



## Lean Six Sigma Black Belt

Level 3

Take the step towards a successful change journey where Lean implementation and Six Sigma specialization merge.

**LEAN  
AKADEMIET**

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# Lean Six Sigma Black Belt

## **Become the competent Lean Six Sigma process specialist who works across the organization**

This programme is designed for professionals who seek full specialization in both Lean and Six Sigma. We believe that truly high-performing Lean organizations strengthen their foundation with Six Sigma's structured and data-driven approach.

The programme integrates three complete Lean and Six Sigma belt certifications into one structured pathway, equipping you to lead end-to-end Lean Six Sigma implementation at an organizational level.

Whether your ambition is to drive Lean leadership and cultural transformation or to lead complex, cross-functional Six Sigma projects grounded in data and statistical analysis, this programme provides the competencies required to deliver measurable results and impact.

### **From awareness to expertise**

In this programme, you will first be guided through the fundamental Lean principles and tools. Key focus areas include Value Stream Mapping, daily performance board meetings (Kaizen boards), and the practical transition from Lean theory to operational practice.

Project management is an integral part of the programme, where participants are trained in Lean methodology through the development and execution of their own improvement project. We also explore change management and the importance of leadership tools in driving successful organizational change.

To strengthen Lean with a data-driven approach, Six Sigma is fully integrated into the programme. This provides you with a solid understanding of process performance and variation as the foundation for delivering results that meet customer requirements.

The programme is highly practice-oriented. You will work hands-on with tools and applied exercises, enabling you to implement your new competencies immediately. Throughout the programme, you will work intensively with Six Sigma statistics, hypothesis testing, regression analysis, Statistical Process Control (SPC), and Control Plans, applying these tools directly in your own projects to achieve measurable results.

## **Cross-functional improvement initiatives**

In the final phase of the programme the focus shifts to shaping competent Lean Six Sigma specialists who can create momentum and implement improvements across the organization. This includes Policy Deployment (Hoshin Kanri), where you develop the capability to establish a goal hierarchy within your organization and initiate measurable improvements aligned with strategic objectives.

Emphasis is also placed on strengthening the improvement culture through Toyota Kata, where you learn to coach employees in a scientific and structured manner - elevating the quality of improvement work to a higher level. Visual management and board structures form a central element, building the capability to align initiatives at multiple levels so that all activities contribute toward one shared direction. At the same time, we address the development of a Leadership System that ensures sustained focus and follow-through.

The overall objective is to elevate you to a higher strategic level, enabling you to apply your specialized expertise effectively within the organization. This is complemented by advanced Six Sigma tools found only in the specialist's toolbox, including full DMAIC mastery, Quality Function Deployment (QFD), and Design of Experiments (DOE). As a result, you will not only be capable of addressing waste and variation control, but also of serving as a trusted internal expert - someone others turn to for theoretical guidance and methodological direction.

## **Is this programme right for you?**

The Lean Six Sigma Black Belt programme is tailored for professionals who want to develop their capabilities from foundational knowledge to true expertise in process improvement and data-driven analysis. Whether you are passionate about leading improvement projects, aspire to become a Six Sigma specialist, or aim to bridge Lean principles with data-driven analysis, this programme is designed for you.

# Content of the education

This programme develops you into a specialist in Lean and Six Sigma. You will be able to lead successful Lean Six Sigma implementation, create momentum and foster ownership within improvement initiatives. At the same time, you will know how to support your work with data, becoming a trusted advisor that others turn to for guidance and professional sparring.

This programme package includes the following modules: Lean Yellow Belt, Six Sigma Yellow Belt, Lean Green Belt, Six Sigma Green Belt, Lean Black Belt and Six Sigma Black Belt. Together, these modules constitute the Lean Six Sigma Black Belt programme - 20 training days plus a final examination date, which will be scheduled during the programme.

## Lean Yellow Belt

### Introduction to Lean

- Familiarity with the history behind Lean, and an understanding of the 5 Lean principles, which are the essential when working with Lean. The Lean principles are thoroughly introduced through exercises and cases.
- Review of the 8 types of waste and the potential to eliminate waste in different work processes
- Introduction and overview of selected Lean tools and techniques, among others: 5S, VSA, Poka Yoke, Standard Work, Kanban, Kaizen board meeting.
- Focus on the customer and the customer's expectations, as well as target management.
- Challenges in connection with the implementation of Lean, and the importance of being able to visualize and structure the Lean improvement work.

### Practical exercises and cases

- Small exercises in relation to the different Lean tools, which will give you an insight to why these tools can be relevant for your work, as well as how they can be introduced in your organization.
- Case work where you learn to work with a Value Stream Mapping (VSM), including mapping the AS-IS, with a focus on the customer (the golden triangle), waste and prioritization of solutions
- After this you will be working on the TO-BE and including the Lean design principles.
- Interactive performance board meetings where you will actively participate.

## Certificate of education

Upon completion of the training, you will receive a training certificate as proof of your participation



## Lean Green Belt

### Lean Introduction to Lean Pilot

- Introduction to working with Lean as a Pilot Project. Including the selection and delimitation of projects in your organization. You are introduced to communication tools (PER), which give attention to the project - and work with the Burning Platform and Vision.
- Goal management - the understanding of how you set SMART goals and why it is important for your Lean work that the goals are 'smart'.
- Introduction to Stakeholder Analysis and the understanding of how important it is to know the people who is involved and how you communicate and handle their role in the project.
- Basic understanding of Value Stream Mapping (VSM) as a method and how you are to use it for your own project work.
- VSM - AS-IS mapping of own processes with

a focus on waste hunting, data collection and improvement potential.

- VSM – TO-BE mapping of future processes. The focus is on the selection of relevant Lean tools and the use of the Lean design principles.
- Introduction and understanding of various tools that can be used for Problem Analysis. Including A3 - Problem Analysis, Fishbone analysis, Pareto etc.
- Gap analysis and prioritization of smaller activities and projects, which must lead the Lean project from AS-IS to the TO-BE. Here you will be introduced to and work with the implementation plan.
- The reinforcement of Lean and focus on Kaizen - Continuous improvements. An in-depth introduction to the performance board meeting and different types of performance boards.
- Understanding how important change management is in your Lean work. You will be introduced to different management methods, among others: ADKAR, behavioral profiles, the composition of the 'good team' and situational management.

#### Project work and exercises

- During the module, you are working with small practical exercises that help make the theories and methods relatable to your own worklife. Including goal management exercises and communication exercises in the form of an elevator speech (PER).
- You will already start working on your own Lean project from the first day of classes. We provide brown paper, post-its etc. for mapping your project, and we are ready to guide, coach and help you throughout the course. You must bring the project on all the course days as you will continue working on the project during the course as we bring more tools into play.
- You can expect homework on the project. This may involve, among other things, data collection and/or workshops for your colleagues.

## Examination

Examination: 30 minute project presentation based on your Lean case project, which you will be working on during the training.



## Lean Black Belt

### Performance management

- The first Lean Black Belt module strengthens your understanding of how strategic alignment and performance management are applied in a Lean organization.
- Through Hoshin Kanri (Policy Deployment), you are introduced to a structured approach that ensures the organization's strategy is anchored at all levels - from executive management to the shop floor.
- We focus on creating alignment between strategic objectives and daily operations through a structured cascading process. You will also gain insight into the process landscape, providing a clear overview of core and support processes and establishing a shared foundation for cross-functional collaboration.
- Hoshin Kanri and the process landscape are integrated into a performance management system where target setting and follow-up are central elements.
- You will learn how such systems support strategy execution, continuous improvement and create organizational transparency.

### Systematic problem solving

- This module focuses on problem solving in

response to deviations within a Lean performance management system. The emphasis is on systematically identifying, analyzing and addressing deviations effectively - a critical capability in Lean organizations.

- Lean performance management creates transparency in performance, supports continuous improvement and ensures that the organization achieves its strategic objectives. Deviations inevitably occur, and it is essential to respond quickly and methodically to maintain flow, quality and customer focus.
- The module introduces various problem-solving methods such as Fishbone (Ishikawa), 5 Whys and A3 - adapted to the complexity of the problem. The entire process - from problem identification to solution implementation - is covered with a focus on structure, learning and lasting improvement.

#### Continuous improvement

- The module focuses on how organizations can build a structured approach to improvement work that both engages employees and supports strategic objectives with Kaizen, Kaizen Events and Toyota Kata as central concepts.
- The module emphasizes both the practical methods and the cultural foundation required to succeed with continuous improvement. It focuses on how leaders and employees together can build a culture of improvement where challenging the status quo and striving for better results - step by step - becomes a natural part of daily work.

#### Sustainment and anchoring

- The final module focuses on the role and behaviors of leaders in a Lean organization. It builds on the fundamental understanding that leadership in a Lean context is not solely about setting direction and following up on results, but to a great extent about actively supporting and developing the processes and people that create value for the customer.
- The first three modules are integrated, and we introduce the concept of 'Leader Standard Work'

as a structured approach to how leaders create stability, support improvements and ensure daily operations through visible and systematic behaviors.

- The module introduces practical Lean tools such as Standard Work, T-cards, Process Confirmation and Gemba, all of which support a more present, data-driven and development-oriented leadership practice.

#### Workshops, case work and assignments

- Throughout the module you will be introduced to short practical exercises, simulations and cases designed to enhance your understanding of how the theories and methods work in practice.
- These elements are designed to provide insight and inspiration for how you, as part of your individual assignments, translate theory into a project within your own organization. Your project results will be presented at an oral examination.

#### Examination

Oral examination, for which you prepare a comprehensive deployment plan for your own project. The project and deployment plan are developed throughout the Lean Green Belt and Lean Black Belt modules.



## Six Sigma Yellow Belt

### Introduction to Six Sigma

- Introduction to what Six Sigma is and an understanding of the background for Six Sigma as a data-based method for optimization and efficiency. In addition to this, you will be thoroughly introduced to the basic structure of Six Sigma.
- Presentation of Six Sigma project work and the different possible roles in working with Six Sigma - focusing on the DMAIC structure as an approach to Six Sigma Project work.
- Review of selected Six Sigma tools, among others: SIPOC, project charter, FMEA.
- Introduction to Six Sigma mathematics. You will gain an understanding of what it means to work with data and will be introduced to graphical analysis and how you can present your data graphically so that it is easy to understand for the recipients.
- Understanding what a Measurement System Analysis (MSA) is and why the MSA is an important element in working with Six Sigma and data.
- Through an introduction to capability and stability, you gain an understanding of how to measure whether one's processes meet given expectations or specifications.
- Finally, you are presented with how to work with control and create lasting changes. This is further elaborated on the Six Sigma Green Belt module, where you will get to work with it in practice.

### Practical exercises

- On the course you work with small exercises that give an understanding of how Six Sigma can be used in practice. Among other things, you work with COPQ (Cost of Poor Quality) based on a business case.
- You work in smaller teams on your business case, and you learn to make a SIPOC analysis. Through this, you get a deeper understanding of how SIPOC can be used in practice and as a high-level flowchart.
- During the course, you will also be introduced to Six Sigma XL software, and you will learn to use

this software to analyze various data.

### Examination

The programme ends with a multiple-choice test consisting of 35 questions.



## Six Sigma Green Belt

### Six Sigma in practice – Project manager

- The module begins with a recap. on the DMAIC structure as an approach to Six Sigma Project work from the Yellow Belt.
- Basic understanding of Six Sigma Statistics and how to work statistically in practice. Including understanding of data collection (sampling) and important elements of data collection.
- Hereafter, we dive into Hypothesis testing as a statistical method. You will be introduced to different types of hypothesis testing with a particular focus on hypothesis testing of normally distributed data. As well as what errors that can occur when working with hypothesis testing. You will be introduced to various statistical tools.
- Introduction to regression and regression analysis, which is included as an analysis element in Six Sigma's DMAIC structure and is one of the most important elements in the Six Sigma project. You will gain an understanding of why regression analysis is such an important tool and how it is used in practice - and on your project(s).
- Presentation of the tool: Statistical Process Control (SPC), as a statistical method to follow performance. You are presented with how it can be used in practice and how you transfer this knowledge to your own project work. In addition

to this, you will be introduced to the work with Six Sigma control plans, as a management and planning tool.

### Project work

- Right from the start of the Six Sigma Green Belt module, your project work begins. You work with a project, selected processes, flow etc. from your organization. So already before the start of the course, you should start thinking about a topic for your project.
- You will be working on the project during all course days. You must therefore bring a computer to all classes. You get access to Six Sigma XL software through Lean Akademiet, and we are ready to guide, coach and help you throughout the training. In addition to this, you will have online support on your project work.
- It must be expected that you will spend some extra time outside the course days for homework on the project. This may involve data collection and/or workshops for your colleagues, etc.

### Online support

As part of your Six Sigma Green Belt education, time is set aside for online support and coaching on your project.

### Examination

The Six Sigma Green Belt education concludes with an oral project defense. During the exam, the student must either digitally or physically present his project. 45 minutes are set aside for project review, and a grade is assigned according to the Danish grading scale. If you are several participants from the same company, it is possible for you to take exam together. There can be a maximum of 3 people per project.



## Six Sigma Black Belt

### Certified Six Sigma specialist

- The module begins with a brief recap of key elements from the Green Belt module that are essential for your continued work with Six Sigma.
- Further elaboration on hypothesis testing from the Green Belt module, this time with a particular focus on hypothesis testing for non-normally distributed data.
- You will continue working with regression and regression analysis, covering topics such as linear regression and multiple regression. You will gain an understanding of when the different regression methods can and should be applied and how they can strengthen your Six Sigma work - as well as your project work.
- Introduction to the specialist tools DFSS (Design for Six Sigma) and QFD (Quality Function Deployment), which are essential tools for process specialists working with process and product design.
- Developing an understanding of MVA (Multivariate Analysis) as an advanced analytical approach for examining multiple variables, measurements and their interrelationships.
- Developing a deeper understanding of Six Sigma statistics and reviewing statistical tools for data comparison and hypothesis testing, including One-Way ANOVA and Chi-Square tests (contingency tables).
- Introduction to data transformation techniques and methods for handling non-normally distributed data.
- In the Black Belt module, regression analysis from the Green Belt level is explored in greater depth, and logistic regression is introduced as an

advanced statistical method.

- Comprehensive introduction to working with design processes within the Six Sigma framework. This includes D-FMEA (Design Failure Mode and Effects Analysis) as a structured methodology for identifying potential risks in process or product design - and DOE (Design of Experiments) as a systematic approach to designing, conducting and analyzing structured experiments involving multiple factors.
- In addition, participants are introduced to simulation techniques. We cover Monte Carlo simulation as a statistical method that runs thousands of randomized “what-if” scenarios to estimate the probability of different outcomes, thereby strengthening analyses through a more robust data foundation.
- Finally, you will gain an understanding of the role a Six Sigma Black Belt should assume within the organization’s Six Sigma efforts - and how to effectively facilitate Six Sigma initiatives across the business. You will develop the capability to guide the selection of appropriate Six Sigma tools and to coach and mentor Six Sigma Yellow and Green Belts.

#### **Black Belt project work**

- During the Black Belt training days you will continue working on the project you initiated during your Six Sigma Green Belt module. You will further develop the project by applying the new tools introduced throughout the training.
- Time will be allocated during each training day to continue working on your project. Therefore, please remember to bring your laptop to all sessions.
- You should expect to invest additional time outside the training days to work on your project assignments. We are available to guide, coach and support you throughout the entire programme. In addition, time is allocated beyond the training days for online support related to your project work.

#### **Online support**

As part of your Six Sigma Black Belt programme dedicated time is allocated for online support to assist you with your project.

#### **Examination**

Your programme concludes with a final examination focusing on the Six Sigma elements covered in both the Green Belt and Black Belt modules. You are expected to incorporate relevant Lean tools and leadership considerations into your assessment.

The examination consists of an oral project defense. The examination date will be agreed upon during the programme.

During the exam participants must present their project either digitally or in person. A total of 45 minutes is allocated for the project presentation and discussion - and grading is based on the Danish 7-point grading scale.



## Core disciplines

- **Lean mindset** - the 5 Lean principles.
- **Lean toolbox** - tools and techniques.
- **Kaizen** - continuous improvements.
- **Change management** - managing resistance to change.
- **Lean culture** - cultural transformation.
- **Policy Deployment** - objectives across the organization.
- **Toyota Kata** - scientific approach to improvement.
- **Lean leadership** - a coaching-based leadership system.
- **Data-driven approach** - evidence-based decision making.
- **Measurement System Analysis (MSA)** - testing and validating data quality to ensure the reliability of your measurement system.
- **Process capability** - how to document the process's ability to consistently meet customer requirements.
- **Sig Sigma Statistics** - how (and why) we draw conclusions about the overall process based on a sample (subgroup) of data.
- **Hypothesis testing** - how we determine whether the differences observed in our data are random or statistically significant - and how we work with different types of data.
- **Control** - ensuring that the optimized process remains stable and in statistical control by applying Statistical Process Control (SPC) to monitor and visualize ongoing performance.
- **QFD (Quality Function Deployment)** - ensuring cross-functional alignment with a strong focus on customer requirements.
- **Statistical understanding** - developing a deep conceptual understanding of statistics without relying on statistical software.
- **DOE (Design of Experiments)** - the ability to design, conduct and analyze structured experiments involving multiple factors.
- **Monte Carlo Simulation** - a simulation technique used to model "what-if" scenarios and calculate the probability of different outcomes.

## Prerequisites

There are no prerequisites for participating in this programme. We guide you step by step through the Lean Six Sigma framework, equipping you with the competencies needed to work successfully with Lean Six Sigma across the entire organization - or within specific functions or departments.

## Learning outcomes

Upon completion of the programme you will be able to lead Lean Six Sigma deployment across the organization and ensure strategic alignment and coherence across improvement initiatives.

## Software

Lean Akademiet provides you with a full SigmaXL license, which will serve as the primary software tool throughout the programme. Please bring your own laptop with the full version of SigmaXL installed. The software license, along with relevant information and installation guidelines, will be provided in the programme onboarding materials.

## **Homework**

There is no preparation required prior to the start of the programme. Between training days, you should expect to review the course materials and complete short exercises. In addition, you will be required to work on your own project as preparation for the final examination.

## **Final examination**

The Lean Six Sigma Black Belt programme includes several examinations throughout the course, designed to demonstrate that you have understood the material and can translate theory into practice. The programme concludes with a comprehensive final examination in the form of an oral project defense. During the examination, participants must present their project either digitally or in person. A total of 45 minutes is allocated for the project presentation and discussion, and grading is based on the Danish 7-point grading scale.

The final examination date will be agreed upon during the programme.

## **Price**

[See the price here. Included is full catering and handed-out training material.](#)

## Practical information

### **We are doing everything to ensure that you'll get a good experience**

A perfect course is not only a result of good teaching. The physical environment surrounding that course should give you, as a student, the best conditions for learning new.

[We have collected all practical information here.](#)

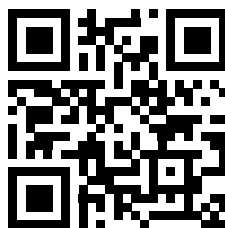
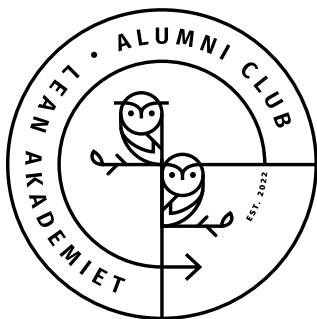
## LA Alumni Club

### Med et Green Belt certifikat får du mulighed for at deltage i fagligt inspirerende events

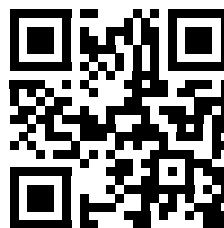
Lean Akademiets Alumni Club er vores lukkede netværksgruppe hvor tidligere kursister med bestået Green Belt eksamen inviteres til at deltage i fagligt inspirerende events.

#### Vi mødes to gange om året.

Samtidig med at vi mødes to gange årligt, så tilbyder vi ligeledes et rum for netværk, inspiration og sparring på vores lukkede LA Alumni Club gruppe på LinkedIn. Her er du velkommen til at dele spændende og relevant indhold.



LA Alumni Club



LinkedIn