



**LUNDS UNIVERSITET**  
Lunds Tekniska Högskola

*Course syllabus*

# Ljud i byggnad och samhälle

## Sound in Building and Environment

**VTAF01, 7,5 credits, G2 (First Cycle)**

**Valid for:** 2023/24

**Faculty:** Faculty of Engineering, LTH

**Decided by:** PLED V

**Date of Decision:** 2023-03-21

### General Information

**Main field:** Technology.

**Elective Compulsory for:** V3

**Language of instruction:** The course will be given in Swedish

### Aim

The aim of the course is to give the students knowledge in the foundations of sound and its effect on human, applied to problems with noise in buildings and environment.

### Learning outcomes

*Knowledge and understanding*

For a passing grade the student must

- Be able to explain basic acoustic concepts.
- Be able to explain how sound arises, spreads and is perceived by human, as well as how it affects health and well-being.
- Be able to account for common standardized measurement methods.
- Be able to give an account of current requirements regarding noise in society.
- Be able to give an account of measures to reduce the impact of noise in society.
- Be able to explain basic principles regarding sound transmission through walls and floor.

*Competences and skills*

For a passing grade the student must

- Be able to perform airborne sound insulation measurements of between rooms through walls and floors according to standardized methods.

- Be able to perform sound absorption measurement according to a standardized method.
- Be able to propose measures to achieve desired acoustic properties in rooms.
- Be able to plan, analyze and report on community noise measurements.
- Be able to summarize the results of completed measurements in report form.
- Analyze and interpret results from calculations and measurements.

## Contents

The course deals with the fundamentals of acoustics and introduces basic concepts and phenomena in acoustics such as sound level, frequency, spectrum, noise, sound effect, diffraction, interference, absorption and sound insulation.

### *Theory content*

- Fundamental acoustic concepts and phenomena
- The effect of sound on humans
- Regulations regarding community noise
- Sound propagation outdoors: Noise from traffic and industry
- Sound insulation: Calculation and measurement for walls and floors
- Room acoustics: Calculation and measurement of sound absorption and reverberation time

### *Laboratory work*

The course includes two mandatory labs. Examples of laboratories are:

1. Measurement of sound insulation for walls and floors according to standardized methods.
2. Measurement of reverberation time and sound absorption according to standardized methods.

### *Project task*

A project assignment that has to be presented both in writing and orally is mandatory. The project assignment is graded. Examples of project tasks are:

- Noise level outdoors.
- Room acoustic design.

## Examination details

**Grading scale:** TH - (U,3,4,5) - (Fail, Three, Four, Five)

**Assessment:** Approved written exam, a project assignment reported in writing and orally and an approved laboratory work. The course is graded based on results from the project assignment and the exam result.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

## Admission

**The number of participants is limited to:** No

The course overlaps following course/s: VTA070

## **Reading list**

- E. Nilsson: Grundläggande akustik. 2023.

## **Contact and other information**

Course coordinator: Kent Persson, [kent.persson@construction.lth.se](mailto:kent.persson@construction.lth.se)

Course homepage: <http://www.akustik.lth.se/utbildning/kurser/>