



Course syllabus

Faculty of Technology

Department of Building Technology

4BY111 Byggnadsakustik och vibrationer, 7,5 högskolepoäng

Building Acoustics and Vibrations, 7.5 credits

Main field of study

Civil Engineering

Subject Group

Building Technology

Level of classification

Second Level

Progression

A1N

Date of Ratification

Approved by Faculty of Technology 2016-06-20

The course syllabus is valid from spring semester 2017

Prerequisites

Bachelor of Science within the field of civil engineering. Applicants who do not have the formal requirements may be validated as qualified by the program directors by showing that they have relevant working experience. Two years relevant working experience equal one year studies at university level.

Objectives

After completing the course the student will be able to:

- exemplify different sounds and vibrations
- predict how different building structure affect sound transmission
- apply different standards on acoustics and vibrations in buildings
- execute and analyze a dynamic vibration measurement and evaluate its results

Content

The course includes the following issues:

- What is noise and vibrations
- Differences in between impact sound and footfall noise
- The difference between direct sound and flanking transmission
- Methods of measurement and analysis of air-borne or structure-borne sound according to Swedish standards
- Time to frequency domin
- Mass, stiffness and damping
- How do different dynamic properties influence the spread of impact noise
- Measurement and analysis of acoustics and vibrations
- Experimental modal analysis

- Experimental modal analysis

Module 1 0 credits

Type of Instruction

Lectures, laboratory work and study visits.

Examination

The course is assessed with the grades Fail (U) or Pass (G).

Examination and grading is based on written submission of the report.

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

Required Reading and Additional Study Material

Required reading

Anders Brandt, *Noise and Vibration Analysis: Signal Analysis and Experimental Procedures*, Wiley, latest edition. 464 pages.

Osama A. B Hassan, *Building Acoustics and Vibrations - Theory and practice*, Umeå University, Word Scientific Publishing, latest edition. 972 pages.

H Bodén, U Carlsson, R Glav, H. P. Wallin och M. Åbom, *Ljud och Vibrationer*, Marcus Wallenberg Laboratoriet för Ljud- och Vibrationsforskning, latest edition. 409 pages.