SD2809 Computational Aerodynamics Design of Aircraft 6.0 credits

Aerodynamiska beräkningar för design av flygplan

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

Establishment

The official course syllabus is valid from the spring semester 2026 according to the Director of First and Second Cycle Education: HS-2025-1185.. Date of decision: 2026-05-19.

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Completed degree project at Bachelor's level with a major in technology.

Completed course in fluid mechanics.

English B / English 6

Intended learning outcomes

After completing the course, a student should be able to:

- Describe the fluid mechanics laws that underlie the Navier-Stokes equations.
- Apply appropriate numerical methods for solving flow problems
- Describe the numerical foundations of fluid mechanics calculations
- Describe basic relationships and performance for different aircraft concepts.
- Perform a conceptual design of an aircraft using a commercial software.

Course contents

The course covers the following topics:

- Compressible Navier-Stokes equations and their solution with basic CFD
- Aerodynamics for aircraft with a focus on transonic flow
- Application of the chain from geometry management, mesh generation, CFD calculations, aerodata

Examination

- TEN1 - Written exam, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Assignments, 3.0 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.

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.