



# MG2020 Modularisation of Products 6.0 credits

## Modulindelning av produkter

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 MG2020 valid from Autumn 2019

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Mechanical Engineering

## Specific prerequisites

Basic eligibility and 120 cr in Engineering

## 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:

- present, in brief, the Modular Function Deployment method and explain its part in integrated product development
- clarify the requirements of different market segments and how these drive variance in a modular system
- carry out and document a function analysis and necessary concept evaluations
- suggest a proper modularisation of a product family, considering company strategies
- define module variants and show how these can be configured into products
- explain the link between product development and manufacturing when modularisation is used
- document and motivate choices and decisions made during a strategic product development project

## Course contents

Many companies are focusing on rationalising their product handling throughout the company as well as they want to maintain or improve their ability to satisfy the changing customer demands. The companies have to make both the organisation and the product more effective. One way is by structuring the product so it incorporates the demands from the customers, the corporation and the long term strategy. Many researchers are involved in the area of understanding how this should be done. At KTH, Dept. of Production Engineering, and IVF, the MFD-method (Modular Function Deployment) was developed some years ago.

The method is one of the first to accommodate the product structure to the manufacturing and the strategies of the company. The method consists of five steps to design a product so it is divided into a number of modules that could be combined/purchased/shared among product variants. This allows the manufacturing cost to be minimised and the complexity (the number of different parts) may be lowered, yet it still allows flexibility and variety. The method focus on the corporate strategy regarding core competence and preparation for technical change. Depending on which of these aspects that are important for the company and their products, the product may be designed and structured in different ways. The method has been used successfully in some 20 Swedish companies to create a company specific modularisation. Furthermore, the method has also been useful in creating a common understanding of the product and corporate strategies among marketers, designers, manufacturers and so on.

The course is based on the Modular Function Deployment method that consists of five steps:

- Clarify customer requirements
- Select technical solutions
- Generate module concepts
- Evaluate concepts
- Improve each module

## Course literature

Can be downloaded from Canvas by registered course participants

## Examination

- PRO2 - Project work, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Written exam, 1.0 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.

Attendance at classes is required to a large extent, as is active participation in the project group work

## 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.