



professional  
development

# ASQ Certified Six Sigma Black Belt (CSSBB)

14 Days over 6 Months

Advanced Skills + Black Belt Certification



classroom



in-company for  
teams



live virtual



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# Our Approach to Black Belt Training and Certification

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## We train Black Belt Practitioners that Stand Out from the Crowd

If you want to achieve an international Lean Six Sigma Black Belt certification, this programme is a focused and time-efficient way to do so. Through completing this Black Belt training, you will dive deeper into Lean and Six Sigma methodologies. The skills you gain will enable you to lead process improvement teams towards achieving transformational improvements for your organisation.

We include everything you need to gain knowledge and capability as a Black Belt practitioner, and set yourself up for ASQ exam success. Booking a place on our programme provides you with 14 days of tutor led training, course materials, Sigma XL software, and 365 days of unlimited access to an online ASQ exam simulator.

Our Six Sigma Black Belt programme is focused on equipping participants with the knowledge, skills, and confidence to deliver significant savings and improvements at an advanced level while applying the ASQ Body of Knowledge to a Black Belt project of your choosing. We also focus on preparing you to sit and pass the ASQ Certified Six Sigma Black Belt exam.







## How is this Programme Delivered?

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- ✔ This programme is 14 days in total. It is delivered in short, 3 and 2-day instalments over 6 months.
- ✔ You will utilise the weeks between each training session for revision, project work and studying sample exam questions and answers.
- ✔ You will have up to 6 months following completion of training to submit your project work for certification. Your project will be assessed against documented criteria outlined in your assessment brief.
- ✔ When designing our Lean Six Sigma Black Belt programme, we focused on a balance between practical black belt project work and the theoretical learning to prepare you for your ASQ exam.
- ✔ This combined approach means that you'll feel confident in your abilities, and fully prepared to sit your exam.

# Programme Aims

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This course is fully aligned with the ASQ Black Belt Body of Knowledge 2022 (BB Bok). The aims of our programme are:

## ① Knowledge & Skills through Practical Project Application

To equip you with the knowledge and skills to understand and be able to apply the ASQ Black Belt Body of Knowledge (BB BoK) to a Black Belt project. In order to achieve this, you are required to complete a Black Belt project using the Body of Knowledge. You will be provided with a detailed assessment brief outlining the requirements and associated improvements and financial savings. On successful completion of the project, you will be awarded a Professional Development Lean Six Sigma Black Belt (based on the ASQ BB BoK).

## ② Exam Preparation

To prepare you for the ASQ Certified Six Sigma Black Belt (CSSBB) exam. ASQ lay down eligibility criteria in order to be approved by them to sit their exam. You can read more about the eligibility criteria on pages 9 and 10 of this brochure. You are responsible for ensuring that you meet these criteria.



# Why Choose Our Approach? (8 Key Benefits)

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## ✔ Join an Elite Group of Black Belts

This programme is designed to train Black Belts to an exceptional level.

Through completing this programme and achieving certification, you'll be joining a group of standout Black Belt high calibre practitioners.

## ✔ Proof of Competence

Through completing the project work central to this course, you'll gain solid proof of your ability to execute successful Black Belt process improvement programmes.

## ✔ A Versatile Black Belt Skill-Set

The skills and knowledge you'll gain during this training can be applied effectively to any industry.

## ✔ International Certification & Established Credibility

This programme leads to the internationally respected ASQ Certified Six Sigma Black Belt (CSSBB). With members in over 130 countries, ASQ (American Society for Quality) is known globally as a leader in upholding impeccable Six Sigma standards of excellence and quality.

The ASQ Mark of Quality is internationally recognised as proof of competence for Lean Six Sigma practitioners.

## ✔ Delivered by Experts

Our Black Belt trainers have extensive practical experience leading and managing process improvement initiatives across a range of businesses based on the lean six sigma methodology.

## ✔ International, Best-Practice Methodologies

This Lean Six Sigma Black Belt programme is designed to provide you with practical, best-practice approaches to Black Belt projects.

## ✔ Training and Exam Preparation Resources

We include all elements you'll need to acquire Black Belt knowledge and confidence, and to prepare to achieve your certification successfully. This incorporates 14 days of training, all course materials, SigmaXL software, and a 365-day access to the ASQ exam simulator. Your ASQ Certified Six Sigma Black Belt exam is the only additional cost.

## ✔ Potential for Increased Salary

On average, Black Belts command a higher salary than other belt levels and non-certified process improvement practitioners.

## What our students say...

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“ I thought the delivery of the course was extremely professional, and I enjoyed being part of the training and believe it has added to my repertoire of skills. I will be participating in future sessions delivered through PD.

The course was very well coordinated, the duration between sessions was really good and the material covered was very relevant. The opportunity to use real data in the exercises was very beneficial as was the time spent with the other participants to discuss each other's projects. The ability to have 1:1 sessions with the trainer was also really beneficial.

Course content was very clear. Overall organization was excellent. Availability of slide deck was really useful as were the test questions at the end of the modules. The breakout sessions were really good. It was a great opportunity to practice what we were learning as well as networking with the team to learn from each other. Training consultant was very efficient and well organized. All communications were sent on in-advance of the scheduled sessions.

[live virtual] delivery was excellent and I do not believe we lost out because we were unable to meet up in person. ”

- Tony, spring 2021

“ My overall experience was professional, helpful and knowledgeable. I found every interaction was friendly and clear domain knowledge was evident. It gave me confidence booking with Professional Development and in the learning environment itself.

I felt expectations, and the agendas, were always clear and up-front. The course content was strong enough to stand on its own, and the exercises really helped embed the theory with practical application.

The trainer was clearly experienced and brought his knowledge to the course. Most of us have had some exposure to Six Sigma through our careers, it was great to learn the background to the tools.

While I missed the normal classroom interaction, I think it went well via [live virtual classroom].

The breakout rooms were brilliant, which really helped the discussions and exercises – that is actually an improvement from classroom! ”

- Maitiú, spring 2021





## Who Attends?

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This Black Belt training is designed for participants from diverse organisational areas within business.

As Lean Six Sigma is a process improvement methodology utilised in every sector, our participants come from a broad spectrum of backgrounds. Black Belts are in demand in every industry including finance, service, healthcare, hospitality, logistics, pharmaceuticals, IT, and of course, manufacturing.

The ideal candidate for this programme is someone who has a strong knowledge and understanding of the processes in their business. They should be in positions where they can effect positive change. This could include organisational change agents, process improvement leads, managers and supervisors, and project managers.

You can read more about the eligibility requirements for this Black Belt programme on the following pages.



# Eligibility Requirements

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The Lean Six Sigma Black Belt professional drives and supports cross functional and multi-disciplined teams to effectively manage business process excellence across the organisation.

The skills of the Lean Six Sigma Black Belt include advanced knowledge in Lean Six Sigma tools and techniques coupled with enhanced interpersonal skills and people management skills to coach and mentor multiple teams.

The ASQ Certified Six Sigma Black Belt (CSSBB) is aimed at experienced process improvement practitioners who want to progress their skills and expertise. As a programme and certification designed for seasoned practitioners, there are a number of eligibility requirements and an application process that must be adhered to. We can approve your eligibility status for this programme and advise on your eligibility status for the ASQ exam. You are responsible for ensuring that you meet the criteria for your exam.

We have outlined a brief overview of the ideal candidate for this training and certification on the next page.



# Eligibility Requirements

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- ✓ Delegates should have experience leading and managing business and process improvements and should have delivered cost savings in either transactional (service) or transformational (manufacturing) environments using Lean Six Sigma tools and techniques.
- ✓ They should have an understanding of basic statistics and algebra to understand statistical concepts.
- ✓ Participants need to be able to influence and effectively manage change across the business and to drive a continuous improvement culture to deliver greater savings and gain breakthrough performance in key business areas.
- ✓ It is essential to have a defined, approved business improvement project to work on during this programme that will enable you to return a significant saving to your organisation. Typically our Black Belts deliver savings in the region of €90K to €250K.
- ✓ It is important that each participants can devote significant time to completing the project and exercises between course modules.



## Need advice about your eligibility status?

If you are unsure whether you meet the eligibility criteria, the best way to clarify is by consulting with our Director of Training. Get in touch, either by calling Freephone 1800 910 810, or clicking below to ask a question.

[Ask a Question](#)

# How do you want to learn?



## Virtual Training

Enjoy all the benefits of classroom training while connecting from home.

[Learn More](#)



## In-Company Training

Tailored training for your team, delivered in-person or virtually.

[Learn More](#)

# Live Virtual Training

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Virtual training enables you to connect to live, trainer-led sessions from wherever you are.

It's easy to connect and you'll gain the benefits of a classroom style of training while enjoying the convenience of learning at home.

Our virtual training dates are available for anyone to attend.

## How Virtual Training Works

Once you confirm your place on one of our upcoming virtual training dates, we'll send you the information and link you need to join the training.

To connect with our live training, you'll need a steady internet connection and a device with a web-camera, speakers, & microphone. Most home internet connections work perfectly for virtual training. These days, almost all smartphones, computers, and tablets have built-in web cameras, speakers, and microphones.

Our training consultants will advise you on how to get connected. It's an easy, user-friendly process.



## Why Virtual?

- ✔ **Learn from Home** - This is an ideal solution for anyone who works from home. You can connect with real-time training sessions from wherever you're currently based.
- ✔ **Delivered by Experts** - By choosing our live virtual training, you'll learn from subject matter experts. You'll also benefit from the ability to ask questions and gain advice from our trainers.
- ✔ **Group Training** - This style of training enables you to interact virtually with your fellow trainees. Via our online platform, you'll be able to take part in group discussions and exercises without leaving home.
- ✔ **Focused Learning Environment** - One of the key advantages of an in-person classroom style training is the focused learning environment. Live, trainer-led virtual training also provides this high-impact format.

[Reserve My Place](#)



# In-Company Training

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We run this Lean Six Sigma Black Belt training for in-company (also called “in-house” or “on-site”) training.

This means that we deliver training exclusively to your team on a date you choose.

There are many benefits to choosing an in-company style of delivery.

## How In-Company Training Works

When you get in touch with us about in-company training - either by phone or by requesting a quotation using the button on this page - our expert training consultants will work with you to find the best training solution for your needs.

We will create a programme that addresses the issues and goals at the top of your list, and choose a training delivery method and dates that suits you best.



## Why In-Company?

- ✔ **Tailored for Your Team** - Although the Black Belt course syllabus must be adhered to, we can take your business and any challenges you are facing into account when delivering the course. We will make the training delivery relevant to your team.
- ✔ **You Choose the Delivery Style** - We can deliver this training as an in-person, classroom style course (where we come to your location), or by live, virtual classroom training.
- ✔ **Flexibility** - In-company training gives you the ability to schedule training at a time that works best for your schedule. It removes the inconvenience of having to take someone out of their role for training at a busy time.

[Get a Quote](#)

# Programme Content: Module 1- Organization-Wide Planning and Deployment

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## Training Objectives: Module 1

- 1 Understand the value and goals of deploying Lean Six Sigma within a project.
- 2 Be able to apply lean six sigma tools to screen and select projects for improvement.
- 3 Understand the roles and responsibilities within a Lean Six Sigma deployment projects.
- 4 Be able to apply a range of strategic planning tools and apply change management techniques to overcome barriers and drive organisational change.

## A Organization-wide Considerations

- Fundamentals of Six Sigma and lean methodologies
- Project Selection and Six Sigma, lean, and continuous improvement methodologies
- Relationships among business systems and processes and stakeholders
- Strategic planning, feasibility and deployment tools (Hoshin Kanri, portfolio analysis, SWOT, PEST, contingency and business continuity planning)

## B Leadership

- Lean Six Sigma Roles and responsibilities
- Organizational roadblocks and change management

# Programme Content: Module 2 - Organizational Process Management and Measures

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## Training Objectives: Module 2

- 1 Understand the impact of different stakeholders on a project.
  - 2 Be able to select and apply benchmarking techniques appropriate to your project.
  - 3 Understand and analyse performance and financial metrics.
- A Impact of lean six sigma projects on stakeholders
  - B Benchmarking and selection of performance goals
  - A Performance and Financial Business Measures

# Programme Content: Module 3 - Team Management

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## Training Objectives: Module 3

- 1 Be able to apply team selection criteria to ensure you have the right balance of skills and expertise.
- 2 Be able to apply a range of interpersonal and team techniques to successfully manage, motivate and reward the project team.

### A Team Formation

- Team types and constraints
- Team roles and responsibilities
- Team member selection criteria
- Team success factors

### B Team Facilitation

- Motivational techniques
- Team stages of development
- Team communication
- Team leadership models

### C Team Dynamics

- Group behaviours
- Meeting management
- Team decision-making methods

### D Team Training

- Training needs assessment
- Delivery techniques
- Evaluation of training



# Programme Content: Module 4 - Define

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## Training Objectives: Module 4

- 1 Be able to determine customer requirements using a range of tools including data collection methods, Voice of the Customer, Kano, CTQ, QFD, SIPOC etc).
- 2 Be able to use a project charter to initiate a project which will include a business case, problem statement, scope, goals, performance metrics etc.) and be able to use various project management and analytical tools to track the project progress.

### A Voice of the Customer

- Customer identification, segmentation and impact assessment
- Customer data collection methods
- Customer requirements (CTX, CTQ, QFD, SIPOC, Kano model)

### B Business Case and Project Charter

- Business case
- Problem statement
- Project scope
- Goals and objectives
- Project performance measurements
- Project charter review

### C Project Management Tools

- Gantt charts
- Toll-gate reviews
- Work breakdown structure (WBS)
- RACI model

### D Analytical Tools

- Affinity diagrams
- Tree diagrams
- Matrix diagrams
- Prioritization matrices
- Activity network diagrams
- Process decision programme chart (PDPC)
- Interrelationship digraph (ID)

# Programme Content: Module 5 - Measure

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## Training Objectives: Module 5

- 1 Be able to use process flow metrics and tools to indicate the performance of a process.
- 2 Be able to develop and implement data collection plans, and use techniques in sampling, data capture, and processing tools.
- 3 Understand and use MSA (Measurement System Analysis) tools.
- 4 Apply and evaluate descriptive statistics, probability concepts and distributions.
- 5 Be able to determine and evaluate process capability and process performance indices.

## A Process Characteristics

- Process flow metrics
- Process analysis tools

## B Data Collection

- Types of data
- Measurement scales
- Sampling concepts and methods
- Data collection plans and methods

## C Measurement Systems

- Measurement system analysis (MSA)
- Measurement systems across the organization
- Metrology

## D Basic Statistics

- Basic statistical terms
- Central limit theorem
- Descriptive statistics
- Graphical methods
- Valid statistical conclusions

## E Probability

- Basic concepts
- Distributions (normal, Poisson, binomial, chi square, Student's t, F, hypergeometric, bivariate, exponential, lognormal, Weibull)

continued on next page...

# Programme Content: Module 5 (continued)

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## F Process Capability

- Process capability indices Cp and Cpk
- Process performance indices Pp, Ppk, Cpm, and process sigma
- Process capability studies, attribute data, non-normal data and use of transformation techniques.
- Process performance vs. specification metrics (PPM, defects per million, DPMO, DPU, throughput yield, RTY)
- Short-term and long-term capability

# Programme Content: Module 6 - Analyse

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## Training Objectives: Module 6

- 1 Be able to model relationships between process variables using correlation and regression analysis and multivariate tools.
- 2 Be able to perform hypothesis tests for means, variances, and proportions, and analyse their results.
- 3 Understand and evaluate and appropriately apply a range of tests including ANOVA, chi square, contingency tables, and nonparametric tests to your project.
- 4 Understand and be able to apply FMEA and use root cause analysis tools to your project.
- 5 Be able to identify and analyse your process using the seven lean waste streams and apply gap analysis tools to compare current and future states.

### **A** Measuring and Modelling Relationships Between Variables

- Correlation coefficient and confidence level
- Linear regression
- Multivariate tools to investigate sources of variation

### **B** Hypothesis Testing

- Terminology
- Statistical vs. practical significance
- Sample size
- Point and interval estimates
- Tests for means, variances, and proportions
- Analysis of variance (ANOVA)

- Goodness-of-fit (chi square) tests

### **C** Risk Analysis and Management

- Types of risks
- Failure mode and effects analysis (FMEA)

### **D** Additional Analysis Methods

- Gap analysis
- Root cause analysis
- Waste analysis



# Programme Content: Module 7 - Improve

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## Training Objectives: Module 7

- 1 Understand and be able to distinguish, apply and evaluate design of experiments (DOE) principles.
- 2 Be able to apply various lean methods to eliminate waste and reduce cycle time.
- 3 Be able to develop plan to implement an improved process and be able to analyse and interpret risks.

## A Design of Experiments (DOE)

- Terminology
- Design principles
- Planning experiments
- One-factor experiments
- Two-level fractional factorial experiments
- Full factorial experiments

## B Lean Methods

- Waste elimination including pull systems, Kanban, 5S, standard work, poka-yoke
- Cycle-time reduction including continuous flow, SMED), heijunka (production leveling)
- Project scope
- Other improvement tools and techniques including TOC and OEE

## C Implementation Plans for Improvement

# Programme Content: Module 8 - Control

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## Training Objectives: Module 8

- 1 Understand and be able to apply a range of statistical process control (SPC) techniques to your project.
- 2 Understand and be able to apply total productive maintenance (TPM) and visual factory concepts to your project.
- 3 Be able to develop and apply control plans and associated tools to maintain and sustain project improvements.

### A Statistical Process Control (SPC)

- Objectives
- Selection of variables
- Rational subgrouping
- Control chart selection including X-R, X-s, ImR, p, np, c, u, short-run SPC, and moving average
- Control chart analysis

### B Other Controls

- Total productive maintenance (TPM)
- Visual controls

### C Maintain Controls

- Measurement system reanalysis
- Control plan

### D Sustain Improvements

- Lessons learned
- Documentation
- Training for process owners and staff
- Ongoing evaluation

# Programme Content: Module 9 - Design for Six Sigma (DFSS) Framework and Methodologies

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## Training Objectives: Module 9

- 1 Understand common DFSS methodologies (DMADV and DMADOV).
- 2 Understand DFX methodologies, and elements of robust designs.

**A** Common DFSS Methodologies including DMADV and DMADOV

**B** Design for X (DFX)

**A** Robust Designs

# Achieving Your Certification

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Here is an overview of the 2 black belt certifications you will achieve through this programme, and a brief introduction on how they are achieved.



## Professional Development - Project Certified Lean Six Sigma Black Belt

You will apply the ASQ Body of Knowledge to a black belt project which will be submitted to Professional Development for assessment and certification, in line with a detailed assessment brief.

Following completion of the course, you will have up to 6 months to complete your project for assessment



## ASQ Certified Six Sigma Black Belt - Exam Certified Six Sigma Black Belt (CSSBB)

**Computer Delivered:** The CSSBB examination is a one-part, 165-question, four-and-a-half-hour exam and is offered in English only. **150 questions are scored** and 15 are not scored.

**Paper and Pencil:** The CSSBB examination is a one-part, 150-question, four-hour exam and is offered in English only.



# Achieving Your Certification

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The following is a summary of the distribution of questions over the Black Belt BoK:

1. Organization-Wide Planning and Deployment (12)
2. Organizational Process Management and Measures (12)
3. Team Management (15)
4. Define (20)
5. Measure (25)
6. Analyze (22)
7. Improve (21)
8. Control (17)
9. Design for Six Sigma (DFSS) Framework and Methodologies (6)

## 3 Ways to Get Started

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### Talk to Us

You can reach us by phone on Freephone 1800 910 810, or 01 861 0700 (mon - thurs, 9.00am - 5.30pm, fri, 9.00am - 5.00pm).

We will be happy to answer any questions, advise on the best option for your black belt training, or book a place for you on an upcoming course date.

**Freephone 1800 910 810**



### Reserve a Virtual Place

Using the button below, you can view and select upcoming dates to reserve your provisional place on an upcoming lean six sigma black belt course.

We will get in touch with course details, to answer any questions you may have, and to confirm your place.

**Reserve a Place**



### Get a Quote

Click the button below to request a tailored quotation for your company's lean six sigma green belt training

We will be in touch with a detailed quotation fitting your team's requirements.

**Get a Quote**

# About Us

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## Professional Development - 35 Years of Innovation and Excellence

We believe that the key to a thriving and rewarding career is continuous professional development.

For over 34 years, Professional Development has led the way in providing practical, innovative courses leading to relevant and respected certifications.

We specialise in delivering training for core business skills including project management, agile, scrum, lean six sigma, management, communications, sales, it service management, and training design and delivery skills.

Our courses are designed to expand your skills, & enhance your career potential

## Stay Connected

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### Our Courses

Our courses are a balanced blend of both theoretical learning and practical application. This focused learning environment optimises the impact of training.



### Our Team

Our trainers are chosen for their engaging manner and expertise in a chosen field. They bring a wealth of experience to each programme they deliver.



### Our Clients

We provide training for Ireland's leading brands, working with companies of all sizes in every industry. We also provide training for non-corporate organisations.



### Our Certifications

In many sectors, international certification is now essential. We provide many options for globally recognised certification in each subject area.

# Contact Us

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