SG2225 Fluid Mechanics Continuation Course 4.0 credits

Strömningsmekanik fortsättningskurs

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

Establishment

Course syllabus for SG2225 valid from Autumn 2012

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

No special prerequisites apart from mandatory courses within the basic F-program.

Language of instruction

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

Intended learning outcomes

- The student should be able to formulate mathematical models of fluid mechanical problems including heat exchange and make relevant approximations of fluid phenomena.
- The student should apply these models for simple cases and interpret the results.
- The student should gain some skill in carrying out fluid mechanical computations.

Course contents

The student should be able to

- Derive the energy and heat transport equations for fluid mechanic problems.
- Derive Kelvins circulation problem and the vorticity equation.
- Master classical potential theory including Kutta-Jukowskis theorem.
- Compute the flow field for a number of so called exact solutions.
- Understand fluid mechanics problems at high Reynolds numbers.
- Carry out a simple simulation of flow.

Disposition

Seven two-hour lectures, five two-hour exercises and a lab exercise. The lab exercise is presented at a two hour seminar.

Course literature

Kundu & Cohen, Fluid Mechanics, Academic Press, 2008.

Lecture notes and lab manual.

Examination

- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Lab Exercise, 1.0 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.

- LAB1 - Lab Exercise, 1.0 credits, grade scale: P, F
- TEN1 - Examination, 3.0 credits, grade scale: A, B, C, D, E, FX, F

Other requirements for final grade

(TEN1; 3 credits), (LAB1; 1 credit). Examination testing skills in solving problems and applying mathematical methods. Completed lab exercise and lab report.

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.