

# Audio et musique



## Component

École Nationale  
Supérieure  
d'Électrotechnique  
d'Électronique  
d'Informatique  
d'Hydraulique  
et des  
Télécommunications

## In brief

- > **Ametys Code:** M34HOJ6M
- > **Open to exchange students:** Yes

## Presentation

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### Objectives

Discover tools for processing and generating audio signals, particularly for restoration (noise reduction, click removal, remixing) and music synthesis (physical models, generative AI).

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### Description

The course is structured as follows:

Lecture 1: Audio signal denoising (click removal, background noise reduction)

Lecture 2: Non-negative matrix factorisation (NMF) and its application to audio source separation

CM3: Physical models for music synthesis

CM4: Overview of AI methods for audio signal processing

Practical work: Interpolation of audio signals for click removal

Project: Writing a presentation document on Shazam, Audionamix or Spotify.

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## Pre-requisites

Statistical signal processing, time-frequency analysis, machine learning.