

# Analyse fonctionnelle

**Lecturer**

Antoine GLORIA (Coordinator)

**Course mnemonic**

MATH-F411

**ECTS credits**

5 credits

**Language(s) of instruction**

French

**Course period**

First term

**Campus**

Plaine

## Course content

Calculus in Hilbert and Banach spaces. Duality, weak topology, representation theorems, Riesz-Fredholm theory, spectral theory and Sobolev spaces

## Objectives (and/or specific learning outcomes)

We cover more advanced notions of functional analysis towards their applications in PDEs and applied mathematics

## Pre-requisites and co-requisites

### Courses having this one as co-requisit

MATH-F412 | Méthodes variationnelles et équations aux dérivées partielles | 5 crédits, MATH-F433 | Topics in the analysis of partial differential equations | 5 crédits, MATH-F520 | Interplay between PDE and probability | 5 crédits and STAG-F013 | Stage en entreprise en sciences et technologie de l'environnement | 15 crédits

## Teaching method and learning activities

course, exercises, personal work

## References, bibliography and recommended reading

Principes d'analyse fonctionnelle, M. Willem, 2007, Cassini

Analyse fonctionnelle, théorie et applications, H. Brezis, 1999, Dunod

Partial Differential Equations in Action, From Modelling to Theory, S. Salsa, 2008, Springer

## Course notes

Podcast, Université virtuelle and Syllabus

## Other information

### Place(s) of teaching

Plaine

### Contact(s)

2.07.104 CP 214, Campus Plaine, agloria@ulb.ac.be

## Evaluation method(s)

Oral examination

### Evaluation method(s) (additional information)

written examination

### Main language(s) of evaluation

French

### Other language(s) of evaluation, if applicable

English

## Programmes

### Programmes proposing this course at the faculty of Sciences

MA-MATH | **Master in Mathematics** | finalité Research/unit 1 and finalité Research/unit 2