

Invitation to companies and organizations to
send selected employees to

CHALMERS

Six Sigma Black Belt Program

including

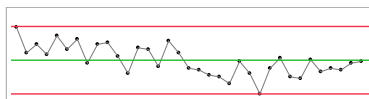
Coaching of Six Sigma Project Selection & Six Sigma Black Belt Course

Win-Win-Win

The Chalmers Six Sigma Black Belt program arrangement has a win-win-win set-up: the organization gets access to a state-of-the-art process improvement methodology; employees get trained as improvement leaders and Black Belts (BB); and Chalmers get strategic relevant topics for our students to work with.

During the program, external BB-candidates work with 2-3 master students from the Quality and Operation Management program (QOM) on a continuous improvement (CI) initiative addressing problem owners' and stakeholders' needs in the organization during four months. This three-way interaction has proven to be very successful. Organizations get improvement leader(s) trained, resources for a critical continuous improvement problem and last but not least, in contact with a potential work force; Individuals get a Six Sigma Black Belt certification and experience; and from the QOM program perspective, we get access to real improvement projects and get valuable input to the program from the company representatives and their Black Belt candidates that reinforce our Six Sigma community.

The starting point for the CI effort is usually a strategic KPI (key performance indicator) for the process owner that has an unsatisfactory level or varies in an uncontrolled way. Depending on the nature of the problem, different tools and practices from the Lean Six Sigma methodology are applied. Typical deliveries have been: process flow definitions for products, services and information (such as mapping of complex cross-organizational information flows), establishment of upstream process measures, development of measurement systems (procedures and information handling), process/product performance optimizations. The main objective of the program is to train improvement leaders who can deal with complex problems including both technical and organizational issues.



Background

In 2007, the Division of Service Management and Logistics at Chalmers launched an international master's program in Quality and Operations Management (QOM) in cooperation with the Division of Operations Management. The program includes a unique Six Sigma Black Belt course, where external Black Belt trainees from industry, healthcare, municipal and other organizations participate. Collecting experience from working on real issues is required to earn the black belt skills and to obtain first-hand experience of the power in the methodology relevant for BB certification.

Content

The selection of projects, feedback and implementation of results into the organization are essential steps for a successful Six Sigma process. Therefore, facilitation and support for project selection is provided as part of the Chalmers Six Sigma Black Belt Program. This is particularly reinforced in the

present set-up, since we have experienced that the link between the Black Belts and their 'closest home' organization has been the weakest link in several of otherwise excellent Six Sigma infrastructures built-up. The focus of Set 1 is therefore on how to utilize Six Sigma competences and tools locally, by linking all projects directly to the improvement of important KPI's for that organizational unit.

Set 2 is the Black Belt training; planned according to the DMAIC (Define-Measure-Analyze-Improve-Control) cycle. In each session of the course, the DMAIC cycle is followed. Examples and illustrations are taken from manufacturing, service and healthcare environments. In addition, the participating companies can provide illustrations from their practices, which contribute to an increase in participant engagement. In the course, graphical methods are emphasized and a critical attitude is adhered to in order to avoid some easily avoidable pitfalls. One particular successful aspect of the Chalmers Six Sigma Black Belt program is the focus on the early and late phases of the DMAIC cycle. The particular focus on the start and end phases in this program makes a difference when it comes to creating a joint understanding of the issues: are we solving the right problem, can we trust the data and are we delivering something that is implementable now?

QOM students

We expect an interesting synergy based on the mixture of theoretical knowledge on the part of the QOM students and the practical experience and expertise on the part of the external Black Belt candidates.

External Black Belt candidates

It is important that the external participants have some basic mathematical and statistical knowledge corresponding to a *bachelor's degree in engineering*. Furthermore, they should be prepared to devote time not only to study the course material between course sessions, but also to apply the practices together with the students and pave the way for them within their organizations, that is to organize the work on site. Together with problem owners and organizational stakeholders, it should be anchored that *approximately one third of their working hours* is spent on the program between February and May (in practice, this means that an employee plus three students in total spend more time than an employee's fulltime work on a strategically important issue). External candidates get a **Chalmers Six Sigma Black Belt Certification** corresponding to international de facto Black Belt standard, but *cannot earn higher-education credits in this program*.

Company membership and cost

The program is offered to companies and organizations (not single individuals) that want to train their personnel. For companies/organizations there is no direct fee to be paid for participating in the program provided (according to a signed letter of intent) that:

- **ISSUE:** The project task chosen has a clearly defined problem owner and a general strategically important aim, but not too firmly scoped. The first activity within the black belt course will be to characterize and scope the problem.
- **RESOURCES:**
 - **TIME:** The Black Belt candidates have 1/3 of their time for workshops and project work in and between sessions during the spring.

- **ACCESS:** Students are granted access to personnel and facilities for workshops and process mapping, and have access to relevant data.
- **COST:** Students' travel expenses are covered
- **SOFTWARE:** It is required that the external candidates are provided with relevant software for data visualization, data analysis and experimental planning, since the most important skill of BBs is to handle and analyze data and to set up relevant monitoring structures besides skills to lead CI initiatives.
- **NUMBER OF CANDIDATES:** It is recommended to send at least two candidates per company to create internal momentum of Lean Six Sigma implementation.

Course structure

The course consists of two sets of activities:

- Set 1: Local management team project selection
- Set 2: Black Belt training

Important: The course language is English since the master programs at Chalmers attract many international students. The candidates must be prepared to handle English as the primary Project Team language in order to embrace all team members, even though the project is executed in a Swedish context mainly.

Course outline

Set 1: Six Sigma Project Selections

Applicable for organizational leaders & process owners

Session 1	Early January, TBD - online seminar	An introduction for problem owners and stakeholders at participating organization and their Black Belt candidate(s)
Session 2	January 2021	Project selection and coaching
Session 3	Fall 2021	Follow up with company

Set 2: Black Belt Training

Compulsory sessions for the Black Belt candidates and International Students from Master Program in Quality and Operations Management (always Tuesday-Wednesday)

Seven two-day sessions + one half day project conference

Wo3 (Jan 19 to 20)	S1: Understanding Variation
Wo4 (Jan 26 to 27)	S2: Define phase
Wo6 (Feb 09 to 10)	S3: Measure phase
Wo8 (Feb 23 to 24)	S4: Analyze phase
Wi2 (Mar 23 to 24)	S5: Project review
Wi6 (Apr 20 to 21)	S6: Improvement phase
Wi8 (May 04 to 05)	S7: Control phase
Wo21 (May 25)	S8: Project presentation

The training will be Covid-19 adjusted following a hybrid model with onsite and online teaching components and workshops.

Limitation

The Six Sigma Black Belt program does not cover implementation of a Six Sigma hierarchy, infrastructure or corporate project administration. *The focus is on Black Belt training and local management utilization of Six Sigma resources, including definition and selection of Six Sigma projects.*

Black Belt Certification

A Black Belt certificate requires a completed and reported Six Sigma project, active review of another project, participation in seminars and passing a theoretical exam (Set 2).

Course Literature

- The Black Belt Memory Jogger Second Edition: A Pocket Guide for Six Sigma DMAIC Success Spiral-bound, Sarah Carleton, Six Sigma Academy, GOAL/QPC, May 16, 2016
- Handouts and other materials provided by the teachers

Location

Chalmers University of Technology (Johanneberg campus). 412 96 Göteborg, Sweden

Scientific board

Advisors and guest lecturers:

Bo Bergman, Prof. | Chalmers

Martin Arvidsson, PhD, Assoc. Prof. | After Market and Operational Excellence Manager, Cochlear Bone Anchored Solutions

Ida Gremyr, Prof. | Chalmers | Director of the Master Program in Quality and Operation Management (QOM)

Program staff

Examiner and lecturer:

Peter Hammersberg, PhD, Senior lecturer, Material, Manufacturing and Quality Engineering | Six Sigma Master Black Belt

Co-leader and lecturer:

Hendry Raharjo, PhD, Assoc. Prof. Quality Management Engineering

Co-teacher and administrator

Anna Norinder, MSc, Grad student: Quality Management Engineering

Application

Apply to:

Peter Hammersberg

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Welcome to the
CHALMERS
Six Sigma
Black Belt Program 2021!

