

# Integration



Component

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



Semester

Automne

## In brief

- > **Ametys Code:** N5EE01A
- > **Open to exchange students:** Yes

## Presentation

### Objectives

At the end of this class, students will be able to calculate integrals and frequency representations encountered in physics (Fourier series and transformations). A second objective is the comprehension of the mathematical tools for this frequency analysis, in particular the Lebesgue integration.

### Description

This course is divided into 6 classes and 5 tutorials. Following a presentation of the Lebesgue integration, the class will focus on the results enabling the calculation of integrals:

Interchanging limits and integrals continuity and differentiation of an integral, change of variables and integration in  $n$  dimensions. The frequency representations of periodic functions (Fourier series) and integrable functions (Fourier transform), will be defined focusing on the properties of these representations. Finally, the convolution operation and its connection to the Fourier transform will be studied.