## Grant Title: Accelerated Pathways in Advanced Manufacturing (APAM)

**Community College of Rhode Island** Author:

Link: http://www.ccri.edu/

#### Document: Number10 Strategy3 Activity1 Deliverable14h - 07 LEAN COURSE-PROP-REV-03-4-21-2016

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## **COURSE PROPOSAL APPROVAL TRACKING FORM**

## NAME OF COURSE Lean Manufacturing: ETCN 2250

#### SIGNATURES REQUIRED PRIOR TO SUBMISSION

Academic Department		
Proposal Originator(s):	Ed Hanrahan Signature	Date
	Signature	Date
Department Vote for Approval: # Yes <u>10</u> # No <u>0</u> # Not Voting (Department members voting "no" may submit a separate report)		
Department Chair:	Signature	Date
Academic Dean:	Signature	Date

**Note:** All sections of this form must be completed and submitted with all required attachments to the Chair of the Curriculum Committee according to published distribution schedule. Should you have any questions, call the Office of the Dean of Business, Science and Technology, 825-2147.

CURRICULUM REVIEW COMMITTEE MEETING FOLLOW UP			
Meeting Date: Curriculum Committee Chair:	Committee Vote: # Yes # No Signature	# Abstentions	
Forward to VPAA and President Return to Department			
V.P. for Academic Affairs:	Signature	Date	
	Signature	Date	

File: Office of Vice President for Academic Affairs

## Community College of Rhode Island

Course Proposal:

x New Course Revised Course

Please attach a course syllabus with course topics, toythook titles and evaluation methods			
Beginning 1/2013, all NEW & REVISED proposals should use syllabus format on Page 9			
Date Submitted:	4/18/16		
DEPARTMENT:	Engineering and Technology		
DEVELOPED BY:	Ed Hanrahan		
COURSE TITLE:	Lean Manufacturing		
COURSE NUMBER:	ETCN 2250		
	CONTACT HOURS PER WEEK		
CREDITS: 2	Other:     Lecture hours:   1   Lab hours:   2   (Clinical hrs., Practicum, etc.)		
	ACTUAL COURSE MEETING TIME HOURS / MINUTES PER WEEK Lecture 60 Lab 120 Other: hours / minutes: min hours / minutes: min (Clinical hrs., Practicum, etc.)		
This is a 1 <sup>st</sup> year course: Yes No   This is a 2 <sup>nd</sup> year course: Yes *			
If this course wi	Il be required in a specific academic program(s), indicate below:		
Yes IN NEW MANUFACTURING A.S DEGREE (ETMA)			
If this course will replace another course in a specific academic program, indicate below:			
If this course ran on an experimental basis, indicate the course number:			
Rationale:			

A Lean course was one of several recommendations made by the Rhode Island Manufacturing Association (RIMA) and the Manufacturing Advisory Board that was convened at CCRI with the assistance of RIMA. The manufacturing owners, managers and other company representatives that made up the board, insist that students and potential employees must be introduced to and understand the culture, concepts and strategies of Lean manufacturing. These companies believe that employees that have the understanding of lean philosophy will be more productive and a better employee for the long-term success of these Rhode Island companies.

#### CATALOG DESCRIPTION (include old and new):

OLD:	Ν/Δ
	N/R
NEW:	
	This course is designed to examine Lean Manufacturing and its strategies, using case studies and specified
	designed Lean labs. Lean tools such as Kaizen events and Value Stream Mapping (VSM) are the ideal tools
	to achieve breakthrough results. This course will focus on preparatory steps that must be taken to insure
	achievable, measurable goals and team success. Students to identify and eliminate non-value-added steps,
	and to learn how preforming small incremental steps will improve the company's quality, productivity, and
	most importantly the bottom line. The class will focus on how to sustain the results attained during Kaizen
	events over the long-term. The value of the 5s Systems, Set-Reduction and Total Productive Maintenance
	WIII DE STUDIED.
PREREQUISIT	
	List course number, title and reading level
<b>CO-REQUISIT</b>	E:
	List course number, title and reading level
	UTV. In this source intended for transfer to the following institutions.
IRANSFERABI	LITY: Is this course intended for transfer to the following institutions:
RIC	C URI Other, please specify N/A
How does the o	course align with existing transfer agreements? Please list the specific course(s) at sister
institution this	proposed course will match.
N/A	

#### Student Learning Outcomes/Educated Person:

The learning outcomes of specific courses foster multiple perspectives which contribute to the acquisition of desired graduate outcomes as well as to inform and deliver discipline related content.



- Please delineate the major learning outcomes for the proposed course. Each learning outcome should be written in a format that follows the statement "as a result of this course, a student will be able to:"
- Indicate what techniques/methods will be used to achieve these student learning outcomes?
- List how will the student learning outcomes be assessed?

#### Community College of Rhode Island Student Learning Outcomes

#### Course Title: Lean Manufacturing: ETCN 2200

The learning outcomes of specific courses are to foster multiple perspectives that contribute to the acquisition of desired graduate outcomes as well as to inform and deliver discipline related content.

Please delineate below the major learning outcomes for the proposed course. Learning Outcomes should be written in a format that follows the statement: "as a result of this course, a student will be able to..."

ltem #	STUDENT LEARNING OUTCOMES	TECHNIQUES/METHODS USED TO ACHIEVE OUTCOMES	TYPE(S) OF ASSESSMENT USED TO DETERMINE THE DEGREE TO WHICH THE OUTCOMES ARE ACHIEVED
1	Visual Controls The student will gain a conceptual understanding of the visual workplace and an overview of the methodology for implementing and sustaining change throughout the Lean process.	The World Wide Web, Reading assignments, specified Lean case studies, specifically designed Lean labs	Classroom presentations written perspectives written before and after summarization's
2	<b>5S</b> The student will learn the Lean concepts of the 5S System and study how to implement the concepts to transform a designed lean situation.	The World Wide Web, Reading assignments, specified Lean case studies, specifically designed Lean labs	Classroom presentations written perspectives written before and after summarization's
3	Value Stream Mapping (VSM) The student will learn the concept of Value Stream Mapping (VSM) and how it is implemented to create a material and information flow map of production processes.	The World Wide Web, Reading assignments, specified Lean case studies, specifically designed Lean labs	Classroom presentations written perspectives written before and after summarization's
4	Lean Overview The student will learn the basic concepts of Lean manufacturing and the tools and methodologies necessary to implement " Lean " on the manufacturing floor	The World Wide Web, Reading assignments, specified Lean case studies, specifically designed Lean labs	Classroom presentations written perspectives written before and after summarization's
5	<b>Total Productive Maintenance</b> The student will learn the concepts regarding Overall Equipment Effectiveness (OEE) and how it is related to capacity.	The World Wide Web, Reading assignments, specified Lean case studies, specifically designed Lean labs	Classroom presentations written perspectives written before and after summarization's
6	<b>Quick Changeover (SUR/SMED)</b> The student will learn the principles of Quick Changeover, otherwise known as Set-Up Reduction (SUR) and Single Minute Exchange of Dies (SMED).	The World Wide Web, Reading assignments, specified Lean case studies, specifically designed Lean labs	Classroom presentations written perspectives written before and after summarization's
8	<b>Cellular Design</b> The student will study the concepts of Cellular/Flow Manufacturing.	The World Wide Web, Reading assignments, specified Lean case studies, specifically designed Lean labs	Classroom presentations written perspectives written before and after summarization's

9	Lean Office The student will study how the principles of Lean on the manufacturing floor can be implemented in an office environment.	The World Wide Web, Reading assignments, specified Lean case studies, specifically designed Lean labs	Using a series of specifically designed Lean laboratory's, reading assignments
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## **COURSE PROPOSAL**

#### **CCRI** Definition of an Educated Person: Four Abilities

The Community College of Rhode Island recognizes four critical areas that define the learning outcomes of a CCRI graduate. These four abilities can be applied in many contexts and are critical skills that must be developed not only at CCRI, but over the course of a lifetime. These core abilities guide students, faculty and staff in establishing educational goals and assessing learning within and across the primary domains of knowledge: arts and humanities, science and mathematics, and the social sciences.

Since individual courses provide the opportunity to gain knowledge in these four critical areas, it is essential to understand which areas are to be covered in each course. In each of the four areas below, please indicate in the <u>Item(s) #</u> box next to each critical element, the <u>Item #(s)</u> from the previous page (Student Learning Outcomes) which supports the Educated Person Ability that is covered.

- 1. Effective Communication
  - a. Use standard English grammar and mechanics
  - b. Create work that addresses a given purpose and context and responds to the target audience
  - c. Present a central idea, supported by concrete, relevant details
  - d. Establish a clear and consistent sequence of ideas
- 2. Critical Thinking
  - a. Identify and analyze complex ideas
  - b. Determine a research focus and the nature and scope of information needed
  - c. Locate, evaluate, and use information effectively
  - d. Draw logical conclusions from information
  - e. Express well-reasoned or innovative perspectives
- 3. Quantitative, Mathematical and Scientific Reasoning
  - a. Demonstrate an understanding of mathematical, quantitative or scientific principles.
  - b. Apply a scientific approach in asking questions Apply mathematical, quantitative, or scientific principles in solving problems
  - d. Interpret numeric information in graphical forms
- 4. Social Interaction
  - a. Evaluate ethical dimensions of decisions
  - b. Use teamwork to accomplish tasks in groups
  - c. Demonstrate an understanding of global, cultural and historical perspectives.

Note: With respect to the four abilities listed above, the level of attainment achieved should reflect the needs of the specific program. It is not necessary that individual courses address each outcome, yet, in total, all courses required by a program of study must together meet these goals.

1-8	
1-8	

Item(s) #





2,3,5,6	
1-7	

1-8	
1-8	
1-8	







4	
1-7	
4	

#### **ADMINISTRATIVE PLANNING**

Indicate the locations where the course will be offered (check all that apply):			
Knight x Flanagan Liston Newport			
Shepard Westerly _x Off-Campus _x DL Hybrid			
Indicate time of day this course will be offered:			
Days x Evenings x Weekends Web			
Indicate semester(s) the course will be offered: Fall Spring _x Summer			
Indicate the course scheduling format: 15 weeks x 5 week module Other 7-1/2			
<b>REQUESTED START DATE:</b> / /			
FINANCIAL: Will this course necessitate purchasing new capital equipment? Yes No			
Specify amount and type of additional operating funds required to support this course, including any software:			
Will students be required to use a lab as part of the course? Yes x No			
If yes, specify lab characteristics and lab preference (e.g., public computer lab, electronic classrooms, specific science lab, etc.):			
Will course require a lab fee? Yes No			
Explain the reasons for requesting a lab fee. List specific items requiring replacement each semester/year.			

#### ADMINISTRATIVE PLANNING continued:

Do current full-time or adjunct faculty possess requisite education/experience? Specify additional/unique training that may be required.

Yes	
Will additional staff hiring be required to implement this course proposal?	Yes No
If yes, specify requirements/skills:	
What additional books, periodicals, data bases or other resources are no	eeded in the Library to support the course?

## If another department(s) will be impacted by this course offering, indicate the department(s) involved, the potential impact, and the principals involved in these discussions.

1. The English department may not have access to rooms 0073, 0074 and 0076



## Proposed Course Syllabus Components For All New & Revised Course Proposals Beginning 1/2013

Course Title: Lean Manufacturing 2200-xxx, credit hours: (1 hour lecture, 2 hours lab)

#### Semester and Year: Spring/Summer/Fall 20XX

#### Instructor Name: XXXXX

#### **Instructor Contact Information:**

Class location information (Room #: xxx, meeting time: xxx, etc.) Email: (CCRI email: xxx) Office: (Campus location, room number: xxx) Office Phone: (other phone numbers: xxx) Office Hours: TBA Departmental Administrative Support: Paula Arruda, 825-2156, parruda1@ccri.edu

**Course Description** This course is designed to examination Lean Manufacturing and its strategies, using case studies and specified designed Lean labs. Lean tools such as Kaizen events and Value Stream Mapping (VSM) are the ideal tool to achieve breakthrough results. This course will focus on preparatory steps that must be taken to insure achievable measurable goals and team success. Students to identify and eliminate non-value-added steps, and how preforming small incremental steps will improve the company's quality, productivity, and most importantly the bottom line. The class will focus on how to sustain the results attained during Kaizen events over the long-term. the value of the 5s Systems, Set-Reduction and Total Productive Maintenance topics will be studied.

#### Prerequisite: ETME-1020

#### Course delivery mode: Lecture, lab, class and individual presentations

#### **Course expectations –**

In addition to any specific expectations you wish to highlight, state that students are responsible for following the policies set forth in the Student Handbook (<u>http://www.ccri.edu/advising/student\_services/handbook.html</u>) and College Catalog (<u>http://www.ccri.edu/catalog/</u>)

#### Student Learning Outcomes (as approved by the department and/or Curriculum Committee)

STUDENT LEARNING OUTCOMES

#### 1. Visual Controls

The student will gain a conceptual understanding of the visual workplace and an overview of the methodology for implementing and sustaining change throughout the Lean process.

#### 2. 5S

The student will learn the Lean concepts of the 5S System and study how to implement the concepts to transform a designed lean situation.

3. Value Stream Mapping (VSM)

The student will learn the concept of Value Stream Mapping (VSM) and how it is implemented to create a material and information flow map of production processes.

4. Lean Overview

The student will learn the basic concepts of Lean manufacturing and the tools and methodologies necessary to implement " Lean " on the manufacturing floor

5. Total Productive Maintenance

The student will learn the concepts regarding Overall Equipment Effectiveness (OEE) and how it is related to capacity.

6. Quick Changeover (SUR/SMED)

The student will learn the principles of Quick Changeover, otherwise known as Set-Up Reduction (SUR) and Single Minute Exchange of Dies (SMED).

7. Cellular Design

The student will study the concepts of Cellular/Flow Manufacturing.

8. Lean Office

The student will study how the principles of Lean on the manufacturing floor can be implemented in an office environment.

**Required textbooks and materials** The Machine That Changed the World: By James P. Womack, Daniel T. Jones, Daniel Roos

Recommended student materials access to PC, flash drive

Textbook materials on Library reserve and/or electronic resources The Machine That Changed the World: By James P. Womack, Daniel T. Jones, Daniel Roos Statement about requirements for accessing computer, Internet, and specific hardware or software requirements if applicable **See Engineering and Technology department class schedule regarding lab times** 

### Grading Scale and policies (college policy)

Assessment Criteria all presentations written assignments and the completion of labs must be submitted on the date identified. Any assignment that does not meet this requirement will not be accepted, unless adjustments have been made at least two days before assignment due date. This is not negotiable

Policies on late or make-up work or makeup any assignment submitted after the due date will be accepted at my discretion.

Academic integrity statement (see College catalog regarding plagiarism Course Proposal Form REV. 9/13 Page 12 of 13

## Use of cell phones/electronic devices

<u>Class Cell Phone and other Electronics Devices Policy:</u> All cell phones, headphones, text messaging equipment, CD players, MP3 players or other music file players; GPS equipment, Blackberries, Palm Pilots and/ or any other electronic device not listed here must be turned off and put away for the entire class. Video and audio recording is prohibited as well as the distribution of class material using any sort of data application software, using the Internet. Failure to comply with this policy could result in dismissal from the class

## Attendance policy See Engineering and Technology department regarding class punctuality and attendance policies

On-campus meeting requirements for online and hybrid courses N/A

#### Calendar of weekly course topics; To Be Determined

Schedule of course topics and assessments with due dates when possible.

#### Services for Students with Disabilities

Any student with a documented disability may arrange reasonable accommodations. As part of this process, students are encouraged to contact the office of Disability Services for Students as early in the semester as possible (<u>http://www.ccri.edu/dss/index.shtml</u>).

# This syllabus is subject to change at any time at the discretion of the instructor. Students are responsible for keeping current with changes made to this syllabus.