

University of Arkansas – Fort Smith
5210 Grand Avenue
P. O. Box 3649
Fort Smith, AR 72913–3649
479–788–7000

General Syllabus

WFL 2303 Six Sigma (6 Σ) Strategies

Credit Hours: 3

Lecture Hours: 3

Lab Hours: 0

Prerequisite: MATH 1303 College Mathematics, MATH 1403 College Algebra, or consent of department head

Effective Semester: Summer I 2011

I. Course Information

A. Catalog Description

An overview of Six Sigma methodologies used to improve company performance with an emphasis in the DMAIC (Define, Measure, Analyze, Improve, Control) approach. The course will also examine the value of using quality and performance measures to define strategy in an organization.

B. Additional Information - None

II. Student Learning Outcomes

A. Subject Matter

The learner will:

1. Identify problems that can be corrected using Six Sigma
2. Describe the 5 steps in the DMAIC model
3. Sketch a SIPOC diagram and use it to identify improvement opportunities
4. Develop an x-bar and R chart
5. Explain how DFSS (Design for Six Sigma) can be used to produce high quality
6. Describe the most common mistake-proofing techniques used in manufacturing
7. Write a control plan that will identify developing quality problems
8. Develop an initial implementation plan for Six Sigma Strategies in your company
9. Calculate defective percent, DPMO, and sigma quality level
10. Calculate net present value (NPV), payback, and return on investment (ROI)

B. University Learning Outcomes

This course enhances student abilities in the following general education areas:

Global and Cultural Perspectives

Course exercises and assessments use true-to-life business scenarios which address issues of diversity and global business climate.

Communication Skills

Class presentations will require students to exercise skills in small group and oral communication

Analytical Skills

Students will work with and use various complex analysis tools to solve real-world business problems.

Technological Skills

Students will use computer applications to support their analysis of business problems.

Quantitative Reasoning

Course exercises and assessments require students to set up and solve complex mathematical function using spreadsheet features. Discussion and explanation of certain business math formulas will be an integral part of the course.

III. Major Course Topics

- A. DMAIC approach to improvement activities
- B. SIPOC model (Suppliers, Inputs, Process, Outputs, Customers)
- C. Statistical Process Control (SPC) overview
- D. The Value of CTQs (Critical to Quality)
- E. Overview of Design for Six Sigma (DFSS)
- F. Introduction to Analysis of Variance (ANOVA)
- G. Confidence intervals
- H. Overview of DOE (Design of Experiment)
- I. Value of FMEA (Failure Modes & Effects Analysis)
- J. Mistake proofing concepts
- K. Developing control plans & control charts
- L. Starting a Six Sigma program
- M. Project Management
- N. Quality calculations
- O. Financial analysis: Break even analysis, net present value (NPV), payback, return on investment (ROI)
- P. Six Sigma best practices

Q. The Green Belt and Black Belt certification