

(January 6, 2011)

## OM 337 TOTAL QUALITY MANAGEMENT

SPRING 2011

TTH 12:30 AM–1:45 PM UTC 4.110

Unique # 03985

Instructor: Uttarayan (Rayan) Bagchi

Office: CBA 3.434A; Phone: 458-1831 (Home)

Office Hours: TTH 11:00 a.m.-12:00 noon and by appointment; Mail Box: Dept. of IROM, CBA 5.202

e-mail: [Uttarayan.Bagchi@mcombs.utexas.edu](mailto:Uttarayan.Bagchi@mcombs.utexas.edu); Course Web Page: via Blackboard.

### COURSE TOPICS:

This course focuses on the essence, principles, and practices of total quality management (TQM). Some of the ideas and topics that are covered are: process improvement; service quality; customer satisfaction; process control and capability; role of inspection; economics of quality; report cards; and organizational learning.

### COURSE PREREQUISITE:

For business majors, Operations Management 335 (or Management 335 or Management Science 335) or Operations Management 335H (or Management 335H or Management Science 335H) with a grade of at least C; for others, admission to an appropriate major sequence in engineering.

### COURSE LEARNING OBJECTIVES:

By the end of this course, you should have:

gained an improved understanding of

- what quality is as viewed from a variety of perspectives;
- the foundational elements of total quality management;
- the organizational, competitive and economic potential of total quality management

and acquired the skills to

- analyze any manufacturing or service process to uncover improvement opportunities;
- determine if a process is in control and its capability;
- sources and remedies of customer dissatisfaction.

### LEARNING MATERIALS:

The Memory Jogger II by Brassard and Ritter

A **readings packet** containing all the readings and cases is available from the University Co-op Custom Publishing. A **class companion packet** containing some materials we shall use in class is available from the GSB Copy Center (GSB 3.136). Please remember to bring the class companion packet to class starting with Session 2.

### PERFORMANCE EVALUATION:

Class Participation	20%
Case Reports (5)	10%
Group Presentation ( <i>March 1, 3, 8</i> )	10%
Group Presentation ( <i>April 26, April 28, May 3</i> )	10%
Exam 1 ( <i>February 23, 7:00-9:30 PM</i> ) – covers Sessions 1-11	25%
Exam 2 ( <i>April 13, 7:00-9:30 PM</i> ) – covers Sessions 1-21	<u>25%</u>
Total	100%

**Case Reports:** At the beginning of every class session in which a case report is due, you will turn in a written report, not to exceed 1 double-spaced page, which addresses the case discussion questions listed in the detailed schedule. The report should not have any attachments. **No late report will be accepted.** These reports will not be returned to you, so please keep a copy for yourself.

**Class Participation:** This, a very important component of your course grade, is essentially a measure of how actively you are engaged in class proceedings, and what you contribute to the learning of others. Class attendance is an essential component of class participation.

**Group Presentations:**

Your group will make two oral presentations to the class, of approximately 15 minutes duration each, on topics assigned to you. The presentations are scheduled for March 1, March 3, March 8, April 26, April 28, and May 3.

**DETAILED SCHEDULE:**

<b>SESSION 1 (T, 1/18)</b> Readings:	<b>INTRODUCTION</b> "Made in U.S.A.: A Renaissance in Quality"
<b>SESSION 2 (TH, 1/20)</b> Readings:	<b>WHAT IS QUALITY?</b> Memory Jogger- Radar Chart
<b>SESSION 3 (T, 1/25)</b> Case: Case Questions:	<b>WHAT IS TQM?</b> Paul Chesler, Director, Quality Assurance 1. What are the causes of the quality problem on the Greasex line? 2. What should Paul Chesler do about the quality problem?
<b>SESSION 4 (TH, 1/27)</b> <b>PROCESS IMPROVEMENT</b> Readings:	<u>Memory Jogger</u> - Brainstorming, Cause & Effect, Flowchart, Force Field, NGT (and Multivoting), Pareto Chart, Problem-Solving/Process-Improvement Model: Improvement Storyboard, Run Chart, Scatter Diagram, and Tree Diagram
Case:	Florida Power and Light Quality Improvement (QI) Story Exercise(A)
Case Questions:	1. Consider the seven-step problem solving mechanism known as the quality-improvement story (QI story). How would you characterize its role at FPL? 2. Why use a storyboard? 3. What is the role of tools such as fishbone diagram, Pareto chart, and force field analysis?
<b>SESSION 5 (T, 2/01)</b> <b>PROCESS IMPROVEMENT (cont...)</b> Readings:	<u>Memory Jogger</u> - Brainstorming, Cause & Effect, Flowchart, Force Field, NGT (and Multivoting), Pareto Chart, Problem-Solving/Process-Improvement Model: Improvement Storyboard, Run Chart, Scatter Diagram, and Tree Diagram
Case:	Florida Power and Light Quality Improvement (QI) Story Exercise(A)
Case Questions:	1. Consider the seven-step problem solving mechanism known as the quality-improvement story (QI story). How would you characterize its role at FPL? 2. Why use a storyboard? 3. What is the role of tools such as fishbone diagram, Pareto chart, and force field analysis?

**SESSION 6 (TH, 2/3)****PROCESS IMPROVEMENT (cont...)**

Readings:

Memory Jogger- Team Guidelines

Case:

Massachusetts General Hospital: CABG Surgery (A)

Case Questions:

1. What are the reasons for using CABG as the starting point for care path creation at MGH?
2. For each stakeholder at MGH, identify why there may be resistance to the care path. For each key concern, what should be the response of MGH?

Assignment:

*Case Report***SESSION 7 (T, 2/8)****PROCESS IMPROVEMENT (cont...)**

Readings:

Memory Jogger- Team Guidelines

Case:

Massachusetts General Hospital: CABG Surgery (A)

Case Questions:

3. What are the reasons for long lengths of stay (LOS) of CABG patients at MGH?
4. Why did LOS decline during 1993-1994?
5. If CABG care path is a success at MGH, what are some of the longer-term improvement opportunities that would leverage the CABG success?
6. Suppose that the bottleneck for CABG at MGH is the SICU which has only 15 beds for CABG patients. MGH follows a level admittance policy (the same number of CABG patients to be admitted every day from Sunday through Thursday); no operations are scheduled on Saturdays and Sundays; and CABG patients spend two nights – the second and the third nights of their stay at MGH - in the SICU. You may assume that on the day of a patient's move from the SICU to the Ellison 8, the patient's bed is available to another patient. The following questions require you to track the number of daily moves of patients, in and out of SICU. Assume that the SICU remains the bottleneck throughout.

(a) What is MGH's weekly CABG capacity (= number of CABG operations per week)?

(b) What is the utilization of SICU beds assuming that MGH runs CABG at full capacity?

Suppose that the length of stay in the SICU is reduced from 2 nights to 1 night.

(c) What will be MGH's weekly CABG capacity (= number of CABG operations per week)?

(d) What will be the utilization of SICU beds assuming MGH runs CABG at full capacity?

(e) If the length of stay at MGH is nine nights, what will be the average number of CABG patients at MGH?

**SESSION 8 (TH, 2/10)****SERVICE QUALITY**

Readings:

"Improving Service Quality in America: Lessons Learned"

Case:

Singapore Airlines (A)

Case Questions:

1. What are the two or three key elements of SIA's strategy?
2. SIA management states that cabin crews are a vital component of its service strategy. Evaluate the elements of SIA's work-force-management program (e.g., training program, performance measurement, feedback, and communication procedures).

Assignment:

*Case Report*

**SESSION 9 (T, 2/15)****SERVICE QUALITY (cont...)**

Readings:

"Improving Service Quality in America: Lessons Learned"

Case:

Singapore Airlines (A)

Case Questions:

2. SIA management states that cabin crews are a vital component of its service strategy. Evaluate the elements of SIA's work-force-management program (e.g., training program, performance measurement, feedback, and communication procedures).
3. How sustainable is SIA's strategy?

**SESSION 10 (TH, 2/17)****CUSTOMER SATISFACTION**

Readings:

"The Power of Unconditional Service Guarantees"

Case:

Xerox Corporation: The Customer Satisfaction Program

Case Questions:

1. Should Xerox offer a guarantee? Give two reasons for and two reasons against.
2. If Xerox chooses to offer a guarantee, what kind of guarantee should it offer and why?

Assignment: *Case Report***SESSION 11 (T, 2/22)****GAP MODEL OF CUSTOMER SATISFACTION**

***Exam 1 on Wednesday, February 23, 7:00-9:30 PM***

***NO CLASS on Thursday, February 24 (No office hour)***

**SESSION 12 (T, 3/1)****GROUP PRESENTATIONS****SESSION 13 (TH, 3/3)****GROUP PRESENTATIONS****SESSION 14 (T, 3/8)****GROUP PRESENTATIONS****SESSION 15 (TH, 3/10)****ECONOMICS OF QUALITY**

Case:

Texas Instruments: Cost of Quality (A) and (B)

Readings:

"Zero Defections: Quality Comes to Services"

Case Questions:

1. Why did TI choose to adopt a financial measure of quality?
2. Why use COQ instead of 'direct measures of quality' (DMOQ)?
3. Why did ISD's first attempt to implement a COQ system fail?

Assignment: *Case Report*

***NO CLASS on Tuesday, March 22 (No office hour)***

**SESSION 16 (TH, 3/24)      PROCESS CONTROL/CAPABILITY**

Readings:

"Understanding Variation"

Memory Jogger- Control Charts, Data Points, Process Capability  
Quality Wireless (A)

Case:

Case Questions:

1. What fraction of the days in 2003-2004 failed to meet the targeted hold time of 110 seconds? Given that the daily average hold time was normally distributed with a mean of 99.67 and a standard deviation of 24.24, what fraction of days where the call center failed to meet the targeted hold time of 110 seconds would you expect? What is the sigma capability of the call center?
2. What fraction of the days in April 2005 failed to meet the targeted hold time of 110 seconds? Given that the daily average hold time after process improvements was normally distributed with a mean of 79.50 and a standard deviation of 16.86, what fraction of days where the call center failed to meet the targeted hold time of 110 seconds would you expect?
3. Based on the performance in April 2005, do you think that the performance of the call center has improved?

**SESSION 17 (T, 3/29)****PROCESS CONTROL/CAPABILITY (cont...)**

Readings:

"Six-sigma Quality Programs"

Memory Jogger- Control Charts, Data Points, Process Capability  
Quality Wireless (B)

Case:

Case Questions:

1. What do you think of Jackson's management approach?
2. If we assume that call center performance during the month of September is continuing at the improved level with a mean of 79.50 and a standard deviation of 16.86, what is the sigma capability of the call center? What is the probability of observing ten days that average 86.6 or more? What is the probability of observing ten days that average 74.4 or less?
3. What would you do if you were in Jackson's position?

**SESSION 18 (TH, 3/31)****INSPECTION****SESSION 19 (T, 4/5)****INSPECTION (cont...)****SESSION 20 (TH, 4/7)****REPORT CARDS**

Case:

Productivity and Performance Systems: A Comparative Analysis  
of Northern Telecom and United Parcel Service

Case Questions:

1. Productivity and performance systems reflect how management views the nature of work itself and why employees work. Articulate in a concise manner the relevant views of the UPS management and those of the NT management.
2. "If you do it our way, you'll be less tired at the end of the day," says a UPS spokesman. Is the spokesman right? If yes, where does process knowledge reside at UPS?
3. Where does process knowledge reside at NT?

**SESSION 21 (T, 4/12)****ORGANIZATIONAL LEARNING**

Readings:

“Using the Balanced Scorecard as a Strategic Management System”  
 “Building a Learning Organization”

Case:

Analog Devices: The Half-Life System

Case Questions:

1. How is Schneiderman’s half-life effect different from the well-known experience/learning curve effect?
2. What is the role of the half-life method at Analog?

Assignment: *Case Report*

***Exam 2 on Wednesday, April 13, 7:00-9:30 PM***

***NO CLASS on Thursday, April 14 (No office hour)***

**SESSION 22 (T, 4/19)****HEALTH AND SAFETY**

Case:

Workplace Safety at Alcoa (A)

Case Questions:

1. What has been and needs to be the half-life of Mission Valley’s safety improvement?
2. As Paul O’Neil, how do you describe what has and has not worked at Mission Valley?

**SESSION 23 (TH, 4/21)****HEALTH AND SAFETY (cont ...)**

Case:

Workplace Safety at Alcoa (A)

Case Questions:

2. As Paul O’Neil, how do you describe what has and has not worked at Mission Valley?
3. What is your evaluation of Linda Merton’s plan for 1992?

**SESSION 24 (T, 4/26)****GROUP PRESENTATIONS****SESSION 25 (TH, 4/28)****GROUP PRESENTATIONS****SESSION 26 (T, 5/3)****GROUP PRESENTATIONS**

***NO CLASS on Thursday, May 5***

**McCombs Classroom Professionalism Policy**

- **Students arrive on time.** On time arrival ensures that classes are able to start and finish at the scheduled time. On time arrival shows respect for both fellow students and faculty and it enhances learning by reducing avoidable distractions.
- **Students display their name cards.** This permits fellow students and faculty to learn names, enhancing opportunities for community building and evaluation of in-class contributions.

- **Students minimize unscheduled personal breaks.** The learning environment improves when disruptions are limited.
- **Students are prepared for each class.** Much of the learning takes place during classroom discussions. When students are not prepared they cannot contribute to the overall learning process. This affects not only the individual, but their peers who count on them, as well.
- **Students do not speak unless they are speaking to the entire class.** Do not engage in private conversations, however short or innocuous, while the class is in progress. They are disruptive and discourteous to the speaker. Raise your hand if you have a question or comment.
- **Laptops are closed and put away and phones and wireless devices are turned off.**

### **Academic Dishonesty**

The McCombs School of Business has no tolerance for acts of scholastic dishonesty. The responsibilities of both students and faculty with regard to scholastic dishonesty are described in detail in the Policy Statement on Scholastic Dishonesty for the McCombs School of Business:

*By teaching this course, I have agreed to observe all of the faculty responsibilities described in that document. By enrolling in this class, you have agreed to observe all of the student responsibilities described in that document. If the application of that Policy Statement to this class and its assignments is unclear in any way, it is your responsibility to ask me for clarification. Policy on Scholastic Dishonesty: Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. You should refer to the Student Judicial Services website at <http://deanofstudents.utexas.edu/sjs/> or the General Information Catalog to access the official University policies and procedures on scholastic dishonesty as well as further elaboration on what constitutes scholastic dishonesty.*

### **Honor Code**

The core values of the University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

(Link to University Honor Code: <http://registrar.utexas.edu/catalogs/gi09-10/ch01/index.html> ).

### **Class Web Sites and student Privacy**

*Password-protected class sites will be available for all accredited courses taught at The University. Syllabi, handouts, assignments and other resources are types of information that may be available within these sites. Site activities could include exchanging e-mail, engaging in class discussions and chats, and exchanging files. In addition, class e-mail rosters will be a component of the sites. Students who do not want their names included in these electronic class rosters must restrict their directory information in the Office of the Registrar, Main Building, Room 1. For information on FERPA related issues see <http://registrar.utexas.edu/students/records/ferpa/>.*

### **Students with Disabilities**

Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, 471-6259,

<http://www.utexas.edu/diversity/ddce/ssd/>.

### **Religious Holidays**

By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

Session	Day	Date	Topic	Case	Assignment Due
01	T	1/18	Introduction		
02	TH	1/20	What is Quality?		
03	T	1/25	What is TQM?	Paul Chesler	
04	TH	1/27	Process Improvement	Florida Power Light	
05	T	2/01	Process Improvement	Florida Power Light	
06	TH	2/03	Process Improvement	Mass Gen Hosp	Case Report
07	T	2/08	Process Improvement	Mass Gen Hosp	
08	TH	2/10	Service Quality	Sing Airlines (A)	Case Report
09	T	2/15	Service Quality	Sing Airlines (A)	
10	TH	2/17	Customer Satisfaction	Xerox	Case Report
11	T	2/22	Gap Model of Customer Satisfaction		
<b>EXAM 1</b> <u>Wednesday, February 23, 7:00-9:30 p.m.</u> (EXAM 1 covers Sessions 1-11)					
	<b>TH</b>	<b>2/24</b>	<b>NO CLASS (No Office Hours)</b>		
12	T	3/01	Group Presentations		
13	TH	3/03	Group Presentations		
14	T	3/08	Group Presentations		
15	TH	3/10	Economics of Quality	Tex Instr (A) & (B)	Case Report
	<b>T</b>	<b>3/22</b>	<b>NO CLASS (No Office Hours)</b>		
16	TH	3/24	Process Control & Capability	Qual Wire (A)	
17	T	3/29	Process Control & Capability	Qual Wire (B)	
18	TH	3/31	Inspection		
19	T	4/05	Inspection		
20	TH	4/07	Report Cards	North Telec & UPS	
21	T	4/12	Organizational Learning	Analog Devices	Case Report
<b>EXAM 2</b> <u>Wednesday, April 13, 7:00-9:30 p.m.</u> (EXAM 2 covers Sessions 1-21)					
	<b>TH</b>	<b>4/14</b>	<b>NO CLASS (No Office Hours)</b>		
22	T	4/19	Health and Safety	Alcoa (A)	
23	TH	4/21	Health and Safety	Alcoa (A)	
24	T	4/26	Group Presentations		
25	TH	4/28	Group Presentations		
26	T	5/03	Group Presentations		
	<b>TH</b>	<b>5/05</b>	<b>NO CLASS</b>		

\*\*PLEASE Note: No office hours on February 24, March 22 and April 14.\*\*