

SYLLABUS

Strength of Materials and Solid Mechanics 7.5 credits M0011T

Hållfasthetslära A

Course syllabus admitted: Autumn 2023 Sp 1 - Present

**DECISION DATE
2021-02-17**

Strength of Materials and Solid Mechanics 7.5 credits M0011T

Hållfasthetslära A

First cycle, M0011T

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 statics.

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
- Fracture mechanics
- Fatigue

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, homework, 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 homework assignments are voluntary, but those who choose the solve them must be prepared to present their solutions orally and be present at the presentation. The laboratory work practically illuminates selected sections of the course. The laboratory work is done in groups of three students 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 is examined through a written exam and differentiated grades are given. To obtain a final grade according to the scale 3, 4, 5, in addition to an approved written exam an approved laboratory report is also required. Good results on the home assignments and attendance at the oral presentations can affect the final grade. The course has a compulsory attendance at the laboratory work.

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

Cannot be included in the degree together with F0030T or M0032T.

Overlap

The course M0011T is equal to MTM118

Course offered by

Department of Engineering Sciences and Mathematics

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0002	Laboratory work	U G#	0.7	Mandatory	A07	
0004	Written exam	G U 3 4 5	6.8	Mandatory	A21	

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 Head Faculty Programme Director Niklas Lehto 2021-02-17

Syllabus established

The syllabus was established by the Department of Applied Physics and Mechanical Engineering 2007-02-28, and remains valid from autumn 2007.