

Six Sigma Green Belt Training

Georgia Tech IIE Chapter

Introduction

The philosophy of six sigma recognizes that there is a direct correlation between the number of product defects, wasted operating costs, and the level of customer satisfaction. With six sigma, the common measurement index is defects per unit and can include anything from a component, piece of material, or line of code to an administrative form, time frame, or distance. Six sigma emphasizes identifying and avoiding variation. The use of six sigma changes the discussion of quality from one where quality levels are measured in percentages (parts per hundred) to a discussion of parts per million or even parts per billion.

The implementation of six sigma is a team process. The top executive and upper management must be part of the six sigma process. Six sigma is a multiyear undertaking that demands an ironclad commitment—way beyond lip service—from the highest corporate executive. In short, it is not a quick fix.

Methodology

The six sigma strategy involves a series of steps that are specifically designed to lead the organization through the gauntlet of process improvement. These major steps include the following:

1. **Define.** Defining the current process including inputs, outputs, customers, suppliers, value added, and key measures or indicators of customer satisfaction.
2. **Measure.** This involves the identification of critical quality characteristics, documents the existing process, performs necessary measurements, and estimates the process capability.
3. **Analyze.** The second step allows analysis of performance measures to determine the amount of improvement that might be possible to make the critical quality characteristic “best in class.” This may involve process redesign.
4. **Improve.** This phase guides the organization to specific product characteristics that must be improved to achieve the performance and financial goals. Once this is done the characteristics are diagnosed to reveal the major sources of variation. Key process variables are identified by way of statistically designed experiments. Optimum performance levels for each result from the experiments.
5. **Implement.** After improvements have been developed and appropriate cost justifications performed they must be implemented. This requires project management skills.

6. **Control.** This phase is for documentation and monitoring of the new process conditions to assure that the implemented improvements are used as intended. Standardization of the methods and procedures is essential. It is also essential that projected benefits are verified.

Since organizations are built around people and their knowledge, the success of the six sigma quality improvement strategy depends on individuals who are properly trained. The successful six sigma efforts are led by individuals within the organizations, commonly called “black belts,” who are expert in the methods and applications of the six sigma tools.

Green Belt Training

General overview or Green Belt training is a three-day program. Concepts and methodologies are explained and illustrated. Participants learn about data collection and the interpretation of the data, specifically as it relates to the processes. Participants must pass an examination to receive the IIE Green Belt Certificate. The examination is given during the afternoon of the last day of training.

The three-day class is IIE’s basic Six Sigma for Process Improvement course.

Specific topics covered include

- Six Sigma philosophy
 - o Objective
 - o Organization
 - o Structure
 - o Approach
- DMAIC
- Six Sigma Projects
- Variation
- Histograms
- Basic Statistics
- Statistical Process Control
 - o Variables
 - o Attributes
- Process capability
- Root Cause Analysis
 - o Break even
 - o Flow charts
 - o Pareto analysis
 - o Check sheets
 - o Ishikawa diagrams
 - o Scatter diagrams