

Production, maintenance and quality development 2016

Study guide

Welcome to the course Production, maintenance and quality development, PPU404, 2016. This study guide is intended to inform and guide you on what to expect and how to approach the course. I hope the guidance provided in this document will be helpful in achieving the study goals you have for this course. I recommend that you read this guide as soon as possible so that you see what to expect, and plan your studies in a sufficient way. Further I recommend that you search and download each paper/article in due time so you can read them before the relating lecture. If you, for some reason not can participate on the course start on March 29th, you have to notify me in advance. Otherwise you risk loosing your registration on this course. I am looking forward to see you on March 29th.

Antti Salonen
Ph.D, Senior lecturer

Course code: PPU404

Course responsibility: Antti Salonen

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Examiner: Antti Salonen

Literature:

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

Stålberg, L. & Fundin, A., (2016), "Exploring a holistic perspective on production system improvement", *International Journal of Quality & Reliability Management*, Vol. 33, No 2 , pp. 267-283

Wisner, J. D. & Fawcett, S. E., (1991), "Linking firm strategy to operating decisions through performance measurement", *Production and Inventory Management Journal*, Vol. 32, No. 3 , pp. 5-11

Bengtsson, M. & Osterman, C.,, (2014), "Improvements in vain – The 9th waste", *The 6th International Swedish Production Symposium 2014, Göteborg, Sweden*, Editor(s): Stahre, J., Johansson, B., and Björkman, M.

Bengtsson, M. & Salonen, A. (2016). *Requirements and Needs – A foundation to reducing maintenance-related waste*. Published at 10th World Congress on Engineering Asset Management (WCEAM 2015), Tampere, Finland.

MacDuffie, J. P., (1997), "The Road to "Root Cause": Shop-Floor Problem-Solvong at Three Auto Assembly Plants", *Management Science*, Vol. 43, No 4 , *Frontier Research in Manufacturing and Logistics*, pp. 479-502

The PowerPoint presentations from each lecture will be available in PDF format as additional teaching material. Also, files with study questions, SQ, will be provided for your convenience. Various additional documents may be included in the course.

Webpage: <http://zoomin.idt.mdh.se/course/ppu404>

Learning objectives:

Student shall show ability to:

- apply modern tools and methods for rationalizing the production process
- manage a change project
- analyze and evaluate problems within the production process and based on the analysis, develop improvement plans
- assess machine- and process capability
- perform Root Cause Analysis, RCA

Examination:

- Project (Pro2): 4.5 credits: An applied industrial project
- Written exam (Ten1): 3 credits

Lecture plan

Lecture 1 – Introduction

- Presentation of the curriculum
- Setting up project groups

Lecture 2 – Industrial Process Development

- Main lecturer: Antti Salonen, Mdh
- Literature: *Chen, et.al. 2010*

Lecture 3 – PULSE-meeting 1

- Project specification
- Project plan

Lecture 4 – Quality development

- Main lecturer: Antti Salonen, Mdh
- Literature: *Stålberg & Fundin, 2016*

Lecture 5 – Performance measures

- Main lecturer: Antti Salonen, Mdh
- Literature: *Wisner & Fawcett, 1991*

Lecture 6 – PULSE-meeting 2

- Definition of the studied process

Lecture 7 – Production system development

- Main lecturer: Jessica Bruch, Mdh
- Guest lecturer: Erik Flores Volvo CE

Lecture 8 – Un-defined (Hopefully we can have an interesting guest lecture here)

Lecture 9 – Un-defined (Hopefully we can have an interesting guest lecture here)

Lecture 10 – Change management

- Guest lecturer: Christer Osterman, Scania
- Literature: *Bengtsson & Osterman, 2014 (Preliminary)*

Lecture 11 – Maintenance development

- Main lecturer: Antti Salonen, Mdh
- Guest lecturer: Marcus Bengtsson, Volvo CE
- Literature: *Bengtsson & Salonen, 2016*

Lecture 12 – PULSE-meeting 3

- Current status of the process

Lecture 13 – Root Cause Analysis

- Main lecturer: Antti Salonen, Mdh
- Literature: *MacDuffie, 1997*

Lecture 14 – PULSE-meeting 4

- Root Cause Analysis

Lecture 15 – Investment assessment

- Main lecturer: Antti Salonen, Mdh
- Literature: *TBA*

Lecture 16 – Project presentations

- Final presentations

Applied industrial project

A major part of this course is the applied industrial project. During the course period you will perform a pre-study in an industrial setting. The aim of your pre-studies is to identify and quantify waste, and further to identify root causes of these problems and give suggestions on how to eliminate them.

Example of projects:

- Low capacity/utilization in a production cell.
- Low capacity/utilization in an assembly line.
- Poor quality from a production unit.
- Low availability of a machine/cell.

The pre-study shall be documented in a technical report and presented at a mandatory seminar on May 27th.