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 cannot attend more than one course in a list.

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