



LEAN SIX SIGMA BLACK BELT CERTIFICATION SYLLABUS

Program Code: LSS-BB / DTC-01

Program Code: LSS-BB

Duration: 80–120 hours (10–12 days intensive or 8–10 weeks blended)

Format: Online / On-site / Blended

Target Audience: Managers, Process Owners, Engineers, and Senior Professionals leading strategic improvement initiatives.

Prerequisites: Lean Six Sigma Green Belt Certification or equivalent experience.

1. Strategic Role of the Black Belt in Organizational Transformation

Lean Six Sigma Black Belts play a critical role as transformation leaders, driving data-based decision-making, mentoring improvement teams, and ensuring measurable business impact. They act as strategic change agents, aligning operational excellence initiatives with the organization's vision and performance goals. Black Belts combine technical mastery with leadership skills to deliver sustainable improvements and cultural transformation across all business units.

2. Program Objectives

At the end of the Black Belt program, participants will be able to:

- Lead complex Lean Six Sigma projects with cross-functional teams.
- Apply advanced analytical and statistical tools to drive improvement.
- Manage and mentor Green Belt and Yellow Belt teams.
- Quantify financial and strategic impact of process improvements.
- Facilitate organizational change and communicate results effectively.

3. Learning Outcomes

Participants will be able to:

- Master the DMAIC and DFSS (Design for Six Sigma) methodologies.
- Execute advanced statistical analyses for data-driven problem solving.



LEAN SIX SIGMA BLACK BELT CERTIFICATION SYLLABUS

Program Code: LSS-BB / DTC-01

- Apply leadership and change management techniques to guide teams.
- Integrate Lean tools for waste reduction and process optimization.
- Deliver measurable performance improvement aligned with business objectives.

4. Course Structure (Modules Overview)

Module	Content	Tools / Techniques
Module 1 – Advanced Lean Six Sigma Principles	Comprehensive review of Lean Six Sigma concepts, strategic alignment, and deployment planning.	SIPOC, Strategy Mapping, Hoshin Kanri
Module 2 – Define Phase (Strategic Scoping)	Project selection aligned with business goals; stakeholder analysis and charter validation.	VOC, CTQ Tree, Project Charter, Stakeholder Matrix
Module 3 – Measure Phase (Data & Metrics)	Measurement system analysis, process capability, and advanced data collection planning.	MSA, Gage R&R, Cp/Cpk, Sigma Level Calculation
Module 4 – Analyze Phase (Statistical Mastery)	Data analysis, hypothesis testing, regression, ANOVA, and correlation studies.	Minitab, ANOVA, Regression, Hypothesis Testing
Module 5 – Improve Phase (Optimization)	Experiment design and optimization for process improvement.	DOE, Factorial Design, Poka-Yoke, Kaizen Blitz
Module 6 – Control Phase (Sustainability)	Implementation of process control systems and monitoring plans.	SPC, Control Charts, SOPs, Process Audits
Module 7 – Lean Integration & Value Stream Optimization	Advanced Lean practices integrated with Six Sigma frameworks for value flow improvement.	VSM, SMED, Kanban, Jidoka, TPM



LEAN SIX SIGMA BLACK BELT CERTIFICATION SYLLABUS

Program Code: LSS-BB / DTC-01

Module 8 – Leadership & Change Management for Black Belts	Managing team dynamics, leading change, and influencing stakeholders at all levels.	Kotter's Model, DISC, Coaching Tools, RACI
Module 9 – Risk and Cost Management	Assessment of project risks, financial impact, and cost-benefit analysis.	FMEA, ROI Analysis, Risk Matrix
Module 10 – DFSS (Design for Six Sigma)	Applying Six Sigma principles in new product or process design.	DMADV, QFD, Robust Design, Simulation Tools
Module 11 – Project Presentation and Communication Skills	Preparing and delivering professional project presentations to management boards.	A3 Reports, Storyboards, Presentation Templates
Module 12 – DMAIC Project Implementation (Practical Module)	Execution of two real-world projects (one DMAIC, one strategic). Includes mentoring, reporting, and defense.	DMAIC Templates, A3 Project Report, Financial Impact Dashboard

5. Teaching Methodology

- Blended learning with workshops, simulations, and project coaching.
- Instructor-led sessions on advanced statistical tools and Lean applications.
- Real case studies and cross-industry projects.
- Continuous mentoring and feedback from Master Black Belt instructors.
- Emphasis on leadership, analytical thinking, and communication.

6. Testing & Certification Requirements

Certification is granted upon successful completion of the following requirements:

1. Written Examination – 100 multiple-choice and case-based questions (2 hours) with a passing score of 80%.
2. Project Work – Completion of two DMAIC or DFSS projects demonstrating strategic impact.



LEAN SIX SIGMA BLACK BELT CERTIFICATION SYLLABUS

Program Code: LSS-BB / DTC-01

3. Oral Defense – 30-minute project presentation before a panel of Master Black Belts and industry experts.

7. Instructor Qualifications

All instructors are Certified Master Black Belts with:

- 10–15 years of experience in Lean Six Sigma deployment.
- Proven record in strategic improvement projects across industries.
- Recognized certification under ISO 17024 and ISO 18404 frameworks.

8. Reference Materials

- ISO 13053-1/2: Quantitative Methods in Process Improvement
- ISO 18404: Competencies for Key Personnel and Their Organizations in Relation to Six Sigma and Lean Implementation
- The Lean Six Sigma Black Belt Handbook – ASQ
- Lean Six Sigma Deployment Guide – DTC Edition
- Deming Continuous Improvement Manual – DTC Edition

9. Project Evaluation Rubric

Evaluation Criteria	Description	Weight (%)
Strategic Relevance	Alignment of project with organizational goals and strategy.	15
Analytical Depth	Use of advanced statistical tools and methodology accuracy.	25
Leadership & Team Management	Ability to lead, influence, and engage cross-functional teams.	15



LEAN SIX SIGMA BLACK BELT CERTIFICATION SYLLABUS

Program Code: LSS-BB / DTC-01

Financial & Operational Impact	Demonstrated ROI, cost reduction, or performance improvement.	20
Control & Sustainability	Quality of control mechanisms and sustainability of results.	10
Presentation & Professionalism	Quality, clarity, and professionalism of final defense presentation.	15

10. Certification Award

Upon successful completion of the course, examination, and dual-project requirement, participants receive:

Certificate of Achievement – Lean Six Sigma Black Belt

Issued by Deming Training Center, aligned with international Lean Six Sigma standards.