

# *Introduction to Acoustics*

1. Quantities describing sound field
2. Basic equations of linear acoustics, wave equation
3. Plane wave, relation between sound pressure and particle velocity
4. Sound pressure level and sound intensity level and their relation
5. Multiple sources, resulting sound intensity level
6. Sound power, sound power level
7. Sound power and sound intensity measurement
8. Measurement of sound pressure level, sound level meter
9. Frequency analysis
10. Equivalent sound pressure level, measurement of time varying sounds (traffic noise measurement)
11. Measurement of vibrations
12. Geometrical and wave acoustics in rooms
13. Statistical acoustics, reverberation
14. Sound absorption and reverberation time (Sabine, Eyring)
15. Measurement of reverberation time
16. Materials for room acoustics (absorbing materials and resonators)
17. Principles of improvement of reverberation time
18. Sound insulation of simple wall
19. Measurement of sound insulation
20. Physiological acoustics, human ear
21. Perception of sound, theory of hearing, threshold contour, equal-loudness contours
22. Psychoacoustics, masking, critical bandwidth
23. Sound quality evaluation
24. Hygiene regulations - principles of setting
25. Principle of noise control - sources of noise
26. Loss mechanisms in solids or liquids.
27. Reflection coefficient of acoustic wave on interface between two solids of differing acoustic impedances.
28. Piezoelectric materials and their characteristics.