



# Six Sigma

## Summary

This Six Sigma course develops the knowledge and skills of a Six Sigma Green Belt candidate. This general course does not specifically focus on application in software/IT organizations. The course includes the methods, the descriptive statistics, and the project management skills necessary to use DMAIC to improve processes. The goal of the DMAIC approach is to take a process from its current level (baseline) to a desired target. The discussed DMAIC "tool kit" includes a large variety of statistical tools for analyzing variation and determining whether observed variation is simply sampling variation or whether it is likely due to some real phenomenon. The statistical tools include descriptive graphical displays, such as Pareto charts, histograms, scatter plots, dot plots, box plots, and time series charts. They also include measurement system analysis (Gauge R&R), hypothesis testing, confidence intervals, p-values, t-testing, ANOVA, regression analysis, and design of experiments (full factorial design).

The course is composed of lectures and class exercises with ample opportunity for participant questions and discussions. Much of the class time is devoted to one large exercise in which participants, working in small teams, practice the skills being taught.

## Audience

This course is designed for anyone interested and/or involved in Six Sigma.

## Criteria

Refreshment of basic knowledge of mathematics (statistics) is recommended.

## Duration

3 days (6 modules).

## Remarks

Course participants might need to spend some additional time on the case study after the end of the first and second course day.

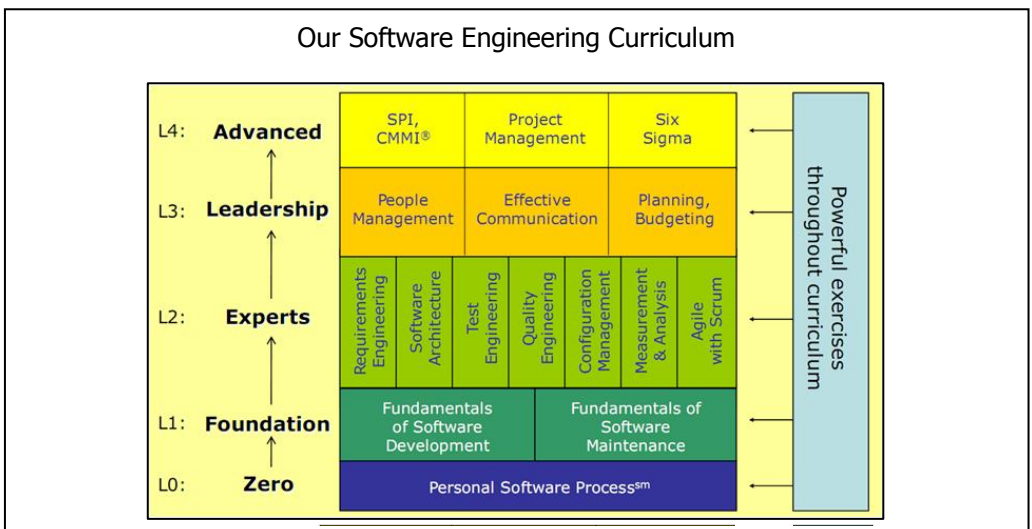


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# Program

## Module 1:

- Six Sigma Background
  - o What is Six Sigma?
  - o History of Six Sigma
  - o Roles and responsibilities
- Basic Statistics
  - o Data worlds
  - o Process capability and Z-Score

## Module 2:

- Define Phase
  - o D1. Define the business case
  - o D2. Understand the customer
  - o D3. Define the process
  - o D4. Manage the project
  - o D5. Gain project approval

## Module 3:

- Measure Phase
  - o M1. Develop process measures
  - o M2. Collect process data
  - o M3. Check the data quality
  - o M4. Understand process behaviour
  - o M5. Baseline process capability

## Module 4:

- Analyse Phase
  - o A1. Analyse the process
  - o A2. Develop theories and ideas
  - o A3. Analyse the data
  - o A4. Verify root causes

## Module 5:

- Improve Phase
  - o I1. Generate potential solutions
  - o I2. Select the best solutions
  - o I3. Assess the risks
  - o I4. Pilot and implement

## Module 6:

- Control Phase
  - o C1. Implement ongoing measurement
  - o C2. Standardise the solutions
  - o C3. Quantify the improvement
  - o C4. Close the project
- Lean Six Sigma
  - o Lean principles
  - o 5S



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In this course, the Six Sigma DMAIC model will be applied to a paper helicopter experiment. Each team will represent a manufacturer company with the objective to outperform competition and maximize profit, forcing the teams to apply all the discussed theory. Very instructive and big fun!

The DMAIC sub-steps used in this course are defined in the 'Lean Six Sigma and Minitab' pocket guide, published by OPEX Resources ([www.opexresources.com](http://www.opexresources.com)).