UNIVERSITÀ DI PAVIA

Anno Accademico 2019/2020

LEAN PRODUCTION

Anno immatricolazione	2018/2019
Anno offerta	2019/2020
Normativa	DM270
SSD	ING-IND/17 (IMPIANTI INDUSTRIALI MECCANICI)
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	INDUSTRIAL AUTOMATION ENGINEERING - INGEGNERIA DELL'AUTOMAZIONE INDUSTRIALE
Curriculum	Industrial Technologies and Management
Anno di corso	2°
Periodo didattico	Primo Semestre (30/09/2019 - 20/01/2020)
Crediti	6
Ore	45 ore di attività frontale
Lingua insegnamento	English
Tipo esame	SCRITTO E ORALE CONGIUNTI
Docente	DI BLASI DAVIDE (titolare) - 6 CFU
Prerequisiti	Basic knowledge of statistics
Obiettivi formativi	This course is an examination of systems redesign utilizing contemporary quality and systems engineering methodologies, specifically Six Sigma, Lean, Toyota Production System (TPS) and Constraint Management. Direct application of principles to a relevant industry field project will be shown. This course is recommended for those students interested in optimization and management of operational processes. The aim of the course is to provide competences and skills about lean and six sigma tools. At the end of the course, students will be able to apply the acquired competences and skills in order to improve industrial processes.

Programma e contenuti

Historycal introduction: lean thinking
• Toyota case study: Toyota Production System
• Japanese culture: an important starting point
• Lean Manufacturing today: Europe vs USA vs Japan => main analogies and differences
• Lean Manufacturing today: some significative examples (external Laboratories: visit to MONIER, CAMEROON, BLOOMBERG)
• Continuous improvement and Lean Leadership
• Visual and shoopfloor management
• Safety and working environment; Heinrich Pyramid
• MURI/MURA/MUDA: 3 tipology of wastes
• SMED: change over and settings optimization
• 5S and standardization
• PDCA and problem solving approach
• Fishbone analysis, 5W1H, 5 Why’s tools
• Quality Control and SPC
• TPM: Total Preventive Maintenance
• Autonomous and Preventive Manintenance
• Machine classification: main criterias
• Cost deployment and wastes indentification
• Logistic application: JIT and Kanban
• Value stream map and SIPOC approach

Metodi didattici

Lectures (hours/year in lecture theatre): 45 Practical class (hours/year in lecture theatre), part of them (20%) will be spent in exercises
12 hours of practical/ Workshops (hours/year in lecture theatre): external visits (Monier, Cameron)

Testi di riferimento

• 2017/18 suggestions:
- The Toyota Way: continuous improvement (Liker/ Franz)
- The Brith of Lean (Fujmoto edition)
- Hoshi Kanri
- Toyota Spirit (T.Ohno)

2016/17 suggestions:
- James P. Womack and Daniel T. Jones . Lean Thinking: Banish Waste and Create Wealth in Your Corporation . 2003 Free Press,
- Peter S. Pande, Robert P. Neuman and Roland R. Cavanagh. The Six Sigma Way: Team Fieldbook. 2002 McGraw?Hill,
- Eliyahu M. Goldratt and Jeff Cox. The Goal: A Process of Ongoing Improvement . 1994 or 2004 The North River Press,
- Michael L. George, David Rowlands, Mark Price and John Maxey. The Lean Six Sigma Pocket Toolbook. 2005 George Group

Modalità verifica apprendimento

Oral exam which requires the preparation of a presentation about a DMAIC Project that will be assigned to each team (3-4 students, depending on the number of total students). A Power Point presentation shall be submitted to my e-mail address (davide.diblasi@unipv.it) 3 days before the exam date at the latest, in order to be reviewed. During the exam, studentwillhave to: • present the lean six sigma tools used in the project • justify the choice made • answerquestions Time for the preparation of the project presentation will also be considered in the final
mark, this to introduce the student into a working reality where it's very important to deliver a good product with a short lead time Threshold to pass is 18/30 and maximum mark is 30/30 cum laude.
For laude: will be requested what book of the reference bobliography was read and what the main contents about it.
2 milestone (individual exercises) will be done during the training, as "refresh" of main contents. A preliminary evaluation will be given to each one.

Altre informazioni

3 external visits are planned in manufactuiring plants; a reports will be requested to each one.

Obiettivi Agenda 2030 per lo sviluppo sostenibile

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