UTD Lean Six Sigma	**Course Title**	Lean Six Sigma (Quality Control)
	Course	OPRE 4310
	Term	Spring 2017
	Schedule	Fridays, 4:00-6:45 pm
	Classroom	JSOM 11.206
	Instructor	Rob Shaum, Lean Six Sigma Master Black Belt
	Contact Information	
	Email	ras150630@utdallas.edu
	Phone	(480) 823-4455
	Office/Hours	Appointment only, no office on campus

General Course Information

Governing Policy: This course is governed by all applicable University policies and procedures. Specifically, in the unplanned circumstance wherein this syllabus has information contradictory to a published policy, the University's policy will reign. For more information on UTD Dallas syllabus policies, please see http://go.utdallas.edu/syllabus-policies.

Pre-Requisites: This course is open to all UTD undergraduate students regardless of major. However, those pursuing a degree in Business, Engineering or other analytical discipline may feel more comfortable with the content.

Course Description: Employers in all industries seek candidates with the analytical skills necessary to continuously improve bottom line results. This course is designed to introduce students to key concepts and techniques used in Lean and Six Sigma, two well-known methodologies with proven business impact. Application to a wide variety of industries and functions will be examined throughout the course.

Learning Objectives: At the conclusion of this course, the student should be able to

1. Identify and define key terms associated with Quality Control.
2. Describe the origins, framework and basic terminology associated with both Lean and Six Sigma.
3. Describe specific techniques associated with structured problem solving.
4. Identify and/or discuss actual or potential application of Lean and Six Sigma in various settings.

This is not a certification course!

Completion of this course does not result in a professional certification such as a Six Sigma Green Belt. Students seeking these worthwhile certifications should refer to the sources below:

- UTD Lean Six Sigma Green Belt Certificate Program - link
- Society of Manufacturing Engineers Lean Certification - link
- American Society of Quality Six Sigma Certification - link

Inclement Weather Policy: Classroom session cancellation due to inclement weather will be governed in accordance with the UTD Inclement Weather Policy as communicated through all official UTD channels. Students should not contact instructor directly to recommend cancellation, inquire about cancellation or verify cancellation. The UTD policy and communication systems on this topic are the Plan of Record. The University of Texas at Dallas is open for normal business operations and instructional activities unless indicated otherwise on the University's home page. More information on policies and procedures can be found at http://www.utdallas.edu/news/2016/11/17-32294_Inclement-Weather-Emergency-Closing-Procedures-at-_story-wide.html.

Course Requirements and Grading Policy

Course content is delivered primarily through traditional lectures supplemented with required reading assignments. To this end, students are highly encouraged to attend instructor led sessions and to actively participate through active dialogue. Course letter grades will be determined using the table below. Standard university policy applies to assigning grade points for each letter grade.

Grade	Percent Range
A+	96.0-100%
A	93.0-95.9%
A-	90.0-92.9%
B+	86.0-89.9%
B	83.00-85.9%
B-	80.0-82.9%
C+	76.0-79.9%
C	73.0-75.9%
Fail	0 – 72.9%

Category	Weighting
Lean Exam (Test Center)	25%
Six Sigma Exam (Test Center)	25%
Online Content Quizzes (10 @ 2% each)	20%
Homework Assignments (4 @ 5% each)	20%
In Class Activities (10 @ 1% each)	10%
Total Opportunity	100%
Extra Credit Case Study	3%

Exams: Two exams will be administered by the Testing Specialists in the Student Success Center. Students must complete the exams within the defined testing time windows. The format is open book (printed course materials, readings and notes). In accordance with test center policy, students may not bring any electronic devices (other than a calculator) but should have access to the course materials via eLearning. Students are reminded that the Testing Center does not allow for walk-ins; please visit http://www.utdallas.edu/studentsuccess/testingcenter/index.html in order to reserve a seat.

Online Content Quizzes: Quizzes will be made available in eLearning immediately after lecture sessions each week and must be completed prior to the class session on the due date shown. Questions will typically be multiple-choice, true/false, or matching. Students are allowed to use the provided course materials, reading assignments, or notes taken during class. Use of internet search and collaboration with other students is **highly discouraged** as this will diminish your learning. Each quiz may be attempted twice.

Homework Assignments: These activities offer the student an opportunity to apply course concepts to simple but practical situations. Assignments may be completed in collaborative teams of 2-4 students. However, each student must turn in an individual copy with all team members listed. All team members must contribute to each assignment they are listed as a member of.

In Class Activities: These activities are designed to incentivize student attendance given that they can only be completed in person during scheduled class times. They also offer an opportunity to interact with other students as these activities will often involve group discussions. The 10 activities will occur on dates and times as determined by the instructor without prior warning. Students who are not present at the time of activity cannot make up the activity regardless of the reason for absence.

Extra Credit Case Study: Case studies offer the student an opportunity to examine application of the concepts in practical business situations. It is highly recommended that students choosing this extra credit assignment complete case study in collaborative teams of 2-4 students. However, each student must submit an individual copy with all team members listed. There are a total of 4 case studies that students can choose from but only 1 may be submitted for extra credit. A maximum of 3% will be added to final grades for this optional activity.

Course Schedule

Following is a tentative schedule which I will do my best to follow. Any necessary changes will be announced in class and/or eLearning and/or email distribution.

Week	***Date***	***Classroom Topic(s)***	***Pre-Reading Assignment***	***Assignment Due***
1	1/14	Administrative Overview Introduction to Lean Six Sigma	Course Syllabus	None
2	1/21	Origins of Lean Lean Models	Decoding the DNA of Toyota	Content Quiz #1
3	1/28	Lean: Identify Value Lean: Map the Value Stream	Value Stream Mapping (ASQ)	Content Quiz #2
4	2/4	Lean: Create Flow Lean: Establish Pull	Hirano's 8 Conditions for Flow	Content Quiz #3
5	2/11	Lean: Seek Perfection, Part 1		HW1: 8 Wastes
6	2/18	Lean: Seek Perfection, Part 2 Exam 1 Preparation		HW2: Error Proofing
7	2/25	Exam 1: Lean	2/20 to 3/3 during Testing Center hours of operation	None
8	3/4	Quality Basics	Optional Article: link (recommended, not required)	Content Quiz #4
9	3/11	Statistics for Six Sigma	Cartoon Guide to Statistics (recommended, not required)	HW3: Lean 5S
	3/18	Spring Break		None
10	3/25	Six Sigma Overview	Six Sigma Handbook Ch 1 (recommended, not required)	Content Quiz #5
11	4/1	Six Sigma Define		Content Quiz #6
12	4/8	Six Sigma Measure		Content Quiz #7
13	4/15	Six Sigma Analyze		Content Quiz #8
14	4/22	Six Sigma Improve, Control Exam 2 Preparation		Content Quiz #9
15	4/29	Beyond Lean Six Sigma	Peruse www.tocinstitute.org (recommended, not required)	HW 4: Process Map Extra Credit Case Study
16	5/6	Exam 2: Six Sigma	4/24 to 5/6 during Testing Center hours of operation	Content Quiz #10

Required Reading (will be referenced in lectures, assignments, quizzes and/or exams)
As a convenience, I attempted to identify publicly available materials. However, all referenced publications are the property of the authors and their respective publishers. Any access restrictions imposed by said owners are a matter between the student and the publisher, outside the purview of UTD or its instructors.

- Article 1: "Decoding the DNA of the Toyota Production System"
  - Spear & Bowen, Harvard Business Review
  - https://hbr.org/1999/09/decoding-the-dna-of-the-toyota-production-system
- Article 2: "Value Stream Mapping"
  - Uncredited Author, ASQ Toronto Posting
  - http://asqtorontoforum.org/asqtoronto/wp-content/uploads/2013/10/Value-Stream-Mapping2.pdf
- Article 3: "Hirano's Eight Conditions for Flow"
  - Richard Kunst, Lean Thoughts, August 2009
  - http://kunstartofsolutions.com/LeanThoughts/Vol_8_Issue_34_Lean_Thoughts_August_24_2009.pdf

Extra Credit Case Study
Students may choose one case study from the list below. The case study template and grading rubric are available on eLearning. Students are encouraged to work on case studies in teams of 2-4 but each student must submit a copy with all team members listed.

- Lean Case Studies
  - Thrustmaster, http://www.lean.org/common/display/?o=3342
  - LSG Sky Chefs, http://www.lean.org/common/display/?o=786
- Six Sigma Case Studies
  - Firstsource Financial, http://rube.asq.org/2011/04/six-sigma/service-provider-improves-clients-metrics.pdf
  - Pocono Medical Center, http://rube.asq.org/2006/10/six-sigma/pocono-medical-center-faster-lab-results.pdf

Recommended Reading

For additional insights above and beyond the scope of this course, I recommend the following:

The Improvement Guide: A Practical Approach to Enhancing Organizational Performance
Gerald Langely, et al
Jossey Bass
ISBN: 978-0470192412

Lean Thinking: Banish Waste and Create Wealth in your Corporation
James P. Womack, Daniel T. Jones
Simon & Shuster
ISBN: 978- 0743249270

Learning to See: Value Stream Mapping to Create Value and Eliminate MUDA
Mike Rother
Lean Enterprise Institute
ISBN: 978-0966784305

The Hitchhiker's Guide to Lean
Jamie Flinchbaugh, Andy Carlino
Society of Manufacturing Engineers
ISBN: 978-0872638310

Six Sigma Handbook, Fourth Edition
Thomas Pyzdek, Paul Keller
McGraw Hill
ISBN: 978-0071840538

The Cartoon Guide to Statistics
Larry Gonick, Woollcott Smith
Harper Perennial
ISBN: 978-0062731029

Even You Can Learn Statistics
David Levine, David Stephan
FT Press
ISBN: 978-0137010591

The Goal: A Process of Ongoing Improvement
Eliyahu Goldratt
North River Press
ISBN: 978-0884271951