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CAL POLY
Industrial Technology
ORFALEA COLLEGE OF BUSINESS

Lean Six Sigma Green Belt (ITP303) and Transactional Green Belt Courses Online

Class Meetings: Mon/Wed 4:10-6PM online at **Zoom** **https://calpoly.zoom.us/j/215381714**
Course Web Address: Canvas
Non-Cal Poly Students (e.g. Transactional GB and BB) – Google folder

Co-Instructor: **Dr. Eric Olsen** Professor Industrial Technology
Online Office Hours: T/Th 1:10 – 2pm or by appointment at Zoom per above.
Cell: 805 602-0228 Email: eolsen@calpoly.edu
Profile: http://www.cob.calpoly.edu/faculty/eric-olsen/
Central Coast Lean: https://www.purpose-ccl.org/

Co-Instructor: **Mr. Wes Love** Professor Industrial Technology and Packaging
Online Office Hours: M/F 1-3pm and by appointment
Office: 805 756-7626 Email: welove@calpoly.edu

TAs for this class are Austin Nix ajnix@calpoly.edu, Will Spalding wkspaldi@calpoly.edu and Emily Plane eplane@calpoly.edu

IT303 COURSE DESCRIPTION

4 units

Prerequisite: STAT 217, STAT 218, STAT 251, or any 300 or 400 level statistics course.
Development of a comprehensive set of skills to effectively function as a lean six sigma leader. Discussion and problem workout sessions covering the lean six sigma green belt body of knowledge including problem definition, measurement, analysis, improvement, and control, as well as the team leadership skills necessary to complete projects.

TEACHING AND ONLINE LEARNING APPROACH

We will use a "flipped classroom" approach that emphasizes questions and answers and real-world guests in the Zoom classroom and access to knowledge content and theory online. We call the class the "Cal Poly Lean Six Sigma Forum" because it combines three categories of students: Green Belts (GBs), Transactional Green Belts (TGBs), and Black Belts (BBs). And just about anyone from the lean six sigma community who wants to join us online. Students can be in a CSU degree program or working professionals. This creates a rich mix of experience and lean learners.

The class meets synchronously online every week using Zoom at https://calpoly.zoom.us/j/215381714 . Students are required to attend every session to ask questions and interact either in person or online. Guest speakers will be a regular feature of the Wednesday session and will be the most

interactive. The Monday session will be a "Movie Day" featuring the greatest hits of lean online movies, videos, and a project simulation. Attendance to the Movie Day session is optional, but we will be discussing the movie and activities afterwards.

Students will be required to complete a series of 4 "Lecture Quizzes" covering the live sessions and integrating the online MoreSteam training. The primary learning elements for the course are the online lectures and guest speakers, weekly online movies, the online MoreSteam training material (see below), and an individual Lean Six Sigma Mini Project.

Comment on Transactional vs "Regular" Green Belt: The Transactional Green Belt course of study is offered to CSU, UC, and Community College faculty and staff that are tasked with applying lean six sigma in an administrative work environment. Topics, examples, and tools covered in the online MoreSteam sessions are tailored for such. Regular Green Belts pursue a more general course of study that includes traditional topics, examples, and tools applicable to industrial operations and manufacturing. However, all GBs cover the same DMAIC (Define, Measure, Analyze, Improve, Control) process and its underlying lean principles.

LEARNING GOALS AND OUTCOMES

The overarching learning objective of this course is to develop a comprehensive set of skills that will allow you to function effectively as a Lean Six Sigma leader. The Green Belt body of knowledge includes techniques for both quantitative and non-quantitative analysis, as well as the team leadership skills necessary to get projects across the goal line. *[Note: This **course is about training, NOT certification**. An additional course, which includes a significant project, is required for certification.]*

After completing this course, you should be able to DO the following:

1. Communicate using Lean Six Sigma concepts.
2. Think about your organization as a collection of processes, with inputs that determine the output.
3. Relate Lean Six Sigma concepts to the overall business mission and objectives.
4. Use the concept of a Sigma Level to evaluate the capability of a process or organization.
5. Understand and apply the five step D-M-A-I-C model as a framework to organize process improvement activity.
6. Employ a wide range of process improvement techniques within the D-M-A-I-C model.
7. Recognize the organizational factors that are necessary groundwork for a successful Lean Six Sigma effort.
8. Employ your Six Sigma skills to lead a successful process improvement project delivering meaningful results to the organization.

Testimonial from past Student: "… I want to thank you for what has turned out to be an excellent class. Since learning the principles of lean six sigma and applying them to my project I have begun to view mundane everyday tasks as a process/system, which, with the use of the appropriate tools, may become increasingly more efficient and effective in achieving their intended goal. Moreover, the means by which you taught us these principles - e.g. the flipped classroom experience - really helped me to understand how what I was learning in the modules applied to the jobs of those people who came into speak. Although this autonomous system of learning did initially backfire on me as I struggled to keep up with MoreSteam's demanding study schedule, it did, in the end, prove to be the most effective way for me to learn the material, which I hope is evident from my score on the final.

In short, thank you for offering this class and for doing so in a fun and interactive way. I am graduating this coming Saturday (assuming I pass all my finals ha ha), however, I hope to stay in touch. Who knows, maybe someday I will go on to do great things with the knowledge I took from your class and can come in to share that with your new crop of students."

- ***David Berning, Pilot Class Fall 2013***

Related – ITP Program Learning Goals

1. Apply fundamental knowledge and skills to solve management, technology and applied engineering problems.
2. Apply decision tools and methods and make recommendations based on their outcome.
3. Demonstrate effective participation and leadership in teams.
4. Demonstrate effective writing and speaking skills.

COURSE MATERIALS

Required

1. This course does not have a text. We will be using the same online training material used by over 50% of Fortune 500 Companies. MoreSteam is a premiere supplier of online lean six sigma training material https://www.moresteam.com/elearning/tour/lean-six-sigma-retail-tour.cfm You need to purchase access for a year.

   Follow these steps:
   a. Obtain a discount **Coupon Code** from Professor Eric Olsen eolsen@calpoly.edu or on the course Canvas website. This will allow you to **pay the Cal Poly discount price and get the correct mix of products** (i.e. training, practice test, and final exam).
   b. Go to the Cal Poly/MoreSteam portal at: **https://www.moresteam.com/university/calpoly.cfm** Select **ENROLL Cal Poly Lean Six Sigma Green Belt and Exam** (Cal Poly students or non-CSU professionals) **or Transactional Green Belt and Exam**. Note that you are receiving a significant discount from the list price. ***DO NOT go to the main site for MoreSteam. Your discount will not work.***
   c. **CREATE MY ACCOUNT** for new customers. The price will be adjusted based on your Coupon Code at checkout. Be sure to **use your Cal Poly (students) or work email address** as your username to get the discount.
   d. **Enter Coupon Code** and **Pay** as directed.
2. In line with its mission to "Build a Community of Lean Practice" Central Coast Lean has purchased a site license to Gemba Academy **http://www.gembaacademy.com/enterprise/CCLean/** . This license allows any Cal Poly student, faculty, or staff **free** access the site and its resources. The **username is: CCLean** and the **password is: BE9kaizen** (case sensitive). The password will change every quarter. If you are still at Cal Poly in the future and want access to the site, just contact me eolsen@calpoly.edu. Please respect this as intellectual property and do not share this outside Cal Poly. If you do want to share this within Cal Poly, I would appreciate if you cc me or send folks to me for access. That way I can monitor the "community building."
3. To participate in this course online, you are required to have access to a good internet connection and a working computer with a good microphone and video cam. We will be required to demonstrate your compliance to this requirement by make a brief online "stand-up" presentation in the class.

Recommended

It is also recommended you get a free copy of JMP or Minitab from Cal Poly or your University's software download channel. This will supplement the statistics software (EngineRoom) provided free with the MoreSteam training. Minitab also has a "lite" version that runs on a Mac.

COURSE REQUIREMENTS

To successfully achieve the learning objectives for this course, you are required to:

1. Complete quizzes and assignments for each topic per the course block plan provided.
2. Prepare to discuss and ask questions about material covered in online sessions.
3. Attend weekly class sessions (online) designed to enhance your understanding and appreciation of the course material and take appropriate quizzes.
4. Complete various "participation" assignments designed to engage you in the course and the lean six sigma community.
5. Complete the Practice Test.
6. Complete a "Lean Six Sigma Mini-Project" (see below).
7. Pass a comprehensive online exam during finals week – 60 questions, 3 hrs.

COURSE OUTLINE

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Lean Six Sigma Forum - Block Plan

Wk	MoreSteam Online Sessions and **Assignments**	"Movie Day" - Monday	Online Hours TGB	Online Hours GB	Target Complete*
1	*Session 1: Introduction to Lean Six Sigma*		4.7	4.6	1/10/21
	Session 2: Define 1 - Starting a Project and Leading Teams		6.5	6.5	
	Electronic Index Card and Resume due	*White Bead, Inc.*			
2	*Session 3: Define 2 - Voice of the Customer*		6.5	6.5	1/17/21
	Session 4: Define 3 - Mapping the Process		5.2	5.3	
	Quiz A	*Movie: Stew Leonard*			
3	*Session 5: Measure 1 - Measurements and Basic Statistics* *Tuesday Follows Monday Schedule*	*Project Sim (Mon): Define and Measure*	5.8	5.8	1/24/21
	Mini-Project Ideas Assignment, Team Project Sim Slides and Team Self Assessment due	*Project Sim (Wed): Analyze Improve and Control*			
4	*Session 6: Measure 2 - Measurement System Analysis*		6.5	8.6	1/31/21
	Quiz B, LeanEdit Practice Video Assignment due	*Movie: Toast Kaizen*			
5	*Session 7: Measure 3 - Charting Process Behavior*		6.0	9.4	2/7/21
	Mini-Project Draft Charter due	*Movie: The Goal*			
6	*Session 8: Analyze 1 - Identifying potential root causes*		5.7	6.9	2/14/21
	Quiz C	*Movie: Stockless Production*			
7	*Session 9: Analyze 2 - Hypothesis Testing*	*Monday Holiday*	10.9	11.7	2/21/21
	Tool Plan Assignment due	*Movie: Gemba Academy - 5S*			
8	*Session 10: Improve*		10.2	11.4	2/28/21
	Quiz D	*Movie: Right First time*			
9	*Session 11: Control*	*Mini-Project Reportouts*	4.9	6.1	3/7/21
	Quickie Kaizen, Practice Test, CTQC Survey, Elevator Speech				
10	***Final Mini-Project, Mini-Project Survey, Shingo Model Assessment due***	*Mini-Project Reportouts*			3/14/21
	Online Exam on MoreSteam		**3.0**	**3.0**	**Any 3 hours: Thurs, 18March - Fri, 19March**
Notes:	** Target complete all assignents by Sunday, 11:55pm.*		***75.9***	***85.8***	

PERFORMANCE EVALUATION

Grade Breakdown

Canvas Movie/Lecture Quizzes A, B, C, D (missing 1 = average of 3)	10%
MoreSteam Quizzes – avg of 11	10%
Class participation*	10%
Mini-Project	25%
Practice Test	5%
Comprehensive 3 hr Final Exam	40%
Total	**100%**

***Class participation:**

Quantitative measures – complete and on time (118pts - 10% total)

a) Electronic Index card – 3pts
b) Resume – 3pts
c) Mini-Project Ideas Assignment – 6pts
d) DMAIC Project Simulation (28pts total)
    a. Team Project Sim Slides – 10pts
    b. Team Self-Assessment – 18 pts
e) LeanEdit Practice Video Assignment – 3pts
f) Draft Project Charter – 6pts
g) On time completion of online MoreSteam session quizzes – 33pts total (3pts each)
h) "Stand-up" credit in class – 6pts
i) Tool Plan assignment – 6pts
j) Mini Project Elevator Speech – 6 pts
k) Course Quickie Kaizen assignment – 6pts
l) Mini Project Survey – 3pts
m) CTQC Survey – 3 pts
n) Shingo Survey online – 3 pts
o) On-Time Practice Test – 3 pts
p) Extra Participation Credit: Additional Poster version of Mini-Project – 12pts. (ps: Best examples will be posted at the next Central Coast Lean Summit.)

Note: If students do not achieve the 80% minimum on the exam required to proceed with certification, the exam may be retaken after a 30-day "cooling off" period. The original test score still determines the course grade.

POLICIES AND PROCEDURES

Because in this class, we **"Use lean to teach lean" the overriding policy is to apply lean principles** in any applicable situation. The **primary lean principle we will apply is "Respect for People."** We respect your ability to make good choices for yourself and the good of the class.

1. **Integrity policy**: Your most valuable asset is your ***personal integrity***. Exercise and develop this important asset in this course. The penalty for cheating is an **F for the course**. Cheating occurs when:
    - A student looks at other students' work during a quiz or exam or obtains help outside their assigned group on assigned homework sets or exams.
    - A student copies large sections of another author's material without referencing it (plagiarism).
    - Students share answers to online quizzes or individual homework assignments.
2. **Escalation Policy**: **You are responsible for anything that is said in class or any changes made to assignments**. Do not e-mail or call Prof Love or Prof Olsen asking, "What did I miss?" Find a buddy to share coverage responsibility. If your buddy is at a loss, please contact one of our able Teaching Assistants before going to a professor. cc a professor if you like.
3. **Late assignment Policy**: We generally will accept late work for 2/3 or 1/2 credit unless the points or rubric already incorporates on-time completion. For example, you get 3 participation points if you complete your MoreSteam Session Quiz on time and zero points if it is late. Note that you get a separate overall average grade for completing all the MoreSteam Quizzes by the end of the course.

4. **Attendance Policy**: We want you in class! However, we respect your capability to make good priority decisions in you studies and life. Our job is to provide good value in class time. We do not take attendance. Class time content is covered on the four Lecture/Movie Quizzes (ABCD).
5. **Sharing Lean Celebrity video recordings**: As a general practice, we don't share video recordings of our lean celebrities. It is one of the benefits of attendance. Early on we recommend that you arrange with a classmate to get notes if you need to miss a celebrity.
6. **Miss 1 Lecture/Movie Quiz and we will replace with the average:** You can take thee quizzes only if you choose.
7. **Final Grade Calculation**: We actually don't use Canvas to calculate the final grade. We use a separate Spreadsheet adjusted for each quarter as appropriate.

You are responsible for managing the inputs into your grade. *The points are there. I do not give additional projects to increase one's grade.*