PIQC

Leading the Modern Quality Movement in Pakistan

5 Days Training/Certification Course

SIX SIGMA GREEN BELT

An International Training & Certification in Pakistan

INTERNATIONALLY LICENSED COURSE

FOR PROCESS IMPROVEMENT/QUALITY ASSURANCE MANAGERS AND ENGINEERS

SIX SIGMA GREEN BELT

A top class International Quality Certification in Pakistan with extensive practical skills

Six Sigma is an emerging Quality Management tool with extensive power for improving performance of products, processes and systems of the organizations. The organizations looking for breakthrough improvement in their organizations cannot ignore this program.

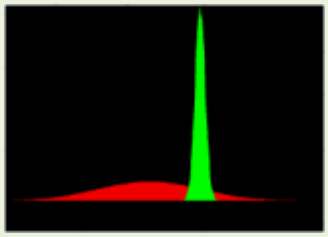
Unlike, ISO 9000 where the focus is on standardization, Six Sigma builds management teams in organizations who are developed with exhaustive problem solving and analytical tools, statistical tools, process improvement tools, and process control tools. Creating these unique capabilities, overall enterprise improvement methodology is deployed in organizations to reduce product or services failure rates to near zero levels. Utilizing a disciplined, data-driven approach, Six Sigma practitioners collect and use various data like customer feedback, product inspection results, process parameters, key performance indicators and their long term trends, supplier performance results in the supply chain etc. to monitor, control, and improve operational performance by eliminating and preventing defects in products / and associated processes, including management, service delivery, production and customer satisfaction.

What is Challenge?

Pressures to reduce variations and improve the quality & value of the products and services delivered to customers are unrelenting. Organizations can find themselves facing key opportunities or critical problems where their business processes and systems are no longer effective.

What is Six Sigma Green Belt?

This is a middle level six sigma program. It aims to provide medium level capabilities to run six sigma projects in the companies. Six Sigma Green Belts are the professionals from Quality and other departments who work under the guidance of Six Sigma Black Belt in various problem solving and quality improvement activities in the six sigma program being run in organizations. A company which embarks on six sigma strategy needs a number of green belts, who form part of six sigma project teams. These teams work on business and quality improvement projects in their respective organizations. This course is conducted by PIQC in collaboration with Singapore Quality Institute International Singapore.



SIX SIGMA GREEN BELT

Who is Green Belt?

Green Belts serve on Black Belt Project teams. They collect and analyze data, develop process maps , assigned the tasks of certain level of statistical analysis and developmental designs for a particular project. Green Belts can also be assigned specific improvement projects to be conducted as their own-projects that would not require statistical rigor demonastered by Black Belts.

Gain Advance Knowledge and Practical Skills through Real Life Projects

This is one of the most practical courses in Quality and includes a number of Quality tools and approaches. The course is specially designed to provide practical exposure to participants with practical projects and hands on experiences on advanced statistical software packages so that they are useful in their companies from practical point of views and can help building the companies to the world-class level.

Duration

This is a five days course (09:30 am to 05:30 pm) daily

Venue

Classes are held at PIQC training centers in Lahore and Karachi.

Course Instructors

Internationally qualified and experienced Six Sigma Black Belts. All the course instructors are approved tutors by Singapore Quality Institute and they have worked in number of Six Sigma projects in the companies.

Fee

US$ 650 per participant (or equivalent Pak Rs). This is internationally licensed course and highly expensive in abroad. The fee is specially discounted for Pakistani participants.

Why select PIQC?

- Its pioneer in the Pakistan to lead the Quality Movement.
- Its tutors have sound technical background and international exposure of training and consulting.
- It has trained hundreds of quality professionals at national and internal level.
- It has affiliations with international process improvement professionals.

PIQC

www.piqc.com.pk

SQI International

SQI International Pte Ltd is a wholly owned subsidiary spin off from the Singapore Quality Institute (SQI),

step up to quality

Body of Knowledge and Topics

The body of knowledge of this course is compatible to the one defined by the American Society of Quality – ASQ ®. The instructors and the teaching methodology are also ensured to the highest level. The following is the guidelines of the topics to be covered in the course.

I. ORGANIZATIONAL PROCESS MANAGEMENT & MEASURES

A. Introduction to Six Sigma

Detailed introduction with Analytical discussion

B. Impact on stakeholders

Describe the impact six sigma projects can have on customers, suppliers, and other stakeholders.

C. Critical to Quality CTQ requirements

Define and describe various (critical to quality (CTQ) and the importance of aligning projects with those requirements.

D. Business Performance Measures

Define and describe various business performance measures, key performance indicators (KPIs), the financial impact of customer loyalty, etc.

II. TEAM MANAGEMENT

A. Team Formation

1. **Team Types and Constraints**
   Define and describe various types of teams and determine what team model will work best for a given situation.
2. **Team Roles**
   Define and describe various team roles and responsibilities, including leader, facilitator, coach, individual member, etc.
3. **Team Stages**
   Facilitate the team through the classic stages of development; forming, storming, norming, performing, and adjourning.
4. **Team Communication**
   Identify and use appropriate communication methods (both within the team and from the team to various stakeholders) to report progress, conduct milestone reviews, and success of the project.

B. Team Dynamics

Identify and use various techniques (i.e., coaching, mentoring, intervention, etc.) to overcome various group dynamic challenges, including overbearing / dominant or reluctant participants, feuding and other farms of un productive disagreement, unquestioned acceptance of opinions as facts, groupthink, floundering, rushing to accomplish or finish, digressions, tangents, etc.

III. DEFINE

A. Project Charter

1. **Problem Statement**
   Develop and evaluate the problem statement in relation to the project's baseline performance and improvement goals.
2. **Project Scope**
   Develop and review project boundaries to ensure that the project has value to the customer.
3. **Goals and Objectives**
   Develop the goals and objectives for the project on the basis of the problem statement and scope.

B. Project Tracking

Identify, develop, and use project management tools, such as schedules, Gantt charts, reviews, etc., to track project progress.

IV. MEASURE

A. Process Characteristics

1. **Input and output variables**
   Identify these process variables and evaluate their relationships using SIPOC and other tools.
2. **Process Flow Metrics**
   Evaluate process flow and utilization to identify waste and constraints by analyzing work in progress (WIP), takt time, cycle time, throughput, etc.
3. **Process Analysis Tools**
   Analyze processes by developing and using process maps, flowcharts, procedures, work instructions, etc.

B. Data Collection

1. **Types of Data**
   Define, classify, and evaluate qualitative and quantitative data, continuous (variables) and discrete (attributes) data, and convert attributes data to variables measures when appropriate.
2. **Measurement Scales**
   Define and apply nominal, ordinal, interval, and ratio measurement scales.
3. **Collecting Data**
   Develop data collection plans, including consideration of how the data will be collected (e.g., check sheets, data coding automated data collection, etc.) and how it will be used.

C. Measurement Systems

1. **Measurement Methods**
   Define and describe measurement methods for both continuous and discrete data.

2. Measurement Systems Analysis
Use various analytical methods [e.g., repeatability and reproducibility (R&R), correlation, bias, linearity, precision to tolerance, percent agreement, etc.} to analyze and interpret measurement system capability for variables and attributes measurement systems.

D. Basic Statistics

1. Basic Terms
Define and distinguish between population parameters and sample statistics (e.g., proportion, mean, standard deviation, etc.)

2. Descriptive Statistics
Calculate and interpret measures of dispersion and central tendency, and construct and interpret frequency distributions and cumulative frequency distributions.

3. Graphical Methods
Construct and interpret diagrams and charts, including box-and-whisker plots, run charts, scatter diagrams, histograms, normal probability plots, etc.

4. Valid statistical Conclusions
Define and distinguish between enumerative (descriptive) and analytic (inferential) statistical studies, and evaluate their results to draw valid conclusions.

E. Process Capability

1. Process capability indices
Define, select, and calculate Cp and Cpk to assess process capability.

2. Process Performance Indices
Define, select, and calculate Pp, Ppk, and Cpm to assess process performance.

3. Short-term and Long-Term Capability
Describe and use appropriate assumptions ' and conventions when only short-term data or attributes data are available and when long-term data are available. Interpret the relationship between long-term and short-term capability.

4. Process Performance vs. Specification
Distinguish between natural process limits and specification limits, and calculate process performance metrics such as percent defective, parts per million (PPM), defects per million opportunities (DPMO), defects per unit (DPU), process sigma, rolled throughput yield (RTY), etc.

V. ANALYZE

A. Measuring and Modeling Relationships Between Variables

1. Correlation Coefficient
Calculate and interpret the correlation coefficient and its confidence interval, and describe the difference between correlation and causation.

2. Regression
Calculate and interpret regression analysis, and apply and interpret hypothesis tests for regression statistics. Use the regression model for estimation and prediction, analyze the uncertainty in the estimate, and perform a residuals analysis to validate the model.

3. Multivariate Studies
Use and interpret charts of these studies and determine the difference between positional, cyclical, and temporal variation.

B. Hypothesis Testing

1. Terminology
Define and interpret the significance level, power, type I, and type II errors of statistical tests.

2. Statistical vs. Practical Significance
Define, compare, and interpret statistical and practical significance.

3. Tests for Means, Variances, and Proportions
Use and interpret the results of hypothesis tests for means, variances, and proportions.

C. Additional Analysis Methods
Root Cause Analysis

Define and describe the purpose of root cause analysis, recognize the issues involved in identifying a root cause, and use various tools [e.g., the 5 whys, Pareto charts, fault tree analysis, cause and effect diagrams, etc.) for resolving chronic problems.

VI. IMPROVE

A. Design of experiments (DOE)

1. Terminology
Define basic DOE terms, including independent and dependent variables, Factors and levels, response, treatment, error, etc.

2. Design Principles
Define and apply DOE principles, including power and sample size, balance, repetition, replication, order, efficiency, randomization, blocking, interaction, confounding, resolution, etc.

3. Planning Experiments
Plan, organize, and evaluate experiments by determining the objective, selecting factors, responses, and measurement methods, choosing the appropriate design, etc.

B. Implementation
Develop plans for implementing the improved process (i.e., conduct pilot tests, simulations, etc.), and evaluate results to select the optimum solution.

VII. CONTROL

A. Statistical Process Control (SPC)

1. Objectives

Define and describe the objectives of SPC, including monitoring and controlling process performance, tracking trends, runs, etc., and reducing variation in a process.

2. Selection of Variables

Identify and select critical characteristics for control chart monitoring.

1. Control Chart Selection

Select and use the following control charts in various situations: X - *R*, *X* - *s*, individual and moving range (ImR), p, np, c, u, short-run SPC, and moving average.

2. Control Chart Analysis

Interpret control charts and distinguish between common and special causes using rules for determining statistical.

B. Maintain Controls

1. Control Plan

Develop a control plan for ensuring the ongoing success of the improved process including the transfer of responsibility from the project team to the process owner.

C. Sustain Improvements

1. Lessons Learned

Document the lessons learned from all phases of a project and identify how improvements can be replicated and applied to other processes in the organization.

PIQC
Leading the Modern Quality Movement in Pakistan

LAHORE

PIQC Institute of Quality
1/2 Km Defence-Kahna Road, Off Monnoo Chowk, 10 Km Raiwind Road, Lahore
Ph: 042-35323600-35324167-8
Direct: 042-35323606, Fax: 35324169
Email: training@piqc.com.pk
URL: www.piqc.com.pk

KARACHI

PIQC Institute of Quality
D-63, Block 8,
Gulshan-e-Iqbal, Karachi
Ph: 021-34973784, 334822234
Fax: 021-34990775
Email: piqc@cyber.net.pk
URL: www.piqc.com.pk