IE Technical Elective: Quality Management and Six Sigma
Fall 2020

Industrial Engineering
Pittsburgh Institute, Sichuan University

Instructors: Steve Hsueh-Ming Wang steve.wang@scupi.cn Mobile: 13241870375

Teaching Assistant:

王蔺景
手机:134-8893-6422 | 邮箱:2997582622@qq.com | 微信号:Douzi233n

Class Meetings: Wednesday 8:15am - 11:00am,
Rm 3-101

QQ code: on the last page

Course Description:

This course promotes understanding of the content and practice of quality management and six-sigma change management as it relates to sustainability, reliability, maintainability/availability, quality functions within the organization, quality management as a system, Kaizen, Statistical Process Control, inventive problem-solving tools, and DMAIC/DMADV of Six Sigma management.

Course Objectives:

Instructional Goals:

- Present and explain the concepts of Total Quality Management and develop understanding of businesses as systems.
- Introduce the concept of sustainability and the components of sustainable business models.
- Explain the concept of quality and constant quality improvement.
- Present the concept of continuous process improvement through utilizing everyone in the organization in improvements.
- Present and explain the basic tools and techniques of Kaizen and how it can be applied.
- Demonstrate the use of statistical process control methods.
- Present the concepts of Six Sigma.
- Present inventive problem-solving tools

Outcomes, Students will be able to:

- Demonstrate the understanding of businesses as a system and problem-solve using systems analysis.
- Define sustainability and identify sustainable business models.
- Define quality in the context of sustainable design and quality management and demonstrate understanding of integrating quality into management.
- Describe the basic tools and techniques of Kaizen and how it can be applied.
- Demonstrate how to use statistical process control methods.
- Demonstrate understanding of the concepts of Six Sigma.
- Apply inventive problem-solving tools

Course Texts and Resources:

Required:

1. Evans, Lindsay, "Managing for Quality and Performance Excellence," the 10th version, Thomson, 2016
2. Steve Hsueh-Ming Wang, "Six Sigma Project Management," Second Edition, Chinese Society for Quality, 2006. (in Chinese)

Optional - Additional Resources:

1. Bob Willard, "The New Sustainability Advantage: Seven business case benefits of a triple bottom line," New Society Publishers, 2012.
2. Basem El-Haik and David M. Roy, "Service Design for Six Sigma – A Roadmap for Excellence," John Wiley & Sons, Inc. 2005. ISBN 10-0-471-68291-8
3. Kenneth H. Rose, "Project Quality Management, Why, What, and How," J. Ross Publishing, 2005, ISBN 1-932159-48-7.
4. A Guide to the Project Management Body of Knowledge, Third Edition, Project Management Institute, 2004.

Reference Material for Course:

1. Reference Material will be provided during the semester.

Class Policies:

Students will be expected to participate in class discussions, submit assignments, make presentations and successfully complete examinations.

This course will use SCUPI's Blackboard system extensively for posting course materials. Blackboard is accessible at https://learn.scupi.cn/. All registered students have accounts on Blackboard and may access them virtually anywhere via a web browser. The instructor plans to post class materials by noon on each class day. E-mail should be sent to the instructor at steve.wang@scupi.cn. You are responsible for maintaining a clear inbox to prevent messages from being bounced.

Course assignments, announcements, and supplemental documents will be posted on Blackboard, usually in Adobe Acrobat format (PDF) or Microsoft Office 2007 or 2010 format (DOC, XLS, etc.). Students need to ensure they have the capability to read these formats.

Attendance and participation are critical to student success in the course. SCUPI tracks attendance. Please notify the instructor if you are going to be absent. Advance notice is encouraged for scheduled absences, such as for work and personal travel.

Please turn off or silence all audible cell phones and electronic devices while in class.

Grading and Expectations:

All materials submitted for grading should reflect a professional-level of quality, similar to what is expected by an employer. Guidelines will be given in class on grading criteria and expectations for specific assignments. Students are expected to use skills and demonstrate knowledge acquired during the course.

All graded items must be submitted in class or on Blackboard. Specific instructions will be given on how to submit each item.

Late Submittals: Assignments and cases are due at the start of the class period (8:15 AM sharp). Late submittals are not allowed.

Graded Items:

Graded Item	Percentage	Description
Articles/ Cases (Group Presentation)	10%	There will be ten selected group assignments each week except the first, mid-term, and last two weeks.
Proposition and Annotation	10%	You need to create a proposition from the textbook or assigned articles. Five propositions with annotations are needed per week.
Summary of the case study	10%	A summary of five-hundred-works writing is needed individually for each case study.
Midterm Examination	30%	
Final Examination	30%	
Class Participation	10%	Class participation is critical for students to understand topics presented in class and to enhance course teachings with practical, real-world examples.
Total:	100%	

Course Schedule (Tentative):

The following schedule is current as of the date shown at the bottom of the page. The schedule is subject to change due to class input, guest speaker schedules, inclement weather, etc. The most recent version of the syllabus will be available on Blackboard.

Students are expected to complete all reading assignments prior to the start of class to facilitate review and discussion. Reading assignments for each week may include additional handouts, as assigned.

Week	Date	Topic	***Case Presentation***	Text
1	9/9/2020	**Course Introduction** **Business Ethics**		
2	9/16/2020	**Introduction to Quality**	Quality Practices in Modern China (p.36)	EL Ch. 1
3	9/23/2020	**Foundations of Quality Management**	The win-win relationship between EU and Huawei	EL Ch. 2
4	9/30/2020	**Customer Focus** **Workforce Focus**	Harley-Davidson (p. 134)	EL Ch. 3, 4
5	10/7/2020	**National Holiday**		
6	10/14/2020	**Process Focus**	Building Japanese Quality in North America (p. 238)	EL Ch. 5
7	10/21/2020	**Mid-term**		

8	10/28/2020	**Cost of Quality**	A Review of Research on Cost of Quality Models and Best Practices	EL Ch. 6
9	11/4/2020	**Reliability Maintainability/Availability**	Performance metrics analysis for aircraft maintenance process control	EL Ch. 7
10	11/11/2020	**Statistical Process Control (Variables)**		EL Ch. 8
11	11/18/2020	**Statistical Process Control (Attributes)**		EL Ch. 8
12	11/25/2020	**Kaizen Basic tools & Techniques**	Human critical success factors for kaizen and its impacts in industrial performance	EL Ch. 9
13	12/2/2020	**Six Sigma**	Lean Thinking: Reduction of Waste, Lead Time, Cost through Lean Manufacturing Tools and Technique	EL Ch. 9
14	12/9/2020	**Quality Management Systems**	Financial indicators in healthcare quality management systems	EL Ch. 10
15	12/16/2020	**Building and Sustaining Quality and Performance Excellence - Sustainability**	Making Sustainability Count	EL Ch. 14
16	12/23/2020	**Final Presentation**		
17	12/30/2020	**Final Exam**		

ASSIGNMENT

A. Guidance of Assignments

1. Individual assignments:

   (a) Proposition and annotation: Articles and book chapters that are required reading for all students each week are listed on the weekly schedule – articles that are not part of the text are posted on Blackboard. Your proposition is an insight that you gained from the reading materials for the week. It can be as short as one sentence. You must then quote and cite to the page and paragraph of the reading materials from which you gained the insight.
   (b) A 250-word summary of the case study assigned for the week is also required each week.
   (c) A 250-word summary of the advanced article posted for the class.

2. Group assignments:

   The class will be divided into 3 groups on day one. The groups will be required to prepare a presentation on the case study for that week, and post the presentation on Blackboard before 5:30 pm the day of the presentation. The second group will prepare a presentation on the advanced article for the week and post the presentation on Blackboard before 5:30 pm the day of the presentation.

3. The final written review of the book; business analyses, technologies or evaluations; and case studies and a presentation is due in week #13.

B. Format and Length of Written Assignments

1. Advanced articles should be critically reviewed in a short paper of about 250 words. State the basic message of the article; comment on its implications for the practice of sustainability and quality management. The team assigned to prepare the presentation may also want to comment on its credibility or "face validity," when compared to your own experiences.

2. Case write-ups should at least address the assigned case questions and should not exceed three pages in length. The assigned team can use the memorandum format posted on Blackboard.

3. Final review (book review business analysis, technology evaluation, or case study) length should be eight pages maximum. Due date is April 20, 2015. Comment on the strengths and weaknesses of the book or project. Did the author achieve his objectives? Should quality managers in our projects (or environment) read this book? Which ones and why? For example, the review could be business analysis of the quality technology applications in a chosen functional area of an organization or society. The report will include evaluation of existing applications, and analysis of the potential for innovative applications. The focus in this type of report is on application. If you want to evaluate an emerging technology and its implications to some functional areas in a business, the focus in this type of report is on the technology and the opportunities it creates. The report can (optionally) be based on a literature study only, for example: explore the implications of using Lean Six Sigma in a project, evaluate the implications of Balanced Scorecard (BSC) for a project, or assess the affect of the Quality Management System on a brokerage project. A case study depicts the application of an innovative technology. This report should focus on the benefits, costs, and risks created by the innovative application.

Please note: Written assignments are due at the beginning of the class session in which they will be discussed or presented.

C. Software

You may need to use the statistical software. The old student test version of Statgraphics may download from Blackboard. You need to download VMware Player from the following web site: https://my.vmware.com/web/vmware/free#desktop_end_user_computing/vmware_player/6_0 for free. Then you can run the old version of 32 bit software to experiment more concepts of quality management. You also can directly download it from http://www.statgraphicsonline.com/ for one month trial version.

QQ Code: