

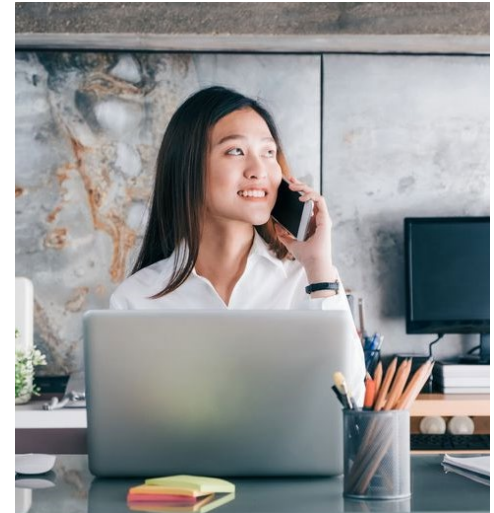
Lean Six Sigma Black Belt Training



What is a Black Belt

A Lean Six Sigma Black Belt is a trained improvement agent who demonstrates change management skills, project management skills, team leadership, and understands team dynamics.

Black Belts aim for *breakthrough improvements*.





What is a Black Belt

- Lead *complex* and *multifunctional* process improvement or process design projects
- Manage projects using a roadmap that encompasses change management
- Identify and optimize the key factors that are linked to the customers needs in a process or product
- Analyze data and information in order to *demonstrate* and *prove* the way forward
- Achieve successful breakthroughs in *environments where resistance is a challenge*





Typical role of a Black Belt

- Lead, as a team leader, complex cross functional projects
- Provide technical support and mentoring to Black Belts and Green Belts, including on the most recent tools
- Act as an internal consultant and a Lean Six Sigma expert
- Participate to the governance
- Establish procedures, best practices





Overall content

- Change management tools
- Team decision making tools
- Analysis tools
- Statistical tools
- Project management
- Artificial Intelligence tools



Recognize

Module I



1. Selecting the right projects to improve
2. Strategic planning / Hoshin Kanri
3. Multi generation project plans
4. Value Stream Mapping





Define Module I



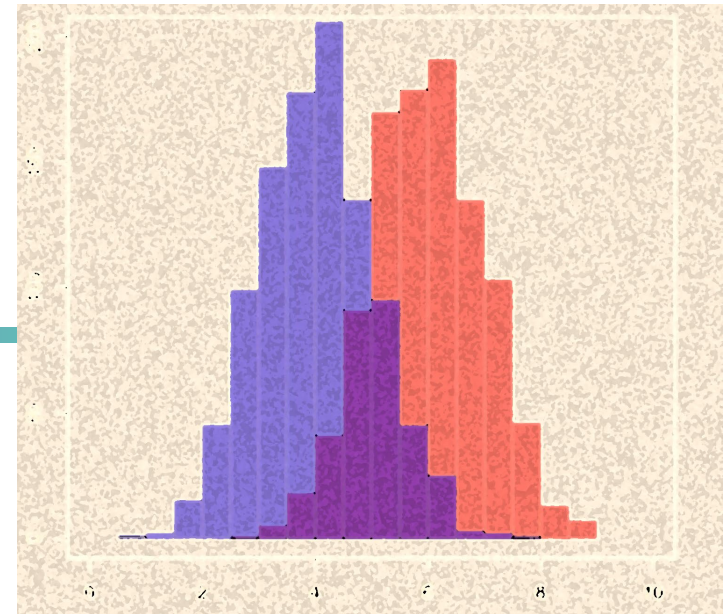
1. Defining the project
2. Teamwork and team building
3. Overview of process management
4. Project management tools and principles
5. Change management tools

Measure

Module II



1. Voice of the customer and survey techniques
2. Artificial Intelligence / Machine Learning: applications and overall process
3. Mapping the process
4. Sample size calculation
5. Measurement system analysis (Gauge R&R, continuous, attribute)
6. Advanced Process capability for normal and non normal data
7. The Leader and the Team



Analyze phase

Module III



1. Graphical Analysis
2. Hypothesis testing, ANOVA
3. Correlation and regression
4. Selection of the factors to improve
5. AI/Machine Learning
 1. Supervised (KNN, CART)
 2. Unsupervised (K Means, PCA)
6. Change Management and Communication
7. Conflict Management

Improve Phase

Module IV



1. Process design methodology including the Pugh matrix
2. Scenario evaluations and selection, creativity
3. Pilot and implementation plan
4. Design of experiment (full, fractional)
5. Setup reduction
6. Pull: Kanban
7. Workshops guidelines and facilitation
8. AI/Machine Learning – Understanding available technologies
 1. Neural networks and deep learning notions
 2. Reinforcement learning
9. Coaching and Influence

Control phase

Module IV



1. Setting a control plan (recap)
2. Evaluation of the gains
3. Control charts, SPC (recap only)





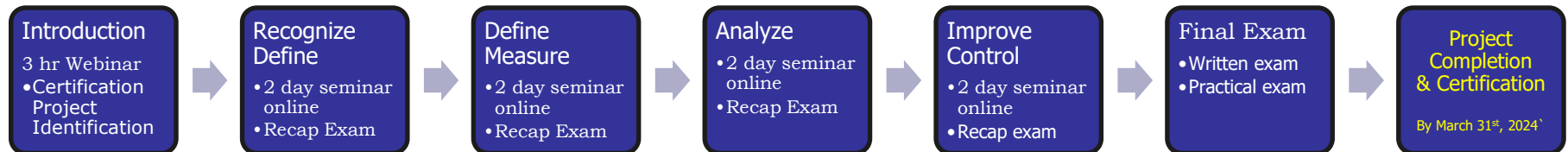
Exams Module V

1. Written exam
2. Practical exam





Certification and training



Coaching and work on the project
Group coaching and working session can also be scheduled



Black Belt Certification Requirements

- Accomplishments
 - Complete 1 project from definition to implementation, including controls
 - Pass interim exams
 - Pass final exam

Once a Belt, Always a Belt



Black Belt Certification Requirements

- Support and coaching
 - Online and over the phone coaching
 - Ad hoc meetings when possible
 - 16 hours including certification



Certification Project Selection Criteria

The project needs to deal with a problem that is SMART

- **Specific** - One problem
- **Measurable** – If you can't measure it, you don't know if you improved
- **Achievable** – Contained enough to be able to make a difference
- **Relevant** - Still having a impact on the institution's operations
- **Time constrained-** Your project needs to have an end date



Project Selection Criteria

- The project is connected to a recognized need, impacts and adds value to your organization (quality, time, cost)
- No minimum dollar value, still SMART
- The project has a measurable benefit that can be confirmed and is correlated to a product or process performance characteristic that is measurable in a valid and reasonable way.



Project Selection Criteria

- The project is based on a process that does not depend on major influences outside of your control.
- The project has a sponsor who is willing to support the project.





Examples

- Projects lead time reduction
- Product or service lead time reduction
- Inventory turns improvement
- Bid process
- Yield improvement
- Top 1 or top 2 customer complaints reduction
- Improve change management in products or services
- Cost estimating process



Examples

- Reduction of blood stream infections in ICU
- Reduction in patient information errors
- Emergency Department Patient Wait Time
- Day surgery lead time reduction
- Redesigning a wing for efficiency and quicker communication
- Improved Patient Throughput in Radiology
- Unique treatments dosage preparation and control



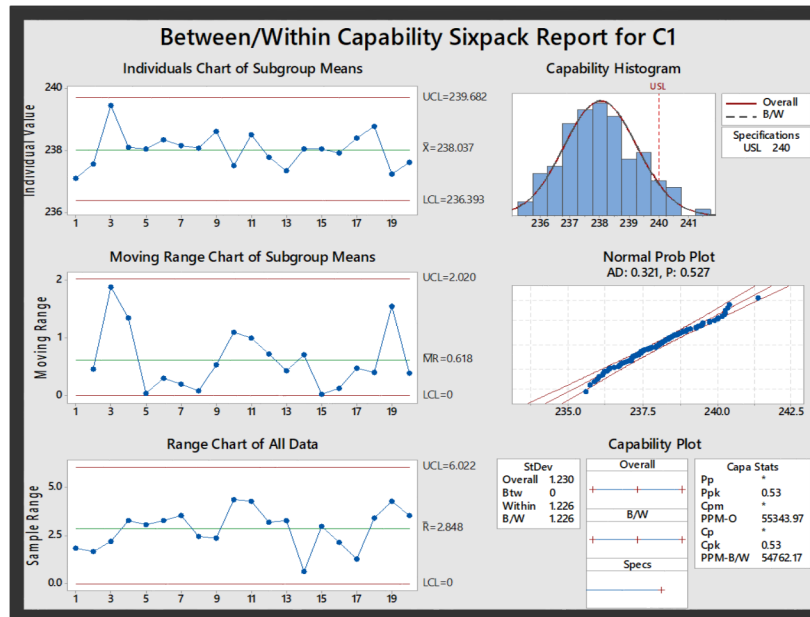
Pre-Requisites



- 2 years of work experience (in any field)
- Lean Six Sigma Green Belt Certification or the equivalent
- Exceptions can be discussed, for example
 - Equivalent experience and exposure
 - Additional training pre-Black Belt



Setup Needed



- Registration and payment
- Internet connection, webcam
- Laptop with Microsoft Office
- Material and Excel Templates supplied
- Google account (gmail) for some AI Machine Learning Exercises
- Minitab supplied (Desktop and Web Version)
- *Minitab Workspace*