SG2214 Fluid Mechanics 7.5 credits

Strömningsmekanik

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

The course syllabus is valid from Spring 2022 according to the school principal's decision: S-2022-0529 Decision date: 2022-02-24

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Completed BSc course in fluid mechanics and completed BSc thesis.

English B / English 6

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

1. The student should be able to identify, apply and/or present derivations of mathematical models of fluid mechanical phenomena and make relevant approximations.
2. The student shall for simplified cases be able to apply the derived models (numerically or theoretically) and be able to interpret the result.
3. The student should show an ability to relate obtained data, observed phenomena and processes in a laboratory environment to the theoretical description of fluid mechanics.
4. The student should get a fundamental preparation in order to be able to work with fluid mechanical problems as an engineer.

Course contents

Introduction, tensors, kinematics. Continuum mechanical conservation laws for mass, momentum and energy. Laminar viscous flow. Laminar boundary layers. Vorticity dynamics. Two-dimensional irrotational flow. Introduction to turbulent flow.

Examination

- INL1 - Assignments, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

INL1: Written assignments and participation and reporting of laboratory exercise

TEN1: Written exam.

Examiner decides, in consultation with KTH's coordinator for students with disability (Funka), about any adapted examination for students with documented, permanent disability. The examiner may allow another examination form when re-examining individual students.

Other requirements for final grade

- INL1, Assignments/laboratory exercise, 3,0 hp, P/F
- TEN1, Examination, 4,5 hp, A-F

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.