



CERTIFICATION SYLLABUS

Certified Lean Six Sigma Black Belt

Exam Code: CLBB™



A complete preparation guide covering exam objectives, core competencies, domain weightage, and topics to prepare.

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Objective of the Certification

- **Lead full-scale DMAIC projects independently** — manage complex, cross-functional, and enterprise-wide process improvement initiatives from start to finish, often as a full-time role.
- **Master advanced statistical analysis** — apply advanced tools such as multiple regression, multivariate analysis, non-parametric tests, reliability analysis, and advanced Design of Experiments (DOE), including fractional factorial and response surface methodology.
- **Drive Design for Six Sigma (DFSS)** — apply Six Sigma principles proactively in the design of new processes, products, or services, not just the improvement of existing ones.
- **Mentor and coach Green Belts and Yellow Belts** — provide technical guidance, review project methodology, and validate statistical rigor across the organization's improvement portfolio.
- **Align projects with business strategy** — translate high-level organizational goals into a portfolio of Six Sigma projects, working closely with Champions and executive sponsors.
- **Lead organizational change management** — manage the people side of large-scale process change, including resistance management and cross-departmental stakeholder alignment.
- **Own financial and business impact reporting** — quantify, validate, and report the ROI and strategic value of improvement projects at a leadership level.
- **Build deployment capability** — help design and scale an organization's broader Six Sigma program, including training curricula and belt certification pipelines.

Core Competencies — CLBB™ (Lean Six Sigma Black Belt)

CLBB™ Core Competency Wheel



1. Enterprise Project Leadership

- Independently lead complex, cross-functional, and enterprise-wide DMAIC projects, often as a full-time responsibility.
- Manage multiple concurrent improvement projects and portfolios aligned to strategic business goals.
- Partner with Champions and executive sponsors to select, scope, and prioritize high-impact initiatives.

2. Advanced Statistical Analysis

- Apply advanced hypothesis testing, multiple regression, and multivariate analysis to complex data sets.
- Design and execute advanced DOE techniques, including fractional factorial designs and response surface methodology (RSM).
- Perform non-parametric analysis and reliability/survival analysis where standard assumptions don't hold.
- Interpret and validate complex statistical models to support high-stakes business decisions.

3. Design for Six Sigma (DFSS)

- Apply Six Sigma principles proactively during the design of new products, services, or processes — not only in improving existing ones.
- Use tools such as QFD (Quality Function Deployment), robust design, and tolerance design to build quality in from the start.

4. Mentorship & Technical Coaching

- Mentor and coach Green Belts and Yellow Belts on tool selection, statistical rigor, and DMAIC execution.
- Review and validate the technical quality of improvement projects across the organization.
- Build internal Six Sigma capability by training others and standardizing methodology.

5. Organizational Change Leadership

- Lead large-scale change management efforts, including resistance management and stakeholder alignment across departments.
- Influence and negotiate with leadership to secure resources and sustain improvement culture.
- Navigate organizational politics and competing priorities to keep enterprise initiatives on track.

6. Business Impact & Strategic Alignment

- Quantify, validate, and report financial and operational ROI of projects at a leadership level.
- Translate high-level business strategy into an actionable portfolio of Six Sigma projects.
- Contribute to broader Six Sigma deployment strategy, training curricula, and certification pipelines.

7. Advanced Process Control & Sustainment

- Design robust, enterprise-scale control systems and control plans that sustain gains across multiple sites or departments.
- Apply advanced SPC techniques for complex, multi-variable, or non-normal processes.

Who Should Take This Certification

- Experienced process improvement professionals ready to lead complex, enterprise-wide DMAIC projects independently.
- Green Belts seeking to advance into full-time process improvement leadership roles.
- Senior Quality Managers, Operations Directors, and Continuous Improvement Leaders driving organization-wide initiatives.
- Project Managers and Program Managers who need advanced statistical and change-management capabilities for large-scale transformations.
- Consultants specializing in operational excellence, business process reengineering, or organizational transformation.
- Professionals responsible for mentoring Green Belts and Yellow Belts and building internal Six Sigma capability.
- Individuals aspiring to progress toward Master Black Belt certification.

Prerequisite: Lean Six Sigma Green Belt certification (Mandatory)

Exam Information

Exam Name	Lean Six Sigma Black Belt
Exam Code	CLBB™
Exam Format	Multiple Choice Questions (MCQ) & Scenario Based
Duration	240 minutes
Number of Questions	150
Passing Score	70%
Mode of Exam	Test Center Based Testing / Online Testing
Language	English
Validity	Lifetime
Open Book	No

Examination Domain & Weightage

Domain	Core Competencies Tested	Weightage
Organizational-Wide Planning & Deployment	Six Sigma deployment strategy, project portfolio alignment, Champion/sponsor collaboration, COPQ at enterprise scale	8%
Define Phase	Advanced project chartering, multi-stakeholder VOC synthesis, enterprise-level SIPOC, project portfolio prioritization	12%
Measure Phase	Advanced MSA, complex sampling strategies, non-normal data handling, process capability across multi-site data	18%
Analyze Phase	Multiple regression, multivariate analysis, non-parametric tests, reliability/survival analysis, advanced hypothesis testing	22%
Improve Phase	Advanced DOE (fractional factorial, response surface methodology), robust design, large-scale solution deployment	20%
Control Phase	Enterprise-scale SPC, multi-variable/non-normal process control, control system design across sites	12%
Design for Six Sigma (DFSS) & Advanced Topics	QFD, robust design, tolerance design, change management, mentoring/coaching methodology	8%
Total		100%

Topics to Prepare

The topics below represent the core areas candidates should focus on for each domain, reflecting the enterprise-level depth expected at the Black Belt level.

1. Organizational-Wide Planning & Deployment

- **Six Sigma Deployment Strategy:** Enterprise-wide rollout planning, deployment models, and aligning Six Sigma with organizational strategy.
- **Project Portfolio Management:** Selecting, prioritizing, and sequencing multiple improvement projects across business units.
- **Champion & Sponsor Collaboration:** Roles and responsibilities of Champions/Sponsors, and how Black Belts partner with leadership to secure resources.
- **Enterprise COPQ:** Calculating and communicating the Cost of Poor Quality at an organizational (not just project) level.

2. Define Phase

- **Advanced Project Chartering:** Scoping large, cross-functional, or multi-site projects with complex stakeholder landscapes.
- **Multi-Stakeholder VOC Synthesis:** Reconciling conflicting Voice of Customer inputs across departments, regions, or customer segments.
- **Enterprise-Level SIPOC:** Mapping processes that span multiple functions, systems, or locations.
- **Portfolio Prioritization Tools:** Advanced project selection matrices weighing strategic value, risk, and resource constraints.

3. Measure Phase

- **Advanced MSA:** Gage R&R for complex or destructive testing scenarios, and measurement system analysis across multiple sites.
- **Complex Sampling Strategies:** Stratified, cluster, and multi-stage sampling for large or distributed data sets.
- **Non-Normal Data Handling:** Recognizing non-normal distributions and selecting appropriate transformation or analysis methods.
- **Multi-Site Process Capability:** Calculating and comparing Cp/Cpk/Pp/Ppk and sigma levels across multiple locations or production lines.

4. Analyze Phase

- **Multiple Regression:** Building and interpreting models with multiple independent variables.

- **Multivariate Analysis:** Analyzing relationships among several variables simultaneously (e.g., MANOVA, principal component analysis at a conceptual level).
- **Non-Parametric Tests:** Selecting and applying tests (e.g., Mann-Whitney, Kruskal-Wallis) when normality assumptions fail.
- **Reliability & Survival Analysis:** Assessing product/process life data, failure rates, and time-to-failure analysis.
- **Advanced Hypothesis Testing Judgment:** Choosing the correct test for ambiguous, real-world data scenarios.

5. Improve Phase

- **Advanced DOE:** Fractional factorial designs, response surface methodology (RSM), and optimizing multiple responses simultaneously.
- **Robust Design:** Designing solutions that perform consistently despite variation in uncontrollable factors (Taguchi-style thinking).
- **Large-Scale Solution Deployment:** Piloting and rolling out improvements across multiple sites, shifts, or business units.
- **Advanced Risk Assessment:** Applying FMEA and risk-based thinking at a systems or enterprise level.

6. Control Phase

- **Enterprise-Scale SPC:** Designing control systems that work consistently across multiple sites, machines, or product lines.
- **Multi-Variable/Non-Normal Process Control:** Selecting appropriate control charts when standard assumptions don't apply.
- **Control System Design:** Building sustainable, scalable control plans with clear ownership across a larger organization.

7. Design for Six Sigma (DFSS) & Advanced Topics

- **Quality Function Deployment (QFD):** Translating customer requirements into design specifications (House of Quality).
- **Robust & Tolerance Design:** Building quality into new products/processes from the design stage rather than fixing defects later.
- **Change Management at Scale:** Leading large-scale organizational change, managing resistance, and sustaining culture shifts.
- **Mentoring & Coaching Methodology:** Structuring how Black Belts review, guide, and validate Green Belt and Yellow Belt project work.