

UNIVERSITY OF KENTUCKY
APPLICATION FOR CHANGE IN EXISTING COURSE: MAJOR & MINOR

1. Submitted by College of College of Engineering Date 01/22/07
Department/Division offering course UK Center for Manufacturing
2. Changes proposed:
(a) Present prefix & number MFS 581 Proposed prefix & number MFS 681
(b) Present Title Quality Control
New Title Sustainable Quality Systems Design
(c) If course title is changed and exceeds 24 characters (Including spaces), include a sensible title (not to exceed 24 characters) for use on transcripts: Sustain Quality Sys Design
(d) Present credits: 3 Proposed credits: 3
(e) Current lecture: laboratory ratio 20 Proposed: 20
(f) Effective Date of Change: (Semester & Year) Fall 2007
3. To be Cross-listed as: _____
Prefix and Number _____ Signature: Department Chair _____
4. Proposed change in Bulletin description:
(a) Present description (including prerequisite(s):
The purposes and goals of quality control, economics of quality control, quality engineering, statistics and probability in quality control and the functions of a quality control/assurance program in a manufacturing setting.

(b) New description:
This course provides the theory and principles of sustainable quality production systems as originally developed by Shewhart and Deming. The course will focus on statistical methods from the viewpoint of quality control: at the product specification level; at the product production level; and at the judgment of quality at the inspection level.

(c) Prerequisite(s) for course as changed: Basic Statistics
5. What has prompted this proposal?
Move to 600 level to satisfy graduate student requirements and to reflect greater depth.

6. If there are to be significant changes in the content or teaching objectives of this course, indicate changes:
Content adds intro to quality function deployment, robust design the seven tools of quality, and intro to experimental design

7. What other departments could be affected by the proposed change?
N/A
8. Is this course applicable to the requirements for at least one degree or certificate at the University of Kentucky? Yes No
9. Will changing this course change the degree requirements in one or more programs? Yes No
If yes, please attach an explanation of the change. (NOTE – If “yes,” program change form must also be submitted.)
10. Is this course currently included in the University Studies Program? Yes No
If yes, please attach correspondence indicating concurrence of the University Studies Committee.

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11. If the course is 400G or 500 level, include syllabi or course statement showing differentiation for undergraduate and graduate students in assignments, grading criteria, and grading scales. Check here if 400G-500.
12. Is this a minor change? Yes No
 (NOTE: See the description on this form of what constitutes a minor change. Minor changes are sent directly from the Dean of the College to the Chair of the Senate Council. If the latter deems the change not to be minor, it will be sent to the appropriate Council for normal processing.)
13. Within the Department, who should be consulted for further information on the proposed course change?

Name: Dr. Arlie Hall Phone Extension: 859-257-6262 ext. 434

Signatures of Approval:

<p style="font-size: 1.2em; color: blue;">January 13, 2007</p>	
Date of Approval by Department Faculty	Reported by Department Chair
<p style="font-size: 1.2em; color: blue;">04/21/08</p>	
Date of Approval by College Faculty	Reported by College Dean
<div style="background-color: yellow; padding: 2px; display: inline-block;">Approval UC 9/30/08</div>	
*Date of Approval by Undergraduate Council	Reported by Undergraduate Council Chair
<p style="color: gray;">*Date of Approval by Graduate Council</p>	<p style="color: gray;">Reported by Graduate Council Chair</p>
<p style="color: gray;">*Date of Approval by Health Care Colleges Council (HCCC)</p>	<p style="color: gray;">Reported by HCCC Chair</p>
<p style="color: gray;">*Date of Approval by Senate Council</p>	<p style="color: gray;">Reported by Senate Council Office</p>
<p style="color: gray;">*Date of Approval by University Senate</p>	<p style="color: gray;">Reported by Senate Council Office</p>

*If applicable, as provided by the Rules of the University Senate.

The Minor Change route for courses is provided as a mechanism to make changes in existing courses and is limited to one or more of the following:

- a. change in number within the same hundred series;
- b. editorial change in description which does not imply change in content or emphasis;
- c. editorial change in title which does not imply change in content or emphasis;
- d. change in prerequisite which does not imply change in content or emphasis;
- e. cross-listing of courses under conditions set forth in item 3.0;
- f. correction of typographical errors. [University Senate Rules, Section III - 3.1]

MFS 681
Sustainable Quality Systems Design
2007 Fall Semester

Instructor: Dr. Arlie Hall, Office: Center for Manufacturing RM 414E,
Telephone 859-257-6262, Ext. 434. Cell Phone 859- 494-7806
Location: TBA
Time: TBA

Text: Introduction to *Lean Sustainable Quality Systems Design* by Dr. Arlie Hall & *Guide to Quality Control* by Dr. Kaoru Ishikawa. Other reading and problem assignments will be provided by the instructor, including: Introduction to Probability Theory; Quality Function Deployment, Introduction to Robust Design, Statistical Process Control; and *Economic Control of Quality of Manufactured Product* by Dr. W. A. Shewhart

COURSE DESCRIPTION: This course provides the theory and principles of sustainable quality production systems as originally developed and articulated by Dr. Walter A. Shewhart and Dr. W. Edwards Deming. The course will focus on statistical methods from the viewpoint of quality control: at the product specification level; at the product production level; and at the judgment of quality at the inspection level. The three senses in which statistical control may play an important part in attaining uniformity in the quality of the product will be presented. Important topics discussed will include: A brief history of quality control development; Review of Probability Theory; Systems Design Dimensions of Quality; The State of Statistical Control; Statistical Control as an Operation; The Judgment of Statistical Control; The Seven Tools of Quality; Applications and Benefits of Robust Design; The Quality Loss Function; Introduction to Quality Function Deployment; and an Introduction to Experimental Design's Fundamental Concepts. Grading will be based on: Homework assignments 15 points; Mid Term: 25 Points; Final 30 points; Team Project 30 points.

TEAM PROJECT: Team activities are a fundamental part of sustainable quality systems operations. A major part of the student's grade is based on participation in a design team with the objective of transforming a "traditional" system into a "lean sustainable quality system." This assignment is expected to require a minimum of 16 hours of outside the classroom team work.

COURSE LEARNING OBJECTIVES: Upon completion of this course, the student should be able to:

1. Demonstrate ability to apply probability science to achieve a sustainable quality production system
2. Utilize basic concepts of robust design
3. Develop a Quality Function House for assigned problems
4. Restructure a traditional organization into a sustainable quality system
5. Apply basic design of experiments principles
6. Utilize Statistical Process Control charts to analyze a production process.

GRADING SCALE:

A = 90-100

B = 80-89

C = 70-79

D = 60-69

E= 59 & below