Operational excellence

Lean Six Sigma Black Belt

Ten days of training and a project carried out in your company to become a Lean Six Sigma Black Belt: lead complex projects, master advanced statistical tools, coach Green Belts and help management steer an improvement programme. The programme deepens DMAIC, then adds designed experiments, regression, change management and coaching. The Afflatus Black Belt certification is awarded on defence of the project, with quantified gains.

Duration : 10 days

Objectives

1. Lead complex DMAIC projects, across several processes or departments, and quantify their gains
2. Choose and apply advanced statistical tools: MSA, capability, multiple regression, non-parametric tests
3. Design factorial experiments and interpret their effects and interactions
4. Supervise and coach Green Belts and Yellow Belts in their projects
5. Build with the Champions a project portfolio aligned with the company's objectives
6. Lead change and make the results last beyond project closure

Programme

Day 1 — Define: the Black Belt's role and scoping

• The Black Belt in the organisation: Champion, process owner, Green Belts
• Selecting and scoping complex projects: cascading objectives, charter, scope
• Voice of the customer and voice of the process, critical characteristics, Kano model
• Exercise: the charter of each participant's Black Belt project

Day 2 — Measure: data and measurement system

• Data collection plans, sampling and sample size
• In-depth MSA: crossed and nested gauge R&R, attribute measurement, stability, linearity
• Capability of non-normal data, transformations, attribute capability
• Exercise on the data of an industrial project

Day 3 — Analyze: tests and sources of variation

• In-depth hypothesis testing: power of a test, effect size
• Non-parametric tests and when to use them
• One-way and two-way ANOVA
• Multi-vari analysis of sources of variation

Day 4 — Analyze: modelling relationships

• Correlation, simple and multiple linear regression
• Binary logistic regression for attribute defects
• Residual diagnostics and regression pitfalls
• Exercise: a regression model on process data

Day 5 — Lean in Black Belt projects

• Value stream mapping and end-to-end flow analysis
• Pull flow, takt time, line balancing, reducing work in progress
• SMED, TPM and error-proofing as levers of a DMAIC project
• Project stage review: Define and Measure

Day 6 — Improve: designed experiments

• Full and fractional factorial designs
• Effects, interactions, aliasing and design resolution
• Preparing and running a trial in production without disrupting deliveries
• Exercise: a designed experiment on a process simulation

Day 7 — Improve: optimise and secure

- Response surface designs: principle and use cases
- Optimising several responses at once
- FMEA of the solutions and risk analysis of implementation
- Pilot trial and statistical validation of the gain

Day 8 — Control: sustain and quantify

- Choosing control charts, short runs, EWMA and CUSUM charts
- Monitoring plan and handover to the process owner
- Quantifying the gains and validating them with management control
- Project stage review: Analyze and Improve

Day 9 — Leadership, coaching and deployment

- Change management: stakeholders, resistance, communication
- Leading a project team and phase-end reviews
- Coaching a Green Belt: charter review, analysis review, useful questions
- Project portfolio and programme deployment with the Champions

Day 10 — Project review (workshop)

- Workshop: a full review of each project in front of the group, as in a steering committee
- Report and defence: structure, statistical evidence, quantified gains
- Validation criteria for the Afflatus Black Belt certification
- Knowledge test on the whole Black Belt programme

Teaching methods

- Each participant's Black Belt project used as the common thread over the ten days
- Hands-on work on statistical software, with industrial data sets and your own
- Project stage reviews, run as in front of a steering committee
- Role-play of coaching a Green Belt
- Programme led by a Lean Six Sigma Black Belt who runs transformation projects

Assessment and documents

Knowledge test at the end of the programme, end-of-course evaluation at D+1, numbered training certificate verifiable online and training report. The Afflatus Black Belt certification is awarded on defence of a project carried out in the company with quantified gains, and recorded in the training passport.

Bilingual materials for every participant; each classroom course comes with its digital twin on OmniLearn.

Good to know

Ten days is more than twelve half-days' worth of blocks would allow, so the programme is presented by day, one theme per day. Participants who are not yet Green Belts are advised to take « Lean Six Sigma Green Belt » or « Applied Statistics and Minitab for Belts » first.

Practical information

Duration	10 days
Audience	Experienced Green Belts, continuous improvement managers, methods and quality engineers, future leaders of a Lean Six Sigma programme
Prerequisites	Recommended: the « Lean Six Sigma Green Belt » course or experience of DMAIC projects; comfort with basic statistics.
Group size	Groups of 6 to 12 participants, in-company
Format	In-company, face to face on your site
Language	French, Darija or English; bilingual materials
Funding	OFPPT special training contracts (TFP), GIAC, Maroc PME: we prepare the applications with you, at no extra cost.
Programme customisation	Programme adapted to your procedures, your equipment and your audience

Frequently asked questions

Do we need to be a Green Belt to attend the Black Belt?
It is recommended. The programme deepens DMAIC and statistics rather than going over them from the start. A participant with no experience of DMAIC projects is advised to take the Green Belt course first.

How is the Black Belt certification awarded?
It is an Afflatus certification, awarded on defence of a project carried out in the company with quantified gains, then recorded in the training passport. The knowledge test is not enough: the project must be seen through to its end.

Which project should we choose for the Black Belt?
A project broader than a Green Belt's: several processes or departments, a significant stake for management, data available or to be collected. It is validated with the Champion before the first day.

Can a programme of this length be funded?
It fits into the company's training plan. Depending on your situation, OFPPT special training contracts (CSF) may be used, according to the rules in force; we prepare the file with you.