



# SG2214 Fluid Mechanics 7.5 credits

## Strömningsmekanik

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Course syllabus for SG2214 valid from Autumn 08

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

**Grading scale:** A, B, C, D, E, FX, F

**Education cycle:** Second cycle

**Main field of study:** Mechanical Engineering

### Intended learning outcomes

#### Course main content

The student should be able to

- derive the Navier-Stokes equations and explain the meaning of its terms, including the stress and deformation rate tensors
- describe the method of transferring from compressible to incompressible equations
- compute the flow field for a number of so called exact solutions
- derive the vorticity equation and give a physical explanation of its terms
- use the concepts of stream function, velocity potential and apply the Bernoulli equation
- discuss the principles of and derive the boundary layer approximation of the Navier-Stokes equations, and to give self similar solutions of these equations including simple thermal boundary layers
- describe the phenomena of separation of streamlines.

#### Language of instruction

Language of instruction is specified in the course offering information in the course and programme directory.

#### Eligibility

Compulsory courses of the main programmes at F or T and for F SG2223 is recommended. Alternatively compulsory courses at B and M and in addition 5B1304 and 5C1921.

#### Literature

To be announced at course start. In 06/07: Kundu & Cohen, Fluid Mechanics, Academic Press, 2002.

#### Examination

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

#### Requirements for final grade

Homework assignment (INL1; 3 cr)

Exam (TEN1; 4,5 cr.)