SG1217 Fluid Mechanics, Basic Course 6.0 credits

Strömningsmekanik, grundkurs

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

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

Establishment

Course syllabus for SG1217 valid from Autumn 2007

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Course participants are assumed to have successfully completed their first year of studies in Vehicle Engineering, or equivalent courses.

Language of instruction

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

Intended learning outcomes

To introduce fundamental concepts and phenomena in Fluid Mechanics. The course provides a foundation for further studies in the third and fourth years of the degree programme.

Course contents

Hydrostatics. The kinematics of fluid flow. Streamlines and particle paths. Dimensional analysis. Inviscid incompressible flow. Bernoullis law. Control-volume formulations of the continuity and momentum equations. The stream function for two-dimensional flow. Irrotational flow and the velocity potential. Viscous flow: laminar and turbulent flow in channels and boundary layers.

Practicals

Two obligatory practical exercises are carried out by students in groups of four.

Project

Students are required to carry out a project in which they study two-dimensional flow round a wing profile and determine the lift on the wing.

Course literature

Nakayama & Boucher, “Introduction to Fluid Mechanics”, Butterworth-Heineman, 1999.

Warhaft, “An Introduction to Thermal-Fluid Engineering; The Engine and the Atmosphere”, Cambridge Univ. Press, 1997.

Examination

- KON1 - Control Test, 1.5 credits, grading scale: P, F
- KON2 - Control Test, 1.5 credits, grading scale: P, F
- PRO1 - Project, 2.2 credits, grading scale: P, F
- TEN1 - Examination, 0.8 credits, grading scale: P, 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.

Other requirements for final grade

Written tests (3 university credits cr).
Practical and project (2,2 university credits).
Written examination (0,8 university credits).

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.