UNIVERSITÉ DE ROUEN NORMANDIE

Normandie Université

DIPLÔME NATIONAL DE MASTER CONTRÔLÉ PAR L'ÉTAT

MASTER

MATHEMATICS

Mathematical Analysis and Modelling

Campus du Madrillet

sciences-techniques.univ-rouen.fr

UFR Sciences et Techniques

AIM

The aim is to give students a solid background in mathematical analysis with such applications as numerical methods and scientific computing, mathematical modeling, optimization.

INTERNATIONAL PARTNERS

University of Augsburg (Germany)

University of Naples Federico II (Italy)

University of Sevilla (Spain).

State University of Tomsk (Russie).

ADMISSION FOR APPLICATION

Bachelor in Mathematics (or equivalent).

COURSES

Teached in each university and coordinated by a common Stearing Committee. A core of introductory courses is common to all the universities of the program. The selected courses will be chosen by each university according to the local scientific research activity. Courses cover mathematical analysis, ordinary differential equations, partial differential equations, optimal control, probability, statistics and their applications (modelling, numerical analysis, scientific computing).

DESCRIPTION

Double degree Master of Excellence in Mathematics, applied to modelling in sciences.

The development, the theoretical and the numerical treatment of mathematical models is becoming more and more important in many fields, like natural sciences and engineering sciences but also biology, chemistry, environmental sciences and more recently the medical science. The MAM program is an International Master's degree, supported by the internationally renowned research laboratories of each partner. It can be professional or research oriented, depending on the choices of students.

LECTURE LANGUAGES: English

MOBILITY AND DIPLOME

Each student will spend at least one semester (maximum one year) in one of the other partner universities. A double master degree, from both the enrolment and the mobility institution is delivered.

TUTORING

A tutoring system for each student, assigned to a teacher of the enrolment university is in place.

CURRICULUM

First Year M1

Semester 1 (30 CE)

UE 1: Functional Analysis - Mandatory (7 CE)

UE 2: Linear optimization - Mandatory (3 CE)

UE 3: Complements of analysis - Mandatory (5 CE)

UE 4: Probabilities - Mandatory (5CE)

UE 5: Numerical Analysis of PDEs - Mandatory (5 CE)

UE 6: Analysis of PDEs - Mandatory (5 CE)

Semester 2 (30 CE)

UE 1: English - Mandatory (3 CE)

UE 2: Initiation to Mathematical Research - Mandatory (4 CE)

UE 3: Additional analysis 2 - Mandatory (CE)

UE 4: Modeling by ODE-Contrôle - Mandatory (6 CE)

UE 5: Modeling by PDEs in Science - Mandatory (6 CE)

UE 6: Scientific Computing - Mandatory (5 CE)

UE 7: Discrete optimization - Mandatory (3 CE)

Second Year M2

Semester 3 (30 credits)

EU 1: Common Courses

- Computer Tools, Documentation - Mandatory (3 CE)
- Language course - Mandatory (3 CE)

UE 2: Basic course Asymptotic statistics (6 CE)

EU 3: Elective Options - Mandatory (18 CE)

3 options of 6 credits to choose from

- Analysis of EDP A
- Scientific calculation A
- Control and optimization A
- Control and optimization B
- Statistics A

Semester 4 (CE)

EU 1: Language course - Mandatory (3 CE

UE 2: Thematic Course - Mandatory (6 CE)

The thematic course will be chosen by the student from the options offered at the master's level in order to complete his training and to deepen the theme of his dissertation or internship.

UE 3: Research Thesis or Internship (21 CE)

MASTER THESIS

Each student will spend at least one semester (maximum one year) in one of the other partner universities. A double master degree, from both the enrolment and the mobility institution is delivered.

OPENINGS

Jobs in industry and service companies or enrolment in a Ph.D. program in applied mathematics.

INVOLVED RESEARCH INSTITUTIONS

Laboratoire de Mathématiques R. Salem (LMRS) and the doctoral School MIIS, University of Rouen,

Department of of Mathematics of the Universities of Augsbourg, Sevilla and Naples Federico II,

Faculty of Mathematics and Mechanics of the State University of Tomsk,

The research institutes of the partner universities.

CONTACT CFCA

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