

Quality and Reliability in Design and Manufacture Spring 2018

ME 10.342-1 T 9:30am-10:45am W 11:00am-12:15pm ROWx321

ME 10.342-2 MW 9:30am-10:45am ROWx321

ME 10.342-3 M 8:00am-9:15am R 9:30am-10:45am ROWx321

Instructor: T.R.Chandrupatla, Ph.D., P.E.,CMgE,
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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. Principles of probability and statistics are introduced. 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	30 points
Final Exam	40 points
Homework, Assignments, Project	30 points
TOTAL	100 points

Regular attendance is required.

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T.R.Chandrupatla, P.E.

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

Week	Topics	Remarks
1 Jan 15-19	Quality Concepts	Ch. 1
2 Jan 22-26	Tolerances and Fits	Ch. 2
3 Jan 29-Feb 2	Geometric Tolerances	Ch. 3
4 Feb 5-9	Probability and Statistics	Ch. 4
5 Feb 12-16	Sampling Concepts	Ch. 5
6 Feb 19-23	Sampling Concepts Data Presentation	Ch. 5 Ch. 6
7 Feb 26-Mar 2	Review TEST 1 (W, R)	
8 Mar 5-9	Statistical Process Control Statistical Process Control	Ch 7
9 Mar 12-17	SPRING BREAK	
10 Mar 19-23	Process Capability Analysis Acceptance Sampling	Ch. 8 Ch. 9
11 Mar 26-30	Experimental Design	Ch. 10
12 Apr 2-6	Experimental Design	Ch. 10
13 Apr 9-13	Reliability Concepts	Ch 11
14 Apr 16-20	Reliability Concepts	Ch 11
15 Apr 23-27	Review TEST 2 (W, R)	
Apr 30-May 5		