

USC Viterbi School of Engineering
Daniel J. Epstein Department of Industrial and Systems Engineering
ISE 527: Quality Management for Engineers (Spring 2023)

Instructor: Dr. Thomas C. Booth	Course producer: Ceydan Kaya
Office: GER 242-A or Zoom	Office:
Office Hours: 9-11AM (M & W)	Office hours:
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Class timing and location

- Monday and Wednesday: 11:00 to 12:20 PM (Pacific time zone)
- OHE100D (campus students)
- Courses.uscden.net (DEN students)

Text: Evans and Lindsay, Managing for Quality and Performance Excellence, Ed.10, ISBN:978-1305662544

Course Description: We will compare and contrast the philosophical frameworks advocated by quality experts such as Deming, Juran, and Crosby. We will examine the role of leadership and strategic planning in quality improvement, and how the use of measurements will lead to quality and business performance improvements. We will learn the basics of quality tools and methods from the perspective of a manager, which will include six sigma, statistical thinking, tools for process improvement such as process mapping, and statistical process control. Through a team project, students will be exposed to elements of industrial quality management systems including manufacturing plans, QFD, validation tests, FMEA, PFMEA, and measurement system analysis. The teams will create a quality system and an ISO 9001 quality manual for a small business.

Learning objectives: In this course, the student will learn how to develop, deploy and maintain quality practices that assure marketplace acceptance of the products and services provided by a company. The course intent is to provide a knowledge base such that the student will be comfortable with modern quality practices in a company and able to effectively apply quality principles as a manager or high-performing contributor.

Pre-requisites: Basic statistics and probability*

Course website: courses.uscden.net (desire2learn software)

Course Notes: Lecture notes will be posted on the course D2L (desire2learn) website. Configuration management will be used (indicated by Rev a, etc. in the file name) to indicate any updates.

Supplementary materials:

- Course specific notes including “The Math of Quality” will be posted on the course web site for more in-depth information on some of the concepts reviewed in the course.
- Supplemental materials will be posted on the D2L website
- An examination study guide will be posted on the course web site to help the students focus as they study their lecture notes and the text book in preparation for examinations.

Presentations:

- Students currently employed will each make a short presentation to the class describing how quality impacts their company and job
- Full-time students will each write a short critique of a published paper related to a topic that relates to their career aspirations.

Technological Proficiency and Hardware/Software Required: Student should be familiar with Excel.

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Assignments

Team project: each student will participate on a project team. The teams will envision a small business to make and sell a product, design the product and production processes, produce an item (the product) for qualification, perform a qualification test, and create a quality system for the business. The quality system assignments are comprised of

1	Business plan	9	QFD- levels 2-4 & control plan
2	Layout drawing/BOM	10	RFQ
3	Manufacturing concept	11	Assembly process
4	PDR presentation	12	PFMEA
5	Manufacturing plan	13	Balanced scorecard
6	QFD- level 1	14	Qualification test
7	FMEA	15	ISO quality manual (15A-15F)
8	Verification test	16	Table of contents (15A-15F)

Grading:

- Assignments: Required assignments focus on the quality system project. They will be graded with each member of a team receiving the same grade on each of the 16 elements
- Quiz: there will be an on-line quiz after completing most of the chapters. The quizzes will be given on a class day following the completion of the associated chapter.
- Participation: grading will be determined based on class participation, team participation, electronic communication, and participation in non-required assignments
- Mid-term exam: A comprehensive examination for the material in the first half of the course
- Final examination.
 1. The first part will be a take-home exam, the duration of which will be one week. In this exam, the student will solve one or more problems based on techniques described in the text. These may include SPC, sample size, gage R&R, etc.
 2. The second part will be comprehensive and knowledge based.
- The course grade will be based on the following:

	Full time students	Industrial students
1. Quality system team project	35%	35%
2. Participation (team, class)	5%	5%
3. Quality in workplace (presentation)		5%
4. Quality article (presentation)	5%	
5. Quiz	5%	5%
6. Mid-term exam	20%	20%
7. Final exam ("take home"/problem oriented))	15%	15%
8. Final exam ("on line"/knowledge oriented)	15%	15%

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Assignment Submission policy: Assignments may not be turned in past the deadline unless there is a prior agreement with the professor.

Quality and Timeliness Expectations

Assignments submitted late will be penalized.

All assignments shall have cover page with:

1. The name of the person submitting the assignment
2. Team members' names with last names in alphabetical order
3. Document title
4. Document date
5. File name must conform to the following: team#_assignment#.docx

Statement for Students with Disabilities: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. Website and Contact information for DSP: (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX) ability@usc.edu. DSP website: http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html,

Statement on Academic Integrity: USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *SCampus*, the Student Guidebook, (www.usc.edu/scampus or <http://scampus.usc.edu>) contains the University Student Conduct Code (see University Governance, Section 11.00), while the recommended sanctions are located in Appendix A. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>.