MG2203 Process Control and Management 9.0 credits

Process Control and Management

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for MG2203 valid from Autumn 2007

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

For students on the M or P programmes
4G1165 Automation Technology
4G1166 Bachelor's Thesis in Production Engineering and Management
4G1169 Manufacturing
For students on the TPEMM program, se programme description.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The course is intended to develop statistical thinking and skills in how to sample, characterize and make inference from statistical data. Modern statistical software tools are used to enhance knowledge and handle complex industrial management problems.
A part of the course is concentrated on how to plan, conduct and analyze experiments for decision making. Topics related to statistics, probability and Design of Experiment (DoE) are covered.

Course contents

Review of Basic Statistics (Random variables, data characterization, moments), Discrete and continuous probability distributions, sampling and sampling distributions, Hypothesis testing, point and interval estimation confidence intervals, Correlation and regression analyses. ANOVA. Regressions and chi-square tests.

Planning for experiment. One factor design; Randomized Blocks, Latin Square Designs and Extensions. Factorial Design: Two-factor full factorial design, Two level full factorial design. Fractional Factorials. Blocking and Confounding; Contrasts and qualitative factor levels, Mixed Level and Mixture Experiments. Response Surface Methodology. Taguchi's Contributions to Experimental Design; Orthogonal Arrays, Robust Systems.

Static Reliability; Failure Phenomenon and Failure Rate. Rank and Probability Paper Dynamic Reliability. Reliability Testing. Reliability and Human Engineering. Reliability Management. Maintenance Engineering. Introduction to Preventive Maintenance Replacement. Repair Policies. Maintenance Support and Logistics. Introduction of Preventive Maintenance System and Operation. Inspection (Surveillance) Policies. Failure Diagnosis.

Course literature

Will be announced at course start.

Examination

- INL1 - Assignment, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 6.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Other requirements for final grade

Assignments (INL1; 3 cr)
Exam (TEN1; 6 cr)

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.