LINKÖPINGS UNIVERSITET

Sound Technology I

Programme course

6 credits

Ljudteknik I

TNM054

Valid from: 2017 Spring semester

Determined by

Board of Studies for Computer Science
and Media Technology

Date determined

2017-01-25

Main field of study

Media Technology and Engineering

Course level

First cycle

Advancement level

G2X

Course offered for

- Media Technology and Engineering, M Sc in Engineering

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

Intended learning outcomes

This course aims to provide students with the fundamentals of digital audio techniques for processing, analyzing and synthesizing sound. After completion of the course, the student will acquire working knowledge in the design of signal processing applications for professional audio, computer music and special effects for movies, games and virtual environments.

Course content

Introduction to digital audio, sound processing and computer music. Overview of signal processing techniques. Filtering and equalization: parametric filters, filter banks, comb and all-pass filters. Digital delay lines for the simulation of room acoustics and reverberation. Digital audio effects (wha, phaser, flanger). Uncertainty principle and time-frequency representations. The Short-Time Fourier Transform and the phase vocoder. Additive and subtractive synthesis. Amplitude and frequency modulation. Sound synthesis by sinusoidal models.

Teaching and working methods

The course is organized in lectures, problem and laboratory sessions.

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

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

Additional literature

Other

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.