

**SYLLABUS**

# **Mechanical components**

## **7.5 credits M0012T**

**Maskinkomponenter**

**Course syllabus admitted: Autumn 2023 Sp 1 - Present**

**DECISION DATE**  
**2022-06-17**

# Mechanical components 7.5 credits M0012T

## Maskinkomponenter

### First cycle, M0012T

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Maskinelement	Mechanical Engineering

### Main field of study

Industrial Design Engineering

## Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and Foundation level courses in Mathematics, Physics, Mechanics and Solid Mechanics

## Selection

The selection is based on 1-165 credits.

## Course Aim

Divided into 3 categories below, you as a student should after completing the course:

### 1. Knowledge and Understanding

- Know the function of a selection of commonly used mechanical components
- Know about common design criteria and the limitations of commonly used methods when selecting and dimensioning mechanical components
- Understand the basic principles of deriving common dimensioning methods
- Understand how different components affects each other when they are combined in a system

### 2. Skills and Abilities

- Be able to solve the mathematical models associated with the dimensioning methods used in practice, and use them to analyse feasibility and performance
- Be able to select the appropriate components for common applications
- Have the ability to determine material, loads, relevant geometries, etc. and to apply the associated dimensioning method
- Be able to present analyses of mechanical components in text in an engineering-oriented manner
- Have developed your interpersonal skills and your ability to work in teams

### 3. Judgement and Assessment Ability

- Be able to assess the relevance of the results obtained when applying common dimensioning methods
- Be able to judge the feasibility of the dimensioning of commonly used mechanical components

## Contents

This course covers the analysis of machine elements in a systematic manner with the aid of various tools, including both analytical and computer-based methods. Knowledge from mechanics, physics and maths is an invaluable aid, as is the ability to use computer-based analysis and simulation programs. Some examples of components covered are brakes, clutches, gears, bolts, springs etc. This course provides a vital foundation for those students intending to continue their studies in fields involving the application of mechanical components and machine elements systems, e.g., technical design, product innovation, mechanical engineering etc.

## Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

You take part in lectures where important stages in the course are presented and explained. Other classes, in the form of tutorials and practical problem solving are also part of the course. These provide the opportunity for you and your fellow students to solve problems and to seek assistance from the teacher. Laboratory work provides a chance to experience what various machine elements look like in real life, as well as, how they function. The assignments are comprehensive and cover most of the course topics. The laboratory work and homework are done in groups and are examined in various forms that are intended to train report writing and the implementation of numerical methods for solving technical problems. This includes basic modelling and simulations with a computer.

## Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. The assignments and the laboratory work are compulsory, and these are reviewed and assessed during the course. To obtain a final grade in the course, you must pass the assignments and get approval of your laboratory reports - including peer-review of other groups' efforts, and passing the written exam. Participation in laboratory work and at the course introduction during the first lecture is mandatory.

## Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

## Overlap

The course M0012T is equal to MTM132, M0030T

## Course offered by

Department of Engineering Sciences and Mathematics

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Laboratory work	U G#	2	Mandatory	A07	
0004	Assignment	U G#	2	Mandatory	S11	
0005	Written exam	G U 3 4 5	3.5	Mandatory	S11	

## Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

## Last revised

by Niklas Lehto, huvudansvarig utbildningsledare 2022-06-17

## Syllabus established

by Department of Applied Physics and Mechanical Engineering 2005-02-10