

## Lean Six-Sigma Black Belt

Duration: Five Days

### Introduction

Public and service sector companies have constantly focused on controlling and improving their existing manufacturing products or service processes. Quality is a strategy that provides a competitive advantage. It is one of the critical success factors for business and determines the long-term survivability of an organisation. In recent years, Lean Six-sigma has developed into a standard problem-solving and process improvement approach for manufacturers, distributors, transportations companies, financial service organisations, and healthcare providers. The six-sigma approach has been adopted by the majority of the Fortunate 500 companies and many small and mid-sized organisations to dominate its competitors for improving and controlling quality. The Lean philosophy based on the elimination of all non-value-adding activities and waste from a process. The integration of Lean and Six-sigma tools and philosophy is grounded in reducing process variation, waste reduction, and continuous improvement. Successful deployment of Lean Six-sigma reduces process variability, improves product and service quality, decrease cost, reduce cycle time, and enhance profitability and customer satisfaction.

### Objectives of the Programme

This program helps to provide basic quality concepts, Six-sigma problem-solving approach and Lean principles for manufacturing or service sector employees. Executives, managers, engineers and experienced staff members and technician from quality assurance, marketing, purchase, production, research and development, human resource and administrative personnel can be a participant of the programme.

The specific objectives of the programme are:

- Fundamentals of quality management and management aspects of quality improvement
- Process thinking, process data analysis and measuring process performance
- Six-sigma methodology and sigma level quality measurement
- DMAIC problem-solving approach
- Tools for Six-sigma methodology
- Application of DMAIC methodology in real-life situation

- Lean and Kaizen philosophy, Lean tools and techniques
- Integrating Lean and Six-sigma principles in process improvement

### **Pedagogy of the Programme**

The participants will acquire knowledge and develop the ability to apply the concepts and statistical tool to resolve real-life quality management issues. The participants will be groomed via interactive lecture sessions, illustrative examples/cases and spreadsheet-based calculation. Statistical software will be used to create graphical and numerical output for the analysis.

### **Indicative Content of the Programme**

- 1) Overview of quality management
- 2) Dimensions of quality, 7 QC tools, and 7 management and planning tools
- 3) Customers defined quality, relationships between quality attributes and customer satisfaction
- 4) Voice of customer, identification of CTQ characteristics, and QFD
- 5) Basic statistical methods for quality improvement
- 6) Overview of Six-sigma methodology, and roles and responsibilities of Six-sigma team members
- 7) Sigma level performance measurement and yield calculation
- 8) DMAIC problem-solving methodology
- 9) Six-sigma tools and techniques
- 10) Planning and execution of design of experiment
- 11) Risk analysis through FMEA
- 12) Process control and monitoring method
- 13) Practical application of Six-sigma in manufacturing and service processes
- 14) Overview of lean principles and philosophy
- 15) Lean tools: Value stream mapping, Kaizen, TRIZ, visual workplace
- 16) Theory of constraints
- 17) Integrating Lean and Six-sigma for process improvement

## Programme Details

### Programme Fees

INR 30,000 per participant plus service tax (inclusive of the course material & faculty professional fees, working lunch and snacks, and it does not include the accommodation and food expenses of the participants)

**Batch Size:** Minimum 10 and maximum 30 participants per batch

**Programme Duration:** five days, containing 20 sessions of 90 minutes each

**Programme Venue:** The programme can be held in IIM Ranchi or on the premises of participating organisation or any metro city.

## Programme Coordinators

Prof. Sasadhar Bera  
Assistant Professor (Operations Management)  
IIM Ranchi

## Profile of the Programme Coordinators

Prof. Sasadhar Bera is an Associate Professor in the operations management area at the Indian Institute of Management Ranchi (IIMR) since August 2012. He obtained his bachelor's degree in Mechanical Engineering from NIT Durgapur, West Bengal, and master's degree in quality, reliability, and operations research from Indian Statistical Institute Calcutta. He holds PhD degree from IIT Bombay. He worked in the industry for eight years, and this has helped him to provide implementable solutions to real-life issues in managing quality, manufacturing, and business analytics. In the manufacturing domain, he focused on process control, optimisation and quality engineering related issues for five years. He worked for three years in the business analytics domain, mainly in the area of Web analytics, Telemarketing, and Market research. He has expertise in statistical modelling, optimisation, and metaheuristic search strategy to optimise a business process. He also published his research work in top-class international journals. His teaching and research interests include business data analytics, operations analytics, and time series and demand forecasting, decision analytics, process improvement and optimisation, and quality management.