

Daniel J. Epstein**Department of Industrial & Systems Engineering**USC Viterbi
School of Engineering**Systems Architecting and Engineering (SAE)****SAE 551: Lean Operations (3 units)**

The study of lean principles and practices as applied to automotive, aerospace and other industries.

Semester Fall 2013
Lecture Time Friday 5:10-7:50 PM
Instructor Prof. Ted Mayeshiba (mayeshib@usc.edu) (best way to contact)
Office: GER216C
Office phone: (213) 740-0867 (by appt.)
SKYPE: mayeshiba
Office hours: Fridays 4:00P – 4:50P (suggested) by appointment

T.A. Douglas Orellana (dworella@usc.edu)
Office hours: Please use the Discussion Board for questions
Response to Discussion Board 0.5 days
Email for personal issues only
Response to emails within 24 hours.

Introduction and Purposes

- **Objective:** To enhance the students' understanding and appreciation of the importance of lean operation concepts for manufacturing and service enterprises, their resources, the related challenges and problems, and the related tools and technologies. Systems thinking will be emphasized.
- **Description:** Study of various aspects of integrated manufacturing and service enterprises including management, design and production functions, interfaces, and related resources and information systems.
- **Approach:** This course introduces the role of lean thinking in the manufacturing or service (operations) enterprise and its connections with society, economy, and environment. The course will address both theoretical and applied aspects of the topic. Alternative views of lean operations will also be introduced. Ultimately, assessment of learning is provided through the application of learned principles to a process with which the student is familiar and submits as an end of term project. In pursuit of this goal, to the extent possible, the course will use a collaborative learning approach; meaning participation in class is critical to everyone's learning experience. The instructor then functions more as a facilitator to accomplish this goal.

Course Presentations

The course relies heavily upon student interaction. One way to achieve this is through in class presentation. It is the instructor's belief that learning is best done in a collaborative environment. All students bring value to the learning experience of others. Because this class is both for the benefit of on campus students and DEN students, ALL student presentations will take the following form (on campus and DEN):

1. Presentations will be submitted on PowerPoint as a "slide show".
2. Presentations will be no more than 2 minutes in length.
3. Transitions between slides are to be built into the presentation.
4. Audio is encouraged but must automatically start with the presentation.
5. Presentations will be aggregated into one file and played at the beginning of class.
6. Due date for all presentations, unlike other homework, will be Friday at 4:00PM prior to class.

This does not pertain to the final presentation.

Course Website

This course will rely on the DEN Blackboard course website, located at <http://den.usc.edu>. Go to the website, login, and click the SAE 551 link. The toolbar on the left-hand side of the page will provide access to course announcements, live and recorded lectures, assignment submission, discussion board, and other information.

- For DEN students: This course will be utilizing WebEx services. For a six minute video orientation of the WebEx service:
<http://mapp.usc.edu/distanceeducation/howdenworks.html>
- For DEN students: This link will offer technical help and list requirements for WebEx use.
<http://mapp.usc.edu/distanceeducation/technicalsupport/technicalrequirements.html>

Course Schedule

Wk	Date	Reading before class	Topic - Class	HW
1	Aug 30	Goal, MTCTW, LEV Part1 & 3, LT Ch. 1	Course Introduction / Overview	1. Student bio [2] 2. VALUE score [2]
2	Sep 6	TW Ch 1-4	Student Bio Presentation - Start of Your Journey	3. Stakeholders [4] 4. Process Abstract [4]
3	Sep 13	LT 2, 3;	VALUE Toyota Production System	5. TW vs. Others [6]
4	Sep 20	TW 11	Quality - Student TW Presentations	6. Process Map of Your Process [4]
5	Sep 27	LT 12, TW 17	Lean Supply Chain Management	
6	Oct 4	TW 8	Lean Analysis Tools (VSM/A3)	7. VSM Current State Project [4]
7	Oct 11	TW 9	Inventory Systems	8. Initial analysis of Project Process [4]
8	Oct 18	TW 5,6,7,15	Lean Product Development	9. Submit (Future State) / Time slot reservation [4]
9	Oct 25		MIDTERM	
10	Nov 1	TW 10; TAL NUMMI	Midterm review / Change Management	10. Case Study Pt. I [5]
11	Nov 8	TW 16	Data, Information, Knowledge / Case Study A3	11. Case Study Pt. II [9]
12	Nov 15		Lean Finance / Sustainability	
13	Nov 22		Alternative View / Learning Organization	12. VALUE score Update [2] 13. FINAL PAPER/ PRESENTATION [80 / 20]
14	Nov 29		Thanksgiving	
15	Dec 6		Presentations (18) 7 min + 1	
16	Dec 13		Presentations (13) 7 min + 1	

Students are expected to frequently check announcements on the course website and their email account registered with DEN for any schedule updates or changes.

Course Readings

- Required Text:
 - *Lean Enterprise Value*, Murman, et al., Palgrave, 2002, ISBN 0-333-97697-5 (LEV)
 - *Lean Thinking*, Womack and Jones, Simon & Schuster, 2003, ISBN 0-7432-4927-5. (LT)
 - *The Toyota Way*, Liker, Jeffrey K. McGraw-Hill, 2004, ISBN 0-07-139231-9 (TW)
- Reference Text for those who are approaching this course with limited sense of a technical workplace or context of Lean, it is recommended that these books be read to offer background. Items will be taken from these texts in the course of class, and it may help in understanding these topics. (Optional):
 - *The Goal*, Goldratt & Cox, North River Press, 2004, ISBN 0-88-427178-1
 - *The Machine That Changed the World*, Womack, Jones, and Roos, 1990, ISBN 0-89256-350-8 (MTCTW)
- Additional documents will be provided through the class website.
- NOTE: These books are available from online booksellers. Students are encouraged to take advantage of this option. These books are not available in the bookstore.

Assignment Submission

- Do NOT email submissions to DEN (denhw@usc.edu), the professor, or the TA. They will not be accepted.
- All assignments must be submitted through the Assignment Manager (the “Assignments” tab) on the DEN Blackboard course website.
- Some major course assignments, when directed by the instructor, will be submitted to the *TurnItIn* system. *TurnItIn* is a plagiarism-detection system that compares student submissions with other submissions, past course submissions, and information available on the Internet. Any submissions reviewed by *TurnItIn* and any that do not follow Academic Integrity standards will be referred to USC Student Affairs.
- To submit an assignment through the Assignment Manager or *TurnItIn* system, click the “Assignments” link on the left-hand side of the course website, find the appropriate assignment on the page, and click “View/Complete” for that assignment. After filling in the appropriate fields and uploading the completed assignment, click the “Submit” link.
- To confirm your assignment was received, go to “Tools” > “My Grades”. All your submissions (and grades) will be recorded here, if you do not see a link to a “score” or a “!” symbol, your submission did not go through. In particular, a “padlock” symbol means your submission has not yet been completed (if you see a “padlock”, you have not yet submitted the assignment). If you have any technical issues with the submission process, email the TA immediately.
- Assignments (except for the midterm and final project/presentation) are due before 4:45 PM on the following class period.

- If assignments are submitted after the due date and time, they will receive a penalty of 10% if less than three days past due and a penalty of 50% if less than five days but more than three days past due. Submissions over five days past due will receive zero credit.
- Assignments must follow the correct file naming convention (last_name, first_name HWX.doc or .ppt). “X” should be replaced with the corresponding assignment number (see “Course Schedule” in the syllabus).
- All submissions should be in either the Microsoft Word (.doc) or Microsoft PowerPoint (.ppt) format. If you need to use a Microsoft Excel table or Adobe PDF image, please copy or insert these images into a Word or PowerPoint document and then submit the Word or PowerPoint. It is very difficult for the instructor to grade and comment on Excel and PDF submissions, therefore Word and PowerPoint submissions are recommended.

Grading

Homework / Participation	25%
Midterm Exam	25%
Final Project Report	40%
Final Project Presentation	10%
Total	100%

- **Homework** assignments will be graded based on depth and quality of analysis, and correctness, as well as number and quality of references, and amount of new information (information is not simply repeated from lecture) when applicable.
- **Attendance** is not part of the course grade. However, participation either in the classroom or on the discussion board is incorporated into the course grade. Participation will likely improve the chances of a student receiving the higher grade if the student is on the bubble between two grades.
- Elements of **participation** in the course may take different forms.
 1. Participation during class. Comments, additions and discussion participation will be considered toward a participation grade.
 2. Participation in *Discussion Boards* (see Discussion Boards below for more details) on BlackBoard is another way to participate in class.
- The **midterm** will be conducted online through the course website. Both on-campus and DEN students will complete the exam online. The exam will be available for a predetermined time window (usually 5PM – 9PM, Pacific Time) on the scheduled date. Any students who have a conflict with this date must notify the professor and the TA no later than two weeks before the exam.
- The **final project** is a written report and oral presentation on a topic selected by the student and **approved** by the professor, which will analyze the Lean Operations cycle for a process (such as product manufacturing or service delivery). The project should involve a process analysis using Lean Operations tools and principles as well as demonstrate the student’s knowledge and understanding of the material presented in the course. There

must be one analysis tool used/addressed in the project from after the midterm. Additional information will be provided on the course website.

- Report (Written paper, format guidelines will be provided)
- Presentation (PowerPoint presentation, given in-class by on-campus students, and in-class or via WebEx by DEN students)

Discussion Board and Questions

- Discussion board threads will be created for every lecture/topic in the course.
- Please check the discussion board frequently
- If you have a question from that lecture or on the assignment from that lecture, please post your question to the discussion board within the corresponding thread.
- If you don't receive a response or your question is not sufficiently answered, only then should you email the professor and the TA. Having questions posted to the discussion board not only reduces the number of duplicate emails we have to answer but also ensures that the information we provide is available to all students.

Student Expectations

- Students are expected to be able to use the following tools in order to upload and download their assignments, obtain pertinent course information, and participate in class discussions
 - On-campus students: DEN Blackboard, MS PowerPoint
 - DEN students: DEN Blackboard, WebEx, MS PowerPoint
- Students are expected to follow the standards of appropriate online behavior. The protocols defined by the USC Student Conduct Code must be upheld in all aspects of class. Examples of inappropriate online behavior include but are not limited to:
 - Posting inappropriate material
 - SPAM to the class
 - Online flaming
 - Offensive languageFor more information, please visit <http://www.usc.edu/student-affairs/SJACS/>
- In the event of any technical breakdown, students are expected to contact the professor or TA ASAP by email or text message.

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus*, the Student Guidebook, contains the Student Conduct Code in Section 11.00 (<http://web-app.usc.edu/scampus/1100-behavior-violating-university-standards-and-appropriate-sanctions/>). Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.

Template for the Final Presentation Schedule

Presentation Order	Day 1 Start	Total - 18	Finals Day Start	Total - 13
1	5:15 PM		4:35 PM	
2	5:23 PM		4:43 PM	
3	5:31 PM		4:51 PM	
4	5:39 PM		4:59 PM	
5	5:47 PM		5:07 PM	
6	5:55 PM		5:15 PM	
7	6:03 PM		5:23 PM	Break
8	6:11 PM		5:31 PM	
9	6:19 PM		5:39 PM	
10	6:27 PM	Break	5:47 PM	
11	6:35 PM		5:55 PM	
12	6:43 PM		6:03 PM	
13	6:51 PM		6:11 PM	
14	6:59 PM		6:19 PM	
15	7:07 PM			
16	7:15 PM			
17	7:23 PM			
18	7:31 PM			
19	7:39 PM			

Department of Industrial & Systems Engineering

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