



**Karolinska  
Institutet**

Course syllabus for

# **Speech and Sound - Production and Perception, 10.5 credits**

Tal och ljud - produktion och perception, 10.5 hp

This course syllabus is valid from autumn 2022.

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

[Autumn2015](#) , [Autumn2016](#) , [Autumn2017](#) , [Autumn2018](#) , [Autumn2019](#) , [Autumn2020](#) , [Autumn2021](#) ,  
[Autumn2022](#) , [Autumn2023](#)

Course code	1AU049
Course name	Speech and Sound - Production and Perception
Credits	10.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Audiology
Level	G2 - First cycle 2
Grading scale	Pass, Fail
Department	Department of Clinical Science, Intervention and Technology
Decided by	Programnämnd 4
Decision date	2014-11-05
Revised by	Education committee CLINTEC
Last revision	2022-03-16
Course syllabus valid from	Autumn 2022

## **Specific entry requirements**

For admission to the course, it is required that the student has managed at least 45 HE credits from semester 1-2 and a pass grade in part 1 and 2 from the course Clinical Audiology 1.

## **Objectives**

The general aim of the course is to give the student an introduction to the human communication process from a phonetic, acoustic and auditory perspective. It is also to give the student a basic knowledge in how humans notice and experience sounds, as well as psychoacoustic concepts and methods of measurement.

The expected learning outcomes of the course

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

- describe and explain basic concepts in phonetics

- describe and identify vowels and consonants, both articulatory and acoustically, and be able to interpret simple speech spectrograms
- describe phonation mechanisms and voice in normal speech
- explain how speech communication may be affected by hearing impairment
- describe and explain basic concepts in sound perception
- relate these concepts of sound perception to the normal-hearing individual's auditory experience and how this can be measured
- relate the most common types of hearing impairments to perceptual consequences
- critically choose and apply simple psychoacoustic methods of measurement.

## Content

The course consists of three modules:

### **Auditory perception, 4.5 hp**

Grading scale: GU

This module highlights how humans notice and experience sounds. The emphasis lies on perception, but the course also includes cognitive aspects of hearing. Basic psychoacoustics constitutes the main part of the course. This part deals with how different physical properties of sound are perceived by humans. Concepts such as auditory threshold, loudness, masking, time and frequency resolution and localization are thoroughly discussed. Normal hearing is covered, as well as perceptual consequences of the most common types of hearing impairments.

### **Psychoacoustic measurements, 3.0 hp**

Grading scale: GU

In this module, psychoacoustic methods of measurement are covered. How one carries out psychoacoustic measurements is covered in theory and practice.

### **Phonetics, 3.0 hp**

Grading scale: GU

The part is an overview of the subject which introduces the theories of speech. The module deals with articulatory, acoustic and auditory phonetics as well as phonology and voice theory.

## Teaching methods

Lectures, laboratory sessions and seminars.

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

The examiner 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 imply that the student cannot retake the element until the next time the course is offered.

## Examination

**Phonetics, 3 credits**

Written examination

**Auditory perception, 4,5 credits**

Written examination

**Psychoacoustic measurements, 3 credits**

Written laboratory report by group which is also presented orally

Written examination

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 additions to a written assignment is counted as one examination. Submission of a blank exam paper is regarded as an examination. In case a student is registered for an examination but does not attend, this is not regarded as an examination.

If there are special grounds, or a need for adaptation for a student with a disability, the examiner may decide to deviate from the syllabus's regulations on the examination form, the number of examination opportunities, the possibility of supplementation or exemptions from the compulsory section/s of the course etc. Content and learning outcomes as well as the level of expected skills, knowledge and abilities may not be changed, removed or reduced.

**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 according to the guidelines that are established by the Committee for Higher 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, during which the students can state their opinions.

The course can be taught in English, if incoming exchange students are attending the course.

The course will not be credited in a degree together with another course the student has completed and passed which completely or partly corresponds to the contents of this course.

**Literature and other teaching aids****Mandatory literature***Gelfand, Stanley A.***Hearing : An Introduction to Psychological and Physiological Acoustics, Sixth Edition**

New edition 6 : London : Taylor and Francis, 2017. - 1 online resource

ISBN:978-1-4987-7543-4- LIBRIS-ID:22247481

URL: [Table of Contents / Abstracts](#)[Library search](#)*Johnson, Keith***Acoustic and auditory phonetics**

3 ed. : Malden, MA : Wiley-Blackwell, 2012 - ix, 222 p.

ISBN:978-1-4051-9466-2 (pbk. : alk. paper) LIBRIS-ID:12458552

[Library search](#)

*Plack, Christopher J.*

### **The sense of hearing**

Third edition. : Abingdon, Oxon : Routledge, 2018 - vii, 329 pages

ISBN:9781138632585 LIBRIS-ID:8jqmvw2v68dq6p6t

[Library search](#)

Scientific papers and other relevant literature may be added.

### **Recommended literature**

*Pickles, James O.*

#### **An introduction to the physiology of hearing**

Fourth edition : Leiden : Brill, 2013 - xxiii, 430 pages

ISBN:9789004243774 LIBRIS-ID:17415410

[Library search](#)

*Schnupp, Jan; Nelken, Israel; King, Andrew*

#### **Auditory neuroscience : making sense of sound**

Cambridge, Mass. : MIT Press, [2012?] - x, 356 pages

ISBN:9780262518024 LIBRIS-ID:fs582n89cbp4nmgl

[Library search](#)

### **In-depth literature**

This book may be used as a complement to Johnson.

*Engstrand, Olle*

#### **Fonetikens grunder**

Lund : Studentlitteratur, 2004 - 355 s.

ISBN:91-44-04238-8 (inb.) LIBRIS-ID:9673093

URL: [http://www.studentlitteratur.se/fonetikensgrunder-z-Ljudexempel, övningsuppgifter, termordlista, länkar till andra relevanta webbplatser](http://www.studentlitteratur.se/fonetikensgrunder-z-Ljudexempel,ovningsuppgifter,termordlista,lankar-till-andra-relevanta-webbplatser)

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