

# Digital filtering

## Course information

ECTS: 2	Independent from the master in Acoustics	Course code :
Lecture: None	Tutorial classes: 18h	Practical work : 8h.

Course coordinator: Bruno Gazengel and Romain Ferron ( [ESEO](#) )

## Course Description

### Aim

The aim of this course is:

- 1- to give basic academic knowledge of digital filtering, for analysis and synthesis of sounds
- 2- to solve a problem of real time information processing using specific and complex calculations and dedicated device (DSP - Digital Signal Processor).

### Prerequisite

Courses:

- 1- [Signal analysis refresh](#),
- 2- [Electronics refresh](#)


### Contents

- 1- General concepts of digital filters, Z transform, poles and zeros, stability, frequency response, design of IIR and FIR filters. Students should know how to use the available tools for software digital filtering : z#transform, filter design (FIR or IIR) with Matlab/Octave in a OFF-LINE framework.
- 2- Virtual instrumentation, Digital filtering, Use of a development starter kit,  
Real time applications, Implementation on chip (DSP).

### Examination duration

2 hours

### Examination type



Written examination