Industrial Process Development

2018-03-27

Antti Salonen

Course objective

Objective

The objective of the course is to provide the students with knowledge in tools, techniques and principles for process development within Production, Quality, Maintenance and Logistics

Learning Outcomes

After completing the course student should be able to:

1. applying modern tools and methods to improve the efficiency of manual and mechanical processes in production and logistics systems
2. analyze and evaluate problems in production / logistics system processes, and develop action and improvement plans
3. demonstrate the ability to be able to map a process, identify and quantify their losses , find the root causes of the loss, as well as provide suggestions for improvement with a simplified investment analysis

From the Course plan

Examination
Project 5 hp
Written exam 2.5 hp

Grades
3, 4 or 5 or grade A-B-C etc

Examination

PROJECT:
Grades based on project work, theory and solutions and the company benefit in the study.

WRITTEN EXAM:
A smaller written exam, based on the theories, presented at the lectures and the associated research papers.
Grades: 3-5 (Swedish), E-A (ECTS)

This year the exam will be even more (but not only) based on the research papers discussed in the course!

Course evaluation, 2016

Overall grade: 4.0 (scale, 1-5)

Pros:

- The industrial projects were prepared in advance
- Good guest lectures
- Good to read scientific papers

Cons:

- The seminars were a bit shallow
- Some of the lectures were very short
- Too many irrelevant projects

Changes to 2018:

- Better industrial projects this year!
- Improved paper seminars
- Some of the lectures have added material

Lecture 1: 2018-04-03

- Lecture: Industrial process development
- Seminar: *Chen, et.al. 2010*
- Lecturer: San Aziz

Note that there will be no lecture on Thursday 2018-03-29

Lecture 2: 2018-04-05

- Pulse meeting: Project specification

- Lecture: Ergonomics
- Lecturer: Dr. Antti Salonen

Lecture 3: 2018-04-10

- Guest lecture: Kaizen & Kaikakku
- Seminar: Yamamoto & Bellgran, 2010

- Guest: Dr. Yuji Yamamoto

Lecture 4: 2018-04-12

- Guest lecture: Time studies
- Guest: Dr. Peter Almström,
  Chalmers University of technology

Lecture 5: 2018-04-17

- Pulse meeting: Process definition
- Lecture: Performance measures
- Lecturer: San Aziz

Lecture 6: 2018-04-19

- Lecture: Production System Development
- Lecture: Simulation of production systems

- Guest: Erik Flores - Mdh

Lecture 7: 2018-04-24

- Guest lecture: Improvement cases
- Seminar: *Bengtsson & Osterman, 2014*

- Guest: Daniel Gåsvaer, Swerea IVF

Lecture 8: 2018-04-26

- Guest lecture: Condition Based Maintenance
- Guest: Dr. Ali Rastegari, Volvo GTO

- Lecture: Maintenance development
- Lecturer: San Aziz

Lecture 9: 2018-05-03

- Lecture: Root Cause Analysis
- Lecturer: Dr. Antti Salonen

Lecture 10: 2018-05-08

- Pulse meeting: Actual status

- Lecture: Investment assessment
- Lecturer: San Aziz

Lecture 11: 2018-05-15

- Prel. Guest lecture: Quality/Six sigma
- Guest Industrial expert

Lecture 12: 2018-05-17

- Pulse meeting: Root Cause Analysis

Lecture 13: 2018-05-22

- Guest lecture: Professional maintenance
- Guest: Per Hansson, Volvo GTO
- Seminar: *Bengtsson & Salonen, 2016*

Final: 2018-05-24

- Final presentations of all projects
- Course evaluation

The projects

Applied industrial projects

- Groups of 4-5 students
- Minimum 1 Swedish speaking student/group
- Real industrial problems
- Car costs outside of Eskilstuna and Västerås will be paid

The projects

The “standard project”

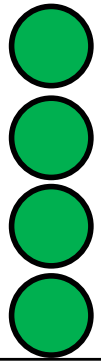
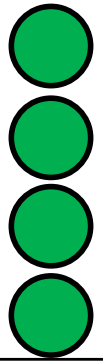
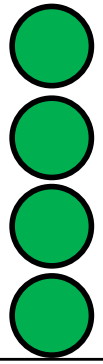
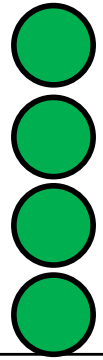
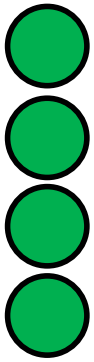
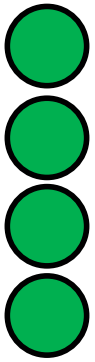
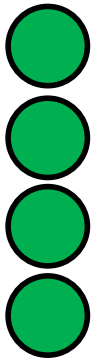
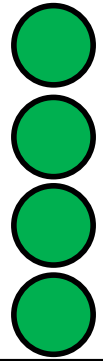
1. Define the problem
2. Define the process
3. Measure the loss
4. Root Cause Analysis
5. Suggest improvements

Reporting the project

1. Pulse meetings
2. A technical report
3. Personal diary
4. Group presentation

Pulse meetings

- Fast status reports: 2 minutes/group
- Four criteria:
  - Deliverables (Different for each stage)
  - Cooperation within the group
  - Cooperation with the company
  - Progress of the report
- Red/Yellow/Green
- Supervision only if needed

1		2		3		4	
5		6		7		8	

The technical report

- Based on the provided template
- English or Swedish
- Written by all group members
- Deadline 2018-05-20

Personal diary

- Based on provided template
- Handed in:
  - 2018-04-09
  - 2018-04-23
  - 2018-05-02
  - 2018-05-21

The group presentation

- All members actively presenting
- English
- 10 minutes presentation maximum!
- 5 minutes questions/feedback

The written exam

- Similar structure to old exams
- Based on lecture PP, and scientific papers
- Remember to register for the exam!

Communication

Course material:
http://zoomin.idt.mdh.se/course/PPU413/

Contact me:
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Next lecture: 2018-04-03

- **Industrial process development**

As preparation, please read:

Chen, J., Li, Y. & Shady, B., (2010), "From value stream mapping toward a lean/sigma continuous improvement proves: an industrial case study", International Journal of Production Research, Vol. 48, No 4 , pp. 1069-1086

Note how the improvement work was systematized!