

Six Sigma Greenbelt Exam

IENG 461

The Six Sigma Greenbelt Exam is a one credit, self-paced course. Successful completion of this course satisfies the exam requirement for Six Sigma Green Belt Certification.

Overview:

One of the necessary steps to attain Greenbelt certification is proof that the person to be certified has a base of knowledge necessary to successfully complete the six sigma problem solving methodology on a greenbelt level. The six sigma process improvement methodology is: Define, Measure, Analyze, Improve, Control.

Exam Topics:

The following topic areas are considered “fair game” for the six sigma greenbelt exam:

- Five step Six Sigma design/improvement process
 - Define, Measure, Analyze, Improve, Control
- Project selection
- Underlying Six Sigma philosophy
- Understanding process metrics
- Process Mapping
 - Value Stream Mapping
 - SIPOC
 - Process Flow Chart
- Data Collection
- Measuring the current state of a process
 - Yield
 - DPM
 - DPMO
- Basic quality tools
 - Check Sheets
 - Pareto Analysis
 - Cause-And-Effect Diagrams
 - Sources of Variation
 - Frequency Analysis and Histograms
 - Understanding Data Patterns (shapes, outliers)
- Descriptive statistics for one variable
- Stratification Analysis
- Root Cause Problem Solving
- Measurement System Analysis
 - Types of Measurement Error
 - Gage Accuracy
 - Gage Repeatability & Reproducibility
- Process Capability Analysis
 - Capability Indices (Cp, Pp, CR, Cpk, Ppk)
- Two Variable Analysis – Scatter Plot/Correlation

- Scatter Plot
- Simple Linear Regression
- Correlation, R
- Assessing Model Accuracy, R²
- Regression Abuses / Misinterpreting Correlation
- Basic Statistical Process Control Charts
 - X-bar and R charts
 - p charts
 - u and c charts
- Quality's impact on productivity
- Financial analysis of a project

Reference Material and Courses:

Beyond the courses required for the certificate, the following books, articles, web sites, and courses are recommended to aid in exam review and preparation:

- IENG 302 (Engineering Economics)
- IENG 311 (Work Methods and Measurement)
- The Black Belt Memory Jogger, by Goal/QPC
- Basic Statistics: Tools for Continuous Improvement, by Mark J. Kiemele, Stephen R. Schmidt, & Ronald J. Berdine
- The Management and Control of Quality by Evans and Lindsay
- The Lean Six Sigma Pocket Toolbook by Michael George, David Rowlands, Mark Price, and John Maxey
- <http://www.isixsigma.com/>

Exam Taking Information:

The Six Sigma Greenbelt exam is a 40 question multiple-choice exam. A student must correctly answer at least 70% of the questions to pass the exam. Students are required to schedule a time to take the exam during the final exam week. The only exam aids allowed to the test taker are: a calculator and a single, two-sided, 8 ½" x 11" piece of paper containing notes. The sheet of notes must be turned in with the exam. Each student will be provided with a set of compound interest tables for use during the examination period.