 2

3. ANALYZE (Advanced)

3.1. Measure and Model Data Relationships
- 3.1.1. Least Squares Linear Regression Analysis
- 3.1.2. Linear Correlation Analysis

3.2. Test Hypothesis
- 3.2.1. Determine Confidence Levels
- 3.2.2. Calculate Sample Size
- 3.2.3. Test for means, variances, and proportions
- 3.2.4. Goodness-of-fit Tests
- 3.2.5. Analysis of variance (ANOVA)

3.3. Case Study Application – Analyze

DAY 3

4. IMPROVE (Advanced)

4.1. Applying Design of Experiments
- 4.1.1. Planning and Organizing Experiments
- 4.1.2. Design Principles
- 4.1.3. Design and Analyze One-Factor Experiments
- 4.1.4. Design and Analyze Full-Factorial Experiments
- 4.1.5. Design and Analyze Two-level Fractional Factorial Experiments

4.2. Develop the Business Case

4.3. Case Study Application – Improve

5. CONTROL (Advanced)

5.1. Establish Statistical Process Control System
5.2. Analyze Control Charts
5.3. Case Study Application - Control

Appendix A

MHi Lean Six Sigma Certification Program

LSS Project Verification Forms

MHi LEAN SIX SIGMA GREEN BELT CERTIFICATION
PROJECT VERIFICATION FORM

One of the requirements for certification in the **MHi Lean Six Sigma Green Belt Certification Program** is the demonstration of experience. This MHi Lean Six Sigma Green Belt Verification Form must be completed and submitted attesting to that fact. Please provide one signed Verification Form attesting to the completion of the required Lean Six Sigma project.

Completed, signed Verification Forms can be faxed to Mountain Home at (256) 931-2373, or e-mailed to **registrar@mhc-net.com**.

1. Lean Six Sigma Project completed by:_____
(applicant's name, please print)

2. Lean Six Sigma project title:_____

3. Provide a brief description of the purpose of the project, and how it related to the business objective:

_____

_____

_____

4. Project's start and completion dates by month/year:_____

5. Provide a brief description of applicant's hands-on performance in completing the Lean Six Sigma project. Please include specific examples of tools used, e.g., value stream maps, metrics (DPU, DPMP, RTY), charts, etc. Do not send documentation.

_____
_____
_____

6. Provide a brief statement on the benefits achieved by the successful completion of the project, including but not limited to financial savings, labor, material costs, cycle-time reduction, etc.

_____
_____
_____

7. Verification of completion by project champion/sponsor:
Verification form completed by:_____
(project champion/sponsor signature) *(dated signed)*

Champion/sponsor name:_____

Job Title:_____

Company name:_____

Address: _____

Project champion/sponsor e-mail address_____

Project champion/sponsor telephone_____ Fax number:_____

MHi LEAN SIXSIGMA GREEN BELT CERTIFICATION
KAIZEN/RAPID IMPROVEMENT EVENT VERIFICATION FORM

One of the requirements for certification in the **MHi Lean Six Sigma Green Belt Certification Program** is the demonstration of experience. This MHi Lean Six Sigma Green Belt Verification Form must be completed and submitted attesting to that fact. This Verification Form provides documentation of completion of one Kaizen/Rapid Improvement Event.

Completed, signed Verification Forms can be faxed to Mountain Home at (256) 931-2373, or e-mailed to **registrar@mhc-net.com**.

1. Kaizen/Rapid Improvement event (RIE) completed by:_____
(applicant's name, please print)

2. Kaizen/RIE title:_____

3. Provide a brief description of the purpose of the project, and how it related to the business objective:

_____
_____
_____

4. Kaizen/RIE start and completion dates by month/year:_____

5. Provide a brief description of applicant's hands-on performance in completing the Kaizen/RIE.
Please include specific examples of tools used, e.g., value stream maps, metrics (DPU, DPMO, RTY), charts, etc.

_____
_____
_____

6. Provide a brief statement on the benefits achieved by the successful completion of the project, including but not limited to financial savings, labor, material costs, cycle-time reduction, etc.

_____
_____
_____

7. Verification of completion by project champion/sponsor:

Verification form completed by: _____
(project champion/sponsor signature) *(date signed)*

Champion/sponsor name:_____

Job Title:_____

Company name:_____

Address: _____

Project champion/sponsor e-mail address_____

Project champion/sponsor telephone_____ Fax number:_____

MHi LEAN SIX SIGMA BLACK BELT CERTIFICATION
PROJECT AFFIDAVIT VERIFICATION FORM

One of the requirements for certification in the **MHi Lean Six Sigma Black Belt Certification Program** is the demonstration of experience. The MHi Lean Six Sigma Black Belt affidavit must be completed and submitted attesting to that fact. Please provide two signed Verification Forms attesting to the completion of the two required Lean Six Sigma projects. One may have been a training project.

Completed, signed affidavits can be faxed to Mountain Home at (256) 931-2373, or e-mailed to registrar@mhc-net.com.

1. Lean Six Sigma Project completed by:_____
(applicant's name, please print)

2. Lean Six Sigma project title:_____

3. Provide a brief description of the purpose of the project, and how it related to the business objective:

_____

_____

_____

4. Project's start and completion dates by month/year:_____

5. Provide a brief description of applicant's hands-on performance in completing the Lean Six Sigma project. Please include specific examples of tools used, e.g., value stream maps, metrics (DPU, DPMP, RTY), charts, etc. Do not send documentation.

_____
_____
_____

6. Provide a brief statement on the benefits achieved by the successful completion of the project, including but not limited to financial savings, labor, material costs, cycle-time reduction, etc.

_____
_____
_____

7. Name(s) of Green Belts "mentored" during this project:

_____

8. Verification of completion by project champion/sponsor:
Verification form completed by:_____
(project champion/sponsor signature) *(dated signed)*

Champion/sponsor name:_____

Job Title:_____

Company name:_____

Address: _____

Project champion/sponsor e-mail address_____

Project champion/sponsor telephone_____ Fax number:_____

MHi LEAN SIXSIGMA BLACK BELT CERTIFICATION
KAIZEN/RAPID IMPROVEMENT EVENT AFFIDAVIT VERIFICATION FORM

One of the requirements for certification in the **MHi Lean Six Sigma Black Belt Certification Program** is the demonstration of experience. This MHi Lean Six Sigma Black Belt Verification Form must be completed and submitted attesting to that fact. This Verification Form provides documentation of completion of one Kaizen/Rapid Improvement Event.

Completed, signed Verification Forms can be faxed to Mountain Home at (256) 931-2373, or e-mailed to **registrar@mhc-net.com**.

1. Kaizen/Rapid Improvement event (RIE) completed by:_____
(applicant's name, please print)

2. Kaizen/RIE title:_____

3. Provide a brief description of the purpose of the project, and how it related to the business objective:

_____
_____
_____

4. Kaizen/RIE start and completion dates by month/year:_____

5. Provide a brief description of applicant's hands-on performance in completing the Kaizen/RIE.
Please include specific examples of tools used, e.g., value stream maps, metrics (DPU, DPMO, RTY), charts, etc.

_____
_____
_____

6. Provide a brief statement on the benefits achieved by the successful completion of the project, including but not limited to financial savings, labor, material costs, cycle-time reduction, etc.

_____
_____
_____

7. Name(s) of Green Belts "mentored" during this project:

_____

8. Verification of completion by project champion/sponsor:

Verification form completed by: _____
(project champion/sponsor signature) *(date signed)*

Champion/sponsor name:_____

Job Title:_____

Company name:_____

Address: _____

Project champion/sponsor e-mail address_____

Project champion/sponsor telephone_____ Fax number:_____

Innovative & Comprehensive

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