

<b>Course Number/Section:</b>	<b>HMG 6332 / OPRE 6354 Section OW1</b>
<b>Course Title:</b>	Quality Improvement in Healthcare
<b>Term:</b>	Fall 2025
<b>Course Modality:</b>	ONLINE

<b>Instructor:</b>	Dr. Kannan Ramanathan
<b>Virtual Office Hours:</b>	Email for appointment
<b>Email:</b>	<a href="mailto:kxr087000@utdallas.edu">kxr087000@utdallas.edu</a>

<b>TA:</b>	Vanshu Batra
<b>Virtual Office Hours:</b>	Tuesday: 12 - 1 PM, Friday: 5 - 6 PM
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### Course Description

This course uses the Lean Six Sigma framework to discuss how healthcare organizations can improve the quality of care and implement continuous improvement in the healthcare environment. Lean manufacturing/service focuses on improving the speed of a process and the elimination of waste, primarily by reducing non-value-added steps. Six Sigma deals with improving consistency and the effectiveness with which a process meets customer requirements. Concepts from the combined framework – Lean Six Sigma – are increasingly being applied to healthcare processes.

### About Certification in Lean Six Sigma

Please note that this is NOT a project-based course, i.e., the course requirements do not include the completion of a project. If you complete HMG 6320 (The American Healthcare System), HMG 6321 (Strategic Leadership of Healthcare Organizations), HMG 6323 (Healthcare Informatics in Healthcare), in addition to this course (HMG 6332), and secure a minimum 'B' grade in each course, you qualify for a Lean Six Sigma Yellow Belt Certificate. You **must** formally apply to, and be accepted into, the Yellow Belt Certificate Program, followed by applying 'to graduate' to be awarded this certificate. All academic certificate programs follow the same application and admission processes as graduate degree programs. All dates and deadlines can be on the UTD Academic Calendar. Note also that there are penalties (fees) if you do not apply for admission and graduation on a timely basis. If you have questions about the Yellow Belt, please contact Dr. Thurgood. If you have questions about the Green Belt, please contact Dr. Ramanathan.

### Students Learning Objectives/Outcomes

At the conclusion of this course, the student should:

- Understand concepts of Lean and Six Sigma as applied to healthcare processes
- Develop analytical thinking and problem-solving capability
- Cultivate ability to apply concepts and techniques to process engineering in healthcare
- Be familiar with tools in process engineering
- Express your ideas and thoughts clearly and concisely

### [JSOM Virtual Learning Launchpad \(VLL\)](#)

To access your course content, complete the [JSOM Virtual Learning Launchpad \(VLL\)](#) in eLearning. Follow the [VLL student video instructions](#) provided. The certificate must be completed each academic year and uploaded each semester for all synchronous / asynchronous courses. The Launchpad will be available once your course starts or before if you are registered before the first day of classes. Please see the [Academic Calendar](#) for the exact date.

### Materials:

1. **Textbook: *Lean Six Sigma for Quality in Healthcare*** by Dr. Kannan Ramanathan.  
This textbook is available (for purchase) ONLY from Amazon - <https://shorturl.at/DhnTk>  
A copy of the text is available (for free) in the UTD Library on reserve.
2. In addition, some readings will need to be purchased (see list at end of syllabus).

## Quizzes and Graded Assignments

Assignment	All Day CT On	Scope of quiz	Time	Number of questions	% of grade
			(minutes)		
Mid-Term (closed book)	Wed, OCT 08 To Sat, Oct 11	All topics up to (but not including) Basic Statistics. All questions are multiple choice. Each question carries one point.	75	75 MCQ	37%
Final (closed book)	Wed, Dec 03 To Sat, Dec 06	All topics, with emphasis on Basic Statistics and Six Sigma. All questions are multiple choice. Each question carries one point.	100	75 MCQ	41%
Assessment Quiz	Thu, Dec 04 ONE DAY ONLY	<u>You have questions on both Lean and Six Sigma</u>	10	10 MCQ	2%
Assessment Quiz	<b>The Assessment Quiz is NOT proctored. You do NOT need to book time with the Testing Center.</b>				
Statistics Practice	You can get up to 5% based on proportion of right answers to questions in three practice assignments: Practice Basic Statistics, Practice Box and Whisker Plots, Practice Normal Distribution.				5%
Quizzes open book	Quizzes differ with respect to number of questions, time available, and deadlines.				15%
	No proctoring is required.				
	<b>Content from these quizzes is not included in the mid-term and final.</b>				
Extra Credit Opportunities	Extra credit of up to two marks (for attending healthcare management events and/or other activities.) One mark (not percentage point) for each event attended will be added to final exam marks for a maximum of two marks for one course. Email from organizer of event is required. These points are solely at the discretion of the Professor.				

Extra Credit Opportunities	Sat, Sep 20 or Sat, Sep 27 TBD	You will need to come <u>in person</u> to JSOM with <u>your textbook</u> from 10 AM to 12 noon. Each time, you will get 2 marks for simply being present from 10-12 and up to 8 marks for completing the assignment. (Five marks equal 1%). You will be asked to read/discuss the textbook and ask questions. Assignment details will be announced later. You must confirm your participation by Sep 10 (for Sep 20 or 27), and by Nov 10 (for Nov 29), by accepting meeting invite that will be emailed.
Extra Credit Opportunities	Sat, Nov 29	

Mid-term and final MUST be taken at the UTD Testing Center (or another approved Testing Center) on the days specified (whenever you can make a reservation). Note that the UTD Testing Center is not open 24/7. **If you need to have a make-up mid-term or final for any reason, there will be a deduction of 10% points. The make-up quiz may be different (in both format and grading criteria) from the scheduled quiz. The 10% penalty will apply to the grade for the entire course. (e.g., if your course grade is 95% and you have a 10%-point penalty, your course grade will be 85%).**

## Exams

- You need to take your Mid-term and Final during the scheduled window in person
- If you need to have a make-up exam outside the scheduled window – for whatever reason - there will be a deduction of 10% points from the earned grade for that exam
- The make-up exam may be different (in both format and grading criteria) from the scheduled quiz
- The Mid-term will cover all material from the beginning to the end of discussions on Lean
- The Final will cover all material on Six Sigma, Basic Statistics, and may also have some questions regarding differences between Lean and Six Sigma
- Open-book quizzes do not need proctoring (i.e., do not need to be taken at a testing center)
- Material from open-book quizzes is not included in Mid-term and Final

- **See:** <https://ets.utdallas.edu/testing-center/students/>  
<https://ets.utdallas.edu/testing-center/distance-learning/>  
<https://dox.utdallas.edu/list15802>

**Note that ALL** proctored exam applications for a testing center other than UTD must be submitted and received by the UT Dallas Testing Center **at least 10 business days** prior to the exam date. The UT Dallas Testing Center will adhere to the 10-business day deadline for submission, **no exceptions**. For questions about remote testing – please contact [tcdl@utdallas.edu](mailto:tcdl@utdallas.edu).

### Grading Criteria

Grading criteria may vary from those for other courses or even this same course in other semesters.

Points Above	Letter Grade
0%	F
70%	C
75%	C+
78%	B-
81%	B
84%	B+
88%	A-
93%	A

**Note: Grades are NOT curved**

### Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same: *"As a Comet, I pledge honesty, integrity, and service in all that I do."*

### Links to eLearning resources

- [Getting Started with eLearning](#)
- [Student eLearning Tutorials](#)
- [eLearning Support Center](#)

### Links for Proctored Exams

- [UTD Testing Center](#)
- [Distance Learning Proctored Exams](#)

### Other useful links

- For students with disabilities [link to accommodations](#)
- Academic Support Resources [academic support resources](#)
- University's policies [syllabus policies](#)
- University's policy on AI [Generative AI use in academic work](#)

**AI Policy for this course.** No restrictions on the use of AI.

**READ THE SYLLABUS IN ITS ENTIRETY**

**Professor and TA will not respond to questions if the information is already provided in the syllabus.**

## Open-book Quizzes

Readings for these quizzes are related to quality in healthcare. But each reading is NOT necessarily connected to the same topics you may be reading in the textbook or the online recorded lectures at that time.

**PLEASE NOTE:**

- YOU MUST SUBMIT THE FOLLOWING OPEN-BOOK QUIZZES BEFORE THE DEADLINE
- ONLY ONE SUBMISSION IS ALLOWED
- DO NOT SUBMIT ACCIDENTALLY
- DO NOT WAIT TILL THE LAST MINUTE TO SUBMIT – DEADLINES WILL **NOT** BE EXTENDED

Reading	Complete quiz by 11:59 PM Central Time
Q1 Making a dent in medical waste	Sun, Sep 14
Q2 Factory Efficiency Comes to the Hospital	Sun, Sep 28
Q3 Mistake-Proofing Healthcare - Why Stopping Processes Might be a Good Start	Sun, Oct 05
Q4 HealthCare Quality - Accountability	Sun, Oct 12
Q5 Applying the Lean principles of the Toyota Production System to Reduce ... ..	Sun, Oct 26
Q6 Writing The New Playbook For US Healthcare	Sun, Nov 02
Q7 The Impact of Six Sigma Improvement-A Glimpse into the Future of Statistics	Sun, Nov 09
Q8 Managing Quality with Process Control	Sun, Nov 16
Q9 The Normalization of Deviance in Healthcare Delivery	Sun, Nov 23

Readings for Q3, Q8, Q9 can be purchased from the link below.

<https://hbsp.harvard.edu/import/1318945>

## Other Readings

These and other readings are available as follows.

For copyright reasons you will need to obtain these on your own.

**Content from these readings is not included in the mid-term and final exams.**

- Q1** In a World of Throwaways, Making a Dent in Medical Waste  
*Yingfei Chen, The New York Times, July 5, 2010*
- Q2** Factory Efficiency Comes to the Hospital  
*Julie Weed, The New York Times, July 10, 2010*
- Q3** Mistake-Proofing Healthcare  
*John R. Grout and John S. Toussaint, Business Horizons (2010), 53, 149-156*  
(Purchase from link above)
- Q4** HealthCare Quality - From Data to Accountability  
*Mary Darby, National Health Policy Forum, February 1998*  
[https://hsrc.himmelfarb.gwu.edu/cgi/viewcontent.cgi?article=1002&context=sphhs\\_centers\\_nhpf](https://hsrc.himmelfarb.gwu.edu/cgi/viewcontent.cgi?article=1002&context=sphhs_centers_nhpf)
- Q5** Applying the Lean principles of the Toyota Production System to reduce wait times in the ED  
*David Ng, Gord Vail, Sophia Thomas, Nicki Schmidt, CJEM 2010; 12(1):50-7*
- Q6** Writing the New Playbook for U.S. Health Care: Lessons from Wisconsin  
*John Toussaint, Health Affairs 28, no.5 (2009):1343-1350*

- Q7** The Impact of Six Sigma Improvement-A Glimpse into the Future of Statistics  
*Gerald J. Hahn, William J. Hill, Roger W. Hoerl and Stephen A. Zincograph*  
*The American Statistician, Vol. 53, No. 3 (Aug. 1999), pp. 208-215*
- Q8** Managing Quality with Process Control  
Roy D. Shapiro, Harvard Business Publishing, Core Curriculum Readings, 8020-HTM-ENG, Sep 10, 2013  
(Purchase from link above)
- Q9** The Normalization of Deviance in Healthcare Delivery  
John Banja, Harvard Business Publishing, Mar 15, 2010, #: BH375-PDF-ENG  
(Purchase from link above)
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**NOTE**

**YOU SHOULD NOT EXPECT A ONE-TO-ONE MATCH BETWEEN THE TEXTBOOK AND THE RECORDED LECTURES. THIS IS DUE TO THE FACT THAT THE TEXTBOOK AND RECORDED LECTURES ARE UPDATED AT DIFFERENT TIMES, AND I ATTEMPT TO INCORPORATE THE MOST CURRENT MATERIAL (IN THE TEXT OR THE RECORDING), AS WELL AS IMPROVE THE PRESENTATION. THIS IS AN EXAMPLE OF APPLYING CONTINUOUS IMPROVEMENT.**