MG2047 Advanced Manufacturing Equipment 6.0 credits

Avancerad produktionsutrustning

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

Establishment

The official course syllabus is valid from the spring semester 2024 in accordance with the decision by the Head of school: M-2022-1582. Date of decision: 14/10/2022

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Completed course in manufacturing technology, e.g.
MG1016" Manufacturing Technology" or MG1026 "Manufacturing Technology"

Language of instruction

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

Intended learning outcomes

After passing the course, the student should be able to:

- state the main features of design and working principles for machine tools and industrial robots
- evaluate the concept machine processing system and assess factors that influence the performance of the system
- carry out and evaluate calibration and testing of production equipment

For higher grades, the student should furthermore be able to:

- assess and suggest solutions for design of and working principles for machine tools and industrial robots

Course contents

The course focuses on machine tools and industrial robots as integrated parts of production systems for discrete manufacturing of components. The course aims to analyse the performance of the equipment during continuous operation. The course is divided into two parts of equal extent.

The first part of the course focuses on lectures that give an extensive presentation of the configurations, subsystems and control of machine tools and industrial robots, and their design, manufacturing and operation principles. This is shown for subtractive machining processes and it is explained how measuring techniques can be used to optimise the operation of machines or to improve the design.

The second part focuses on laboratory work. There are four practical labs where students will measure kinematics, statics, dynamics and thermoelasticity induced errors of machine tools or robots, followed by a computer-based laboratory session to visualise and quantify the positioning precision for the machines based on the practical labs.

Examination

- LAB1 - Laboratories, 1.5 credits, grading scale: P, F
- LITT - Summary and presentation of scientific articles, 1.5 credits, grading scale: P, F
- TEN1 - Written exam, 3.0 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

Active attendance at compulsory course activities

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.

Additional regulations

Replaces the course MG2103 from spring semester 2024. Only one of the courses can be taken.