



Design of Experiment Statistisk försöksplanering

7.5 credits

7.5 högskolepoäng

Ladok Code: 41T09B

Version: 2.0

Established by: Board of the department 2010-11-22

Valid from: Autumn 2010

Education Cycle: First cycle

Main Field of Study (Progressive Specialisation): Production and Quality Control Technology (G1F)

Disciplinary Domain: Technology

Prerequisites: Knowledge corresponding to Regression Analysis 7.5 Credits or Mathematical Statistics 7.5 Credits.

Subject Area: Industrial Engineering and Management

Grading Scale: ECTS-credits

Content

The course contents are:

- factorial and fractional factorial designs
- blocking
- visualisation and diagnostic tools
- quality tools for uncovering significant factors
- factorial designs with analysis of variance (ANOVA)
- statistical tests
- factorial designs with centre-points
- hypothesis testing
- transformation of response data
- variance of effects
- verification of factorial experiments
- the missing data problem
- explanatory models

Learning Outcomes

The student shall upon completion of the course be able to

- design, conduct and analyse factorial and fractional factorial experiments first and foremost in an industrial manufacturing setting
- employ the results (the models) yielded from designed experiments for the purpose of improving the manufacturing processes
- determine when designed experiments apply in industrial and societal contexts
- judge when and how external variation may interfere with the results of an experiment
- employ quality tools for visualisation of significant factors
- employ statistical tests commonly used in industrial manufacturing
- analyse experimental results using statistical software
- validate a statistical model
- analyse and conduct a factorial experiment with centre-points

Forms of Teaching

The instruction consists of the following activities:

- lectures

- exercises
- experiments
- software-based classes
- seminars
- project work
- field studies
- group presentations

The language of instruction is English.

Forms of Examination

The course will be examined through the following examination elements:

Written exam

Learning outcomes:

Credits: 5.5

Grading scale: ECTS-credits

Learning outcomes:

Credits: 2

Grading scale: Fail (U) or Pass (G)

Student rights and obligations at examination are in accordance with guidelines and rules for the University of Borås.

Literature and Other Teaching Materials

Student Influence and Evaluation

Miscellaneous