

IME 3280 QUALITY ASSURANCE AND CONTROL

Spring 2011 (CRN #11979)

MWF 10:30 – 11:20 a.m. (Rm. C 229)

Catalog Description: Techniques of controlling quality in manufacturing systems. Topics include organization of quality, methods of measurement, and basic statistical tools. NOT FOR ENGINEERING CREDIT. Prerequisite: STAT 2160 or MATH 2600 or IME 2610.

Textbook: Mitra, Amitava, Fundamentals of Quality Control and Improvement, (Hoboken, New Jersey: John Wiley & Sons, Inc., Third Edition, 2008).

Reference: Besterfield, Dale H., Quality Control, (Upper Saddle River: Prentice Hall, Eighth Edition, 2009)

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Office Hours: MW 9:30-10:20 am., T 10:30-11:20 am.

Coordinator: Dr. David M. Lyth, Professor.

Prerequisite by topic:

1. Basic electronic communication skills; word processing, electronic spreadsheet, internet access, email
2. Working knowledge of descriptive statistics, mean, variance, graphical display methods, probability (STAT 2160, 2600, or equivalent)
3. Working knowledge of inferential statistics; estimation, hypothesis testing, regression (STAT 2160, 2600, or equivalent)

Course objectives:

<u>Course Objectives</u>	<u>Performance Criteria</u> ¹	<u>ABET/TAC Outcomes</u> ²
1. Ability to select and apply knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies.	B2: Applies appropriate statistical techniques.	b*
2. Ability to identify, analyze, and solve broadly-defined engineering technology problems.	F4: Did you improve your ability to solve real problems in this field?	f*

¹**Performance Criteria:** IME performance criteria may be found at <http://www.wmich.edu/ime>

²**ABET/TAC Outcomes:** Outcomes may be found at <http://www.abet.org/>

Computer Usage:

Two computer assignments will be given during the semester on the dates specified in the syllabus and you must use Microsoft Excel to solve each assignment. These computer assignments are designed to help you understand the concepts of statistics and statistical process control. These computer assignments must be completed and submitted by 9:00 a.m. on the due date. Any assignment submitted from 9:01 a.m. and onwards of the due date WILL RECEIVE A 'ZERO'. You must submit the assignment through the WebCT Assignment Dropbox. Submission of both assignments is mandatory to pass the class. In doing the assignments, you may seek assistance from another student/instructor. However, you should not complete the assignment with another student.

Course Schedule:

<u>WEEK OF:</u>	<u>TOPIC</u>	<u>CHAPTER</u>
1-10	Introduction to Quality Control Total Quality Systems	1
1-17	MLK Day Convocation & Activities (No Classes on Monday, 1-17) Impact of Some Philosophies on Quality	2
1-25	Quality Management: Practices, Tools, and Standards	3
1-31	Quality Management: Practices, Tools, and Standards Fundamentals of Statistical Concepts and Techniques	3 4
2- 7	Fundamentals of Statistical Concepts and Techniques EXAMINATION #1 (2-9)	4 1-3
2-14	Data Analysis and Sampling <i>Assignment #1(Posted on 2-18, due on 2-23)</i>	5
2-21	Statistical Process Control Using Control Charts SPIRIT DAY (No Classes on Friday, 2-25)	6
2-28 to 3-4	SPRING BREAK (No Classes)	
3-7	Control Charts for Variables	7
3-14	Control Charts for Variables	7
3-21	Control Charts for Attributes EXAMINATION #2 (3-23) <i>Assignment #2 (Posted on 3-25, due on 3-30)</i>	8 4-7
3-28	Control Charts for Attributes	8
4- 4	Process Capability Analysis	9
4-11	Acceptance Sampling Plans	10
4-18	Reliability	11
4-26 (Tue)	COMPREHENSIVE FINAL EXAMINATION #3 (8:00 – 10:00 am)	

Home Work Problems:

There are numerous problems at the end of each chapter. You should solve these problems as the appropriate topics are covered in class. The only way you can understand the subject material and do well in this course is by actually solving problems. Hence, it is recommended that you solve as many of the problems as possible. If you encounter difficulty in solving any of the problems, you can either raise the question during class or contact the instructor in his office.

Library Usage:

There are several books on the subject of Quality Control in Waldo Library containing numerous solved problems. One of these books has been identified under References. It is strongly recommended that the student use at least this book to study the solved examples. This will greatly enhance his/her ability to analyze problems and determine the approach to be taken for solving any given problem.

Evaluation Distribution:

1. Examination # 1	30%
2. Examination # 2	30%
3. Examination # 3	30%
4. 2 Excel Assignments	10%
TOTAL	100%

Grading Scale:

The following grading scale will be used in my class:

A (91-100), **BA** (86-91), **B** (81 – 86), **CB** (76 – 81), **C** (71 – 76), **DC** (66 – 71), **D** (60 – 66), **E** (below 60).

Attendance at all examinations is mandatory and no make-up exams or assignments will be given. All examinations and assignments will be graded on a numerical scale. At the end of the semester, the grades will be added up for all the items (with the appropriate weights) and then converted to a letter scale to determine the final course grade. In order to receive a course grade of ‘C’ or higher, a student must pass (receive a grade of “D” or higher) in two out of the three examinations.

Academic Honesty:

You are responsible for making yourself aware of and understanding the policies and procedures in the Undergraduate and Graduate Catalogs that pertain to Academic Honesty. These policies include cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse. [The policies can be found at <http://catalog.wmich.edu> under Academic Policies, Student Rights and Responsibilities.] If there is reason to believe you have been involved in academic dishonesty, you will be referred to the Office of Student Conduct. You will be given the opportunity to review the charge(s). If you believe you are not responsible, you will have the opportunity for a hearing. You should consult with your instructor if you are uncertain about an issue of academic honesty prior to the submission of an assignment or test.