

MA1-Audio Engineering

Presentation of the semester

H. Lissek

EPFL
Laboratoire de Traitement des Signaux LTS2

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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

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.

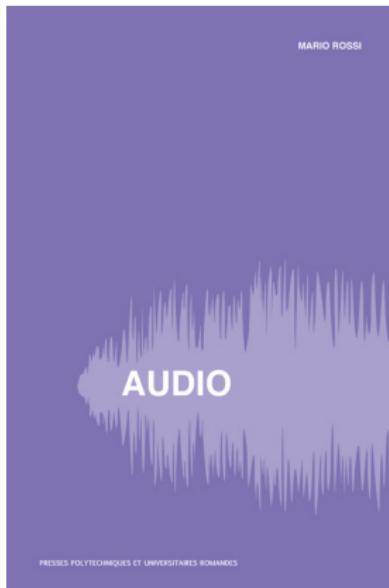
Online support

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

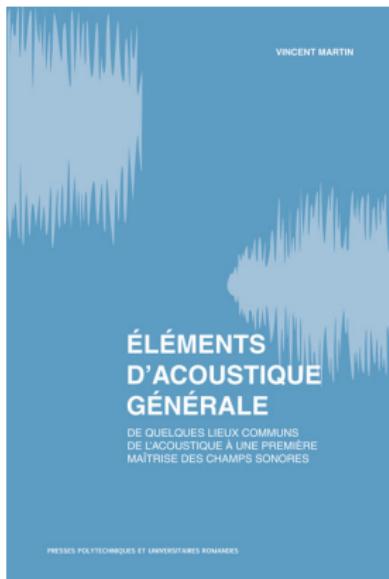
Semester outline
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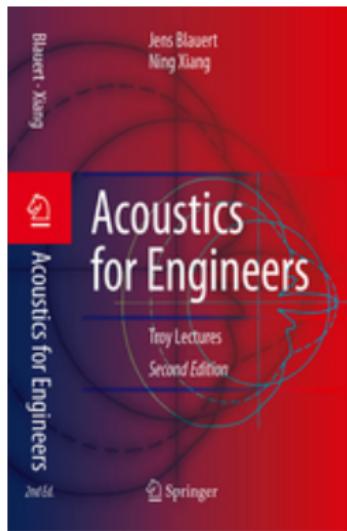
Organization
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Additional information
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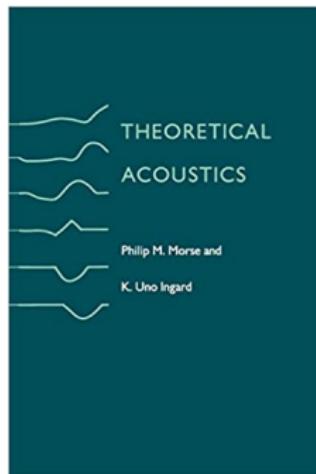


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