

Machine Elements, Second Course

Programme course

6 credits

Maskinelement, fortsättningskurs

TMME14

Valid from: 2017 Spring semester

Determined by

Board of Studies for Mechanical
Engineering and Design

Date determined

2017-01-25

Main field of study

Mechanical Engineering

Course level

Second cycle

Advancement level

A1X

Course offered for

- Design and Product Development
- Mechanical Engineering, M Sc in Engineering
- Mechanical Engineering, Master's programme

Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites

Basic courses in mechanics, solid mechanics, fluid mechanics, and machine elements.

Intended learning outcomes

The course aims at giving the student a theoretical and practical knowledge about bearings and a number of transmission elements. As an important part of the course, it is described how selection and sizing of the different machine elements is performed in the industry. Engineering design exercises, where in most cases necessary data are taken from catalogues, aim at checking that the course contents have been digested. Upon completion of the course, the student should be able to:

- Design hydrodynamic and hydrostatic bearings.
- Design gears with respect to their strength.
- Select a suitable coupling or clutch for a given transmission, and size it.
- Design belt drives and chain drives.

Course content

Plain bearings (types of friction, hydrodynamic bearings, hydrostatic bearings, Reynolds equation, p-v-diagrams),
Gears (helical gears, calculation of strength according to DIN 3990, worm gears),
Couplings and clutches (design with respect to load fluctuations), Chain drives,
Flat and V-belt drives,
Timing belt drives

Teaching and working methods

Teaching is in the form of lectures and classes.

Examination

UPG1	Assignments	6 credits	U, 3, 4, 5
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Grades

Four-grade scale, LiU, U, 3, 4, 5

Department

Institutionen för ekonomisk och industriell utveckling

Director of Studies or equivalent

Peter Schmidt

Examiner

Peter Christensen

Course website and other links

Education components

Preliminary scheduled hours: 38 h
Recommended self-study hours: 122 h

Course literature

Utdelat material

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.