Digital Signal Processing

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

In brief

- **Ametys Code:** N7AE04C
- **Open to exchange students:** No

Presentation

Objectives

Moving from continuous-time signal processing theory to digital signal processing practice.

Description

Lecture-Tutorial 1: Introduction, Review of Fourier Transforms
Lecture-Tutorial 2: Signal Classes and Their Representations
Lecture-Tutorial 3: Continuous-Time Filtering
Lecture-Tutorial 4: Study of a Multi-Path System
Lecture-Lab 5: Advantages of digital technology - sampling
Lecture-Lab 6: Quantization - Discrete Fourier Transform (beginning)
Lecture-Lab 7: Discrete Fourier Transform (continued): zero padding, fast algorithm (FFT)
Lecture-Tutorial 8: Autocorrelation estimation and spectral analysis: periodogram/correlogram, Spectral Power Density
Lecture-Tutorial 9: Review of Z-transform, time-invariant linear filtering, and applications

BE 1 to 5: Spectral analysis and filtering of simulated and real signals using Matlab

Pre-requisites

Fourier analysis.

Complex variables, Z-transform.

Probability and statistics.

Matlab programming