

April 28, 2008

Dr. Jeannine Blackwell  
Dean of the Graduate School  
University of Kentucky  
202B Gillis Building 0033  
Lexington, Kentucky 40506

Subject: Master of Science in Manufacturing Systems Engineering Graduate Certificate Option.

The Center for Manufacturing, beginning in the March 1994, initiated the development of a curriculum in Toyota's "Lean" systems; the College of Engineering offered its first "Lean" course to on-campus engineering students in the Fall Semester 1994. Our currently integrated curriculum of both technical and managerial skills is comprised of six courses.

Toyota's Lean system has become a world wide phenomenon for achieving the highest quality, lowest cost, delivered on time production system. Their system is being widely adopted in many non-manufacturing settings which include hospitals, schools, and other similar entities. Our own Medical Center is currently turning to Toyota's system for improving its patient quality and safety standards.

The Center for Manufacturing's Lean curriculum has been taught widely to public industries on a world wide basis. However, we have not made the current curriculum widely available to our engineering students. Therefore, it is most appropriate that we correct this shortcoming by designating our Lean curriculum as a Graduate Certificate Option under our current Masters of Science in Manufacturing Engineering course of study. The attached document outlines this Proposal for a Graduate Certificate in Lean Systems.

Respectfully,

Dr. Bruce Walcott,  
Director of the Center for Manufacturing

cc: Dr. Thomas Lester.

## Proposal for Graduate Certificate in Lean Systems

Initial Date: 12-11-07

Revised Date: 4-30-08

The faculty of the Manufacturing Systems Engineering Program requests the establishment of a Graduate Certificate in Lean Systems.

### **Justification**

The Manufacturing Systems Engineering Faculty offers a number of courses related to Lean Systems. The first such course was taught in Fall of 1994. Subsequent to 1994, the curriculum was extended to six courses by 1997. Of those six courses the following have been taught to students: MFS 503, MFS 526, MFS 525, and MFS 612. The current curriculum is being extended to include:

1. Management of a Lean System (3-hrs)
2. Leadership for a Lean Enterprise (3-hrs)

These two courses represent courses 5 and 6 of the Lean Certificate program that is currently offered to the public.

Since then, the curriculum has grown to include six regularly taught courses, and several other courses that have been taught either occasionally or on an experimental basis. The curriculum has drawn significant interest from our MFS degree program and has attracted many industries which view knowledge of lean manufacturing as important for new hires.

### **Perspective Students**

The objective is to promote:

1. Students in the MFS degree program (or other programs) who have completed a core set of courses in Lean Systems.
2. Students who are interested in Lean Systems knowledge and complete the courses in post-baccalaureate status (non-degree status) but are not yet committed to a particular degree

### **Faculty Associates**

As per the Graduate School's Certificate Gridlines, a graduate certificate requires a group of faculty "associates" who will participate in delivering the courses in the curriculum or who are otherwise associated with the curriculum or its topical area.

The initial list of faculty associates will be as follows:

1. Dr. Bruce Walcott (Elec. Engr. and Mfg. Sys. Engr.)(Professor)
2. Dr. Larry Holloway (Elec. Engr. and Mfg. Sys. Engr.)(Professor)
3. Dr. Arlie Hall (Mech. Engr. and Mfg. Sys. Engr.)(Assistant Professor)
4. Dr. Fazleena Badurdeen (Mech. Engr. and Mfg. Sys. Engr.)(Assistant Professor)
5. Dr. Jingshan Li (Elec. Engr. and Mfg. Sys. Engr.)(Assistant Professor)
6. Dr. Phillip Marksberry (Mfg. Sys. Engr.)(Lecturer)

Toyota Partners (guest speakers)

1. Mr. Rich Alloo (TMMK)
2. Mr. Ken Kreadle (TMMK)

The initial list meets the minimum requirement of three members of the Graduate Faculty.

### **Graduate Certificate Director**

The Graduate Certificate Director will be recommended by the Dean of the College of Engineering and appointed by the Dean of the Graduate School. Dr. Lester recommends that Dr. Arlie Hall, the original developer of the current lean curriculum be designated as an interim director of the certificate option.

### **Certificate Curriculum**

The curriculum will be focused on lean systems and will require 12 credit hours. It will consist of the following courses:

#### ***Core for certificate (all required)***

1. MFS 503 Lean Manufacturing Principles and Practices (3-hrs)
2. MFS 526 Operations Management in Lean Systems (3-hrs)

All core courses will be offered at least once per year. Additionally, MFS 503 and MFS 526 are offered yearly in the Lean Certificate option.

#### ***Lean Electives (pick two)***

Two additional courses related to lean manufacturing are required. These can include the following:

3. MFS 525 Organizational Learning for Lean Enterprise (3-hrs)
4. MFS 612 Design of Lean Manufacturing Systems (3-hrs)
5. MFS 599 / 699 Management of a Lean System (3-hrs)
6. MFS 599 / 699 Leadership for a Lean Enterprise (3-hrs)
7. Other courses, approved in writing by the Graduate Certificate Director

MFS 525 and MFS 612 are offered yearly in the Lean Certificate option program.

### **Admission Requirements**

The admission requirements will be the same as those in effect for admission to the Graduate School. Students with the following status are welcome to apply:

- University scholars status
- Post-baccalaureate status
- Conditional status

All admittance into the certificate program is by approval by the Graduate Certificate Director. Students are also required to apply and be admitted to the certificate program prior to taking any classes that will be counted towards completion of the certificate.

### **Target Student Group**

Students are expected to come from various backgrounds ranging from engineering to non-engineering fields. The certificate program should be attractive to students who are employed in industry and seeking further knowledge in Lean Manufacturing methods, and to traditional students who may be supplementing their degree programs with focused courses in lean manufacturing.

### **Maintenance of the Certificate Program**

The Lean Systems Graduate Certificate Director will prepare review of the program's status, operations and certificate awardees every six years.

### **Award of the Certificate**

Students that have completed two core courses and two elective courses with an average GPA of 3.0 are eligible to graduate. The Graduate Certificate Director shall send a Graduate Certificate Completion Form to the Dean of the Graduate School upon completion of the last course. The form is accompanied by the student's certificate for signature by the dean and the Graduate School will notify the university Registrar for posting to the permanent transcript.

### **Notes**

The **Guidelines for Graduate Certificates** super exceeds this document and is the master for discrepancy resolution.

## Brothers, Sheila C

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**From:** Arlie Hall [hall@engr.uky.edu]  
**Sent:** Thursday, November 05, 2009 11:18 AM  
**To:** Brothers, Sheila C  
**Cc:** walcott@engr.uky.edu; sekulicd@engr.uky.edu  
**Subject:** The Senate Program Committee meeting on October 30th, 2009

Sheila,

Subject: Graduate Certificate in Lean Manufacturing Systems

RE#2: Demand:

The projected demand, within a two academic years is estimated to be about 30 or more students per academic year. This demand could reach as many as 45 students, given that we are planning to offer at least one course per semester using the medium of distance learning. The College of Engineering has experience faculty and facilities to offer distance learning course work

Dr. Arlie Hall  
Assistant Professor  
Center for Manufacturing  
859-257-6262 ex 434  
Cell: 859-333-6329  
e-mail: [arliehall@aol.com](mailto:arliehall@aol.com).

## Brothers, Sheila C

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**From:** Menciondo, Marta  
**Sent:** Tuesday, November 03, 2009 3:12 PM  
**To:** Brothers, Sheila C  
**Cc:** Menciondo, Marta; Barnes, Thomas G; Jane Hayes; Schoenberg, Nancy E; Arrington, Michael; Wermeling, Daniel; Wasilkowski, Greg  
**Subject:** The Senate Programs Committee meeting on October30th 2009

Sheila,

The Senate Programs Committee met on Friday October 30th at 1 PM.

Our recommendations are:

### **Master of Science in Manufacturing Systems Engineering Graduate Certificate Ooption:**

Approval provided that:

- 1) They include a paragraph about the demand for this program
- 2) The routing sheet is available

### **Graduate Certificate in Vocal Pedagogy:**

Approval

### **Master of Science in Agricultural Economics University Scholars Program:**

We need the following:

- 1) Some form of communication (letter/ email/ etc) from Georgetown College stating that they agree.
- 2) A paragraph on Demand.
- 3) A paragraph on their plans to offer the same option to UK students or students from other universities?
- 3) Is there a precedence for this kind of arrangement at our University? Sheila, you may be able to answer this for us.

Please let me know if I should communicate with Mike Mullen about the additional information needed or if you will do it.

Tx,  
Marta

*Marta S. Menciondo*

*University of Kentucky College of Public Health - Biostatistics Department*

*121 Washington Avenue - Suite 201 - Lexington, Kentucky 40536-0003*

*Sanders Brown Center on Aging*

*Rm 331 Sanders-Brown Bldg. - 800 S. Limestone St. - Lexington, KY 40536 - 0230*

*(859) 257-1412 ext 274 - FAX (859) 323-2866*

## SIGNATURE ROUTING LOG

**General Information:**

Proposal Type: Course  Program  Other



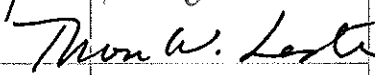
Proposal Name<sup>1</sup> (course prefix & number, pgm major & degree, etc.): Graduate Certificate in Lean Manufacturing Systems

Proposal Contact Person Name: Dr. Arlie Hall Phone: 257-6262 x 434 Email: hall@engr.uky.edu

**INSTRUCTIONS:**

Identify the groups or individuals reviewing the proposal; note the date of approval; offer a contact person for each entry; and obtain signature of person authorized to report approval.

**Internal College Approvals and Course Cross-listing Approvals:**

Reviewing Group	Date Approved	Contact Person (name/phone/email)	Signature
Director of Graduate Studies	11-5-09	Dr. Dusan Sekulic / 257-2972 / sekulic@engr.uky.edu	
Director, Center for Manufacturing	11-5-09	Dr. Bruce Walcott / 257-1182 / walcott@engr.uky.edu	
Dean, College of Engineering	11-5-09	Dean Thomas Lester / 257-1687 / lester@engr.uky.edu	
		/ /	
		/ /	

**External-to-College Approvals:**

Council	Date Approved	Signature	Approval of Revision <sup>2</sup>
Undergraduate Council			
Graduate Council			
Health Care Colleges Council			
Senate Council Approval		University Senate Approval	

Comments:

<sup>1</sup> Proposal name used here must match name entered on corresponding course or program form.

<sup>2</sup> Councils use this space to indicate approval of revisions made subsequent to that council's approval, if deemed necessary by the revising council.