

**IE 4923/6923 Six Sigma Methods & Project  
Syllabus – Fall 2007  
Larry G. Dalton, P. E., CSSBB**

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**Catalog Description:**

IE 4923/6923. Six Sigma Methods and Project. (3) (Prerequisites: IE 4623/6623, IE 4653/6653). One hour lecture. Four hours laboratory. Introduction of six sigma and problem solving methodologies. Application of learned methodologies in selecting, performing, and completing a process improvement project.

**Prerequisites by topic:**

- Engineering Statistics I & II (IE 4613 & IE 4623)
- Industrial Quality Control, IE 4653.

**Textbooks and other required material:**

- Breyfogle, Forrest W. III, Implementing Six Sigma, John Wiley & Sons, Inc., ISBN 0-471-26572-1
- Quality Council of Indiana, CSSBB Primer
- Minitab Statistical Software (Version 14 or higher)

**Course Objectives:**

1. To leverage basic Industrial Engineering knowledge with advanced methods commonly identified with six sigma (ref: American Society for Quality (ASQ) Body of Knowledge)
2. To apply applicable Six Sigma DMAIC methodologies in the performance of a “real world” continuous improvement project.
3. To appreciate the value of, and utilize teamwork in accomplishing improvements to the “as is” process.
4. To demonstrate competence using Industrial Engineering and Six Sigma “tools” in achieving quantifiable results.
5. To demonstrate professional capabilities in communicating project results to an audience of peers and others.
6. To prepare a student participant for the ASQ Certified Six Sigma Black Belt Exam.

## Course Topical Outline:

- I. Introduction to Six Sigma**
  - A. Enterprise-wide Deployment
  - B. History of Six Sigma
  - C. Six Sigma Roles and Responsibilities
  - D. Linking Projects to Organizational Goals
  
- II. Six Sigma Body of Knowledge**
  - A. Define
  - B. Measure
  - C. Analyze
  - D. Improve
  - E. Control
  
- III. Six Sigma Project Selection and Planning**
  - A. Outline of Project Expectations/Entitlement
  - B. Project Selection
  - C. Determination of Project Scope
  - D. Development of Project Charter
  - E. Development of Project Business Case
  - F. Team Selection and Development
  
- IV. Project Performance**
  - A. Baseline Current Process Performance
  - B. Evaluate and Select Project Methodologies
  - C. Establish Six Sigma Baseline Metrics
  - D. Validate Measuring System
  - E. Collect Data
  - F. Analyze Data
  - G. Perform Process Improvement Experiments
  - H. Implement Improved Process
  
- V. Project Completion and Presentation**
  - A. Determine Six Sigma Control Methodologies
  - B. Implement Methodologies
  - C. Measure Process Performance and Determine Project Financial Benefits
  - D. Develop Written Project Report
  - E. Develop Presentation
  - F. Make Presentation

## Method of Evaluation & Grading Scale:

### 100 Point Scale

<b>A</b>	90 - 100
<b>B</b>	80 - 89
<b>C</b>	70 - 79
<b>D</b>	60 - 69
<b>F</b>	Below 60

### Method of Evaluation & Weighting

Attendance, Participation, & Assignments

20%

Project Performance

55%

- Use of Six Sigma Methods 20%
- Written Project Report 15%
- Project Management/Results 10%
- Oral Project Presentation 10%

Final Exam

25%

- The final exam will be very similar to the ASQ Certified Six Sigma Black Belt Exam. It will consist of 100-125 multiple choice questions covering various topics from the ASQ CSSBB Body of Knowledge (2007 Revision).

Assignment Set

- Multiple assignments will be made during the course. These assignments will involve a variety of problems, questions, or exercises associated with six sigma methodologies. The purpose of these assignments is to “exercise” the student’s abilities to use a variety of six sigma “tools” that may not otherwise be required during the course of their applied project. All assignments will be due no later than the last scheduled class date (11/28/2007)

Graduate Student Assignment

- Students enrolled in the graduate level course will be required to complete a separate experimental project or research paper involving a six sigma method or topic approved by the instructor. This assignment will be due on or before the last scheduled class date (11/28/2007).

## **University Honor Code**

Mississippi State University has an approved Honor Code that applies to all students. The code is as follows:

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Upon accepting admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code. For additional information please visit:

<http://www.msstate.edu/dept/audit/PDF/1207.pdf>

LD 8/20/2007