MA1-Audio Engineering
Presentation of the semester

H. Lissek

EPFL
Laboratory of Wave Engineering LWE

September 10, 2025

Semester outline - Part I: Perception of sound and room acoustics

I-Introduction to physical acoustics (reminder)

- Visit of the acoustics facilities
- Introduction to acoustics (reminder of usual definitions and orders of magnitudes)

II-Hearing

- The auditory system
- An introduction to Psychoacoustics
- Noise and its effects

III-Room acoustics

- Wave theory of acoustics
- Geometrical room acoustics
- Statistical room acoustics

Semester outline - Part II: Electroacoustics and audio engineering

IV-Electroacoustic analogies: application to transducers and wind instruments

- Reminder on electroacoustic analogies - Application to wind instruments
- Electroacoustic transducers
- Sound radiators
- Acoustic antenna and arrays

V-Microphones and loudspeakers

- Microphones theory and design
- Electrodynamic loudspeakers and enclosures

VI-Introduction to electroacoustic absorption

- Room modal equalization with electroacoustic absorbers

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Organization

Lecture organization:

- delivery of lecture material the week before the class
- (2 or) 3 hours of class (mostly standard one, sometimes flipped lectures)
- 1 (or 2) hour of exercises

Experimental presentation

Regular (virtual) visits of the facilities for live experiments

Lecture support

Acoustics

- **M. Rossi, Audio, PPUR, 2007.**
- V. Martin, *Éléments d'acoustique générale*, PPUR, 2007.
- **J. Blauert and N. Xiang, Acoustic for Engineers, Springer-Verlag, 2009.**
- P. M. Morse, K. U. Ingard, *Theoretical acoustics*, Princeton University Press, 1987.

Room acoustics

- H. Kuttruff, *Room acoustics*, Spon Press, 2009.

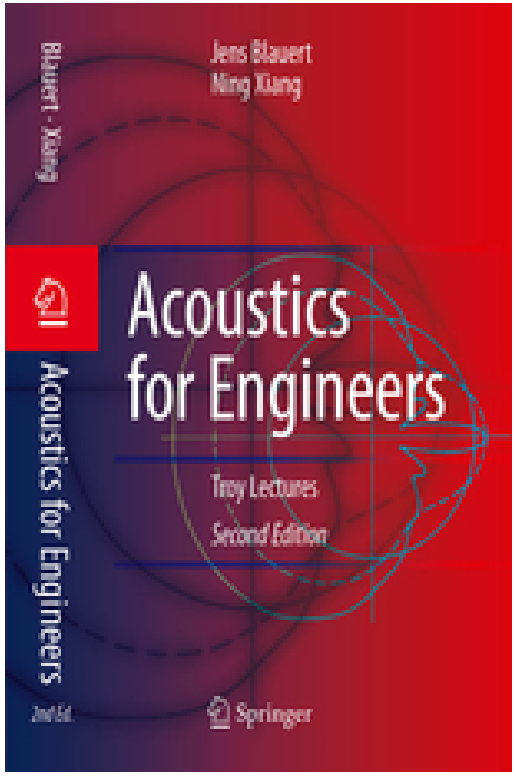
Online support

Weekly updated lecture support (pdf files) on
`http://moodle.epfl.ch/course/view.php?id=14694`

EPFL


MARIO ROSSI
AUDIO
PRESSES POLYTECHNIQUES ET UNIVERSITAIRES ROMANDES


VINCENT MARTIN
ÉLÉMENTS D'ACOUSTIQUE GÉNÉRALE
DE QUELQUES LIEUX COMMUNS DE L'ACOUSTIQUE À UNE PREMIÈRE MAÎTRISE DES CHAMPS SONORES
PRESSES POLYTECHNIQUES ET UNIVERSITAIRES ROMANDES



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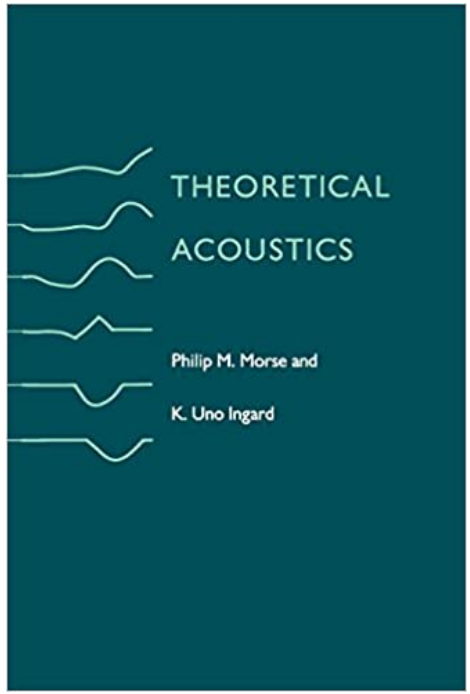
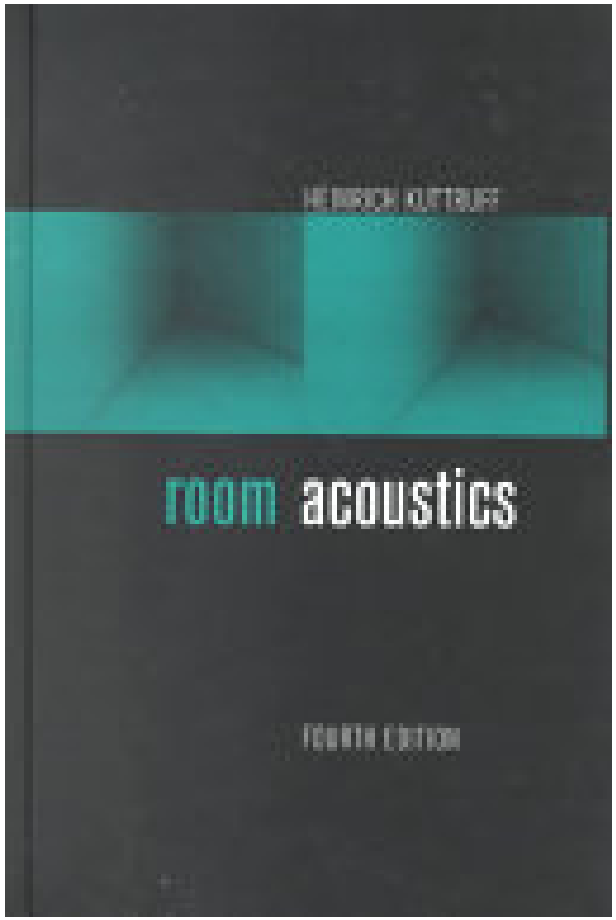

THEORETICAL
ACOUSTICS
Philip M. Morse and
K. Uno Ingard



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