



ÇANKAYA UNIVERSITY
Faculty of Engineering
Department of Industrial Engineering

Faculty Member:
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**IE 326 – Quality Engineering (3 2 4)
Spring 2017**

Course objectives

- To introduce the concepts and statistical methods employed in the assurance of product conformance to specification limits.
- To introduce different statistical process control techniques.
- To enlighten students on the importance of reduction in variability in process.
- To introduce acceptance sampling techniques.
- To teach how to conduct and use design of experiments to improve quality of products and processes.

Teaching Assistant

Derya Akbulut, e-mail: akbulut@cankaya.edu.tr

Course website

<http://webonline.cankaya.edu.tr/>, students are required to enroll to IE326 course and to check the course website regularly.

Text

Montgomery D.C. (2013), *Statistical Quality Control: A Modern Introduction*, 7th ed., Wiley

Lectures & Recitations

Lectures and recitations will be held at the time and place indicated in the following table. MS Powerpoint slides as well as on-the-board problem solving techniques will be used during the lectures. Recitations will cover the problems for the associated week.

Section	Lecture	Recitation
01	Wednesday 09:20 – 12:10	Wednesday 12:20-14:10 H338
02	LA14	Friday 13:20-15:10 H338

Attendance

Attendance will be collected during the lectures and recitations.

Homework

There will be three homework assignments related to the recitation problems. Use of either Minitab or statistical functions in MS Excel might be required for homework assignments. Homework assignments are due **on Sunday of the submission week at 23:55** and should be uploaded to the course website (**not** to the teaching assistant). Homework assignments will be submitted as a group of at most 2 to 3 students. In case of **plagiarism (copying)**, students will get a zero from the homework assignment and university **discipline** regulations will be applied.

Term Project and Oral Presentation

There will be a term project for the application of statistical concepts in this course. The term project will be done with project teams of **four or five students**. The use of **real** company data is required for the project work. Use of either Minitab or statistical functions in MS Excel is required for the project assignments. Guidelines for the term project is provided at the course website. A term project report is

NOT required, instead there will be **an oral presentation** of the term project. All members of the team are required to be present some work during the team presentation. Last two weeks of recitation hours are dedicated to oral presentations. Each section will present their term project in their corresponding recitation hours.

At week 6, students should form their groups and inform course assistant by e-mail. The deadline of group formation is **Friday of week 6 at 23:55**. Groups will include **four or five students**. Those who do not/cannot form a group will be grouped by the instructor. These groups will be valid only for the project and presentation. Detailed information about the content of the project will be announced later.

Tentative Course Schedule

Every student should check course web site regularly; and is responsible for the material of the week, and announcements made at the course web site.

Week	Lecture (Topic)	To-Do
1	Introduction to Quality and Quality Improvement Concept	Read Chapter 1
2	DMAIC Process	Read Chapter 2
3	Review of fundamental statistical concepts	Read Chapter 3 and 4
4	Graphical tools for quality improvement	Read Chapter 5, Upload homework 1
5	Statistical Process Control methods and techniques	Read Chapter 5,
6	Control Charts for Variables: X-R	Read Chapter 6 E-mail project groups
7	Control Charts for Variables: X-S	Read Chapter 6
8	Control Charts for Attributes	Read Chapter 7, Upload homework 2
9	Process Capability Analysis	Read Chapter 8
10	Acceptance Sampling for Attributes	Read Chapter 15
11	Acceptance Sampling for Variables	Read Chapter 16
12	Designed Experiments: 2^k Factorial Design	Read Chapter 13
13	Two Level Fractional Factorial Designs	Upload homework 3 , Oral presentations
14	Quality Management System Standards	Oral presentations

Tentative Grading (*)

Assessment Tool	Quantity	Percentage
Midterm Exam	1	30
Oral Presentation	1	15
Homework	3	15
Final Exam	1	40

(*) Instructor reserves the right to change the grading policy

Exams & Make-Ups

Exams will include questions related to short description of main concepts and quantitative problems. Most exam questions will be similar to recitation and homework questions. All exams will be closed book and closed notes. Students are allowed to **bring one A4 size formula sheet** that can be used during exams. Make sure that you **only** write formula to the sheet. **If you have solved problems and/or verbal explanations in your sheet, it will be collected in the exam.**

If a student misses an exam with a valid excuse, then he/she will get a make-up exam according to the rules in university by-laws. A make-up exam might contain different type of questions than the regular exam.