

COURSE TITLE:

ACUSTIC AND NOISE CONTAMINATION

COURSE DESCRIPTION:

Scope of the course: After review of the basics of acoustic theories (waves, their generation, and the laws of propagation) the biological and physiological aspects (human ear, hearing, perceptions) are covered. The topics: characteristics of sonic waves (types of waves, intensity), spectrum-analysis (Fourier-analysis, noise, tones) are touched. Acoustic instruments and noise control procedures are taken into consideration, then insight into sound technical and diagnostics application is provided.

Theme of the course: Definitions and basic concepts, wave equations and the solutions (chains, strings, vibrating air columns, beams, plates, membranes vibrations); sound sources, acoustic resonator; similarity of sound spaces, types of waves. Dispersion relations, sound speed, shock waves. Energy relations in acoustics, sound pressure, sound, sound intensity, loudness in dB scale. Sound spreading, refraction, absorption. Boundary layer phenomena, sound insulation, sound insulations. Audio frequency analysis, Fourier analysis, sound spectrum. Clear sound, music, bang, noise. Infrasound, human voice, ultrasound. Acoustic instruments: microphones, sonar, human ear, piezoelectric transceivers. Noise harm, noise protections, noise standards, active noise reductions.

TEACHER:

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