

# Sound Technology

Programme course

6 credits

Ljudteknik

TNM103

Valid from: 2020 Spring semester

**Determined by**

Board of Studies for Computer Science and  
Media Technology

**Date determined**

2019-09-23

## Main field of study

Media Technology and Engineering

## Course level

Second cycle

## Advancement level

A1X

## Course offered for

- Media Technology and Engineering, M Sc in Engineering

## Specific information

The course may not be included in the degree together with TNM054

## Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

## Prerequisites

Signals and Systems, Transforms Theory, Sound Physics or similar. Basic programming.

## Intended learning outcomes

Analogue and digital sound technology are today of importance for many different media productions, from computer games and immersive media production via user interfaces and UX to sound and music editing. This course aims to give the students in-depth knowledge of methods for sound technology, sound effects and signal processing, as well as analysis and synthesis of sound and waveforms. After completing the course, the student will be able to apply knowledge about the design of analogue and digital signal

processing applications for professional audio, music production, film, games and virtual environments, as well as visualization, and forensic work.

## Course content

Introduction to digital audio, audio and music processing. Overview of signal processing and audio effects technologies. The adjustment of the dynamic content of an audio signal such as compression and expansion. Filter and leveling of signals, different filter applications, and different filter types. Digital delay lines as well as analogue options for simulation of room acoustics and echo. Digital and analogue audio effects (such as wah-wah, phaser, flanger). Phase vocoding for pitch and temporal changes of a signal. Additive and subtractive synthesis, as well as analogue and digital synthesis methods. Amplitude and frequency modulation of signals.

## Teaching and working methods

The course comprises lectures, lectures/seminars given by the students, as well as programming-oriented and practical audio-technical labs. A written exam in the form of a homework exam, which is carried out for a limited amount of time, that explains in writing how a specific signal processing task could be solved.

## Examination

LAB1	Laboratory work	U, G	3 credits
HEM1	Home-assignment	U, 3, 4, 5	3 credits

## Grades

Four-grade scale, LiU, U, 3, 4, 5

## Course literature

Lecture notes and distributed material.

## Other information

### About teaching and examination language

The teaching language is presented in the Overview tab for each course. The

examination language relates to the teaching language as follows:

- If teaching language is Swedish, the course as a whole or in large parts, is taught in Swedish. Please note that although teaching language is Swedish, parts of the course could be given in English. Examination language is Swedish.
- If teaching language is Swedish/English, the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English (depending on teaching language).
- If teaching language is English, the course as a whole is taught in English. Examination language is English.

### **Other**

The course is conducted in a manner where both men's and women's experience and knowledge are made visible and developed.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

## **Department**

Institutionen för teknik och naturvetenskap

## **Director of Studies or equivalent**

Camilla Forsell

## **Examiner**

Niklas Rönnberg

## **Course website and other links**

## **Education components**

Preliminary scheduled hours: 50 h

Recommended self-study hours: 110 h

## **Course literature**

**Other**