Elective course unit

General information

- Course name in French: Electifs
- ECTS credits: 4 (see below what must be done to get these ECTS)
- **Period: Fall-Winter Semester (from early September until end of January/early February)**
- Level : Undergraduate (Bachelor 4th Year) or Graduate (Master 1st Year)
- Teaching hours: 90 hours divided into 3 courses (30 hours each)
- Language of instruction: usually French

Warning! The elective course unit consists of 3 courses. Students must choose **one and ONLY ONE** course in each list.

Three courses in Mathematics can be attended as they are offered in two separate lists:

1. Numerical mathematics and simulation (List 1),
2. Introduction to stochastic processes (List 2),
3. Advanced analysis (List 3).

Due to timetable constraints, you can choose to attend only one course in List 1, one course in List 2 and one course in List 3.

Numerical mathematics and simulation (available in course list 1)

General information

- Course name in French: Mathématiques numériques et simulation
- ECTS credits: see explanation above
- **Period: Fall-Winter Semester (from early September until end of January/early February)**
- Level : Undergraduate (Bachelor 4th Year) or Graduate (Master 1st Year)
- Teaching hours: 30 hours (Lectures = tba hours, Tutorials = tba hours, Self-study = tba hours)
- Language of instruction: French
- Coordinator: Marie Billaud-Friess
- Instructor(s): Marie Billaud-Friess, Mitra Fouladirad, Guillaume Chiavassa, Christophe Pouet
- Last update 14/03/2025 by C. Pouet

Brief description

This course is an advanced course in Mathematics dealing with simulation, stochastic algorithms and Itô integration.

Learning outcomes

- tba

Prerequisites Tba

Assessment Tba

Course content

1. Simulation of random variables
    - tba
2. Monte-Carlo methods
    - tba
3. Stochastic algorithms
    - tba
4. Introduction to Itô integration

Bibliography

Introduction to stochastic processes (available in course list 2)

General information

- Course name in French: Introduction aux processus stochastiques
- ECTS credits: see explanation above
- **Period: Fall-Winter Semester (from early September until end of January/early February)**
- Level : Undergraduate (Bachelor 4th Year) or Graduate (Master 1st Year)
- Teaching hours: 30 hours (Lectures = tba hours, Tutorials = tba hours, Self-study = tba hours)
- Language of instruction: French
- Coordinator: Mitra Fouladirad
- Instructor(s): Mitra Fouladirad, Thibaut Le Gouic
- Last update 14/03/2025 by C. Pouet

Brief description

This course is an advanced course in Mathematics dealing with random processes.

Learning outcomes

- tba

Prerequisites Tba

Assessment Tba

Course content

1. Conditional expectation
    - tba
2. Markov chains
    - tba
3. Poisson process
    - tba

Bibliography

Advanced analysis (available in course list 1)

General information

- Course name in French: Analyse mathématique
- ECTS credits: see explanation above
- **Period: Fall-Winter Semester (from early September until end of January/early February)**
- Level : Undergraduate (Bachelor 4th Year) or Graduate (Master 1st Year)
- Teaching hours: 30 hours (Lectures = tba hours, Tutorials = tba hours, Self-study = tba hours)
- Language of instruction: French
- Coordinator: Magali Tournus
- Instructor(s): Magali Tournus
- Last update 01/04/2022 by C. Pouet

Brief description

This course is an advanced course in Mathematics dealing with functional analysis.

Learning outcomes

- tba

Prerequisites Tba

Assessment Tba

Course content

1. Tba
    - tba

Bibliography