MG2031 Manufacturing, Advanced Course 6.0 credits

Tillverkningsteknik, fortsättningskurs II

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

Establishment

Course syllabus for MG2031 valid from Autumn 2011

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

MG1001 Manufacturing or
MG1006 Design and Product Realization - Manufacturing

or equivalent

Language of instruction

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

Intended learning outcomes

On successful completion of this course you will be able to:

- account for cutting and forming processes, including unconventional methods
- calculate the economic cutting conditions
- explain the causes of tool wear
- conduct a modal analysis and calculate the natural frequency and damping
- to produce a stability diagram for the manufacturing processing of a slender shaft
- interpret toleranced engineering drawings and plan and carry out a measurement of a part in a coordinate measurement machine
- suggest an improved manufacturing process from analysis of measurement data
- propose and justify the tool geometry, tool materials and coatings for typical processing cases
- summarize the results of measurements in a laboratory report

Course contents

- Vibrations, modal analysis and machine dynamics

- Tools, materials, tool coatings and tool design

- Processing Economics, tool wear and optimization of cutting data

- Forging and sheet metal forming processes

- Unconventional manufacturing processes

- Verification of complex parts with CMM

- Clamping

Course literature

- Skärteknik, Sveriges verkstadsindustrier 1998 (In Swedish)

- Verkstadsmätteknik, Torgny Carlsson, Liber 1999 (In Swedish)

- Sänksmide, Jan Bodin, IVF 2003, (In Swedish)

In addition, lab instructions and lecture notes will be made available throughout the course

Examination

- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 3.0 credits, grading scale: P, 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.

Bonus points for the written exam can be used for 12 months only

Laboratory exercises are only offered during the course

Other requirements for final grade

Written examination (TEN1, 3 cr)

Laboratory exercises and field trip (LAB1, 3 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.