SG2211 Vehicle Aerodynamics 6.0 credits

Fordonsaerodynamik

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

Establishment

The course syllabus is valid from Spring 2025 according to the school principal's decision: S-2024-1590 Decision date: 2024-10-15

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Completed courses in Basic Fluid Mechanics, at least 4 credits.

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

The course is meant to give the students an introduction and an enhancement of their knowledge of fluid mechanics applied in the area of vehicle engineering. Different methodologies for the evaluation of the aerodynamic forces will be introduced. At the end of the course the students should be able to analyse and criticise present solutions and make an attempt of a good aerodynamic design.

Course contents

Overview and review of physical fundamentals of Fluid dynamics. Boundary layers and vorticity. Fluid mechanics of aerodynamic bodies. Bluff body aerodynamics. Aerodynamic forces on road vehicles; their evaluation and possible strategies for their control. Design aspects of external and internal flows in vehicles. During the course seminars will be given on experimental and numerical methods in vehicle aerodynamics, aerodynamics of high-performance cars and aerodynamics of commercial vehicles.

Examination

- PRO1 - Project, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 2.2 credits, grading scale: P, F
- LAB1 - Laboratory Work, 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.

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

One written exam (TEN1; 2,2 credits), written project (PROJ; 3 credits), laboratory work (LAB1; 0.8 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.