

Quality and Reliability in Design and Manufacture

ME 10.342 1 Spring 2013

TR 3:15 pm - 4:30 pm ROW 304

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Course Content: This course introduces concepts of quality and reliability for application in design and manufacture. Basic aspects of dimensioning and tolerancing, and fits are introduced through application of normal distribution and its variations. Geometric tolerances of form, orientation, position, and runout are presented. Aspects of process capability and statistical process control are discussed. Concepts of failure and reliability are presented.

Homework assigned is due at the beginning of the class on the day announced by the instructor. Any reading assignments are to be completed by the next class meeting. Homework must be carried out on engineering paper and neatly stapled. Each student must prepare a portfolio file for the course. The course will also include other *assignments*, and a *project* that may involve computer usage.

Exams: There will be a Midterm Exam, and a Final Exam.

Grading Policy:

Midterm	35 points
Final Exam	35 points
Homework, Assignments, Project	30 points
TOTAL	100 points

Regular attendance is required.

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T.R.Chandrupatla, P.E.

Text: CHANDRUPATLA, TIRUPATHI R., *Quality and Reliability in Engineering*, Cambridge University Press, New York (2009)

Week	Topics	Remarks
1 Jan 22, 24	Quality Concepts Tolerances and Fits	Ch. 1 Ch. 2
2 Jan 29, 31	Tolerances and Fits Geometric Tolerances	Ch. 2 Ch. 3
3 Feb 5, 7	Geometric Tolerances	Ch. 3
4 Feb 12, 14	Probability and Statistics	Ch. 4
5 Feb 19, 21	Sampling Concepts	Ch. 5
6 Feb 26, 28	Sampling Concepts Data Presentation	Ch. 5 Ch. 6
7 Mar 5, 7	Statistical Process Control	Ch 7
8 Mar 12, 14	Statistical Process Control TEST 1	Ch 7
9 Mar 18-22	SPRING BREAK	
10 Mar 26, 28	Process Capability Analysis	Ch. 8
11 Apr 2, 4	Experimental Design	Ch. 10
12 Apr 9, 11	Experimental Design Experimental Design Project	Ch. 10
13 Apr 16, 18	Acceptance Sampling	Ch 9
14 Apr 23, 25	Reliability Concepts	Ch 11
15 Apr 30, May 2	Reliability Testing TEST 2	Ch. 12