

Human Response to Sound and Vibration (HRSV)

Master's Program
Quarter 3: 2025
Completed course gives 7.5 credits

Organization: The schedule for the various lectures is shown to the right. Lab work is compulsory.

Lectures: On-Campus lectures will be given on human response to sound and vibration, annoyance, sound quality, statistics, and experimental planning. (See schedule). Lectures take place at the lecture hall of the Division of Applied Acoustics (TA, Sven Hultins Gata 8A).

Lecturer:
Prof. Roland Sottek, roland.sottek@chalmers.se

Course management: Roland Sottek, Wolfgang Kropp

Lab work management: Leon Müller, leon.mueller@chalmers.se

Exam: Grades depend on the quality of the submitted, compulsory, individually written home tasks (for home assignments part 1 and part 3 work in groups of four/five including a contribution report, part 2 is an online quiz) and presentations from 13-14 March. Final feedback to the home assignments will be given via zoom in week 12. The home assignments should be submitted via Canvas.

Deadline home assignments: 24 January – 07 February 18:00 (part 1: HA 1), 19 February 18:00 (part 2: HA 2) and 20 February – 05 March 18:00 (part 3: HA 3).

Course literature: Papers published continuously online.

Books:

- H. Fastl, E. Zwicker: Psychoacoustics. Facts and Models, Springer Verlag Berlin Heidelberg, 2006.
- B. C. J. Moore: An Introduction to the Psychology of Hearing, Academic Press, 1997.
- J. Blauert: Spatial Hearing, MIT Press, 1997.

The books by Moore, and Zwicker & Fastl will be available for lending by the Division for use during the course. You are not allowed to print copyrighted material.

Lab work: Lab work is compulsory. Lab tasks will not be repeated later. The lab tasks serve as a preparation for the home exams.

Gothenburg, 13 January 2025

Tentative schedule

Date	Time	Activity	Room	Contents
20.01.	09.00-11.45	Lecture 1	TA	General Introduction to Psychoacoustics, Introduction to Sound Walks Basics of Data Acquisition
	13.15-16.45	Lab 1	TA	Sound Walks in 4 Groups (Please wear warm clothes!)
21.01.	09.00-11.45	Lecture 2	TA	Introduction to Soundscapes and Environmental Noise Introduction to ArtemiS / Basic Analyses and Techniques (incl. Setup of Hard- and Software)
	13.15-15.00	Lab 2	TA	Analysis of Sound Walks, Preparation of Home Assignment 1, Individual Questions and Answers

(additional time for consultation and statistic lecture is not yet included)

31.01.	09.00-11.45	Lecture 3	TA	Introduction to Psychoacoustics continued, Overview of Acoustics and Introduction to Signal Processing
	13.15-15.00	Lab 3	TA	ArtemiS: Basic and Advanced Analyses
03.02.	09.00-11.45	Lecture 4	TA	Physiology of Human Hearing, Loudness Perception and Modeling
	13.15-15.00	Lab 4	TA	Project Work (Acoustic and Psychoacoustic Analyses)
04.02.	09.00-11.45	Lecture 5	TA	Further Psychoacoustic Parameters, Psychoacoustic Calculation Models
	13.15-15.00	Lab 5	TA	Project Work (Acoustic and Psychoacoustic Analyses)
05.02.	09.00-11.45	Lecture 6	TA	Perception and Modeling of Modulated Signals, Pattern Recognition Introduction to Binaural Hearing and Binaural Technology

	13.15-15.00	Lab 6	TA	Project Work (Acoustic and Psychoacoustic Analyses)	13.03.	09.00-11.45	PowerP.	TA	Presentation (HA 1, All Groups)
						13.15-15.00	PowerP.	TA	Presentation (HA 2, All Groups)
14.02.	09.00-11.45	Lecture 7	TA	Introduction to Jury Testing	14.03.	09.00-11.45	PowerP.	TA	Presentation (HA 3, All Groups)
	13.15-15.00	Lab 7	TA	Jury Testing		13.15-15.00	Discussion	TA	Discussion and Feedback
17.02.	09.00-11.45	Lecture 8	TA	Design of Jury Tests with SQala					
	13.15-15.00	Lab 8	TA	Design of Jury Tests with SQala					
18.02.	09.00-11.45	Lecture 9	TA	Introduction to Product Sound Quality, Metric Development					
	13.15-15.00	Lab 9	TA	Preliminary feedback to Home Assignment 1 Preparation of Home Assignment 3, Individual Questions and Answers					

(additional time for consultation and support for jury tests (HA 3) is not yet included)

28.02.	10.00-11.45	Lecture 10	TA	Psychoacoustic future begins – Sottek Hearing Model Loudness, Tonality, Roughness, Fluctuation Strength, and in Order Domain (Part 1)
	13.15-15.00	Lab 10	TA	Application of the Sottek Hearing Model (Part 1)
03.03.	09.00-11.45	HA 3	TA	Work on Home Assignment 3 in Groups Consultation
	13.15-15.00	HA 3	TA	Work on Home Assignment 3 in Groups Consultation
04.03.	10.00-11.45	Lecture 11	TA	Psychoacoustic future begins – Sottek Hearing Model Loudness, Tonality, Roughness, Fluctuation Strength, and in Order Domain (Part 2)
	13.15-15.00	Lab 11	TA	Application of the Sottek Hearing Model (Part 2)

(additional time for consultation is not yet included)