



## Course syllabus

Faculty of Technology

Department of Mechanical Engineering

1MT003 Hållfasthetslära, 7,5 högskolepoäng

Solid Mechanics, 7.5 credits

### **Main field of study**

Mechanical Engineering

### **Subject Group**

Mechanical Engineering

### **Level of classification**

First Level

### **Progression**

G1F

### **Date of Ratification**

Approved 2009-12-15

Revised 2020-06-12 by Faculty of Technology. Literature list is revised.

The course syllabus is valid from autumn semester 2020

### **Prerequisites**

General entry requirements and Mathematics 3c, Physics 2 or Mathematics D, Physics B (Field-specific entry requirements 8/A8). Mechanics, 7,5 credits or equivalent.

## Objectives

After completing the course the student shall be able to:

- Define and explain concepts in solid mechanics
- Identify appropriate models and be aware of different assumptions in connection to analyses of mechanical structures
- Use relations and principles in solid mechanics to calculate and present solutions to structural mechanics problems
- Apply engineering presentation principles in laboratory reports and/or homework assignments

## Content

The course comprises the following elements:

- Stresses and strains
- Axially loaded structural elements
- Torsion of beams
- Bending of beams
- Three-dimensional stress and strain states
- Buckling

### Type of Instruction

The teaching consists of lectures, laboratories, and exercises. Participation in the laboratories is mandatory and these are documented in a report.

### Examination

The course is assessed with the grades U, 3, 4 or 5.

The examination consists of two parts, the report of the laboratory work and a written examination. The report of the laboratory work (1 credit) is assessed as failed or passed. The written examination (6,5 credits) is assessed with the grades U, 3, 4 or 5.

Both parts must be approved before the course is passed. The final grade is then given by the grade of the written examination.

### Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

### Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: This course cannot be part of a degree in combination with another course in which the content fully or partly correspond to the content of this course.

### Required Reading and Additional Study Material

#### **Required reading**

Barry J. Goodno, James Gere, 2018, Mechanics of Materials, SI Edition, 9th Edition, CENGAGE Learning Custom Publishing, latest edition

Stefan Björklund, Göran Gustafsson, Lennart Hågeryd, Bengt Rundqvist, 2015, Karlebo Handbok, Lieber förlag, latest edition

Sundstöm B (ed.): Handbok och Formelsamling i Hållfasthetslära, Institutionen för Hållfasthetslära, KTH, Stockholm, latest edition

Graphing calculator including manual: Texas TI-84 Plus CE or equivalent