FSG3112 Turbulence 9.0 credits

Turbulens

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

Establishment

Course syllabus for FSG3112 valid from Autumn 2009

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

SG2214 Fluid Mechanics, or equivalent.

Language of instruction

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

Intended learning outcomes

The primary aim of the course is to give the students an overview of turbulent flow and turbulence.

After completing the course a student should be able to;

- use statistical methods to describe and analyse turbulent flow,

- describe and explain the lengthscale structure of turbulence, and
- use an understanding of turbulence to describe the strengths and weaknesses of common CFD models for turbulent flow.

Course contents

Fundamental phenomena and concepts. Statistical methods. Shear-flow turbulence and the turbulent boundary layer. CFD models for turbulent flow. The theory of isotropic and homogeneous turbulence.

Course literature

Recommended course book; “Turbulent Flows” by S.B. Pope (CUP, 2000).

Alternative; Ch. 13, “Turbulence”, in “Fluid Mechanics” by Kundu & Cohen (Elsevier, 2004).

Examination

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.

Other requirements for final grade

Practical laboratory exercise; homework; and a written test or oral examination. Doctoral students should carry out and present a short literature project.

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.