SD2165 Acoustical Measurements 8.0 credits

Akustiska mätningar

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

Establishment

Course syllabus for SD2165 valid from Autumn 2007

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

Basic courses in mathematics, mechanics.

Language of instruction

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

Intended learning outcomes

The aim of the course is to teach students basic knowledge of sound and vibration measurements as well as analyses. Students will learn the ability to handle common acoustical measurements and to design new experiments in their future work.

After the course students shall be able to:

- Perform standard measurements in acoustics and in vibration, understand physics behind the measurements.
- Design new measurements according to requirement
- Criticize and find possible problems in measurements

Course contents

The course consists of theoretical and practical parts. In the theoretical part, students will learn basics of measurement techniques and the physics behind, principles of sensors, error analysis and the ways to reduce measurement errors, and the relevant International Standards. On the practical side, students will carry out around six experiments covering the following topics:

- Basic acoustic measurements, influence of environment
- Sound power measurements: sound pressure and sound intensity methods
- Air-borne and structure-borne sound transmission loss
- Basic vibration measurements, influence of the sensors
- Sound absorption and surface acoustic impedance
- Reverberation time and different ways to measure structural loss factor

Course literature

Compendium: Acoustical Measurements by Leping Feng. KTH Aeronautical and Vehicle Engineering.

Selected chapters from Handbook of Acoustical Measurements and Noise Control (3rd Ed.) by Cyril M. Harris (editor)

Selected chapters from Acoustical Measurements by Leo L. Beranek

Examination

- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 5.0 credits, grading scale: A, B, C, D, E, FX, 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.

Other requirements for final grade

Lectures and home assignments – written tests (TEN1; 3 university credits)
Laboratory work – attend all lab exercises and submit reports (LAB1; 5 university 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.