



**Karolinska  
Institutet**

Course syllabus for

## **Physics and acoustics, 7.5 credits**

Fysik och akustik, 7.5 hp

This course has been cancelled, for further information see Transitional provisions in the last version of the syllabus.

Please note that the course syllabus is available in the following versions:

Spring2008 , Autumn2009 , Autumn2010 , Autumn2011 , Autumn2012 , Autumn2013 , Autumn2014 , Autumn2015 , Autumn2017 , Spring2024

Course code	1AU002
Course name	Physics and acoustics
Credits	7.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Not applicable
Level	GX - First cycle
Grading scale	Pass, Fail
Department	Department of Clinical Science, Intervention and Technology
Decided by	Programnämnden för audionomprogrammet
Decision date	2007-10-04
Revised by	Education committee CLINTEC
Last revision	2017-04-27
Course syllabus valid from	Autumn 2017

## **Specific entry requirements**

Mathematics 2a / 2b / 2c, Natural Sciences 2, Social Sciences 1b / 1a1+1a2 (field specific entry requirements A14). Or: Mathematics B, Natural Sciences B, Social Sciences A (field specific entry requirements 16).

## **Objectives**

The general aims of the course are that the student should acquire the basic knowledge in mathematics and physiology required for later technical courses and parts in the Study Programme in Audiology.

Learning outcomes of the course

On completion of the course, the student should be able to:

- explain basic concepts in mechanics and relate these to basic wave physics and acoustics
- explain basic properties of sound including noise
- understand and explain relationships in simple circuits, and demonstrate knowledge of basic

- electricity safety
- understand the meaning of mathematical formulas and graphs occurring in mechanics, wave physics, acoustics and electricity
- understand, present, and carry out simple physical measurements.

## Content

The course consists of two modules:

**Physiology and acoustics, 6 hp** The course is an overview course that introduces the scientific working method within the subject areas mechanics, wave physics, acoustics and electromagnetism. Specific emphasis is placed on the interpretation of various types of graphs. The mechanics area focuses on concepts like speed, acceleration, force and pressures. The basic wave physics area includes, among other things, knowledge about various types of waves, wave propagation, impedance and phenomena such as resonance and standing waves. The wave physics application within the acoustics is highlighted and concepts like sound production, sound transmission and reflection are presented in the acoustics part where noise and noise control are also included. The electromagnetism area includes basic knowledge of electric circuits, measurement of electric units and electricity security. **Physical measurements, 1.5 hp** This module consists of laboratory sessions with physical measurements within the above fields. The laboratory sessions should be recorded and are presented in tables and graphics. Presentation takes place in the form of submission of written laboratory reports. Furthermore, the part includes calculation exercises in the form of written assignments.

## Teaching methods

Lectures, laboratory sessions, calculation exercises and demonstrations.

Laboratory sessions are compulsory. In case of absence from a compulsory part, the student is responsible for contacting the course coordinator for complementary assignment.

The course coordinator decides how absence from compulsory course elements can be made up. Study results cannot be reported until the student has participated in compulsory course elements or compensated for any absence in accordance with instructions from the course coordinator. Absence from a compulsory course element could mean that the student can not retake the element until the next time the course is offered.

## Examination

Physics and acoustics, 6 credits

Written examination

Physical measurements, 1.5 credits

Individually written laboratory reports

For a Pass grade in the course, attendance and active participation in compulsory parts are also required. Students who do not pass a regular examination are entitled to re-sit the examination on five more occasions. Each time the course is offered, one regular examination and two additional examinations are given. Each occasion the student participates in the same test counts as an examination. Supplementary addition to a written assignment is counted as an examination.

## Transitional provisions

Examination may take place under the previous reading list during a period of one year after the renewal of the reading list. Examination will be provided during a period of two years after a close-down of the course.

## Other directives

The course evaluation will be carried out in accordance with the guidelines established by the Board of education. The course evaluation will be carried out both through a written course evaluation, at the end of the course, and through an oral course forum at least once in connection with the course, where the students may express their opinions.

The course is taught in English.

## Literature and other teaching aids

### Mandatory literature

*Emanuel, Diana C.; Letowski, Tomasz*

#### Hearing science

Philadelphia : Wolters Kluwer Health/Lippincott Williams and Wilkins, c2009 - xv, 335 p.  
ISBN:9780781780476 LIBRIS-ID:10724924

[Library search](#)

Scientific papers and other relevant materials may be added.

*Johansson, C.*

#### Förberedande kurs i matematik för Audionomprogrammet

Stockholm : Hälsohögskolan, 1996 - 72 s

*This booklet was distributed during the introduction course.*

*Jönsson, A; Johansson, C*

#### Tänkesätt inom fysiken

Huddinge : Karolinska Institutet, - 35 s

*This booklet was distributed during the introduction course.*

*Speaks, Charles E*

#### Introduction to sound : acoustics for the hearing and speech sciences

3. ed. : San Diego : Singular Pub. Group, c1999 - xiii, 316 p.

ISBN:1-56593-979-4 LIBRIS-ID:6364449

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