MASTER MATHEMATICS AND APPLICATIONS

IN BRIEF

Type of diploma : Master degree
Ministry field : Science and Technology
Mention : Mathématiques et Applications

PRESENTATION

The program provides excellent training in many different areas of applied mathematics developed in the laboratory of Mathematics and Applications of Pau:

MMS Program: PDE (partial differential equation) analysis, numerical analysis, scientific computing, high performance computing, optimization.

MSID Program: statistical analysis, decision computer science, computer modeling and associated computer tools.

ORGANIZATION

- M2 Mathematics, Modeling and Simulation (MMS)
- M2 Stochastic tools and Computational Methods for Decision (MSID)

ORGANIZATIONAL UNIT

Collège Sciences et Technologies pour l'Energie et l'Environnement (STEE)

PLACES

Pau

PERSON IN CHARGE

Giacomoni Jacques
jacques.giacomoni@univ-pau.fr

ADMINISTRATIVE CONTACT(S)

MORE INFO

Education language :
Fully taught in English

Number of students : 30

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Secrétariat de Mathématiques - Brigitte GAUBERT
brigitte.gaubert@univ-pau.fr

M2 Mathematics, Modeling and Simulation (MMS)

PRESENTATION

> ***Applications are open from December 2018 to April 2019 from*** https://aap-e2s.univ-pau.fr/siaap/pub/appel/view/5

The program provides excellent training in many different areas of applied mathematics related to modeling with partial differential equations.

This program will enable students to pursue doctoral studies, either in an academic context or in an industrial context (collaboration between the industry and UPPA).

OBJECTIVES

This programme aims to provide solid skills in applied mathematics (partial differential equations analysis, numerical analysis, scientific computing and high performance computing, optimization).

• Courses are focusing on applications in industrial problems, fluid mechanics, waves propagation, optimal design,...

• This programme prepares students for leading positions in private and public organisations in research and development departments.

SKILLS

At the end of this program, the students in "**MMS"** will be able to:

* Elaborate and analyze mathematical models arising from physics, biology, geology, industry,
* Elaborate and analyze numerical schemes,

MORE INFO

ECTS credits : 60

Type of education
* Ongoing training
* Initial training

Number of students : 30

Internship : Mandatory (5 months)

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* Develop, adapt and use industrial or research numerical simulation softwares.

ADDITIONAL INFORMATION

ORGANIZATION

Semester 3

- *Compulsory Courses (Mandatory)*
  · PDE Analysis
  · Numerical Analysis of PDEs
  · High Performance Computing
- *Elective Courses (Choice: 1 Among 2)*
  · Gestion de projets pour MMS et MSID
  · Méthodology
- *Elective Courses (Choice: 3 Among 7)*
  · Introduction to the numerical solution of the wave propagation problems
  · Numerical modeling of flow and transport in porous media
  · Finite Volume Methods for Hyperbolic Systems / Asmptotic Methods
  · Stochastic PDE
  · Advanced PDE
  · Industrial Softwares
  · Shape Optimisation/Fluid Mechanics

Semester 4

- *Compulsory Courses (Mandatory)*
  · Internship or Master's dissertation

ACCESS CONDITIONS

> ***Applications are open from December to April from http://aap.e2s-uppa.eu***

CECRL B2 level in English, or CECRL B1 level in English and CECRL B2 level in French. Students are allowed to use English or French during exams.

Admission Requirements

All students who have completed four years in a higher education institution can apply. Sufficient skills in mathematics are needed (mathematical and numerical analysis).

Limited number of students: 30 per year

Application deadline: June 2019

TUITION FEES

Scholarships

* Region Aquitaine Scholarships for non-EU students
* E2S Talent's Academy Scholarships for all students
* Master's scholarships

FURTHER STUDY

Doctoral studies, either in an academic context or in an industrial context.

PROFESSIONAL INSERTION

Sectors:

* **Industrial or academic**

Fields:

* **Scientific computing, mathematical and numerical analysis, modelling**

Positions:

* **Engineer, Phd Student, researcher**

ORGANIZATIONAL UNIT

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PLACES

Pau

PERSON IN CHARGE

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ADMINISTRATIVE CONTACT(S)

Secrétariat de Mathématiques - Brigitte GAUBERT
brigitte.gaubert@univ-pau.fr

M2 Stochastic tools and Computational Methods for Decision (MSID)

PRESENTATION

This program offers advanced level courses in statistical analysis, decision computer science, computer modeling and associated computer tools.

> ***Applications are open from December 2018 to April 2019 from*** https://aap.e2s.univ-pau.fr/siaap/pub/appel/view/5

OBJECTIVES

This programme aims to provide strong skills in stochastic modeling and statistical methods for data analysis, jointly with the associated computer tools.

* Courses are focusing on applications in the industry, especially in the areas of quality control and safety analysis, but also on applications in datamining and machine learning.
* Courses are taught by academics but also by engineers

According to the excellency of students and their desire to go on doctoral studies, courses about « advanced statistics » and « advanced applied probability » can be offered.

SKILLS

At the end of this program, the students in "**MSID"** will be able to:

* Conduct an appropriate statistical analysis
* Apply any classical statistical methods
* Construct and analyse an experimentaldesign
* Propose and analyze a stochastic model
* Implement stochastic simulation methods
* Manage databases

MORE INFO

ECTS credits : 60

Type of education
* Ongoing training
* Initial training

Number of students : 30

Internship : Mandatory

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ADDITIONAL INFORMATION

ORGANIZATION

Semester 3

- *Compulsory Courses (Mandatory)*
  - · Reliability theory
  - · Monte-Carlo Methods
- *Elective Courses for Industrial Applications (Mandatory)*
  - · Reliability theory
  - · Design of experiments
  - · Data warehouse
  - · Datamining
  - · Gestion de projets pour MMS et MSID
  - · Survival Analysis
- *Elective Course for Reseach (Choice: 2 Among 8)*
  - · Statistic modelling
  - · Stochastic modeling
  - · 8 ECTS à choisir parmi les autres UE du parcours

Semester 4

- *Compulsory Courses (Mandatory)*
  - · Internship or Master's dissertation

ACCESS CONDITIONS

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* Master's scholarships

FURTHER STUDY

Doctoral studies, either in an academic context or in an industrial context

PROFESSIONAL INSERTION

Sectors:

* **Industry, services, academic**

Fields:

* **Dependability and reliabilty analysis (RAMS), data processing, biomedecine**

Positions:

* **RAMS engineer, statistical analysist, datascientist, data processing engineer, biostatistician, phd students**

ORGANIZATIONAL UNIT

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PLACES

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