



## Six Sigma Black Belt Standards

### Introduction

These open source standards represent the minimum required standards for credentialing the above-named process improvement methodology. To comply with *Process Improvement Credentialing Standards*, organizations must conduct testing which covers all body of knowledge elements below. Organizations must also comply with *Process Improvement Credentialing Standards* 15-point organization standard v 0.1.115 or higher. Elements do not necessarily need to be presented in the order shown below. Trainers and organizations are encouraged to teach additional information above and beyond these standards at each level.

### Body of Knowledge

1. General Topics
  - 1.1. History and overview of Six Sigma
  - 1.2.  $y = f(x)$
  - 1.3. Process Variances
  - 1.4. TQM and other competing quality process improvement methods
  - 1.5. Understanding and recognizing opportunities to use Six Sigma within an organization
  - 1.6. Managing and understanding Quality as seen by the customer
  - 1.7. Deciding when to start a Six Sigma project
  - 1.8. Organizational Roles and Responsibilities of project members
  
2. General Topics 2
  - 2.1. DMADV (Design for Six Sigma) variation
  - 2.2. Critical to Quality (CTQ)
  - 2.3. Cost of Poor Quality (COPQ)
  - 2.4. Project Leadership & Mentoring
  - 2.5. Understanding of Six Sigma Champion role

3. DMAIC – Define
  - 3.1. Defining a project
  - 3.2. The project charter
  - 3.3. Developing the business case
  - 3.4. Developing the project team
  - 3.5. Voice of the Customer
  - 3.6. SIPOC
  - 3.7. Define Phase Review
  
4. DMAIC - Measure
  - 4.1. Process Mapping
  - 4.2. Basic Six Sigma statistics
  - 4.3. Cause & Effect
  - 4.4. Basic data collection
  - 4.5. Variation
  - 4.6. FMEA & Gage R&R
  - 4.7. Baseline Performance
  - 4.8. Statistical software options
  - 4.9. Measure phase review
  
5. DMAIC - Analyze
  - 5.1. Charting Data (Run Chart, Pareto, Histogram)
  - 5.2. Root Cause Analysis
  - 5.3. Correlation and Regression
  - 5.4. Hypothesis Testing
  - 5.5. Analysis of Variance (ANOVA)
  - 5.6. Design of Experiments (DOE)
  - 5.7. Verify root causes
  - 5.8. Analyzing opportunities
  - 5.9. Analyze phase review

6. DMAIC - Improve

- 6.1. Brainstorming
- 6.2. Improvement opportunities
- 6.3. Plan for implementation
- 6.4. Improve phase review

7. Control

- 7.1. Control plan
- 7.2. Statistical Process Control Plan
- 7.3. Final tollgate

## Recommendations

- Students should receive 175 hours of study time or combination of study and practical application of skills to be certified at the Black Belt level. Training can be in-class, online, or any combination of blended learning. Experience doesn't necessarily need to be project-based, all work with process improvement methodologies can be considered. Certification bodies are given leeway to decide policies regarding experience reviews.
- Students should be exposed to multiple process improvement methodologies, including Lean, Total Quality Management, 5S.
- Students should be supplied with a certificate of completion showing their name and date of certification. Digital certificates are sufficient.
- Students must be issued a unique certification ID#
- Students should be supplied with a list of additional Black Belt-level books and/or courseware for continuous learning opportunities.