

*14 days*  
***Black Belt Certification***  
***Programme on***  
***Six Sigma Methodology***  
***(Batch 21)***

**DURING JUNE-AUGUST 2018**  
**Duration – 14 days**

***Conducted by:***



**SQC & OR Unit, Indian Statistical Institute,**  
Room No 320, 3rd Floor Old C G O Building  
101 Maharshi Karve Road, Mumbai 400 020  
Tel. 22014588 / 22004574 email: sqcbombay@gmail.com  
[www.isimumbai.co.in](http://www.isimumbai.co.in)

# **BLACK BELT CERTIFICATION PROGRAMME**

## **WHY THIS PROGRAM?**

Globalization has intensified competition, worldwide. Competitive pressure is forcing the Organizations to look for the ways and means for improving their processes so that Quality of the products and services improve, wastes reduce and customer satisfaction increases.

Improved Customer Satisfaction is the goal of today. It cannot just happen. The methodology of modern initiatives is at integrating all operations throughout the corporation to make them produce their outputs right first time. Everything from the receipt of enquiry, internal and external communication, information systems, and customer support and down to the level of logistics services must be done correctly to achieve operational excellence and thereby enhancing satisfaction of the customers.

Implementation Program covers variety of processes related to manufacturing and services including but not limited to distribution operations, warehousing and inventory management, hospitality, health care, electronics equipment manufacturing, electronics component manufacturing, boiler industry to printed circuit board industry, banking to insurance business and what not.

Your Organization shall benefit from this program regardless of products you make or services you offer. This initiative involves everyone in the organization from the CEO to the shop floor personnel.

The Indian Statistical Institute with its vast hands-on experience in these `methodologies assists organizations in integrating piece meal Quality efforts into an overall effective organization-wide initiative that becomes a powerful leverage to take competition by horn.

## **Present Scenario:**

Organizations have been implementing Six Sigma to improve business results. All over the world including India, organizations have claimed that Six-Sigma implementation has resulted in savings of billions of rupees within few years of implementation. And this news has made all the Chief Executives interested in implementing the Six Sigma – nothing wrong with their ambition. But everybody has not achieved success. Many of them are struggling to make progress. One of the major constraints is a qualified professional and this course aims to develop them.

## **Course Description:**

Black Belts are the critical cores of every Six Sigma Implementation. Black Belt experts are groomed in Six Sigma methodology and advanced statistical tools. They are the change agents and the leaders, the project managers and the problem solvers. The program on Black Belt based on Six Sigma Methodology prepares candidates to lead project teams. Although the candidates

do not need to be statisticians, they need to be willing to use statistical tools for Six Sigma implementation. They can come from all functions of any type of organization. After completing the training programme, participants immediately apply the concepts and tools taught during their classroom instructions to their real-time improvement projects leading to dramatic increases in both productivity and profitability of organizations.

**Eligibility:**

Heads of Strategic Business Units, Managers / Executives from various functions with minimum 6 month specialized training in Quality Management Areas for 6 months or certified Green Belts.

**Body of knowledge (BOK):**

BOK is designed to meet the minimum requirements of the most of the major organizations from across a wide range of industries, as listed at the end of the brochure.

**Venue:**

SQC & OR Unit, Mumbai, Indian Statistical Institute, Room No 320, Old C G O Building, 101 Maharshi Karve Road, Churchgate, Mumbai 400 020.

**Programme schedule:**

The program on Black Belt based on Six Sigma Methodology consists of three phases spread over three months (JUNE-AUGUST, 2018).

<b>Phase - 1:</b>	<b>JUNE</b>	<b>25-29, 2018 (5 days)</b>
<b>Phase - 2:</b>	<b>JULY</b>	<b>23-27, 2018 (5 days)</b>
<b>Phase - 3:</b>	<b>AUGUST</b>	<b>28-31, 2018 (4 days)</b>

**Certification criteria:**

Percipients need to attend all the training sessions. At the last (14<sup>th</sup>) day, there will be a three hours examination of multiple choice (MCQ) and descriptive type questions. Participants have to score 70% to pass the examination. Apart from that, each candidate must carry out one real time project using six sigma methodologies. Black belt certificate will be issued after completion of the project and passing the examination.

**Faculties:** Experienced faculties of SQC & OR Division having in-depth experience in implementing Six Sigma in Various organisations like L&T, Reliance, BHEL to name a few.

**Course Fees:** Rs.60, 000/- (Rupees Sixty Thousand only) + 18% GST per participant. Total **Rs.70800/-** (The charges includes course material, Lunch, tea/coffee and 2 times project guidance at office). Before making online payment please check the availability of seats. Fees once paid will not be refunded under any circumstances.

**Registration:**

Please fill up the enclosed nomination form and send it to us Latest by **June 18, 2018.**

## **Indian Statistical Institute**

1. The Indian Statistical Institute is a quasi central organization under the Ministry of Statistics & Programme Implementation.
2. It is declared by an Act of Parliament as an Institute of National Importance.
3. Over the years the Institute has grown as a multi-disciplinary organization. It functions as a University empowered to award degrees upto Ph.D.; as a Corporation in undertaking large scale projects; as a Firm of Consultants to industries to improve Quality, Reliability and Efficiency and as a Meeting place.

## **SQC & OR Division**

1. The pioneer and leader in blending statistical theory with practice and institutionalizing the continuous improvement process into a sustaining system.
2. To strengthen national economy through continual search for excellence in Quality.
3. To disseminate the basic concepts and techniques for Quality Improvement by organizing Training programs, Workshops and In-house programs.
4. To develop highly skilled professionals capable of self actualization.
5. To help industries in their efforts to cope up with the growing challenge of global competition through implementation of quality system based on ISO-9000 series, ISO-14000, QS-9000 standards, Six Sigma & World Class Manufacturing.
6. To continually develop and improve methodologies through applied research efforts to attain International Standards in services provided.
7. To provide solutions to the problems pertaining to the entire gamut of complex Business Decision Processes with the aid of Statistics and Operations Research

## **Challenges Undertaken**

1. The Division has successfully dealt with many challenging problems in the following areas: Design and development, Production scheduling, Process development & control, Process optimization, Line balancing, Production line maintenance, Optimal utilization of raw material, Inventory planning, Reliability analysis & prediction, Sales forecasting etc. covering a wide range of industrial and service sectors.
2. The Division has its share of contribution in the development and improvement of methodologies for real life problems. They include Optimal sampling and inspection procedure, Optimizations in manufacturing, Warranty cost analysis, Taguchi methods of Quality Engineering, Optimum scheme for oil exploration, Debugging procedure in software development etc.

## Body of Knowledge: Six Sigma Black Belt Course

1. Overview of Six Sigma Methodology and roles and responsibilities in Six Sigma implementation
2. Identification, Prioritization and selection of Improvement opportunities
3. Over view of Six Sigma Project execution (DMAIC Define- Measure- Analyze- Improve & Control), and Gate Review Questionnaire
4. Development of Project Team and Charter
5. Define and Map Processes to be improved (SIPOC (supplier, input, process, output, customer) / COPIIS (customer, output, process, input, supplier), Activity Flow Chart)
6. Identification of critical to customer / critical to business characteristics: Voice of Customer & QFD
7. Descriptive Statistics and Statistical distributions Binomial, Poisson ,Normal and other continuous distributions
8. Prioritisation Matrix and FMEA and use of it in Data Collection Planning
9. Introduction to various statistical software packages for data display & analysis like Excel, Minitab, Systat, JMP, crystal ball, etc.- understanding in usage & interpretation of output along with each topic
10. Measurement System Evaluation (Gauge R&R) for variables as well as for attribute measurements (Kappa Value and Confidence interval for agreement with expert)
11. Understanding variation-special causes vs. common causes (Application of Graphical techniques)
12. Stratification methods (like Pareto, Bar Diagrams, stratified dot plot, stratified scatter plot, Box Plot, Multi -Vari Charts etc)
13. Normality test of a data, evaluation of Process Capability for data from a Normal/Non-Normal distribution
14. Evaluation of Process Capability for Data from Normal/Non-Normal Distribution
15. Concept of Short Term, Long Term Process Capability and assessment of Sigma level
16. Cross Functional Process Mapping including identification of value added and non value added activities
17. Organizing for potential causes using cause and effect diagram, FMEA & Tree Diagram
18. Verification/validation of causes using work place investigation (GEMBA)
19. Concept of correlation and Regression and use of the same in validating causes
20. Concept of Test of Hypothesis like 2 Sample t,  $\chi^2$ , ANOVA etc and use of the same in validating the causes
21. Sample Size determination for a given confidence level
22. Multiple Regression, logistic regression and use of the same in validating the causes
23. Concept of Design of experiment and details of full factorial, fractional factorial and screening designs
24. Generate Improvement Ideas using Creativity Techniques (Traditional & non traditional)
25. Solution Evaluation Criteria, Evaluation of solutions and selection of solutions
26. Change Management Process dealing with resistance to change and Process of piloting the solutions
27. Risk Analysis through use of FMEA or related methodologies
28. Concept and Examples of Poke Yoke, Visual Workplace and 5S
29. Planning for full scale implementation (use of Gantt Charts, planning grid, involvement Matrix)
30. Evaluation of results after implementation and monitoring the results through statistical Process Control (like Control Charts, Pre-Control Charts etc)
31. Monitoring the results as a part of established QMS through use of process, product audit and internal audits
32. Institutionalization and integration of the solutions
33. Process of Closing the Project and its documentation
34. Work through at least 3 six sigma projects of different applications

**BLACK BELT CERTIFICATION PROGRAMME**  
**JUNE– AUGUST 2018**  
**NOMINATION FORM**

*Details of the participants attending the program:*

1. Name: \_\_\_\_\_ E-mail: \_\_\_\_\_

Position: \_\_\_\_\_

Highest academic qualification: \_\_\_\_\_

2. Name: \_\_\_\_\_ E-mail: \_\_\_\_\_

Position: \_\_\_\_\_

Highest academic qualification: \_\_\_\_\_

3. Name: \_\_\_\_\_ E-mail: \_\_\_\_\_

Position: \_\_\_\_\_

Highest academic qualification: \_\_\_\_\_

Organization: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Contact Person (with Email): \_\_\_\_\_

Phone: \_\_\_\_\_

*Details of DD/Cheque attached (Rs.70800/-) per participant incl. GST @18 % in favour of “**Indian Statistical Institute**” payable at Mumbai*

Amount : \_\_\_\_\_ DD/Cheque No. : \_\_\_\_\_ Date

Bank : \_\_\_\_\_ Branch : \_\_\_\_\_

Signature : \_\_\_\_\_

Name : \_\_\_\_\_ Date : \_\_\_\_\_

**Bank Details: For Online Payments**

Bank Name: STATE BANK OF INDIA

Account Name: Indian Statistical Institute,

Account Type: **Current**

Bank Account No: 10996682279

Branch: MUMBAI MAIN BRANCH

Bank Address: Mumbai Samachar Marg, Horniman Circle, Fort. Mumbai 400023

IFSC code: SBIN0000300

*\*Xerox copy of this form may be used in case of more participants. Please e-mail the form to: [isibombay@vsnl.com](mailto:isibombay@vsnl.com) or send to :*

*Program Director*

*SQC & OR Unit, Indian Statistical Institute*

*Room No,320,3<sup>rd</sup> Floor, Old CGO Bldg. 101, Maharshi Karve Road, Mumbai 400 020 Tel. 022 –*

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