Institute of Production Engineering
School of Industrial Engineering and Management

MG3915/P43 Disturbance and Variation Analysis in Manufacturing Systems.

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Spring-Autumn 2019

General Information

This is a 9 credits doctoral course covering advanced topics in analysis of disturbances and variations in manufacturing. The course is given at KTH ITM/IIP during the 3rd terms of each academic year depending on the availability of adequate number of students. The course will have four contact sessions in which lectures and presentations are made. Course participants are expected to do individual home-take tasks.

Course Objectives and Intended Learning Outcomes

The course aims to provide advanced knowledge and hands-on experience in disturbances and variation analysis in manufacturing systems. The scope of the course includes advanced methods in process control, root cause analysis, modeling and impact evaluations of disturbances and variations.

After completing the course the student will be able to:

- Identify common disturbance types and their representations.
- Characterize system responses to disturbance
- Develop process control schemes from variation profiles.
- Analyze variation propagation in multi-stage manufacturing.
- Carryout analysis of disturbances.

Course content and schedule

The course is divided in the following four modules:

Module 1. Disturbances and impact analysis.
Module 2. Manufacturing variations and propagations.
Module 3. Process Control and variation source identification.
Module 4. Presentations, demonstrations and course round-up,

Each module consists of a lecture, home-take-task and presentation sessions. Lectures and presentations on specific module are to be made during the contact days while home-take-tasks are to be made between these contact days. The following are the course contact days for the academic year **2019**

	Date	Content
First contact session	06/05/19 - 07/05/19	Course introduction and Module 1
Second contact session	03/06/19 - 04/06/19	Module 2
Third contact session	26/08/19 - 27/08/19	Module 3
Fourth contact day:	16/09/19 – 17/09/19	Module 4

Prerequisite and prior knowledge.

There are no prerequisite courses to take the course for production and industrial engineering post grad students. Prior knowledge in probability and statistics and use of computational tools is an advantage.

Home Take Tasks

Each course participant will have individual home-take-tasks for each module issued during the contact days. Course participants are encouraged to develop these tasks from their own research studies or projects as much as possible. These tasks should be approved by the course instructor before starting.

Assessment

The course will be graded on Pass or Fail basis. To pass the course, it's **obligatory** to attend all the contact days, complete home-take-tasks and present the work.

Placement

The number of students is limited. Please contact the course administrator about your interest to participate latest by 30 of March 2019.

Course Literature

1 Lecture notes
2 Reference material to be provided during the lectures.