Sound Technology

Programme course

6 credits

Ljudteknik

TNM103

Valid from: 2019 Spring semester

Determined by
Board of Studies for Computer Science
and Media Technology

Date determined
2018-08-31

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 wha-wha, phaser, flanger). Phase vocoding for pitch and temporal changes of a signal. Additive and subtractive synthesis, as well as analogue and digital synthesis methods. Amplitud 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	3 credits	U, G
HEM1	Home-assignment	3 credits	U, 3, 4, 5

Grades

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

Course literature

Lecture notes and distributed material.

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