Noise and noise attenuation technologies
(Nikola Holeček, Ph.D., Associate Prof.)

Subjects code: NNAT
Year of Study: 1. or 2.
Lectures: 20
Exercises: 30
ECTS: 6

Contents subjects

- Noise and sound bases
  - Theory of sound waves
  - Frequency, wavelength, speed
  - Sound pressure, speed of particles, sound intensity
  - Energy density, sound power
  - Levels, decibel scale and spectra
- Sense of hearing, influence of noise on people
  - Structure and function of hearing organ
  - Effect of infrasound, low frequency sound and ultrasound on people
- Programme for hearing protection
- Equipment for sound analysis and meter technique
  - Principles of acoustic perception an sorts of microphones
  - Sound-level meter
  - Defining the level of sound power and emissions of sound pressure levels
  - Measurement of sound intensity
  - Searching for sound sources
- Principles of sound reduction and construction of silent devices and machines
  - Identification of sound sources
  - use of sound shields
  - use of sound obstacles
  - use of sound absorption materials
  - active noise attenuation
  - low-noise constructions
- noise arising from gas flow
  - aeroacoustic elementary sources
  - noise from gas jet
  - stiff obstacles in flow and noise on lattices
  - noise absorber
- Noise in industry and machinery – calculations and reductions
  - Noise sources from devices and machines
  - Predicting and reducing noise from vans, engines, pumps...
  - Calculation of sound power levels of various devices and machines

- Noise arising from means of transport - predicting and reduction
    - Noise arising from rolling-stock – generating and measuring
    - Aerodynamic sound sources arising from vehicles
    - Noise coming from aircrafts, airscrew planes, helicopters - calculation and reduction