



MG2104 Manufacturing Technology and Planning 7.5 credits

Tillverkningssteknik- och planering

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

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

Establishment

Course syllabus for MG2104 valid from Autumn 2015

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Compulsory for TPRMM1 who have not taken

MG1001/MG1006/MG1026, or the equivalent

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 will be able to:

- understand how a product can be manufactured
- select a suitable manufacturing method for a specific situation
- describe how the mechanical properties can be influenced by different actions
- identify parameters affecting machinability
- analyse and determine the processing conditions for elementary operations which enable the computation of working times and costs
- define cutting data and be able to optimise the parameters in terms of tool life and cutting forces
- analyse factors affecting the overall machining economy
- understand process variation and chose the right machining operation with respect to machine and process data
- describe the basic plastic deformation methods (rolling, forging, extrusion, drawing and sheet metal forming) and their characteristics
- define different welding methods and their characteristics.
- recognise different structures of materials and to be familiar with the basic casting methods and be able to select between them
- define the principal characteristics for plastics
- define and analyse different kinds of assembly systems
- be acquainted to work holding systems in machine tools and their application

Course contents

Quantitative and qualitative study of manufacturing processes. Emphasis on process selection for optimum design. Laboratory experiments and demonstrations.

Interpretation of the specifications contained in the definition drawing of a part, geometric tolerances and surface finish are discussed. Advanced machining processes topic is also a part of this module as well as machine tool configuration and NC control.

Topics included are accuracy problems in manufacturing, basics of metal cutting, analysis of machining operations, advanced and special and non-conventional machining.

Disposition

Course is alternating lectures, exercises and laboratory work. International guest lecturers is an important part of the course. Company visits.

Course literature

Fred Waters (1996), Fundamentals of Manufacturing for Engineers, 2003, Taylor & Francis, ISBN: 1-85728-338-4

Examination

- LAB1 - Laboratory, 3.0 credits, grading scale: P, F
- TEN1 - Written exam, 4.5 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.

Other requirements for final grade

Approved workshop laboratory exercises (LAB1; 3 cr)
Passed written examination (TEN1; 4,5 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.