

## Lean Six Sigma Black Belt Training & Certification Program

### Course Features

The Lean Six Sigma Black Belt program is designed for someone who intends to solve a business problem by data approach. The course helps participants analyze and drive business goals in a structured manner. The course helps to get an overview of how to initiate six sigma in an organization using lean manufacturing/ management tools where appropriate. The DMAIC phases are explained in detail with a special focus on statistical improvement. All statistical calculations including the test of the hypothesis are done manually as well as using Minitab. The course covers topics as per lean six sigma black belt Body of Knowledge. This course can also be undertaken by participants with not much exposure to statistics. Where required, necessary support would be provided during training to complete the project by the coach.

### Course Objectives

- ♣ Enables participants to initiate six sigma journey in organization and drive business KPIs
- ♣ Select relevant improvement project
- ♣ Use a wide range of lean tools effectively to get quick benefit in operation
- ♣ Understand the analytical approach as required in Define, Measure, Analyse, Improve, and Control phases (DMAIC)
- ♣ Make participant conversant with statistical concept required for analysis
- ♣ Reduce variation and achieve six sigma level by applying DMAIC methodology
- ♣ Assist in project completion so that the participants can handle projects independently

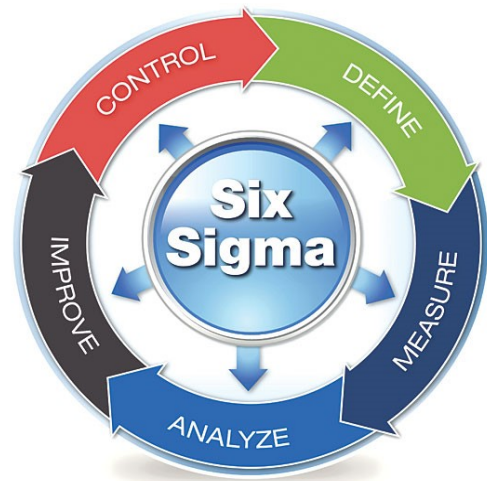
### Who should attend?

People from Operations from both manufacturing and service sectors, professionals in quality, business excellence, process engineering, consultancy etc.



**29th & 30th April,  
1st & 2nd May,  
20th to 23rd May,  
5th & 6th June 2021**

**Time: 9.30am to 5.30pm**



### Course Contents

#### Introduction and Lean Tools

##### **A. Introduction to six sigma**

1. History of Six Sigma
2. Six Sigma as business transformational strategy
3. Six Sigma Organization
4. Balanced Score card
5. Structuring a six-sigma project
6. Types of projects
7. Introduction to DMAIC
8. 12 step methodology for DMAIC

##### **B. Introduction to lean Concepts**

1. The lean concept
2. The 5 Lean principles
3. House of Lean
4. 5S and standardization
5. The 8 major wastes
6. Takt Time
7. Overall Equipment effectiveness
8. Single Minute Exchange of Dies
9. Linkage of Lean Concepts and DMAIC

## Define and Measure Phase

### **C. Define Phase**

1. Voice of customer & Voice of Voice of process
2. Project charter
3. CTQ Drill Down Tree
4. Team formation – ARMI tool
5. SIPOC
6. Value stream mapping
7. Estimation of Benefit
8. Gantt Chart
9. CTQ present state
10. Define toll gate checklist

### **D. Measure**

1. Process Map
2. Fundamental of statistics
3. DPMO, DPU and sigma level
4. Central limit theorem
5. Process capability
6. Process capability and performance
7. Attribute Capability Study
8. Measurement System analysis
9. Linearity, Bias, Stability
10. Accuracy, Precision, Discrimination, GRR for variable data
11. Effectiveness, Miss Rate, False Alarm for discrete data
12. Cause & Effect Diagram
13. Measure Toll Gate checklist

## Analysis Phase

### **E. Analyze Phase**

1. Correlation and Regression
2. Non-Linear Regression
3. Multiple Regression
4. Logistic Regression
5. Forecasting Methods
6. Test of Hypothesis
7. Concept of P-Value
8. Z test – 1 sample and 2 samples
9. T test – 1 sample
10. 2 sample t test – Paired
11. 2 sample t-test unpaired
12. F Test,
13. Analysis of Variance (ANOVA)

**Registration Fee : Rs. 42,000 + 18 % GST  
Per Participant**

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14. Concept of Chi square distribution
15. Chi Square Test for association
16. Chi square test for Goodness of Fit
17. Non parametric test- Mann Whitney Rank Test
18. Wilcoxon Sign Rank Test
19. Design of Experiment
20. Full factorial Taguchi method
21. Sampling Methods
22. 5 Why Analysis
23. Analyze Toll Gate Checklist

## Improve, Control and Final Test

### **F. Improve Phase**

1. Brainstorming
2. Action Planning
3. Cost benefit analysis
4. Piloting a solution
5. Action Implementation
6. Action effectiveness
7. Horizontal Deployment
8. Improve Toll gate review

### **G. Control Phase**

1. Basic of FMEA
2. Control Plan
3. Kaizen and Poka Yoke
4. Visual management
5. Statistical Process Control
6. Human Error and Mistake Proofing
7. Control Toll Gate Review
8. Financial Benefit Calculation
9. Q&A, Feedback and closure

### **Pre-Requisite**

- ♣ Basic understanding of business processes and KPIs
- ♣ Awareness regarding basic improvement methodology
- ♣ Identify suitable area of improvement to be included as part of project

### **Issue of Certificate**

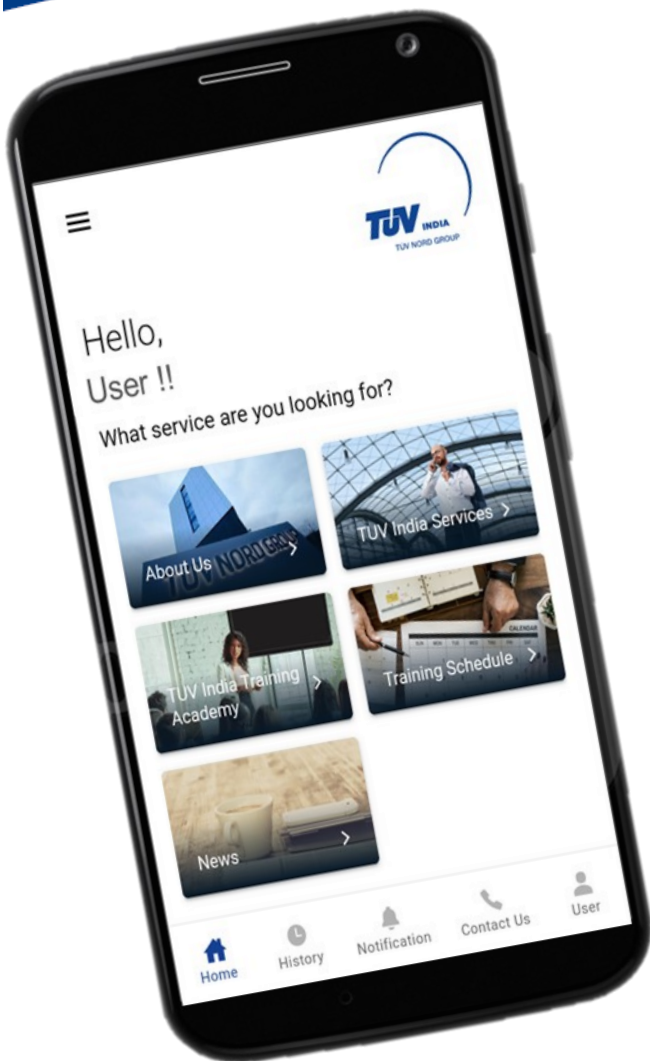
1. Certificate of successful completion shall be issued to all the delegates who attend entire duration of the course and pass the online exam.
2. At least one six sigma DMAIC Project completion demonstrating the tools application.

**Duration:** 8 Hours including 1 hour break for all 10 days



# TUV India's Customer Friendly Mobile App

## TUV INDIA TRAINING ACADEMY (TITA)



**Our user friendly mobile application is developed to provide constant connect with our customers and participants along with hands-on information about the latest offerings of TUV India Training Academy. The app is also apprising the users on diverse service portfolio of TUV India along with latest developments related to our company.**

Some of the highlights of our app are:

- Available on Android- Google Play Store & iOS Apple Store
- Provides overview about TUV India (TUV NORD GROUP), our services and latest developments
- Details about TUV India Training Academy offerings
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