

Audio Technology and Acoustics
VTA 137
Chalmers International Master's Program in Sound & Vibration
Quarter 1: 2023/2024 Syllabus
Completed course gives 7.5 ECTS credits

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Course literature: As stated on the last slide of the different slide decks plus excerpts from **Mendel Kleiner's *Audio Technology & Acoustics (3rd edition)***, list of equations and lecture notes. The book by Mendel Kleiner, *Audio Technology & Acoustics* is sold by Cremona at Chalmers kårhus. It is also accessible for online reading with a Chalmers IP address. See the course website at www.ta.chalmers.se/education/course-materials/audio-technology-and-acoustics/.

Schedule: Lectures and in-class exercises according to the attached schedule.

Lecture room: The lectures (L**) and exercises (E**) will take place in the lecture room at the Division of Applied Acoustics, Sven Hultins gata 8a.

Exercise classes: You have to prepare exercises for each exercise class (except the first one) and tick them on a list in the beginning of the class. Ticking an exercise means that you are prepared to explain your solution in class.

Calculation sessions: To help you with the preparation of the exercises, there will be voluntary calculation sessions, where you can work on the problems in the classroom while the course assistant is available for questions (Mondays 15:15-16:15, Thursdays 9-10, with start Sep 7, in the lecture room at the Division of Applied Acoustics, Sven Hultins gata 8a).

Exam: The exam will take place on Oct 24, 8:30:13:30. **Remember to register for the test!** The duration is 5 hours. A typical test consists of 1–2 essay tasks and 4–5 problems (6 in total). Correct solutions are awarded 5 points per task. The following aids are allowed at the test: Mathematical tables, electronic calculators without text memory and our list of equations for the course (without self-written notes). A minimum of 12 points is required for a passing grade, as well as having ticked 60% of the exercises in the exercise classes.

Changes since last year: Exercise tasks will be published one day earlier.

Administrator's office hours for students: The division's administrator is Susanne Petterson. Phone: 772 6102. E-mail: susanne.petterson@chalmers.se.

Date	Activity	Day	Time	Who	Contents
Aug 29	L1	Tue	13-15	AP	Introduction. Basic concepts: harmonic oscillations, acoustic variables, levels (Ch.1/2)
Aug 31	L2	Thu	13-15	AP	Basic concepts (cont.): frequency domain representation, wave equation and solutions (Ch.1/2)
Sep 1	E0	Fri	13-15	LM	Ch.1/2
Sep 5	L3	Tue	13-15	AP	Basic concepts (cont.): wave equation and solutions (cont.)(Ch.1/2)
Sep 5	E1	Tue	15-17	LM	Ch.1/2
Sep 7	L4	Thu	13-15	AP	Basic concepts (cont.): reflection and transmission (Ch.1/2)
Sep 8	E2	Fri	13-15	LM	Ch.1/2
Sep 12	L5	Tue	13-15	JA	Psychoacoustics: The ear, hearing, binaural hearing, listening, voice and speech (Ch.3)
Sep 12	E3	Tue	15-17	LM	Ch.1/2
Sep 14	L6	Thu	13-15	AP	Room acoustics: geometrical, statistical and physical approaches. (Ch.4)
Sep 15	E4	Fri	13-15	LM	Ch.1/2 + Ch.3
Sep 19	L7	Tue	13-15	AP	Room acoustics (cont.)
Sep 19	E5	Tue	15-17	LM/VR	Ch.3+Ch.4
Sep 21	L8	Thu	13-15	PT	Room acoustics and human hearing (Ch.5). Acoustical planning of listening spaces (Ch.6)
Sep 22	E6	Fri	13-15	VR	Ch.4
Sep 26	L9	Tue	13-15	AP	Sound absorbers (Ch.7), Wave propagation in solids (Ch.8). Sound generation and radiation (Ch.9)
Sep 26	E7	Tue	15-17	VR	Ch.4 + Ch.5/6
Sep 28	L10	Thu	13-15	AP	Sound insulation (Ch.10)
Sep 29	E8	Fri	13-15	VR/CJ	Ch.5/6 + Ch.7
Oct 3	L11	Tue	13-15	JA	Audio 1: Audio Signals
Oct 3	E9	Tue	15-17	CJ	Ch.7 +Ch.8/10
Oct 5	L12	Thu	13-15	JA	Audio 2: Microphones and sound recording (Ch.12)
Oct 10	L13	Tue	13-15	JA	Audio 3: Loudspeakers and sound reproduction (Ch.14)
Oct 10	E10	Tue	15-17	CJ	Ch.8/10 + Ch.12
Oct 12	L14	Thu	13-15	JA	Audio 4: Mixing consoles, digital audio workstations and audio effects
Oct 13	E11	Fri	13-15	CJ/LM	Ch.12 + Ch.14
Oct 17	E12	Tue	15-17	LM	Ch.14 + Exam preparation
Oct 19		Thu	13-15	AP/JA	Consultation time
Oct 20	E13	Fri	13-15	LM	Exam preparation

Note 1: **The "chapter" numbers mentioned for the classroom exercises above refer to Kleiner's *Audio Technology & Acoustics (3rd edition)* book chapters.**