				Course Title		Quality Control (Lean Six Sigma)						
				Course		OPRE 6364-001						
				Term		Spring	2016					
				Time		Tue	4:00 PM - 6:45 PM					
				Classroom		JSOM	1.110					
				Instructor		Kannan Ramanathan						

Instructor's Contact Information

Office Phone	(972) 883-5953
Office Location	3.622
Email Address	Kannan.Ramanathan@UTDallas.Edu
Office Hours	Mon 5:00 - 6:00 PM, by appointment

Teaching Assistant's Contact Information

Name	Pengda (Frank) Feng		
Office Location	JSOM 2.604		
Email Address	pxf140030@utdallas.edu		
Office Hours	Wed	17:30	18:30
	Fri	17:30	18:30

General Course Information

Course Description

This class is designed to introduce students to concepts and techniques in Lean and Six Sigma. Lean manufacturing/service focuses on improving the speed of a process and the elimination of waste, primarily by reduc non-value-added steps. Six Sigma deals with the effectiveness with which a process meets customer requirements a free of defects.   The course covers these topics with an emphasis on quantitative methods.

Employers are increasingly looking for candidates trained in process engineering. As such, this course will benefit students from all business disciplines, and focusing on different majors.

Learning Goals

		1.	Understand concepts of Lean and Six Sigma processes
		2.	Develop analytical thinking and problem solving capability
		3.	Cultivate ability to apply concepts and techniques to process engineering
		4.	Be familiar with tools and software in advanced process engineering
		5.	Express your ideas and thoughts clearly and concisely

Assignments & Academic Calendar

The following is a tentative schedule, which I will try to follow as closely as possible. Should any changes become necessary, I will announce it in class.

1	Tue, Jan-12	01 Lean & Six Sigma - Introduction.pptx
		Introduction to Lean Manufacturing (video)
		02 Lean - Evolution & Steps.pptx
2	Tue, Jan-19	03 Lean - Specify Value - Quality at Source.pptx
		04 Lean - Specify Value - 5S Concepts.pptx
		05 Lean - Specify Value - 5S Implementation.pptx
		5S Factory Makeover (video)
3	Tue, Jan-26	5S Factory Makeover (video)
		06 Lean - Identify Value Stream - Process Mapping.pptx

				Process Mapping (video)							
				07 Lean - Identify Value Stream - Why is Inventory bad.pptx							
	4	Tue, Feb-02		08 Lean - Identify Value Stream - Process Layouts - Part A.pptx							
				08 Lean - Identify Value Stream - Process Layouts - Part B.pptx							
				09 Lean - Identify Value Stream - Types of Processes.pptx							
	5	Tue, Feb-09		10 Lean - Make It Flow - Setup Time Reduction.pptx							
				11 Lean - Make It Flow - Heijunka.pptx							
				12 Lean - Make It Flow - Total Productive Maintenance.pptx							
	6	Tue, Feb-16		Guest Presentation - Dr. Jamison - UTD Vice-President - Business Affairs							
				13 Lean - Pull - Visual Controls.pptx							
				14 Lean - Pull - Push & Pull Systems.pptx							
				15 Lean - Pull - JIT.pptx							
				16 Lean - Always Improving.pptx							
	7	Tue, Feb-23		BRING CALCULATOR TO CLASS							
				17 Statistics - Data & Descriptive Statistics.pptx							
				18 Statistics - Distributions, Process Variations & Sigma.pptx							
	8	Tue, Mar-01		19 Six Sigma - Overview.pptx							
				20 Six Sigma - Define - VOC & CTQs.pptx							
				21 Six Sigma - Define - Project Selection & Charter.pptx							
	9	Tue, Mar-08		Mid-Term (Will include topics covered upto and including 23rd Feb class), you can tak Mid-Term between 3:00 pm-8:00 pm in the Testing Center (basement of McDermc Library). Mid-Term is for two hours or less.							
	11	Tue, Mar-15		**SPRING BREAK - NO CLASS**							
	12	Tue, Mar-22		**Mid-Term Review**							
				This review is your only opportunity to go over your answers and to discuss questions relating to the Mid-te Do not miss this review as I will not discuss the Mid-term later or during office hours.							
				19 Six Sigma - Overview.pptx							
				20 Six Sigma - Define - VOC & CTQs.pptx							
				21 Six Sigma - Define - Project Selection & Charter.pptx							
				22A Six Sigma - Measure - Overview and Defects.pptx							
	13	Tue, Mar-29		22B Six Sigma - Measure - QFD.pptx							
				23 Six Sigma - Measure - Data Collection Plan and Gage R&R.pptx							
	14	Tue, Apr-05		24 Six Sigma - Analyze - Root Cause Analysis.pptx							
				24 Six Sigma - Analyze - Box Plots							
	15	Tue, Apr-12		25 Six Sigma - Analyze - Hypothesis Testing.pptx							
				26 Six Sigma - Improve.pptx							
	16	Tue, Apr-19		27 Six Sigma - Control.pptx							
	17	Tue, Apr-26		The Goal (DVD)							
	18	Tue, May-03		Big Quiz II							
				Topics for Big Quiz II includes: Six Sigma, the video 'The Goal' (screened on April 26th); and basic questions on Lean.							
				You can take Big Quiz II between 3:00 pm - 6:30 pm in the Testing Center (basement of McDermott Library). Big Quiz II is for two hours.							
	Required Reading										

1.		My class notes that will be posted on eLearning.								
2.		Wausau Equipment Company: A Lean Journey (A)		Reference: UV1079						
		Sorin Gruia and Robert D. Landel								
		Case study from Darden Business Publishing								
		(This article is to be used for the short paper)								
3.		Mumbai's Models of Service Excellence		Reference: R1211K-PDF-ENG						
		Harvard Business Review, November 2012								
		Stefan Thomke								
		(This article is for Online Quiz I)								
4.		Lean Consumption								
		by James Womack and Daniel Jones								
		Harvard Business Review, March 2005								
		(This article is for Online Quiz II)								
5.		The Normalization of Deviance in Healthcare Delivery		Reference: BH375-PDF-ENG						
		John Banja								
		Kelley School of Business								
		(This article is for Online Quiz III)								
6.		Managing Quality with Process Control		Reference: 8020-PDF-ENG						
		Roy D. Shapiro								
		Harvard Business School								
		(This article is for Online Quiz IV)								
	Readings 2 to 6 can be purchased from **https://cb.hbsp.harvard.edu/cbmp/access/44156601**									

Recommended Reading

I recommend you read the following two publications to expand your knowledge and understanding of Lean and Six Sigma.

Becoming Lean - Inside Stories of U.S. Manufacturers
Jeffrey K. Liker, Editor
Productivity Press, Portland, Oregon, ISBN 1-56327-173-7

The Six Sigma Handbook, Third Edition
Thomas Pyzdek & Paul Keller
McGraw-Hill, ISBN 978-0-07-162338-4

Course Requirements and Grading Policy

The course content will be presented and discussed through a combination of lectures and class discussions. My int...
to help you think through the issues in a given context, and to help you articulate your participation in class discussio...
clearly and concisely. Students are expected to attend all classes and to read the assigned material. You need to co...
class after having studied the material that will be discussed in a given class. University guidelines recommend that ...
study 2-3 hours per week for every credit hour in which you are enrolled. Your grade will be based on the following:

Online Quiz I	(Mumbai's models of …)	6%		See below . .	
Online Quiz II	(Lean Consumption)	6%		See below . .	
Online Quiz III	(The Normalization of Deviance..)	6%		See below . .	
Online Quiz IV	(Managing Quality with…)	6%			
Mid-term		27%			
Final		27%			
Short paper or process map		17%		See below . .	
Class Participation		5%		See below . .	

Online Quiz I will be on: "Mumbai's model of Service Excellence".

Online Quiz II will be on: "Lean Consumption James Womack and Daniel Jones".

Online Quiz III will be on: "Normalization of Deviance in Healthcare Delivery".

Online Quiz IV will be on 'Managing Quality with Process Control'.

MidTerm and Final are based only on slides - not on readings

Take each quiz at any time, in any order, at the Testing Center

Grades for each quiz will be posted only when all students are done with the Quiz

Short Paper.   Read the Case Study "Lean Wausau Equipment Company (A)". I will give you a question on 5th April. You will respond to the question by 4pm of 19th April.   For each paper, you have two pages for your answer: single-line spacing, Arial font, font size 11. You can attach any footnotes and references on a third page. Your evaluation on this paper will be based on how clear and professional you are in presenting your analysis and comments. Remember to make use of the data in the case study.

Your paper should be submitted BOTH in a hard copy (in class) and in MS Word format (on eLearning). Put your first name, last name and course as your file name. e.g., student John Doe's paper will be John_Doe_OPRE6364.docx.

Project
There will be a few (very few) opportunities to do a mini project instead of the paper. You need to let me know immediately if you would prefer to work on such a map. The map project may involve any process improvement task, e.g., creating a map in Microsoft Visio of a process at the University, or at another organization in the DFW area. This may require several visits to that organization.

Class Participation

Points for class participation will be based on your punctuality, regular attendance, quality and extent of discussion in class, and during guest lectures. Class participation requires your studying class materials before the class. **USE OF LAPTOPS, CELL PHONES, TEXTING, EMAILING, AND SURFING THE INTERNET ARE STRICTLY FORBIDDEN DURING CLASS HOURS - A VIOLATION CARRIES A PENALTY OF 5% FROM YOUR FINAL GRADE.**

Please Note:

Grades will NOT be curved.

There are no make up quizzes.

There is no provision for extra credit.

I cannot reschedule any exam to a different date - please do not ask.

If you miss your exam for a valid and documented reason (sick, accident etc.) I will take the average of your grades from other tests or exams for this course

Grades will be based on the following point ranges which may differ from other courses.

Less than	Letter Grade
75	F
77	C

			80		C+							
			83		B-							
			86		B							
			90		B+							
			93		A-							
			all else		A							

Student Conduct and Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the Rules and Regulations of the Board of Regents of the University of Texas System, Part 1, Chapter VI, Section 3, and in Title V, Rules on Student Services and Activities of the Course Syllabus Page 8, University's Handbook of Operating Procedures. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SSB 4.400, 972/883- 6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty and administration of the School of Management expect from our students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work. We want to establish a reputation for the honorable behavior of our graduates, which extends throughout their careers. Both your individual reputation and the school's reputation matter to your success.

The Judicial Affairs website lists examples of academic dishonesty. Dishonesty includes, but is not limited to cheating, plagiarism, collusion, facilitating academic dishonesty, fabrication, failure to contribute to a collaborative project and sabotage. See http://www.utdallas.edu/judicialaffairs/UTDJudicialAffairs-Basicexamples.html for details.

Plagiarism on written assignments, especially from the web, from portions of papers for other classes, and from any other source is unacceptable. On written assignments, this course may use the resources of turnitin.com, which searches the web for plagiarized content and is over 90% effective.

During tests and quizzes, students in this section are not allowed to have with them any food or drinks, scratch paper, course materials, textbooks, notes, invisible ink pens, or electronic devices, including IPads, IPhones, IPods, MP3 Players, earphones, radios, smart phones, cameras, calculators, multi-function timepieces, or computers. When possible, students should sit in alternating seats, face forward at all times, and remove any clothing which might conceal eye movements, reflect images of another's work, or hide course material for copying. Exam proctors will monitor any communication or signaling between students by talking, whispering, or making sounds, or by using your hands, feet, other body movements, the test paper itself or your writing implement.

Cheating: Includes but is not limited to the use or attempted use of unauthorized materials, information, or study aids in any academic exercise; the use of sources beyond those authorized by the instructor in completing any academic exercise or, engaging in any behavior specifically prohibited by the faculty member in the course syllabus or class discussion. Academic exercise includes all forms of work submitted for credit or hours.

Students in this course suspected of academic dishonesty are subject to disciplinary proceedings, and if found responsible, the following minimum sanctions will be applied:

1. Homework – Zero for the Assignment
2. Case Write-ups – Zero for the Assignment
3. Quizzes – Zero for the Quiz
4. Presentations – Zero for the Assignment
5. Group Work – Zero for the Assignment for all group members
6. Tests – F for the course

These sanctions will be administered only after a student has been found officially responsible for academic dishonesty, either through waiving their right for a disciplinary hearing, or being declared responsible after a hearing administered by Judicial Affairs and the Dean of Student's Office.

In the event that the student receives a failing grade for the course for academic dishonesty, the student is not allowed to withdraw as a way of preventing the grade from being entered on their record. Where a student receives an F in a course and chooses to take the course over to improve their grade, the original grade of F remains on their transcript, but does not count towards calculation of their GPA.

The School of Management also reserves the right to review a student's disciplinary record, on file with the Dean of Students, as one of the criteria for determining a student's eligibility for a scholarship.

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's Handbook of Operating Procedures.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations.

If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the deal will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grades

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of F.

Special Assistance

For help with test anxiety or time management, the following resources are available: your academic advisor, the Learning Resource Center (MC2.402), the Counseling Center (SU1.608), the New Student Programs Office (SU1.610), your instructor.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of the disabled peers. Disability Services is located in room 1.610 in the Student Union.

The contact information for the Office of Disability Services is:

The University of Texas at Dallas, SU 22

PO Box 830688

Richardson, Texas 75083-0688

(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminat discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requiremen be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Cla enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or univ may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Se provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during of hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximu one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalize the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a fai grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious day] or if there is similar disagreement about whether the student has been given a reasonable time to complete an missed assignments or examinations, either the student or the instructor may request a ruling from the chief execut officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive of or designee.

Off-Campus Instruction and Course Activities

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be fou http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the of the school dean.

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