DT2400 Electroacoustics 7.5 credits

Elektroakustik

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

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for DT2400 valid from Autumn 2008

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

Language of instruction

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

Intended learning outcomes

Participants should be able to

- use acoustic fundamentals to calculate e.g. sound level, reverberation time and directivity,
- describe different transducer principles and their relation to the transducer's mechanical impedance and acoustical radiation properties in loudspeakers and microphones,
- use analogies between the electrical, mechanical and acoustical domains to draw and analyze equivalent diagrams for electro-acoustical systems,
- design boxes and horns for electro-dynamic loudspeaker drivers,
- give an overview of analog methods for storage of sound,
- describe the differences between techniques for ultrasound and the technique used for audible frequencies,
- describe the limitations of hearing, in particular those relevant to design of reproduction systems.

Course contents

The hearing and its limitations. General theory for sound waves. Mechanical and acoustical impedances. Analog electrical diagrams mechanical and acoustical systems. The equations for electromechanical two-ports. Loudspeakers and microphones. Mechanical, optical and magnetical recording of sound. Ultrasound technology. Methods of measurement.

Course literature

Liljencrants J., Granqvist S.: Kompendium i Elektroakustik, KTH 2004, (in Swedish), with exercises.

Examination

- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 6.0 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.

Other requirements for final grade

Approved written examination and practical laboratory course.

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.