

San José State University
DEPARTMENT OF AVIATION AND TECHNOLOGY
COLLEGE OF ENGINEERING
TECH 145 – LEAN MANUFACTURING
SPRING 2017 – Section 03
Course Code 28311

Course and Contact Information

Instructor:	Karim Suleman
Office Location:	By Appointment
Telephone:	(408) 896-9569 (Please use email below for contact)
Email:	Tech145.spring2017@gmail.com
Office Hours:	Tuesdays & Wednesdays 11:30AM to 12:30pm by appointments only
Class Days/Time:	Thursdays 6pm to 8:45pm
Classroom:	Aviation & Technology Bldg. Room IS216
Prerequisites:	TECH 140, BUS 140 or BUS 145

Course Format

TECH 145 is a flipped course. The students are expected to review the material in detail at home before class meeting and then conduct exercise in class to apply the learning. The course will require access to computer with MS Office application or basic word processing software to submit homework, take home activities and final project submissions. Students must have access to high speed internet and a Canvas –the management system.

Course Description

Exploration and practice of techniques for reducing waste to optimize the value stream in both manufacturing and non-manufacturing environments. Toyota Production System, Value Stream Mapping, 7 Wastes, 5S, Just-in-Time, TPM, Kaizen.

Course Learning Outcomes (CLO). Upon successful completion of this course, students will be able to:

CLO	Description	How Achieved
1	Define Lean Manufacturing through Toyota Production system and other Lean terms thus demonstrating an understanding of the Language of Lean	Textbook Chapter / Quizzes
2	Determine the personal attributes required to be a successfully change agent.	Who Moved my Cheese Exercise
3	Determine the cultural factors required to be successfully implement change	5S Project
4	Create a Value Stream Map for a current process. Inventory and Variations in Lean	Value Stream Current State Mapping Assignments
5	Identify the 7 Waste in a Value Stream / Significance of Lead Time	7 Wastes, Value Stream Future State Mapping Assignments
6	Use several lean tools such as 5S, Visual Management, quick change over (QCO) and Poka-Yoke to eliminate waste and improve a value stream. How to do Lean. Four Strategies of Lean	5S, Poka-Yoke assignment
7	Understanding the material flow on a lean production line, in particular the difference between push and pull. How to implement Lean	JIT Simulation and Kanban Exercise
8	Identify the mechanism to initiate the material flow in both pull and push systems. Planning and Goals in Lean	JIT Simulation and Kanban Exercise
9	Understand the importance of employee involvement in a Lean manufacturing system and the techniques used to ensure involvement such as suggestion systems and Kaizen circles	5S Project
10	Understand when to use the 7 Tools of Quality to improve the quality and reliability of a Value Stream	Class Assignments & Quiz
11	Use key financial statements to calculate lean metrics and thus determine if the company is "Lean"	5S Project / Metric Exercise
12	Compare and contrast Lean implementations in both manufacturing and service environments to determine similarity and differences	Assignments
13	Apply the principles of continuous process improvement (Deming Circle) to a Value Stream	5S Project
14	Understand the impact of Total Productive Maintenance (TPM) and Stand work on outputs of a Value Stream	TPM / Standard Work Assignments / Quiz
15	Determine the Takt time for a given process and then use the Takt time to analyze the production process. Hoshin Planning	Quiz / Assignments

Textbook

Students are required to purchase “How to Implement Lean Manufacturing: ISBN # 9781309060148 from SPARTAN Bookstore

Other Readings (Optional)

1. Lean Productive Simplified by Pascal Dennis ISBN:1-56327-262-8
2. Lean Speak the Productivity (Business Improvement Dictionary) ISBN:1-56327-275-X

Course Requirements and Assignments

Assignments

There are both team and individual activities in this course. All members of the group will receive the same grade for group assignments. A key part of Lean implementations is working in groups, so please make sure to use this opportunity to enhance your ability to work collectively.

Speakers

There will be three guest speakers - industry leaders in the area of Lean Manufacturing, who will be addressing the class in areas of their expertise. Speakers will be from the areas of Semiconductor, Information Technology (IT / Computer Programming) and Biomedical. Students are encouraged to ask questions at the end of the session. There will be assignments given out at the end of the each session on the material covered by a guest speaker.

Project Work / Presentation

There is required project work in this class. It is preferred that your project should be work related to either manufacturing or non-manufacturing environments. The project should cover all Lean Manufacturing techniques which includes Toyota Production System (TPS), 7 wastes, 5S, Just-In-Time, Jidoka, Total Productive Maintenance (TPM), Kaizen and Value Stream Mapping. The project work should be distributed equally amongst all team members. Each team should have a team leader (Champion). The champion will be responsible to define his/her specific team project to the class. Other responsibilities include assigning project tasks to each member and monitoring progress and completion of tasks from the team members. Each team will have an opportunity to present their project (May 4 and May 11). The presentation will be graded on Lean content, public speaking skills (projection of voice and eye contact with audience), deliver time, attire (professional) and their ability to answer questions after the presentation (demonstrating their knowledge of the subject).

Midterm

There will be one midterm / learning progress check on the 9th week of the semester (April 6, 2017). It will cover the material up to the week prior to Spring break. Your professor will provide you with more details before your spring break.

Quiz /Homework Assignments

There will be quiz after every 2 to 3 chapters covered in the class. Each quiz will be divided into multiple choice questions, short answer questions. This will include Lean dictionary words, material from the class and homework assignments. Homework assignments will be given out with deadlines to submit.

Final Exam

The final exam will be comprehensive. The exam format will be combination of multiple choice, short answer questions and essay questions. This will include Lean dictionary words, material from the class, quizzes and homework assignments. Final Exam will on Thursday May 18, 2017 from 5:15pm to 7:30pm. Location: Room 216

SJSU classes are designated such that in order to be successful in this course, it is expected that student spend, for each unit, a minimum of 45 hours over the length of the course. This includes preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in [University Policy S12-3](http://www.sjsu.edu/senate/docs/S12-3.pdf) at <http://www.sjsu.edu/senate/docs/S12-3.pdf>

Grading Information

3 Speaker Summary	15%
4 Quiz	10%
1 Midterm	15%
Homework	10%
Team/individual Assignments	10%
Final (Comprehensive)	25%
Project / Presentation	15%
Attendance /Participation	Required

Determination of Grades

A+	100	A	93-99	A-	90-92
B+	88-89	B	83-87	B-	80-82
C+	78-79	C	73-77	C-	70-72
D+	69	D	65-68	F	Below 65

Extra Credit assignments are generally not available for this course. Please do the work when it is assigned and submit your work in time. I do not grade on curve for any assignment or for the final course grade. Grading is per the schedule listed above and grades are final when posted in Canvas.

Classroom Protocol

I prefer that you arrive on time but would rather that you come late than not all. Try to minimize disturbance. Since this is a late evening class. I will allow you to have food and drink in the portion of the classroom for lectures. You are responsible for keeping the classroom clean and spill free.

Classroom Ethics

Tech 145 classroom will be a place where diversity is accepted and valued. Different culture and ethnical background is to be respected. Language that degrades an individual or group because of gender, ethnicity, nationality, socioeconomic status, religious preference, sexual orientation, intellectual ability, or physical ability will not be tolerated.

Policies

Turnitin / Plagiarism Avoidance

This course uses the plagiarism checking services of Turnitin.com. Your project, homework and assignments will be required to be submitted through Turnitin, which is integral part of Canvas. There is a plagiarism module in Canvas that gives you some guidance and breakdowns on penalties for plagiarism. Please refer to this module if you have any questions or concerns.

Academic Integrity:

Plagiarism on your assigned classwork / homework assignments, cheating on exams, quizzes will not be tolerated. You cannot copy any part of another person's / student's work and call it your own. You are not allowed to use any electronic devices during quizzes, midterm and final exams, these items must be turned off and placed in your backpack. Cheating in quizzes, midterm and exam will result in a zero and reported to the Dean / Department Chairperson. Please consult the University policies. SJSU Policies:

http://www.sjsu.edu/senate/policies/pol_chron/

Tech 145 / Lean manufacturing, Spring 2017, Course Schedule

January			
26th	Week 1	Course Introduction / Green Sheet	The Birth of Lean Production
		Introduction to Groups	History of Lean Production
		Chapter 1	Practical Perspective of Lean
February			
2nd	Week 2	Chapter 2	The Lean Production System
9th	Week 3	Chapter 3	Inventory & Variation Stability
16th	Week 4	Chapter 4	Lean Manufacturing Simplified
23rd	Week 5	Chapter 4	Standardized Work

March			
2nd	Week 6	Speaker	
		Chapter 5	The significant of Lead Time
9th	Week 7	Chapter 5	Just-In-Time
16th	Week 8	Chapter 6	How to do Lean
23rd	Week 9	Speaker	
		Chapter 6	Jidoka
30th	Week 10	Spring Recess (No Class)	

April			
6th	Week 11	Midterm Exam (Chapter 1 to 5)	
13th	Week 12	Guest Speaker	
		Chapter 7	How to do Lean / Involvement
		Chapter 8	How to Implement Lean / Hoshin Planning
20th	Week 13	Chapter 9	Planning & Goals
27th	Week 14		
		Chapter 10	Sustaining the Gains / The Culture of Lean Production
May			
4th	Week 15	Project / Presentation	
		Exam Review	
11th	Week 16	Project / Presentation	
		Exam Review	
18th	Week 17	Final Exam	5:30pm - 7:30pm Room 216