SQC & OR UNIT
INDIAN STATISTICAL INSTITUTE
BANGALORE

STATISTICAL
INDIAN INSTITUTE
UNITY IN DIVERSITY

This is to certify that

Imtiyaz Biyabani

has successfully completed

MASTER BLACK BELT QUALIFYING COURSE

Conducted during 20 - 30 August 2008

(Prof. A Roy Chowdhury)
Course Director
Indian Statistical Institute

(Prof. Somnath Ray)
Course Director
Indian Statistical Institute

(Prof. U H Acharya)
Head, SQC & OR Unit
Indian Statistical Institute

Certificate # : ISI/MBB-10/2008/09

(Course coverage is given overleaf)

Dated 30 August 2008

ISI Six Sigma Certification Program

Certification acknowledges the technical expertise, analytical skill and application experience necessary to effectively lead an organization towards Six Sigma and Total Customer Satisfaction

COURSE COVERAGE

- Overview of Six Sigma Methodologies
- Review Strategies for effectively implementing six sigma in an organization
- Understanding of Deployment Strategies – Business Goals/ Dashboards/ Balance Business Score Card or Customer Goals including linkages with financial goals
- Executive and other roles and responsibilities in Six Sigma implementation
- Six Sigma Project selection-linkage to strategy
- Over view of Six Sigma Project execution (DMAIC or DFSS/ DMADV) (Define- Measure- Analyse- Improve & Control, Design for Six Sigma, Define Measure Analyse Design and Validate)
- Project Review Guidelines and selection of Belts for the projects
- Development of Project Team and Charter
- Define and Map Processes to be improved
- Voice of Customer & Quality Function Deployment
- Type of Data, knowledge of Statistical distributions
- Prioritisation Matrix and FMEA and use of it in Data Collection Planning
- Introduction to various software packages for data display & analysis like Excel, Minitab, JMP etc.- understanding in usage & interpretation of output along with each topic
- Measurement System Evaluation (Gauge R&R) for variables as well as for attribute measurements (Kappa Value and Confidence interval for agreement with expert)
- Understanding variation-special causes vs. common causes (like dot plots, box plots, histogram and control charts
- Stratification methods (like Pareto, Bar Diagrams, stratified dot plot, stratified scatter plot, Box Plot, Multi Vari Charts etc)
- Normality test of a data, evaluation of Process Capability for data from a Normal distribution and concept of confidence interval, Evaluation of Process Capability for Data from Normal Distribution and Concept of Short Term, Long Term Process Capability and assessment of Sigma level
- Identification of value added and non value added activities (use of lean concept) & Value Stream Mapping
- Organizing for potential causes using cause and effect diagram, FMEA & Tree Diagram
- Verification/validation of causes using work place investigation (GEMBA)
- Correlation and simple & multiple regression and use of the same in validating cause
- Estimation &Test of Hypothesis and use of the same in validating the causes
- Logistic regression and use of the same in validating the cause
- Design of experiment and details of full factorial, fractional factorial and screening design
- Reliability Theory, Design FMEA, Pugh Matrix, TRIZ, Fault Tree Analysis
- Taguchi Methods of Parameter Design and Tolerance Analysis
- Exploratory Data Analysis
- Multivariate Analysis like (cluster analysis, factor analysis etc)
- Conjoint analysis
- Improvement Ideas using Creativity Techniques (Traditional & non traditional)
- Solution Evaluation Criteria, Evaluation of solutions and selection of solutions
- Change Management Process dealing with resistance to change, Process of piloting the solutions& Risk Analysis through use of FMEA or related methodologies
- Concept and Examples of Poke Yoke, Visual Workplace and 5S & Planning for full scale implementation (use of Gantt Charts, Microsoft project, planning grid, involvement Matrix,
- Evaluation of results after implementation, Monitoring the results through statistical Process Control (like Control Charts, Pre-Control Charts etc) after implementation of the solutions & Monitoring the results as a part of established QMS and Institutionalisation and integration of the solutions
- Process of Closing the Project
- Work through six sigma projects of different applications