

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

## **General Syllabus**

### **WFL 2303 Lean Six Sigma Strategies**

Credit Hours: 3      Lecture Hours: 3      Laboratory or other types of Hours: 0

Prerequisite(s): WFL2173 Introduction to Lean Enterprise Systems **or** Consent of Instructor

Prerequisite(s) or Corequisite(s): None

Corequisite(s): None

Effective Catalog: 2020-2021

#### **I. Course Information**

##### **A. Catalog Description**

A study of Lean Six Sigma (LSS) methodologies used to improve company performance with an emphasis in the DMAIC (Define, Measure, Analyze, Improve, Control) approach. The course examines the value of using quality and performance measures to define strategy in accordance with Lean Six Sigma Yellow and Green Belts.

##### **B. Additional Information - None**

#### **II. Student Learning Outcomes**

##### **A. Subject Matter**

Upon successful completion of this course, the student will be able to:

1. Analyze and identify problems that can be corrected using Lean Six Sigma.
2. Describe and map 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 the relationship between DFLSS (Design for Lean Six Sigma) and degree of quality.
6. Describe the most common mistake-proofing techniques used various workplaces.
7. Create a control plan that will identify developing quality problems.
8. Develop an initial implementation plan for Lean Six Sigma Strategies in the workplace.
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 areas:

### **Analytical Skills**

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

**Quantitative Reasoning** - Students will design tests and solve complex mathematical equations using spreadsheet features. Discussion and explanation of certain business math formulas will be an integral part of the course.

### **Communication Skills (written and oral)**

Students will communicate verbally and in writing with a wide range of audiences as they collaborate to solve complex workplace issues using Lean Six Sigma methodologies.

### **Global and Cultural Perspectives**

Students will reflect upon and analyze business efficiency scenarios in both domestic and transnational organizations.

## **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 and Effects Analysis)
- J. Mistake proofing concepts
- K. Developing control plans and 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. Lean Six Sigma best practices