Course Description

Lean Six Sigma techniques, introduced to industry in the late 1980’s, use data-driven decisions to reduce defects, drive down costs and increase efficiency. This methodology focuses on minimizing process variation, thereby enabling the process to operate more smoothly and efficiently. Lean is a process that focuses on eliminating waste and streamlining operations. Lean Six Sigma combines the two processes, providing a powerful tool to make improvements in any process or business. In this course, students learn the history, context, and tools of Lean/Six Sigma and apply the process in a course project.

Course Objectives

1) Develop a broad understanding of Lean/Six Sigma principles and practices
2) Build capability to implement Lean/Six Sigma initiatives in manufacturing operations
3) Operate with awareness of Lean/Six Sigma at the enterprise level
4) Develop skills in problem solving and root cause analysis
5) Compare and contrast lean with the Theory of Constraints and Quick Response Manufacturing.
6) Define an appropriate Lean Six Sigma Project
7) Prepare the students for Green Belt Certification

The SB learning goals are:

COMMUNICATION SKILLS:

Students demonstrate the ability, via both written and spoken word, to effectively present, critique, and defend ideas in a cogent, persuasive manner

QUANTITATIVE FLUENCY:

Students demonstrate competency in logical reasoning and data analysis skills.

INTELLECTUAL INNOVATION AND CREATIVITY:

Students demonstrate their resourcefulness and originality in addressing extemporaneous problems.

SYNTHESIS:

Students demonstrate the ability to integrate knowledge from multiple disciplines incorporating learning from both classroom and non-classroom settings in the completion of complex and comprehensive tasks.

Prerequisite

Junior standing

This course addresses the following SBE learning goal:

- Problem Solving Ability, Global Awareness, Ethical Awareness and Social Responsibility.

Course Texts


Grading and Evaluation:
- Exam 1: 15% (Lean Test)
- Exam 2: 12.5% (Sections II, III, IV)
- Exam 3: 20% (Sections V, VI, VII)
- Exam 4: 12.5% (Sections VII, IX)
- Exam 5: 15% Certification Test
- Quizzes: 10% (Random, not announced)
- Project: 15% (LSS) - Last Day of Classes - Presentation and Report

<table>
<thead>
<tr>
<th>Grading Scale</th>
<th>Letter Grade</th>
<th>Performance</th>
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<tbody>
<tr>
<td>94-100</td>
<td>A</td>
<td>High Superior</td>
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<tr>
<td>90-93.99</td>
<td>A-</td>
<td>Superior</td>
</tr>
<tr>
<td>80-86.99</td>
<td>B+</td>
<td>Very Good</td>
</tr>
<tr>
<td>77-79.99</td>
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<td>87-92.99</td>
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<td>C</td>
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<tr>
<td>70-76.99</td>
<td>C-</td>
<td>Acceptable</td>
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<td>67-69.99</td>
<td>D+</td>
<td>Barely Acceptable, Passing</td>
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<td>63-66.9</td>
<td>D</td>
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<tr>
<td>60-62.99</td>
<td>D-</td>
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<tr>
<td>&lt; or = 59.99</td>
<td>F</td>
<td>Failure</td>
</tr>
<tr>
<td>WA</td>
<td></td>
<td>Withdrawn Excessive Absences (equivalent to F)</td>
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<tr>
<td>X XF</td>
<td></td>
<td>Failure due to Academic Dishonesty</td>
</tr>
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Course Requirements
- DSCI-232 (Business Statistics)
- DSCI-304 (Operations Management)

Topics Included:
- INTRODUCTION TO LEAN PROCESS
- LEAN AND SIX SIGMA
- SIX SIGMA (CERTIFICATION PURPOSES)
- ENTERPRISE-WIDE DEPLOYMENT
- PROCESS MANAGEMENT
- TEAM MANAGEMENT
- DEFINE
- MEASURE DATA
Course Expectations

As your teacher I have the following responsibilities:

1. Come prepared to every class.
2. Plan my class so you can accomplish the objectives listed in the syllabus.
3. Treat you as responsible adults.
4. Consider that it is not always your fault if you don’t understand the material.
5. Create a mutually respectful classroom environment.
6. Encourage you to ask and answer questions.

As students you have the following responsibilities:

1. Come prepared to every class.
2. Complete all work on time with proper thought.
3. Behave as responsible adults.
   • Consider that it is not always my fault if you don’t understand the material.
   • Treat others with respect.
   • Be familiar with basic functionalities of Microsoft Excel. Use the support material: Excel Essentials using Microsoft Excel for Data Analysis and Decision Making (ISBN: 0-534-39309-8).
   • Learn the statistics software outside the classroom with guidance from the professor during office hours (Excel).
   • If you are not familiar with excel, it is YOUR responsibility to do the Excel Review by yourself during the first days of class. You are expected at least to have this knowledge for the class.

Policies and Procedure

Attendance Policies

- Students are expected to attend classes. You cannot expect to have a thorough grasp of the material if you miss class. You are responsible for all material or assignments that are covered in class. Students are expected to contribute to class discussion. Class participation, attendance and promptness are expected and highly encouraged. It is not acceptable to be regularly tardy for class. If you miss a quiz /in class assignment due to tardiness, you may not make it up.

- Students ARE ALLOWED TO MISS ONLY TWO CLASSES without any penalty. If you miss more than two sessions, your will lose a letter grade per absence. You don’t have to come to the professor to excuse your absence, any absence counts for this rule!!!

- Attendance will be taken randomly in different time periods of the class. If you are absent at the time of attendance signing, it is considered absence. If you come in late and the attendance has already been passed, you will be considered absent. Don’t bother to justify your absence since both justified and unjustified absences count for this rule.

- If you miss a session, the professor WON’T repeat the missed material on office hours, it is your responsibility to read on your own and ask your classmates for missing concepts.

Withdrawal Policy

The professor does not process Instructor Withdrawals after the first evaluation for any reason.
• **No makeup exams will be given.** It is impossible to make an equivalent exam without the student at either an advantage or disadvantage. If you miss an exam, with or without a legitimate excuse, you will have a zero for that exam. This policy is non-negotiable.

• **No makeup quizzes will be given.** This policy is non-negotiable. If you registered late for the course and you missed any quizzes, you will have zero on those missing quizzes. The professor cannot wait until the last day to add/drop to start the class.

*SNAP Students/Special Accommodations/Athletes*

• Students that require special accommodations for exams or athletes must talk to the professor no later than ONE week after the semester start and provide necessary documentation.

• **SNAP students are responsible to remind the professor one week in advance before each exam to allow the professor enough preparation time.** If a student fails to remind the professor one week in advance before each exam, the student will have the same evaluation time as the rest of the class for that particular exam.

• **Center for Student Learning:** I encourage you to utilize the Center for Student Learning’s (CSL) academic support services for assistance in study strategies and course content. They offer tutoring, Supplemental Instruction, study skills appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at [http://csl.cofc.edu](http://csl.cofc.edu) or call (843)953-5635.

*College of Charleston Honor Code*

All work that you submit in this course must be your own; unauthorized group efforts will be considered academic dishonesty. This is particularly important with regards to assignments and exams. The sharing or copying of program files (e.g., spreadsheets) is a form of plagiarism. Academic dishonesty is a serious offense, which may result in a failing grade for the course and/or report to the Honor Board for evaluation. If copying is involved, both parties will be judged equally guilty.

*Professional Behavior Guidelines:*

• **Tardiness:** Please arrive on time. If you are later than the start of the class for three times in the semester, it will count as one missed class. If you are late in a quiz day, you have until the other students finish the quiz, the time will not start when you come into the classroom.

• **Side Conversations:** Side conversations make it difficult for your classmates to actively listen and learn.

• **Sleeping:** falling asleep in class is not considered professional behavior.

• **Inattention:** Please don’t read other material (chat, browsing the web, books) or study for other courses during my class. It’s not polite. Please pay attention and join in the individual and group discussions. It will help you master the material.

• **Cell Phone:** Please set your cell phone to silent mode while you are in the class. Cell rings can disturb your classmates as well as me.

• **Printing:** Do not print outside work during class. I will turn off the printer at the beginning of class to prevent any interruption to the class.

• **Navigating or other computer tasks different than class matters:** It is not polite to be doing course work or assignments other than the ones required in class. Also, it is not polite to navigate internet or check email while in class. One point will be taken out from your final grade for every time you do this in class. If you finish your work before other classmates, you might ask for permission to do other work in the computer and until given, you should not do other work.

*Miscellaneous Policies:*

• Although I will try to maintain the class schedule and objectives, I may need to make adjustments. You are responsible to check OAKS CALENDAR for the most recent calendar of activities and dates. Don’t ask the professor about quizzes or exams dates, since she will not give you as accurate information as the OAKS Calendar.

• **I do not give additional projects to increase one’s grade before or after the exam(s).** The professor does not round grades; a 59.9 total grade is an F.

*Complaints about Exams*
The professor encourages students to review in detail when exams are returned. You have two days after the graded evaluation was given to you to make any questions or complaints about it. If that time is passed, it means you have accepted the grade given.

- **No complaints are accepted for any reason if the two-day period has passed (non-negotiable)**

### PROJECT

#### General Comments and Guidelines

The following template has been provided as a guideline for the preparation and submission of your final project report required for Lean Six Sigma class. **You need instructor approval of your initial idea (and company selected).**

Your project submission should:

- Follow as closely as possible the layout and structure of this template
- When you finish your project *there should be no instructional language in your report including this page*
- Contain similar headings or sections as indicated in this template
- Be as specific as possible in terms of describing your Lean Six Sigma project, including any supporting details or data that for the analysis and conclusions drawn from your project
- Closely adhere to the DMAIC, (Define, Measure, Analyze, Improve and Control), including the description of the project, key milestones from each phase of the DMAIC cycle
- Present a professional, compelling and sufficiently detailed account of your Lean Six Sigma project, and your role in that process
- Typical Lean Six Sigma reports are *15-20 pages in length* – sufficient to provide a concise, yet complete account of your Lean Six Sigma project.
- Include an executive summary which clearly states the outcome of the project as well benefits to the organization/company that sponsored your work in the project. This information will also be captured in the Control Phase.
- Key process metrics before as well as after the improvement
- Include the project timeline – the start, duration and completion of the project and estimates of time spent in each phase of the DMAIC cycle

**Report Sections**

- Abstract (Not more than 150 words, not less than 100)
- Introduction to the problem
  - Project justification
  - Company background
  - Methodology applied
- Literature Review
- Analysis of Results
- Conclusions and Recommendations
- References (NO Online references, only books, articles)