# Lean Six Sigma Green Belt Certification Standard

Developed by the Center for Operational Excellence at The Ohio State University

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**Type:** Lean Six Sigma Black Belt
**Version:** 2.0
**Date:** May 18, 2017
**Outline:**



## 1) Purpose

This certification standard was developed to provide a common, robust, objective, and accessible operational definition for "what is a Lean Six Sigma Green Belt." Certification providers can now evaluate Green Belt capability in reference to a rigorous third party standard that reflects the most common scope of industry expectations. This standard has been developed by the Center for Operational Excellence (COE) at The Ohio State University as a service to its member companies and the wider Lean Six Sigma profession. The Center for Operational Excellence does not provide certifications, only a published standard, so there are no conflicts of interest. This standard is made available for public use with the goal of bringing greater uniformity and value to the certification process.

The purpose of a Lean Six Sigma Green Belt certification standard is to provide a more reliable process to measure the capability of the Green Belt - the ability of the Green Belt to effectively lead process improvement efforts. Certification is essentially a predictive exercise - a determination of the likelihood of future success based on an assessment of historical performance. Accordingly, the standard and assessment process must accurately reflect the way in which Lean Six Sigma Green Belt work is actually undertaken within an organizational setting.

**2) Standard-setting Process**

The standard was created with input from a variety of industry sources, including:

- Certification Survey results published by iSixSigma magazine in the May/June issue of 2008
- COE member companies engaged in Lean Six Sigma deployments
- Fisher College of Business faculty
- Fisher Collegel of Business affiliates, including MoreSteam and MoreSteam client base
- COE Certification Standards Advisory Board, comprised of Lean Six Sigma Deployment Leaders

**3) Components of the Standard**

The standard is composed of two basic elements: a **Body of Knowledge**, and a **Body of Experience**. Taken together, these components predict the Green Belt's **Body of Capability** - the things a Green Belt can DO.

**A) Body of Knowledge -** This standard references a Body of Knowledge created by the Lean Six Sigma Working Group of the Center for Operational Excellence to reflect the common expectations of a wide range of Lean Six Sigma companies. Published Body of Knowledge standards offered by The American Society for Quality (ASQ) was reviewed. In comparison, the COE Body of Knowledge includes a stronger focus on Lean tools, reduced emphasis on advanced statistical analysis, and requires different levels of mastery for given subject areas.

**B) Body of Experience -** Lean Six Sigma is not a theoretical exercise - it's about implementing actual process improvements that matter. Accordingly, the Common Standard includes a Body of Experience requirement, which is expressed as four criteria:

- **Number of projects** - The Green Belt must individually and independently execute at least one successful improvement project, which must satisfy the additional requirements set forth below.
- **Leadership role** - The Green Belt must serve as Team Leader for the required project, and must be an active and involved participant in the analytical work of the project. In other words, the difficult analytical/statistical work cannot be delegated or "outsourced".
- **Results** - The required project must produce meaningful results that "matter" to the organization.
    - **Economic targets** - Generally, a Green Belt project should produce economic benefits of $25,000 or greater when executed within a commercial setting in a for-profit business.
    - **Non-economic projects** - Projects executed within other organizations with different primary performance metrics may also be acceptable, but must register substantial improvement in those metrics. Examples or alternate metrics would include patient safety in a hospital, employee safety in an industrial concern, or deployment readiness in the armed forces. The term "substantial" means at least a 15% improvement. In other words, a clear and defendable (with data and facts) positive shift in process capability and business outcomes (some dimension of the balanced scorecard) must be established and proven.
- **Evidence of Mastery** - Projects vary greatly in nature and complexity, and a Green Belt should seek to achieve improvement using the simplest tools available so as to achieve required

improvement for the organization in the shortest possible time. Rigor and relevance should be balanced. During certification, however, candidates are required to demonstrate awareness and some degree of competency against a broad set of 'tools and methods' for each step of the DMAIC methodology. Using a tool that is not required to answer critical project questions is a waste of resources. However, for certification purposes it is necessary to assess mastery of the Body of Knowledge through application. Accordingly, the Green Belt must directly demonstrate mastery of the Body of Knowledge by employing the tools set forth in Exhibit A within the required project work. In short, what this often means is that certain tools are applied to satisfy requirements of certification that may prove to be less productive to solving the focal problem. This natural tension between certification requirements and what is minimally required to solve the focal problem is unavoidable and the certifying Master Black Belt must manage this.

4) **Assessment Guidelines** - Certification against the Common Standard must be an objective assessment performed in a consistent fashion by qualified personnel. The term "Qualified Personnel" means Lean Six Sigma Master Green Belts certified through a rigorous and recognized process, with five or more years of experience within the profession. Assessment should consist of the following five elements:

A) **Knowledge Test** - The Green Belt should successfully complete a comprehensive test of the complete body of knowledge, consisting of 60 or more questions. The term "successfully" means a minimum score of 80% correct.

B) **Project Reviews** - Completed project work should be reviewed for Evidence of Mastery, as set forth above. The project write-up should include the analytical work, commentary outlining critical thinking and the answers to critical questions by phase (DMAIC), as well as data providing evidence of results attained. If the project does not provide the opportunity to demonstrate mastery of a required improvement tool, then evidence from an additional project can be used to show application and mastery of the required tool. **Note: In all cases, submitted projects must represent real project work conducted within a real organization. Simulated projects or case studies are not acceptable for certification purposes.** All submitted project work must have been completed within the prior 2 years.

C) **Interview** - An oral interview should be conducted by the Master Black Belt to validate understanding of the project work submitted.

D) **Verification of Project Results** - Project submissions should be accompanied by an affidavit signed by the Green Belt candidate's supervisor. The affidavit should:

- Verify that the Green Belt candidate was indeed the project Team Leader,
- Comment on the Green Belt candidates performance as Team Leader,
- Validate that the claimed results were actually realized, and were deemed to be significant

E) **Recertification** - Lean Six Sigma skills must be practiced in order to maintain mastery. Therefore, certification should have a limited lifespan of no longer than five years, requiring re-assessment after that time period in order to maintain certification.

**References:**


- iSixSigma Certification Survey: iSixSigma Magazine,May/June 2008, Page 33
- ASQ Six Sigma Green Belt Body of Knowledge http://www.asq.org/certification/six-sigma/bok.html
- Fisher College of Business, Center for Operational Excellence Member Companies: http://fisher.osu.edu/centers/coe/member-companies/

# Exhibit A - Green Belt

| DMAIC Process Step | Requirement |
|---|---|
| **Project Results** | Summary statement of project results tying ending metric performance |
| **Prioritize and Define** | Project Charter (Mandatory)<br>Thought Process Map (Mandatory)<br>S-I-P-O-C Process Flow Chart (Mandatory)<br>Pareto Chart (Mandatory)<br>Voice of the Customer Source (Mandatory)<br>CTQC Tree Diagram (Mandatory)<br>CTQC's Identified with Operational Definition (Mandatory)<br>Gantt Chart (Mandatory) |
| **Measure** | Measurement System Analysis (Mandatory)<br>Trend Chart (Mandatory)<br>Defect Opportunities Defined (Mandatory)<br>DPMO Baseline and Sigma Level (Mandatory)<br>Histogram (Mandatory)<br>Statistical Process Control (Mandatory)<br>Capability Analysis (Mandatory) |
| **Analyze** | Any THREE of the following tools:<br>Cause & Effect Diagram<br>5-Why, 1-How Analysis<br>FMEA - Failure Mode and Effects Analysis<br>Regression & Correlation Analysis<br>Hypothesis Testing (Mandatory) |
| **Improve** | Any THREE of the following tools:<br>Brainstorming<br>System Dynamics<br>Solution Selection Matrix<br>Corrective Action Matrix<br>Piloting Changes<br>Any One of the following tools:<br>Error-Proofing<br>Set-Up Reduction<br>Work Cell Implementation<br>Inventory Pull System Implementation |
| **Control** | Control Plan (Mandatory)<br>Control Chart(s) showing both BEFORE and AFTER data (Mandatory)<br>Any THREE of the following tools:<br>Revised Work Instructions (Standardized Work)<br>5-S<br>Total Productive Maintenance<br>Best Practices - Improvement Integration<br>Project Handoff (Mandatory) |