REGULAR COURSE SYLLABUS

College of: Professional Studies

Department: Engineering Technology

Prefix & Course Number: MET 3630 Crosslisted With*:

Course Title: Lean Manufacturing Systems Engineering

Transcript Course Title (30 characters): Lean Manufacturing

Check All That Apply:  
Required for Major: _____  
Required for Minor: _____  
Specified Elective: _____  
Required for Concentration: _____  
Elective: X  
Service Course: _____

To receive Title IV financial aid funds, all institutions of higher education must comply with the federal definition of a credit hour. The Higher Learning Commission requires institutions to maintain policies and procedures for verifying compliance with this definition.

**Federal Credit Hour Definition:** A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:

1. one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or
2. at least an equivalent amount of work as required in paragraph (1) of this definition for other activities as established by an institution, including laboratory work, internships, practica, studio work, and other academic work leading toward the award of credit hours. 34CFR 600.2 (11/1/2010)

Credit Hours: 3 (3+0)  
Schedule Type: L  
Grade Mode: L

Face-to-Face or Equivalent Hours per course:

Lecture 45  
Lab _____  
Internship _____  
Practicum _____  
Other (please specify type and hours): _____

Additional Student Work Hours per course: 90

Variable topics umbrella course: No X Yes _____  
If yes, number of credits/repeats allowed _____

Specified repeatable course: No X Yes _____  
If yes, number of credits/repeats allowed _____

Prerequisite(s): MET 3000 with grades of "C" or better

APPROVED:

[Signature]  
Date 10/30/2015

Department Chair OR Program Director

[Signature]  
Date 11/3-15

Dean OR Associate Dean

[Signature]  
Date

Associate VP, Academic and Student Affairs

[Signature]  
Date

*If crosslisted, attach completed Course Crosslisting Agreement Form
Prefix and Course Number: MET 3630

Corequisite(s): ___
Prerequisite(s) or Corequisite(s): ___

Banner Enforced Coding:
Prerequisite(s): MET 3000 with grades of "C" or better
Corequisite(s): ___
Prerequisite(s) or Corequisite(s): ___

Registration restrictions: Level _____ Class _____ Program/Major _____ Student attribute ___

Catalog Course Description:
This course introduces the student to production principles, planning, evaluation, deployment, and integration of Lean manufacturing theory and methods. Course covers the concepts of Lean and Six Sigma for both manufacturing and service businesses. Students are provided an overview of Lean, Six Sigma and the Kaizen problem solving methodologies.

Specific Variable Topics Course Description (if applicable, umbrella course description included above):

Required Reading and Other Materials will be equivalent to:


Specific, Measurable Student Behavioral Learning Objectives:
Upon completion of this course the student should be able to:
1. Apply proven Lean methodologies to increase the effectiveness of a manufacturing system.
2. Recognize continuous improvement strategies that apply to the manufacturing systems environment.
3. Describe the relevance of Lean manufacturing principles to manufacturing processes and equipment, supply chain management, product development, and human resource management.
4. Identify and describe the potential enterprise issues associated with the planning, implementation, and evaluation of Lean manufacturing principles.
5. Contrast cell layout from other types of manufacturing layouts, and employ cell design tools to design a cellular layout.
6. Identify and suggest methods for reducing or eliminating the seven wastes common to manufacturing systems.

Detailed Outline of Course Content (Major Topics and Subtopics) or Outline of Field Experience/Internship (experience, responsibilities and supervision):

I. Introduction to Lean Manufacturing
   A. Lean Six Sigma Origins
   B. Leadership For Process Improvement
   C. Strategic Planning For Process Improvement
   D. Creating a Customer Focus
   E. Process Improvement Teams
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II. Process Improvement Opportunities
   A. Value Stream Process Mapping
   B. Just-in-Time and Kanban
   C. Five S
   D. Kaizen and Error Proofing
   E. Work Optimization
   F. Productive Maintenance
   G. Supply Chain Management

III. Variation Reduction Opportunities
   A. Statistics
   B. Variables Control Charts
   C. Process Capability
   D. Reliability
   E. Design of Experiments
   F. Failure Modes and Effects Analysis

Evaluation of Student Performance:
1. Quizzes
2. Exams
3. Final project