

SYLLABUS

Mechanics and strength of materials 7.5 credits M0032T

Mekanik och hållfasthetslära

Course syllabus admitted: Autumn 2024 Sp 1 - Present

**DECISION DATE
2024-02-15**

Mechanics and strength of materials 7.5 credits M0032T

Mekanik och hållfasthetslära

First cycle, M0032T

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Hållfasthetslära	Mechanical 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 Basic courses in mathematics and physics.

Selection

The selection is based on 1-165 credits.

Course Aim

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

Knowledge and understanding

- explain the basic concepts of solid mechanics
- derive and explain stresses, strains and deformations in solid bodies

Skills and abilities

- determine forces, moment, stresses and deformations in common structures
- apply basic dimensioning methods
- analyze components and structures from a strength of materials perspective by methodically addressing and solving problems

Valuation and approach

- critically evaluate methods and results from an engineering perspective and realize their limitations
- reflect on and evaluate their own efforts in laboratory work

Contents

The course deals with the basic principles in solid mechanics, how deformable bodies react to mechanical loading. This includes analysis of external loads and their effect on structures and components and analysis of resulting stresses and deformations.

The course includes the following elements:

- Definitions and basic concepts
- Simple states of loading
- Torsion of circular shafts
- Bending of beams
- Instability
- General states of stress and strain

Realization

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

The teaching consists of lectures, supervision, exercises, and a laboratory assignment. The lectures provide theoretical background, motivations, explanations, and examples of applications of the current course section. The supervision provides help with the students own work. The laboratory work practically illuminates selected sections of the course. The laboratory work is done in groups with a preparatory assignment and a final report.

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 course ends with a written exam and differentiated grades are given. In order to obtain a final grade according to the scale 3, 4, 5, in addition to passing the exam, an approved laboratory report is also required. Attendance at the laboratory session is compulsory.

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.

Remarks

This course cannot be part of the degree together with the course M0011T.

Course offered by

Department of Engineering Sciences and Mathematics

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Written exam	G U 3 4 5	6	Mandatory	A15	
0002	Reports	U G#	1.5	Mandatory	A15	

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 Nils Almqvist, Head of Undergraduate Education 2024-02-15

Syllabus established

by Mats Näsström 2015-02-12