



subject of PhD studies

Géza Pattantyús-Ábrahám  
Doctoral School of Mechanical Engineering

## SUBJECT DATA SHEET AND REQUIREMENTS

last modified: 20<sup>th</sup> May 2016

### ACOUSTICS I. (PhD)

### AKUSZTIKA I. (PhD)

1	Code	Semester Nr. or fall/spring	Contact hours/week (lect.+semin.+lab.)	Requirements p / e / s	Credit	Language
	BMEGEÁT4A13	1.(2.*) fall/spring	2+0+0	e	3	English

\*: in case of enrolment in fall

#### 2. Subject's responsible:

Name:	Title:	Affiliation (Department):
Dr. János VAD	professor, head	Dept. of Fluid Mechanics

#### 3. Lecturer:

Name:	Title:	Affiliation (Department):
dr. Gábor KOSCSÓ	hon. associate professor	Dept. of Fluid Mechanics

#### 4. Thematic background of the subject:

physics, fluid dynamics, acoustics

#### 5. Compulsory / suggested prerequisites:

Compulsory: -

Suggested: Technical Acoustics and Noise Control (BSc and/or MSc level)

#### 6. Main aims and objectives, learning outcomes of the subject:

The course aims to introduce students to the PhD-level areas of acoustics, according to the individual doctoral research topic and interest, with respect to the following (ch.8.) thematic description, in consultation with the lecturer.

#### 7. Method of education:

lecture 2h/w, and private consultation

#### 8. Detailed thematic description of the subject:

The subject of acoustics, the concept of sound and two-fold nature of sound.

Homogeneous wave equation, the general solution and solution in bounded space, organ pipe and room natural frequencies.

Spherical waves, acoustic resonators, the Helmholtz-resonator and applications.

Sound propagation in ducts, higher order modes, cross section step and termination in tubes.

Simple expansion chamber, sound propagation in tubes of varying cross section.

Ray acoustics.

Energetic relations of acoustic waves, sound pressure, intensity and power.

Point monopole, dipole and quadrupole sound sources, the acoustic source model law.

Flow generated noise, Lighthill's acoustic analogy, inhomogeneous acoustic wave equation.

The attenuation of sound.



## 9. Requirements and grading

### a) in term-period

-

### b) in examination period

Written and/or oral exam. Totally max. achievable 100 scores equal to 100% as base of the final grading. Minimum 40 %.

Grading: 0%-39%: fail(1); 40%-54% pass(2), 55%-69%: satisfactory (3), 70%-84%: good(4), 85%-100%: excellent (5)

c) The students are subject to disciplinary measures against the application of unauthorized means at mid-terms, term-end exams and homework and the application of the 1/2013. (I.30.) Dean's Order must be followed.

## 10. Retake and repeat

Due to the Code of Studies and Exams of BME. Any further movements are due to the Code of Studies and Exams of BME.

## 11. Consulting opportunities:

Consultation hours: by email appointments and as it is indicated on the department's website.

## 12. Reference literature (compulsory, recommended):

- Downloadable materials: [www.ara.bme.hu/oktatas/tantargy/NEPTUN/BMEGEAT4A13](http://www.ara.bme.hu/oktatas/tantargy/NEPTUN/BMEGEAT4A13)

## 13. Home study required to pass the subject:

Contact hours	28	h/semester
Home study for the courses	28	h/semester
Home study for the mid-semester checks	-	h/check
Preparation of mid-semester homework	-	h/homework
Home study of the allotted written notes	20	h/semester
Home study for the exam	28	h/semester
Totally:	90	h/semester

## 14. The data sheet and the requirements are prepared by:

Name:	Title:	Affiliation (Department):
dr. Gábor KOSCSÓ	hon. associate professor	Dept. of Fluid Mechanics

