



**LEAN  
SIX SIGMA**  
BELGIUM

**Training & Certification**

**Lean Six Sigma Green Belt**

## Training & Certification

# Lean Six Sigma Green Belt – 7 days

### Target Audience:

All sectors (industry and services)

- Project Managers / consultants (internal or external) in organization, quality, continuous improvement, or operational excellence
- Logistic Managers
- Supply Chain Managers
- Production Managers
- Operations Managers
- Quality Managers

### Training Objectives:

#### Lean Management module

- Understand the philosophy, tools and principles of Lean Management.
- Assess the production capacity, wastage of resources and delivery time of a production unit, a flow of activities or an organization.
- Draw up a process map based on field observations in order to describe and communicate the reality of operations.
- Analyze a process to locate and quantify bottlenecks, overcapacity, waste and malfunctions of all kinds.
- Make operations faster, more agile, efficient and reliable.
- Develop a performance management system based on field indicators and problem-tracking routines.
- Conduct a flow and/or organizational efficiency problem-solving workshop based on the “Kaizen Event” approach.

#### Six Sigma Yellow Belt module

- Analyze the results of a customer satisfaction and expectations survey to identify the quality criteria to be improved.
- Assess the extent and cost of a quality problem.
- Determine the main root causes of a simple quality problem.
- Carry out a comparative assessment of different potential solutions.
- Develop a process performance management system.
- Conduct a DMAIC project to resolve a simple (“discernible”) quality problem.

### **Six Sigma Green Belt module**

- Determine the key quality metric to enhance in the company's processes, based on an analysis of customer requirements.
- Define the operating parameters to be measured, how they are to be measured, and the sample of cases to be taken, to collect the data needed to carry out an analysis of non-quality factors.
- Approximately validate the reliability of the system for measuring the quality of the company's products or services, to be able to collect data that sufficiently reflects the reality of operations.
- Determine certain non-quality factors using statistical analysis with a view to achieve a first step of improvement.
- Develop a process performance management system based on statistical quality control.
- Conduct a DMAIC project to resolve a complex ("indistinguishable") quality problem

### **Program:**

#### **Days 1 and 2 - Lean Management module**

- History and positioning of Lean Management
- DMAIC and Kaizen Event method
- Process capability: cycle time and Takt time
- Work in progress, stock, lead time and Little's Law
- Value Stream Mapping (VSM)
- Load chart
- Analysis of added value and waste elimination
- Process Cycle Efficiency and Overall Process Efficiency
- First Pass Yield and Rolled Throughput Yield
- Theory of constraints and line balancing
- Continuous flow
- Pull flow and Kanban
- Visual Management, Poke-Yoke, 5S
- SMED
- Heijunka, dynamic capacity adjustment and standardization
- Maximum acceptable work-in-progress (WIPmax)
- Kata and Short Interval Control
- Toyota Way
- Complex flow analysis
- Failure Modes and Effects Analysis (FMEA)

## Days 3 and 4 –Six Sigma Yellow Belt module

- History and positioning of Lean Six Sigma
- Typology (LSSx.0) of DMAIC problems and projects
- **Define**
  - Project launch
  - SIPOC
  - The 3 Voices
  - Critical To Satisfaction
  - Kano model
  - Problem statement, objective statement and project opportunity statement
  - Project Charter V1
- MAIC method to solve simple (“discernable”) statistical problems
- **Measure**
  - Problem metric
  - Measurement plan
  - Measurement system validation, precision and accuracy (agreement analysis)
  - Defective rate
  - Project charter v2
- **Analyze**
  - Pareto analysis
  - Five Whys
  - Project charter v3
- **Improve**
  - Research and selection of the solution
  - Business Case
  - Implementation of the solution
  - Improvement validation
- **Control**
  - Process performance monitoring dashboard
  - Response plan

## Days 5, 6 and 7 – Six Sigma Green Belt module

- MAIC Method to solve complex (« indistinguishable ») statistical problems
- **Measure**
  - Basic statistics and data types
  - Project Y and defect definition
  - Measurement plan
  - Measurement system validation: R&R gauge, linearity and bias gauge
  - Sampling and data validation
  - Voice of Process analysis
  - Capability
  - Project charter v2
- **Analyze**
  - Analysis approach  $Y = f(X's)$
  - Ishikawa diagram
  - Introduction to inferential statistics (confidence interval concept)
  - Study of the influence on variation, central tendency, proportions and covariance analysis: contingency tables, graphical analysis (whisker boxes and scatter plots), correlation coefficient, analysis of confidence intervals
  - Project charter v3
- **Improve**
  - Statistical validation of the improvement
- **Control**
  - Statistical process control
  - I-EM, Xbarre-R, Xbarre-S, P and NP, U and C control charts
  - Response plan

## Pedagogy and Learning resources

- Inductive teaching
  - Experimentation of the Lean improvement method (Kaizen Event) through a role-play simulating a cross-functional company process.
  - Learning the DMAIC method by means of a company case study used as a common thread throughout the training.
  - Learning the 'indistinguishable' problem-solving method on a service level improvement case (paper flying machines) carried out in class by the participants.
  - Carrying out a design of experiments in class on a problem of optimizing the geometry of paper flying machines.
- Group of no more than 12 people facilitated in such a way as to encourage interactivity, the sharing of ideas and experience and the development of one's professional network.

- Use of JASP, Statocopex analysis softwares.
- Provision of statistical calculators and analysis models in Excel.
- Training material provided in PDF format.
- Self-assessment and practice test at the end of the course.

## Certification

Closed-book online examination with remote monitoring to be taken within 6 months after the course.

- Lean Management exam – MCQ - 25 questions – 50 minutes
- Six Sigma Green Belt exam – MCQ – 35 questions – 70 minutes

Passing criteria:  $\geq 60\%$

These exams validate the acquisition of basic knowledge in Lean Management and technical skills at the Six Sigma Green Belt level in accordance with the LSSx.0 knowledge body. The exams include a mix of recall questions (e.g. definitions), execution (e.g. calculations, tool selection), and application (e.g. drawing conclusions from results, making decisions in a given situation).