

**IE 423**  
**QUALITY ENGINEERING**  
**Fall 2007**

**Instructor** : Ali R. Kaylan  
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**Office Hours** : T 14:00-15:00, 17:00-18:00 Th 10:00-12:00 M4040  
**Lecture Hours** : Th 12:00-14:00 M3100  
**Problem Session** : T 15:00-17:00 M3100  
**Prerequisite** : An Introductory Course in Statistics (IE256)

**TA : Bilge Küçük**

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**Textbook:**

Montgomery, Douglas C., *Introduction to Statistical Quality Control*, John Wiley & Sons, Inc., Fifth Edition, 2005.

**Course Description:**

This course aims at covering the fundamental methods of quality engineering. The major emphasis is on the statistical tools of quality engineering systems. In addition, quality excellence models, cost models, quality audit programs, quality information systems will be discussed. Actual case studies from industry will supplement the lectures.

**Course Outline:**

|   | <b>Weeks</b>     | <b>Chapters</b> |
|---|------------------|-----------------|
| 1. Quality Notions, Total Quality Management                  | 1 (Sep 25)       | 1               |
| 2. Modeling Process Quality and Related Inferences            | 2-3 (Oct 2, 9)   | 2-3             |
| 3. Statistical Process Control, Control Charts for Variables  | 4 (Oct 16)       | 4-5             |
| 4. Control Charts for Attributes                              | 5 (Oct 23)       | 6               |
| 5. Process Capability Studies                                 | 6 (Oct 30)       | 7               |
| <b>First Midterm Exam Tuesday Nov. 6, 2007, 17:00-19:00</b>   |                  | <b>1-7</b>      |
| 6. Design of Experiments                                      | 7-8 (Nov 13, 20) | 12              |
| 7. Factorial Experiments for Process Design                   | 9 (Nov 27)       | 12              |
| 8. Process Optimization                                       | 10 (Dec 4)       | 13              |
| <b>Second Midterm Exam Tuesday Dec. 4, 2007, 17:00-19:00</b>  |                  | <b>12-13</b>    |
| 9. Acceptance Sampling Plans                                  | 11 (Dec 11)      | 14              |
| 10. Other Acceptance Sampling Procedures                      | 12 (Dec 18)      | 15              |
| 11. Economic Design of Control Charts and Quality Cost Models | 13 (Dec 25)      | 9               |
| 12. Wrap-up Session   | 13 (Dec 25)      |                 |

**Final Exam**

**Grading:**

%20 (Midterm 1)+%20 (Midterm 2)+%15 (Project) +%15 (Assignments/Quizzes) + %30 (Final) = %100

**References:**

1. Feigenbaum, A. V., *Total Quality Control*, McGraw-Hill Inc. , 1991.
2. Grant, Eugene L., Richard S. Leavenworth, *Statistical Quality Control*, Seventh Edition, McGraw Hill, 1996.
3. Banks, Jerry, *Principles of Quality Control*, John Wiley & Sons, Inc., 1989
4. Wadsworth, H. M., K. S. Stephens, A. B. Godfrey, *Modern Methods for Quality Control and Improvement* , John Wiley & Sons, Inc., 1986
5. Juran, J.M. and F.M. Gryna *Quality Planning and Analysis*, McGraw-Hill, 1980.
6. Duncan, A.J., *Quality Control and Industrial Statistics*, Irwin, 1974.
7. Juran, J. M., *Quality Control Handbook*, McGraw-Hill Inc., 1974.
8. *Quality Progress*