MGT 810N
Six Sigma Principles & Methods
Fall 2009

Instructor:	Alan L. Deutschendorf, Jr.
Office:	46 Fisher Hall
Office Phone:	(614) 292-5289
Mobile/Work:	(614) 404-7232
E-mail:	Deutschendorf.1@osu.edu
Office Hours:	Monday and Wednesday 8:00 PM – 9:00 PM. Please make appointment for additional office hours.
Class Time & Location:	M/W: 6:00 PM – 7:48 PM, 275 Gerlach Hall unless otherwise noted in the syllabus
On-Line Training:	www.moresteam.com

PREREQUISITES

This course is open to candidates who have completed MBA850 and MBA870. Students are expected to be proficient in the use of Minitab or other statistical packages and have access to a Windows-based computer with high-speed internet access.

COURSE DESCRIPTION

This course is designed to familiarize students with the Six Sigma process improvement methodology and to provide them an opportunity to practice using Six Sigma Black Belt tools. A Six Sigma Black Belt is an individual who is skilled in applying basic and advanced process improvement and project management methods in order to complete projects that will result in significant, sustainable improvements within an organization. Originally developed by Motorola to improve quality in their manufacturing processes, Six Sigma has been adopted by companies throughout the world to improve all types of processes.

When applied in business environments, Six Sigma programs have been used to dramatically increase an organization's ability to improve quality and customer satisfaction while reducing overall costs. Companies such as AlliedSignal and General Electric have used Six Sigma to significantly increase productivity, operating income and cash flow.

In this course, students will gain an understanding of the strategy and deployment of Six Sigma Black Belt methods. The classroom sessions will combine lectures with group discussions, case based simulations, outside speakers and hands-on exercises.

To compliment the Monday and Wednesday sessions, students will be required to complete online coursework at www.moresteam.com and other assignments during non-classroom hours.

WHO IS A GOOD BLACK BELT CANDIDATE?

The job description for a Black Belt is one that requires application of Six Sigma tools to achieve a process improvement. The desirable qualities of a Black Belt candidate include a mix of technical aptitude, project management, leadership skills and "soft skills" such as coaching. Of these, the leadership skills and the ability to deliver results are typically weighted the highest. In short, the ideal candidate will be a respected "go-getter" with a technical foundation and a team player.

REQUIRED COURSE MATERIALS

All students will be required to purchase MoreSteam.com's web-accessed Six Sigma training program. The cost is $400.00. Please make checks payable to The Ohio State University.

PERFORMANCE EVALUATION

Grading:

√ Timely completion of MoreSteam.com coursework and quizzes	18%
Sigma Brew Tollgates	20%
Midterm I	20%
Design of Experiments Project Analysis	4%
Peer Evaluation	5%
Final Exam	33%

Moresteam Quizzes

Students will be graded on the successful completion of the Moresteam.com quiz(zes) every Monday (8 AM). This is identified with a DUE: on the course outline syllabus. No collaboration of any kind is allowed on Moresteam quizzes.

Moresteam Quiz grading scale:

100% completion with 80% correct	=	1 ½ points
100% completion with 70-79% correct	=	¾ points
<100% completion	=	0 points

Sigma Brew Tollgates:
Each team will be expected to turn in a Tollgate presentation for Define, Measure, Analyze, and Improve pertaining to the online case SigmaBrew. The final Tollgate presentation will be a storyboard. Presentations will be turned in at the beginning of class. Tollgate presentations will be available on-line at Carmen.

Examinations:

Examinations will be multiple choice (much like the quizzes at the end of the sessions) and be based on the content from Moresteam.

No make-up, late or early exams will be given, except in the case of medical emergency.
Business related absences are not excused. Students should make arrangements now to avoid time conflicts.

Experimental Design Project

Conduct a helicopter test using a two or three factor experimental design.

Prepare a written report, 3 pages or less, of the form:

Introduction:

Concise statement of the research question. What results do you anticipate or predict? Where did the +/- choice come from?

Methods:

Clearly describe the precise nature of the experimental design. Detail here is important. Identify variables that were manipulated, held constant, randomized, or ignored. Factors, treatment levels, dependent variables(s), fixed vs. random effects, main effects and interactions should be noted.

The nature of the data collection process is to be described in detail. When and under what conditions was the experiment observed?

Describe any measurement error in the system.

Results:

Report the ANOVA results and include the ANOVA table. Indicate what effects were significant, and effect sizes. Include graphical output, transfer function, optimization (choice of levels) with expected outcome. Conduct Post Hoc tests if appropriate.

Discussion:

Discuss your experimental results. What prior expectations were sustained or refuted? What threats to internal, construct, and external validity might have occurred? What is the generalizability of your results? What sort of experimentation would you recommend for the second round of tests, optimization tests or future experiments?

References:

List any references as appropriate to support you report.

Classroom Performance

The value of the class discussions is directly related to the amount of quality student participation.

- evidence of careful preparation of the on-line course work
- clarity and conciseness of your comments and recommendations

This class is generally aided by the use of laptop computers. However, your participation is greatly reduced by checking emails and other non-related internet websites during class. The computer is to be used for data analysis only during class.

DISABILITY ACCOMMODATION

If you need an accommodation based on the impact of a disability, arrange an appointment with me as soon as possible. We need to discuss the course format and explore potential accommodations. I rely on the Office for Disability Services for assistance in verifying need and developing accommodation strategies. You should start the verification process as soon as possible.

ACADEMIC MISCONDUCT

Material submitted for course grade credit **must** be your own work. I will report any suspected case to the University Academic Misconduct Committee for investigation. Past cases have typically resulted in a failing grade for the course. Academic misconduct is a serious threat to the integrity and value of the Fisher College diploma. Such behavior is intolerable.

COURSE OUTLINE

Date	***Assignments:***	***Activity/Topic Covered***
1. Wed., Sept. 23	Review: Session 1 – Introduction to Lean/Six Sigma	• Introduction to Six Sigma • Course Overview • Introduce SigmaBrew • Create SigmaBrew Teams • Collect fees
2. Mon., Sept. 28	**DUE:** Session 1 – Introduction to Six Sigma **DUE:** Session 2 – Define 1, The Value Stream Read SigmaBrew – Session 1-5, DO NOT PROCEED PAST SESSION 5 **DUE:** Your team should bring a project charter for SigmaBrew to class	• Policy Deployment and value based project selection • Process mapping • Review Project Charter • DiSC • Team Launch
3. Wed., Sept. 30	Review: Session 3 – Define 2, Voice of the Customer Read: Enterprise Rent a Car – Course Packet	• Enterprise Rent a Car • Voice of the Customer • Surveys • Kano Model • Watch SigmaBrew Video • Build SIPOC • Review Define Tollgate
4. Mon., Oct. 5	**DUE:** Session 3 – Define 2, Voice of the Customer **DUE:** Session 4 – Measure 1, Measurements and Basic Statistics **DUE:** SigmaBrew Define Tollgate	• Teams Report Out: Define Tollgate • Introduction to basic statistics
5. Wed., Oct. 7	Review: Session 5 – Measure 2, Measurement System Analysis	• Data Collection Plan • Measurement System Analysis • Review Measure Tollgate
6. Mon., Oct. 12	**DUE:** Session 5 – Measure 2, Measurement System Analysis **DUE:** Session 6 – Charting Process Behavior	• Gage R&R • Control Charts

Date	***Assignments:***	***Activity/Topic Covered***
7.Wed., Oct. 14	Review: Session 6 Read: My Supplier's Capability is What? (Carmen)	• Process Capability • DPMO/Yield/Capability
8. Mon., Oct. 19 **321 Mason Hall**	In class quiz: Sessions 1-6 **DUE:** SigmaBrew Measure Tollgate	• Quiz open to moresteam only • Teams Report Out: Measure Tollgate
9. Wed., Oct. 21 **321 Mason Hall**	Review: Session 7 – Analyze I – Possible Root Cause	• Basic problem solving tools • Pronto Pizza
10. Mon., Oct. 26 **321 Mason Hall**	**DUE:** Session 7 – Analyze I – Possible Root Cause **DUE:** Session 8 – Analyze II – Hypothesis Testing	• Hypothesis Testing • ANOVA
11. Wed., Oct. 28 **321 Mason Hall**	Review: Session 8 – Analyze II – Hypothesis Testing	• Simple & Multiple Linear Regression • Store 24 • Review Analyze Tollgate
12. Mon., Nov. 2 **321 Mason Hall**	Review: Session 9 – Analyze III – DOE, 9.1-9.7 **DUE:** SigmaBrew Analyze Tollgate	• Teams Report Out: Analyze Tollgate • Intro to DOE
13. Wed., Nov. 4 **321 Mason Hall**	Review: Session 9 – Analyze III, DOE, 9.8-9.13	• DOE Continue • Introduce DOE Case Study
14. Mon., Nov. 9 **321 Mason Hall**	Review: Session 9	• DOE in-class activity
15. Wed., Nov.11	Review: Session 9 – Analyze III, DOE **DUE:** DOE - report on DOE experiment	• Speaker
Friday, Nov. 13	**DUE**: Session 9 – Analyze III, DOE	
16. Mon., Nov 16	**DUE:** Teams bring completed FMEA to class	• FMEA Report Out • Prioritizing and selecting solutions

Date	***Assignments:***	***Activity/Topic Covered***
17. Wed., Nov. 18	Review: Session 12 – Leading Teams and Leading Change	• Leading Teams and change • Review Improve Tollgate
Friday, Nov. 20	**DUE:** Session 10 - Improve	
18. Mon., Nov. 23	Review: Session 11 - Control **DUE:** Session 12 – Leading Teams and Leading Change **DUE:** SigmaBrew Improve Tollgate	• Teams Report Out Improve Tollgate • A3, Storyboard
19. Wed., Nov. 25	REVIEW SESSION – DOE Second Life – ON LINE	
20. Mon., Nov. 30	**DUE:** Session 11 – Control **DUE:** A3: Storyboard for all teams	• Review A3 Storyboards
21. Wed., Dec.	REVIEW FOR FINAL EXAM	

Peer Evaluation

Please include all team members' names on the front page of the report in alphabetical order. Teams should consist of 3 students.

Peer Evaluation – Group Projects

Peer evaluations will count for a maximum of 4% of the total points. Your peer evaluation points will be awarded as follows: the quality and timeliness of your submission and the rating by your peers.

When you are evaluating the efforts of yourself and your peers you should take the following actions into account; quality of effort, quantity of effort, working relationship with group members, and completion of assignments in a timely fashion. **Peer evaluations are due to the instructor by Monday, November 30th.**

Your Name:_____ **Team #/Letter**_____

Group Members (including yourself):	**Weight (out of 100%)**
Name: _____	_____
Name: _____	_____
Name: _____	_____
Name: _____	_____
TOTAL	**100%**

COMMENTS:

_____

_____

_____

_____