University of Bridgeport School of Engineering

Technology Management Program

TCMG 578
Six Sigma

Fall 2013 Semester (8/26/2013 – 12/4/2013)

Monday, 6:15 - 8:45

Course Syllabus

Room Mandeville 318

Instructor: Dan Tenney dtenney@bridgeport.edu
MBA, CQE, LSS Coach

Office Location: Tech Building, Room 211
Office Hours: 5:30pm Monday (by email appointment)

Course Overview

Six Sigma is a methodology and set of quality management tools (especially statistical methods) used to improve the quality of process outputs, while identifying and removing the causes of defects or errors and minimizing variability in manufacturing and business processes. This course teaches the core methods and philosophy of Six Sigma, how to champion and setup six sigma in an organization, and what tools are used at the prescribed stages of the improvement cycle. When successfully completing the course, the student will have been exposed to the tools and common methodology used when becoming a certified green belt as used in a world class lean six sigma organization. A team project will signify that the students not only understand the tools but have applied them appropriately to a green belt style project.

The teaching approach consists of lectures, practical case studies and examples, team problem solving, class readings/homework assignments, use of Six Sigma tools, a mid term exam and a team project.

Course Learning Objectives

The course objective is to develop an operational familiarity with Six Sigma and its prescribed tools, and how to apply them in a variety of situations. Continuous process improvement methodologies and techniques will be covered and applied to real life applications.

The objectives of the course are to demonstrate:

- A comprehensive understanding of the modern six sigma methods for continuous improvement.
- An understating of preventing, detecting, and analyzing the root cause of variation in manufacturing and service industries with the intended outcome of reducing variation to the appropriate six sigma level.
- Learn Lean Six Sigma best practices by reviewing current and emerging quality industry standards and practices as suggested by the American Society for Quality (ASQ), ISO 9000, recognized Lean Six Sigma methodology,etc.

Course Topics

Course topics include:

- Introduction to basic concepts of Six Sigma
- Six Sigma Championship, Roles and Responsibilities
- Six-Sigma Process and the DMAIC Roadmap(and requisite tool usage)
- Practical Industry Six Sigma examples and outcomes
- Team problem solving and dynamics using leadership and six sigma project management tools and examples

Text Books and Readings

1. Six Sigma for Green Belts and Champions, Howard Gitlow, Ph.D; David Levine, PhD, 10th printing, September, 2012, Pearson Publishing

2. Reference: Six Sigma For Everyone, George Ekes, John Wiley and Sons, Copyright 2003
3. Additional readings or handouts may be added as appropriate throughout the course

The text or relative chapter of the electronic text, and any handouts/ assignments must be brought to every class.

Software
General spreadsheet presentation software – preferably Microsoft will be used periodically throughout the course. Reference to Minitab and usage instruction will be provided in the primary text

Course Requirements

1. Class Attendance, Participation, Punctuality, Cheating and Plagiarism:
Timely attendance at each class session is expected. Class lectures complement, but do not duplicate, textbook information. **Together students and instructor will create a learning organization.** Students are expected to be on-time for class. A significant portion of your learning will accrue through the constructive and respectful exchange of each other's ideas and search for alternative solutions. You must be actively engaged in class discussions to improve your thinking and communication skills.

Cheating and plagiarism is **ABSOLUTELY UNACCEPTABLE** in any guise. Cheating and plagiarizing means using the work of others as your own. Copying homework, using papers from the Internet, any talking or looking around during exams and allowing others to look at your exam papers are examples of cheating.

It is the student's responsibility to familiarize himself or herself with and adhere to the standards set forth in the policies on cheating and plagiarism.

More than 2 unexecused absenses will result in class failure.

2. Preparation, Deadlines and Late Policy:
Late assignments will be **penalized 20% for each class day past the deadline**. No excuses will be accepted without teacher consent. Don't wait until the last minute to print out your assignment.

3. Homework:
The syllabus identifies both the homework assignments. The homework will be handed at the prescribed date and will coincide with the class stage and learning objectives. Each assignment should be **typed** and only **one or two pages long**. It will be collected per the schedule and may be referred to during class discussion.

4. Current Events/ News:
Each student will re encouraged to read and research beyond the recommended and texts and handouts.**This will be necessary when researching your team project.** Suggested sources include: *Wall Street Journal, New York Times, Business Week, The Economist, Harvard Business Review, Sloan Management Review, MISQ Executive, Organization Science, Academy of Management Executive, Information and Management, Management Science, Newsweek, Time, Fortune, Forbes, Financial Times, the American Society for Quality (www.asq.org),*
Quality magazines and other internet sites.

5. Term Team Project and Presentation:*

By the third class session, teams will be formed. Each team will be responsible for **developing a final course project**. At the end of the course, the team will present to the class and **give a hardcopy of the PowerPoint presentation to the instructor when the students are scheduled to make the presentation**.

To receive a high grade, **every member of the group must equally participate in the presentation, its preparation and delivery.**

*Discussed in first class. Use of DMAIC Six Sigma problem resolution

6. Individual Mid Term Exam and Potential Quizes

A Mid Term Exam will be given that covers Six Sigma and the DMAIC process. There may be a quiz(zes) to ensure that all key Six Sigma areas have been covered and tested.

Suggested topics for a Team Project include:

- Case studies in Six Sigma application
- The Toyota production system
- Joe Juran and his methods
- W Edwards Deming and his methods
- International Quality Standards(ISO, etc,.)
- Case Studies in Quality Improvement
- The Importance of ASQ Certifications – Why, What, How and So What
- Six Sigma Programs and their usage/value
- Cost of Quality – Why, What and How?
- Baldrige Award – Who has it, Why, What and How?
- Other Topics are acceptable with the approval of the instructor

7. Course Grading

Assignments		
Class (homework,participation,quizes)	30 %	
Mid-term Exam	30%	
Team Project	40%	
	100	(Bonus pts at instructor discretion)

One or more quizzes may be given at the discretion of the instructor.
Attendance / participation will be considered as a part of the final grade.
Bonus points may be credited throughout the course.
The grading is subject to change and the changes will be communicated with the students.

All papers must meet anti-plagarism requirements as defined by the university and accepted standards.

9. Course Structure

Lecturing is only one of the three approaches used in this course. Knowledge will be acquired through facilitated class discussion and student presentations. Students are expected to engage actively in preparing for and participating in course discussions. For completing the assignment and project, students may need to do additional research, and look for information and knowledge that is not covered by the textbook and the lectures. It is assumed that a major learning objective for this course is to cultivate students' capability in searching, identifying, evaluation, using, and integrating relevant knowledge that may or may not be provided in the class.

Important Dates:

Classes Begin: 8/26 Monday

Mid Term 10/14 Monday

Last Day of Class: 12/4 Monday

Schedule & Assignments

Date	Topics and Assignments	Reading (must be done before class)
Sessions #1 & #2 8/26;9/9	Overview of Six Sigma Championship, Roles , Responsibilities **Formation of Project Teams (by week 2)** **Homework1 Handout in Class 1 due Class 2**	Read: - Chapter 1 , 2 p. 3-42
Session #3&4 9/16, 9/23	DMAIC Process **Define Discussion** Dashboards Charter Problem Definition VOC VOP SIPOC **Potential Guest Lecturer: VOC** **Homework 2 Handout in Class 3**	Read: - Chapter 3/4 p. 45-100
Session #4 & #5 9/30,10/7	DMAIC Process **Measure Discussion** ❖ Process Capability ❖ Process Map ❖ CTQs	Read: - Chapter 5 p.104-141

	❖ C&E ❖ Measure System Analyses (GRR) **Discuss Answers to Homework 2 in Class 4** **Handout Homework Class 5**	
Session #6 10/14	Mid – term Exam	Chapters 1-5
Sessions #7 10/21	DMAIC Process **Analyze Discussion** ❖ Control Chart X Bar R Charts P and NP Charts C Charts ❖ Check Sheet ❖ Pareto Chart ❖ Scatter Diagram ❖ FMEA ❖ Cause and Effect Diagram **Homework Handout Class 5 due in Class 6**	Read: - Chapter 6 p.145-191
Session 8,9 10/29, 11/4	DMAIC Process **Analyze/Improve Discussion** Lean Six Sigma Overview	Chapters 6, 7 p. 143-215 LSS Handout
Sessions #10 11/11	DMAIC Process **Control Discussion** **Guest lecturer : Control Plans**	Chapter 8 p. 217-226
Session #11 11/18	**Field trip to 3M to review Six Sigma and LSS project examples by Green Belt or Black Belt presenters.**	Teams will present their DMAIC team projects
Session #12 **11/25**	Review Six Sigma learnings and Green Belt certification correlation to the class learnings	Class discussion
Session #13 **12/4**	**Last day of classes/Team presentations**	Team presentations