

Reasonable and Moderate Extension (RME) Format**

FORMAT FOR PROPOSED ADDITION/ABOLITION, REALLOCATION, OR RE-ESTABLISHMENT OF AN EDUCATIONAL UNIT, CURRICULUM, OR DEGREE

I. Program inventory

A. Current

<u>CIP</u>	<u>Major</u>	<u>Specialization/ Concentration</u>	<u>Degree</u>	<u>Unit</u>
15.0613	Manufacturing Systems	N/A	M.S.	Technology

B. Proposed

<u>CIP</u>	<u>Major</u>	<u>Specialization/ Concentration</u>	<u>Degree</u>	<u>Unit</u>
15.0613	Quality Engineering and Management		M.S.	Technology

II. Reason for proposed action

Program name needs to more accurately reflect the content and career path of those graduating from this program. Likewise, new courses in quality and quality systems have been added to the program which has changed the focus of the program. The program has shifted from mainly a manufacturing systems program to one which focuses principally in quality engineering and management. Additionally, students attaining job placement after graduation are more frequently placed in quality related positions of responsibility.

III. Anticipated budgetary effects

None

IV. Arrangements to be made for (a) affected faculty, staff and students; and (b) affected equipment and physical facilities

None

V. Will other educational units, curricula, or degrees be affected by this action

No

VI. Any other relevant information

VII. Catalog copy to be deleted or added

See Attached

VIII. The requested effective date of implementation

Spring 2012

****This request is required to go through the office of the Associate Provost for Academic Affairs before approval of the Faculty Senate and/or Graduate Council.**

Approval Form for Curricular Changes

Southern Illinois University Carbondale

1. Department faculty of the unit originating the request
Outcome of Formal Vote: Votes For 8 Against 0 Yes No Approval
 Date 06 Oct 2009
 Signature Mandara Savage
 Responsible Official (Print) Mandara Savage
 Signature [Signature]

2. Appropriate body/official representing the department/unit where the request originated
Outcome of Formal Vote Votes For 10 Against 0 Yes No Approval
 (if required by Dept/Unit):
 Date 06 Nov 2009
 Signature [Signature]
 Responsible Official (Print) Mandara Savage
 Signature [Signature]

3. College Curriculum Committee or other college-wide faculty bodies where appropriate
Outcome of Formal Vote Votes For 5 Against 0 Yes No Approval
 (if required by Dept/Unit):
 Date Dec. 9/11
 Signature [Signature]
 Responsible Official (Print) TOMAS VELASCO
 Signature [Signature]

4. Dean of the unit originating the request
 Yes No Approval
 Date 12/05/11
 Signature [Signature]
 Responsible Official (Print) JOHN J. WARRICK
 Signature [Signature]
 Dean (Print) JOHN J. WARRICK
 Signature [Signature]

5. Associate Provost for Academic Programs
 Yes No Approval
 Date _____
 Signature _____

6. Faculty Senate (undergraduate programs)
 Yes No Approval
 Date _____
 Signature _____

7. Graduate Council (graduate programs)
 Yes No Approval
 Date _____
 Signature _____

8. Faculty Association
 Yes No Approval
 Date _____
 Signature _____

9. Provost and Vice Chancellor
 Yes No Approval
 Date _____
 Signature _____

10. Chancellor
 Yes No Approval
 Date _____
 Signature _____

11. President
 Yes No Approval
 Date _____
 Signature _____

12. Illinois Board of Higher Education (if necessary)
 Yes No Approval
 Date _____
 Signature _____

13. Higher Learning Commission (if necessary)
 Yes No Approval
 Date _____
 Signature _____



PROGRAM DESCRIPTION (Academic Requirements)

Formerly Form 90A

Southern Illinois University Carbondale

This form should be used for requesting changes in requirements of a degree granting unit, major, minor, concentration, specialization, certification program and miscellaneous changes of any academic program. (See instructions)

1. This change is for: Graduate Catalog

2. Name of units, department:

- a. Degree granting academic unit (College or School) College of Engineering
- b. Department of Division Technology
- c. Degree Type (BS, MS, etc) MS
- d. Major Quality Engineering and Management
- e. Minor _____
- f. Concentration _____
- e. Specialization _____

3. Brief Summary of Change (Use additional page if necessary):

Program Name Change
New Program Description (See Attached)

4. Specific Changes:

If changes are editorial and minor, please make a copy of the actual catalog page(s) with corrections made on the copy and attach to this form. If changes are extensive, please type new catalog copy on white bond paper, double spaced, outlining what you recommend for the appropriate catalog and attach to this form.

5. Effective term will be the next published catalog: _____ (Transfer Student Services Use Only)

6. Approved:

- a. Department Executive Officer [Signature] 9/2/11
Date
- b. Dean [Signature] 12/16/11
Date
- c. Dean of the Graduate School _____
Date
- d. Associate Provost for Academic Affairs _____
Date

7. Transfer Student Services: _____
Date

DEC 21 2011 *m*

DISTRIBUTION is made after action recorded by TRANSFER STUDENT SERVICES (TSS). Copies to: TSS; Dept; Office of Provost & VC, Dean

QUALITY ENGINEERING AND MANAGEMENT www.engr.siu.edu/tech/
deptoftech@engr.siu.edu

COLLEGE OF ENGINEERING

Besterfield, Dale H., Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1971; 1962.

Chang, Feng-Chang (Roger), Associate Professor and Director of Engineering Outreach, Ph.D., Ohio State University, 1985; 1991.

Crosby, Garth, Assistant Professor, Ph.D., Florida International University, 2007, 2008.

DeRuntz, Bruce, Associate Professor, Ph.D., Southern Illinois University - Carbondale, 2005; 1998.

Dunston, Julie K., Associate Professor, Ph.D., Florida State University, 1995; 1995.

Marusarz, Ronald K., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1999.

Orr, James P., Associate Professor, *Emeritus*, Ph.D., Southern Illinois University Carbondale, 1983; 1979.

Savage, Mandara, Associate Professor and *Chair*, Ph.D., Iowa State University, 1999; 1999.

Spezia, Carl J., Assistant Professor, Ph.D., Southern Illinois University - Carbondale, 2002; 2005.

Velasco, Tomas, Associate Professor, Ph.D., University of Arkansas, 1991; 1993.

Master of Science in Quality Engineering and Management

Graduate work leading to a Master of Science degree in quality engineering and management is offered by the College of Engineering. The objective of the program is to develop quality and management professionals who can plan, coordinate, design, implement, and control the quality function in manufacturing and service companies in order to increase productivity, optimize resources, decrease waste, and improve product quality. Course offerings and research are available in the areas of quality assurance, six sigma, lean manufacturing, project management and reliability. The program provides advanced education for students with baccalaureate degrees in engineering, engineering technology, technology, and also an excellent continuing education opportunity for individuals with technical degrees who wish to expand their education in the area of quality and management systems.

Admission

Candidates for this program must be accepted by the Graduate School and the Department of Technology. Candidates should possess a bachelor's degree with a major in a technical area and have a GPA of no less than 3.0/4.0. A student whose undergraduate training is deficient may be required to take additional courses to compensate for deficiencies identified by the technology graduate program committee.

This program requires a nonrefundable \$50.00 application fee that must be submitted with the application for admissions to graduate study in quality engineering and management. Applicants may pay this fee by credit card if applying electronically. Applicants submitting a paper application must pay by personal check, cashier's check, or money order made out to SIU, and payable to a U.S. Bank.

Program Requirements

The thesis option requires students to complete a minimum of 30 semester hours of acceptable graduate credits. This includes 18 semester hours of which is in quality engineering and management and 6 semester hours of thesis (QEM 599) credit.

The program in the thesis option requires a minimum of 30 semester hours of acceptable graduate credit, 15 semester hours of which is in quality engineering and management. Students will complete a master's thesis, having 6 semester hours of thesis (MFGS 599) credit.

Within the 30 semester hour requirement, students must complete 5 of the 6 following core courses or their equivalents:

QEM 510-3 Quality Assurance
QEM 525-3 Six Sigma Black Belt II
QEM 530-3 Lean Manufacturing II
QEM 535-3 Service Quality
QEM 540-3 Reliability Analysis
QEM 550-3 Project Leadership

Students not meeting specific entry requirements may be required to complete prerequisites from the following list of courses:

IT 450-3 Project Management
IT 470a-3 Six Sigma Green Belt
IT 470b-3 Six Sigma Green Belt II
IT 465-3 Lean Manufacturing
IT 480-3 Six Sigma Black Belt

A program of study including the above required core courses (15 semester hours), the master's thesis (6 semester hours), and the remaining 9 semester hours will be selected by the graduate adviser and the student.

If a student prefers the non-thesis option, a minimum of 30 semester hours of acceptable graduate credit including the 15 semester hours of core courses is required. The student is expected to take at least 18 semester hours within the major department.

Prerequisite courses listed above that are taken in order to meet entry requirements can be used to fulfill the remaining 9 semester hour requirement for the thesis option and to fulfill the 30 semester hour non-thesis degree requirement.

Additional Information

Teaching or research assistantships and fellowships are available for qualified applicants. Additional information about programs, courses, assistantships, and fellowships may be obtained from the College of Engineering or from the chair of the department.

Courses (QEM)

510-3 Research Methods. The objective of this course is to familiarize the students with the methods needed in research. Emphasis is placed on how these methods can be applied in the manufacturing systems area. Topics include development of research proposals, use of statistics in the analysis and communication of the results. Prerequisite: enrollment in manufacturing systems program or consent of instructor.

510-3 Quality Assurance. Study of recent advances in quality planning, quality measurement, design assurance, process control, participatory management, supplier quality, customer relations and improvement concepts. Prerequisite: Industrial Technology 470a and 470b.

520-3 Computer-Aided Manufacturing II. Advanced study of the use of computers in the manufacture of products. Emphasis is placed on CAD/CAM integration, CAM generated data and current CAM languages. Prerequisite: Industrial Technology 445.

525-3 Six Sigma Black Belt II. The purpose of this course is to provide the student with knowledge of the most advance areas of the Six Sigma black-belt training. Advanced fractional factorial experiments, response surface methodology, robust design and process, design for Six Sigma and other advance six sigma principles and techniques are covered in this course. Prerequisite: Industrial Technology 470a, 470b, and 480.

530-3 Lean Manufacturing II. This course will cover the principles and techniques of lean manufacturing. Major topics covered include value stream mapping, pull system/Kanbans, continuous improvement/Kaizen, lean six sigma, lean simulation, and other modern lean manufacturing techniques and issues. Prerequisite: Industrial Technology 465.

535-3 Service Quality. This course examines how organizational leadership, strategic development and deployment of service management systems are used to achieve service quality. Key service quality management concepts of customer and market focus, employee focus, communication, and service delivery will be taught through the use of case studies, article reviews and team projects. Prerequisite: none.

540-3 Reliability Analysis. The objective of this course is to provide the student with an overview of the basic techniques applied in the field of reliability and failure data analysis in a manufacturing environment. Prerequisite: Industrial Technology 470b.

545-3 Electrical and Electronic Aspects of Robots. Analysis of servo motors, actuators, sensors and noise and feedback technique that drive robot manipulators. Prerequisite: Industrial Technology 455.

550-3 Project Leadership. This course is designed to develop a graduate student's human relationship skills for leading project teams. Through the use of case studies and practical applications, students will learn effective leadership, team development, motivational, organizational planning, and conflict resolution practices.

560-3 Automated Factory. Advanced study of the integration of robots, automated assemble, automated storage and retrieval systems, automated inspection and computer-controlled transfer systems. Economic justification and implementation are emphasized. Prerequisite: 520, Industrial Technology 455.

580-1 to 4 Seminar. Collective and individual study of issues and problems related to manufacturing systems. Graded *S/U*. Prerequisite: enrollment in the M.S. degree in manufacturing systems.

592-1 to 4 Special Investigations in Quality Engineering and Management. Advanced topics in manufacturing systems. Topics are selected by mutual agreement of the student and the instructor. Prerequisite: consent of adviser.

599-1 to 6 Thesis.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.



ADD DROP **MODIFY**

Syllabus must be attached. Concurrences by affected programs must also be attached whenever appropriate.

COURSE:
Subject Area Number Full Title

Short title will appear on class schedules and transcripts
Short Title (24 characters)

HOURS: Fixed **OR** Variable To **Per Term**

REPEATABLE? NO YES Max hours per term: Max hours toward degree:

DESCRIPTION: Catalog description including restrictions and prerequisites as you wish it to appear in catalog.
 Change MFGS program designation to QEM

COURSE LEVEL: **GRADE MODE:** Normal Other:

CROSSLISTED? NO YES Please list:

FOR GRADUATE CREDIT? (400-level course) YES NO

CO-REQUISITE COURSE (concurrent enrollment) Required Allowed

EQUIVALENT COURSE (internal):

DEGREE ATTRIBUTE: UHON IAI Course: UCC Area

PREREQUISITES: **Min. Grade Required:**

RESTRICTIONS:

<input type="checkbox"/> College	Include:	<input type="text"/>
<input type="checkbox"/> Major	Include:	<input type="text"/>
<input type="checkbox"/> Minor	Include:	<input type="text"/>
<input type="checkbox"/> Class	Exclude:	<input type="text"/>
<input type="checkbox"/> Level	Include:	<input type="text"/>
<input type="checkbox"/> Degree	Exclude:	<input type="text"/>
<input type="checkbox"/> Program	Include:	<input type="text"/>

Please review the instructions for code details

When using Program (College:Degree:Major) do NOT use Level

Effective Term of next published catalog: To be assigned by Transfer Student Services
(All exceptions require Provost approval)

Department Chair/Director	Date	UCC Director (If course is in University Core Curriculum)	Date
Curriculum Committee Chair	Date	Dean, Graduate School (If 400-600 level course)	Date
Appropriate Dean	Date	Associate Provost for Academic Programs	Date

Course Description Recorded: Transfer Student Services is office of record for Master Course File Date

DISTRIBUTION is made after action recorded by Transfer Student Services (TSS). Copies to: TSS (original); Office of Provost & VC, Dean, and Department.

ENM0100
08/11

DEC 21 2011 *mp*