



## **ISE 327 and Six Sigma and Lean Operations**

**Units: 3**

**2018-** Monday – Wednesday, 10:00 am– 11:15 am

**Location:** KAP 163

**Instructor:** Dr. Shalini Gupta

**Office:** GER 216 C

**Office Hours:** Thursday from 3:30 pm – 4:30 pm

**Contact Info:** [shalinig@usc.edu](mailto:shalinig@usc.edu)

**Teaching Assistant:** TBD

**Office:** TBD

**Office Hours:** TBD

**Contact Info:** [TBD](#)

### **Course Description**

In this course, you will learn how to apply the 5-step DMAIC problem solving process, how to use basic statistical tools (cause and effect, Pareto, histogram, scatter plot) to identify the root cause of a problem, and how to use advanced statistical tools (measurement system analysis, regression, designed experiments, control charts) to confirm the effectiveness of a proposed problem solution.

### **Learning Objectives**

You will learn the organizational structure needed to manage a problem solving project. You will also learn five key principles that foster organizational excellence, and how to use basic organizational tools (Value Stream Map, A3 report, 5S, mistake proofing) that help in making these principles a part of daily activity.

### **Course Notes**

blackboard.usc.edu

### **Required Readings and Supplementary Materials**

1. Pyzdek, Thomas . The Six Sigma Handbook- Revised and Expanded, Quality America Incorporated.

2. Rath and Strong, Six Sigma Pocket Guide
3. Liker, The Toyota Way

### **Description and Assessment of Assignments**

**Course Material:** All assigned sections of the texts, plus topics discussed in lecture by the instructor.

**Exams:** Each exam will cover the material presented up to and including the preceding homework assignment. Points will be assigned to each section of the exam. No re-takes will be allowed. No make-up exam will be given. The FINAL EXAM will cover material presented since the second midterm exam. Grading will be similar to the midterm exams. Any person caught cheating on an examination will be referred to judicial affairs.

**Projects:** The project is designed to exercise the skills which you develop over the course of the semester. The project will require you to collect data, model and animate the system, and perform statistical analysis. Prior to working on a project, a proposal must be approved. Additional details will be provided during the course.

**Homework:** Problems sets will be assigned. Homework is not accepted late. If a paper shows an acceptable answer to each assigned exercise, the grade for the assignment is 10 points. An answer to a qualitative exercise is acceptable if it is relevant to the issue. An answer to a quantitative exercise is acceptable if it uses approximately the correct method. If any exercise is unacceptable, the paper will be returned with no points awarded.

**Surprise Quizzes:** Surprise Quizzes will be given. The score will be used to determine the semester points for the quizzes. Any person caught cheating on an examination or quiz will receive a zero score for that examination or quiz.

### **Grading Breakdown**

Exams (1 and 2)	20 % Each
Exams (3)	32 %
Project	15 %
Homework	5 %
Quizzes/In-class Practice	5 %
Attendance	3 %
Total	100%

### **Grading Scale (Example)**

Course final grades will be determined using the following scale

A	95-100
A-	90-94
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	59 and below

### **Grading Timeline**

7 – 8 Days

### **Additional Policies**

- The use of laptops, phones or similar devices during class is not allowed.
- Please Do Not bring food or drinks to the class (Water in plastic bottles is ok)
- All tests are closed book. Laptops are NOT allowed.

**Preliminary schedule with examinations and due dates:**

Week	Date	Topic	Text Chapters
0	8-Jan	Overview and History of Six Sigma	R&S: Chapter 1
	10- Jan	Six Sigma Concepts, Steps and Tools	R&S: Chapter 2
<b>1</b>	<b>15- Jan</b>	<b>No Class</b>	
	17- Jan	Step 1: Define	Pyzdek Chapter 7
2	22- Jan	Step 1: Define	Pyzdek Chapter 7
	24- Jan	Step 1: Define	Pyzdek Chapter 7
	29- Jan	Step 1: Define	Pyzdek Chapter 8
3	31- Jan	Step 2: Measure	Pyzdek Chapter 9
	5- Feb	Step 2: Measure	Pyzdek Chapter 9
4	7- Feb	Step 2: Measure	Pyzdek Chapter 10
	<b>12- Feb</b>	<b>Examination 1</b>	
5	14- Feb	Step 3: Analyze	Pyzdek Chapter 11
	<b>19- Feb</b>	<b>No Class</b>	
6	21- Feb	Step 3: Analyze	Pyzdek Chapter 13
	26- Feb	Step 3: Analyze	Pyzdek Chapter 14
7	28-Feb	Step 3: Analyze	Pyzdek Chapter 14
	5-March	Step 4: Improve	Pyzdek Chapter 15
8	7- March	Step 4: Improve	Pyzdek Chapters 16,17
	<b>11-18</b>	<b>No Class</b>	
9	<b>March</b>	<b>No Class</b>	
	19-March	Step 5: Control	Pyzdek Chapter 18
10	<b>21-Mar.</b>	<b>Exam II</b>	
	26 March	Step 5: Control	Pyzdek Chapter 18
	28 March	Step 5: Control	Pyzdek Chapter 18
11	2- April	History of Lean Operations	L: Chapters 1-2
	4- April	Key Principle 1: Long-Term Approach	L: Chapter 7
12	9- April	Key Principle 2: Flow of Work	L: Chapters 8-10
	11- April	Key Principle 3: Eliminate Waste	L: Chapters 11-14
13	16- April	Key Principle 4: Develop People	L: Chapters 15-17
	18- April	Key Principle 5: Cont. Solve Problems	L: Chapters 18-20
14	<b>23- April</b>	<b>Project Presentations</b>	
	<b>25- April</b>	<b>Project Presentations</b>	
15	<b>Tentative</b>	<b>Final Exam</b>	

## Statement on Academic Conduct and Support Systems

### Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, “Behavior Violating University Standards” <https://policy.usc.edu/scampus-part-b/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

### Support Systems:

*Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call*

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

<https://engemannshc.usc.edu/counseling/>

*National Suicide Prevention Lifeline - 1-800-273-8255*

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

*Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call*

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

*Sexual Assault Resource Center*

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

*Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086*

Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

*Bias Assessment Response and Support*

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

*The Office of Disability Services and Programs*

Provides certification for students with disabilities and helps arrange relevant accommodations. <http://dsp.usc.edu>

*Student Support and Advocacy – (213) 821-4710*

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic.

<https://studentaffairs.usc.edu/ssa/>

*Diversity at USC*

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. <https://diversity.usc.edu/>

*USC Emergency Information*

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible,

<http://emergency.usc.edu>

*USC Department of Public Safety – 213-740-4321 (UPC) and 323-442-1000 (HSC) for 24-hour emergency assistance or to report a crime.*

Provides overall safety to USC community. <http://dps.usc.edu>