SD2166 Building Acoustics and Community Noise 7.5 credits

Byggnadsakustik och samhällsbuller

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

The course syllabus is valid from HT24 according to the school principal's decision: S2023-2096 Decision date: 2023-12-14

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Completed degree proeject on Bachelor level with a major in technology. Basic mathematics in Calculus in One Variable, Calculus in Several Variables and algebra and geometry of at least 22.5 credits and knowledge of differential equations of at least 7.5 credits and Noise and Vibration Control of at least 6 credits.

English B/ English 6

Language of instruction

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

Intended learning outcomes

Students will, after passing the course,

1. Be aware of the main features of the hearing system and how sound is experienced
2. Know and be able to use space acoustic terminology
3. Be able to formulate and execute calculations of basic building acoustic problems eg sound insulation and how this is affected by walls, floor joints, resonances, windows, etc.
4. Implement methods for calculating traffic noise
5. Know the causes of current guidelines for noise, such as annoyance and medical reasons
6. Be able to explain how soil vibration and vibrations in buildings arise, reproduce and calculate

Course contents

The course aims at the students to have knowledge of building acoustics, its causes and consequences, as well as the ability to implement basic planning with regard to noise issues in construction projects. During the course, students will learn the basic knowledge of building acoustics, explain the guidelines for different sources of noise and explain why they exist.

Areas involved within the course include:

1. Perception of sound, different measurements and measurement methods
2. Room acoustics, sound propagation, reflexes, reverberation time, etc.
3. Building acoustic foundamental knowledge, sound insulation and how this is affected by walls, floor joists, resonances, windows, etc.
4. Traffic noise, how sounds from different of traffic sources are calculated and modified with e.g. noise screens
5. Community noise fundamental knowledge, WHO's Research Compilations, Guidelines, Health Impact, etc.
6. Ground vibrations and vibrations in buildings

Examination

- TEN1 - Exam, 7.5 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.

TEN1 - Skriftlig tentamina

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.