

Text: Montgomery, Douglas C., Introduction to Statistical Quality Control, John Wiley and Sons, 7th. Ed., 2012

Instructor: Dr. Majid Jaridi (Majid.Jaridi@mail.wvu.edu)
Room 303 MRB. Phone (304) 293-4099

Office Hours: 10:00 - 11:00 M, W, F or by appointment

Catalog Description

Principles and methods for controlling the quality of manufactured products, with emphasis on both economic and statistical aspects of product acceptance and process control.

Course Objectives and Philosophy

This course is designed to teach students modern statistical methods for quality control and improvement. The objective is to give the students a sound understanding of the principles and the basis for applying them in a variety of both product and non-product situations. Although statistical techniques are emphasized, the course has a strong engineering and management orientation. The students will gain a comprehensive knowledge of the state of the art techniques in statistical process control (SPC).

Prerequisite

Engineering Statistics (IENG-213) or equivalent.

Student Learning Objectives

Upon completing the course, students will:

- a) Possess a comprehensive knowledge of SPC techniques.
- b) Have an introductory knowledge of total quality management methods.
- c) Be able to develop and analyze solution strategies for quality related problems using SPC.

Course Contribution to Professional Component

Engineering Science - 33 %, Engineering Design - 67 %

Course Relationship to Program Educational Outcomes

The course relates to the following program educational outcome:

“Students will have acquired the ability to use modern and classical Industrial Engineering methodologies such as operations research, manufacturing systems, computer programming and simulation, production systems, human factors and ergonomics, engineering statistics and quality control, and engineering economics.”

Key abilities:

- Process control
- Quality control sampling

Performance Indicators:

- Knowledge to decide where to focus resources to enhance quality and to minimize waste
- Experience to decide which process control procedure to apply in a specific situation
- Knowledge to decide whether to use a sampling plan or perform 100% inspection
- Experience to select the most appropriate sampling inspection procedure and ensure that it is executed properly

Course Schedule (Note: This schedule is tentative and flexible)

Week	Topic	Reading
1	Introduction Review of Basic Statistics	Ch. 1 Ch. 3
2	Inferences about Process Quality	Ch. 4
3	Methods of SPC Control Charts for Variables	Ch. 5 Ch. 6
4	Control Charts for Variables	Ch. 6
5	Control Charts for Attributes	Ch. 7
6	Control Charts for Attributes <u>TEST I</u>	Ch. 7
7	Process Capability Analysis	Ch. 8
8	CUSUM and EWMA Charts	Ch. 9
9	Other Process Monitoring Techniques Economic Design of Control Charts	Ch. 10
10	Lot-by-Lot Sampling by Attributes	Ch. 15
11	Lot-by-Lot Sampling by Attributes	Ch. 15
12	Problems and Review TEST II	

13	Other Sampling Procedures	Ch. 16
14	Other Sampling Procedures	Ch. 16
15	<u>Advanced Topics</u>	TBA

General Policies

1. Homework will be assigned each week. Late homework will not be accepted.
2. Makeup tests and incomplete grades are generally not given except as allowed by University policy.
3. Group work is encouraged on homework. It is very important that all members of the group participate and understand the solution to every problem assigned.
4. Class attendance is highly encouraged. In the case of absence from a class, it is the student's responsibility to get the notes from a fellow student.
5. Cell phones and all other communication devices must be turned off during class.

Grading Policy

Test 1	25%
Test 2	25%
Homework	10%
Unannounced Quizzes	5%
Final Test	<u>35%</u>
	100%

Tentative Basis for Issuing Final Grades

	>	90%	:	A
80%	--	89%	:	B
70%	--	79%	:	C
60%	--	69%	:	D
	<	59%	:	F