



Course syllabus

Faculty of Technology

Department of Mechanical Engineering

4MT317 Kontinuummekanik, 4,5 högskolepoäng

Continuum mechanics, 4.5 credits

Main field of study

Mechanical Engineering

Subject Group

Mechanical Engineering

Level of classification

Second Level

Progression

A1N

Date of Ratification

Approved 2018-11-26

Revised 2020-01-08 by Faculty of Technology. Review of literature.

The course syllabus is valid from autumn semester 2020

Prerequisites

Basic eligibility for advanced level studies and special eligibility:

- Algebra and Analysis corresponding to 22,5 credits in Mathematics.
- English B/English 6 or equivalent.

Objectives

After completing the course the student shall be able to:

- explain the benefits and limitations of continuum mechanics
- give examples of physical phenomena that can be analysed using continuum mechanics
- apply the basic principles of tensor algebra for solving physical problems
- describe the ingredients of the mathematical formulation of kinematics
- describe the balance laws and governing equations used for modelling solids and fluids.

Content

The course comprises the following elements:

- Tensor analysis
- Kinematics of solids and fluids
- Balance laws and governing equations
- Constitutive equations

Type of Instruction

The teaching consists of lectures, exercises, and assignments. P

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

The examination consists of two parts, the report of the assignments (1,5 credit) and a written examination (3 credits). Both parts must be approved before the course is passed. The final grade is then given by the grade of the written examination.

Repeat examination is offered in accordance with Local regulations for courses and examination at the first and second-cycle level at Linnaeus University.

If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to give a customized exam or to have the student conduct the exam in an alternative way.

Course Evaluation

During the implementation of the course or in close conjunction with the course, a course evaluation is to be carried out. Results and analysis of the course evaluation are to be promptly presented as feedback to the students who have completed the course. Students who participate during the next course instance receive feedback at the start of the course. The course evaluation is to be carried out anonymously.

Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material

J.N. Reddy, *An Introduction to Continuum Mechanics*, Cambridge University Press, 2013, 2nd ed. or later, 450 pages