

Signal representation and analysis



Component

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

In brief

- **Code:** M34HLEMK
- **Open to exchange students:** Yes

Presentation

Objectives

Placing oneself in a transformed space allows one to highlight particular characteristics of the signal. The aim of the course is to present the diversity of tools for representing deterministic or random signals and their use in decision-making, analysis, compression, etc.

Description

- Different classes of signals
- Review of classic representations (correlations, spectral densities)
- Decomposition based on functions (Fourier, Haar, Hadamard, etc.)
- Time-frequency representations (sliding Fourier transform, energy distributions - Cohen class: Wigner-Ville, etc.)

- Time-scale representations (continuous wavelet transform, orthogonal wavelet decompositions, bi-orthogonal wavelet decompositions, frames, multiresolution analysis).

Pre-requisites

- N5EE01A - Integration
- N5EE01B - Complex variables
- N6EE02A - Signal processing
- N6EE02B - Digital signal processing