



From september 2017, subject to the agreement of the French Minister of National Education, Higher Education and Research

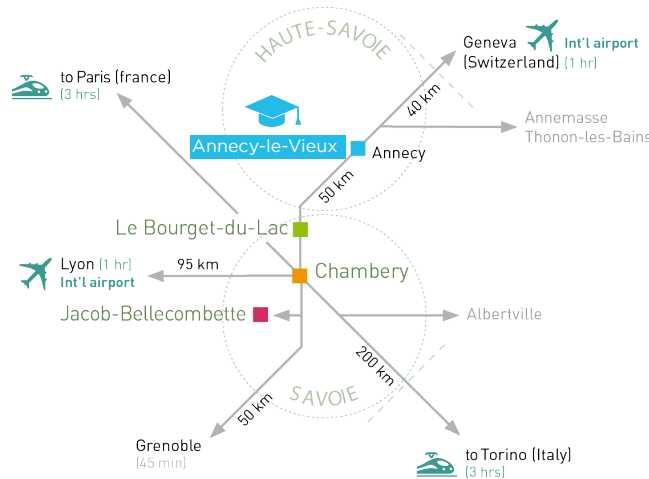
LEVEL OF EDUCATION

| | | | | |
|----------|----|----|--------|----|
| L1 | L2 | L3 | M1 | M2 |
| BACHELOR | | | MASTER | |

GENERAL PREREQUISITES

Hold a B.S. degree in mechanical, electrical, computer or systems engineering, in applied physics or an equivalent degree

LOCATION: Anancy



PRESENTATION

Competencies developed during the cursus:

- Design and achieve a mechatronic system
- Manage a research project
- Master the skills expected in research activities

Objectives:

The Master's students will gain specialized skills in at least one domain and enough additional skills in other domains to meet the requirements of a multidisciplinary mechatronic project and they will become familiar with the requirements of a research activity.

General structure:

- 4 semesters (30 ECTS/semester) based on blending learning allowing customization of the student cursus according to his/her background, his/her research project and his/her professional project

Detailed academic structure:

- S7-S8-S9 semesters devoted to project-based learning through research topics and through participation in an international challenge, and to academic learning (first two semesters with a core curriculum and elective courses spanning 3 orientations: Innovative mechatronic product design, Autonomous wireless systems, Monitoring and control of mechatronic systems)
- S10 semester: internship in a research structure

DURATION

- Full master degree: two years within an international program (3 semesters of direct classroom + a 4 to 6 month internship). Term starts early September.
- 1 or 2 semesters within an international exchange (no-degree)



DETAILED LIST OF COURSES

MASTER YEAR 1

SEMESTER 7

Courses: 15 ECTS

- Mechatronics common framework
- Metrology and Sensors for mechatronic systems
- Project management
- Bibliographical tools
- Communication for research
- Materials for Mechatronics
- Development and deployment frameworks
- Signals and systems, Continuous control
- Physics for mechatronic systems

Projects:

- **Mechatronic case study** 5 ECTS
To study the scientific and technological answers proposed to solve a given problem - 125h
- **Research** 6 ECTS
To propose a technological solution of a problem which is part of a research project - 150h
- **International challenge** 4 ECTS
To take part in a collective project in the framework of an international challenge - 100h

SEMESTER 8

Courses: 15 ECTS

- Modeling, simulation and digital analysis
- Core skills, organisations and standards
- Multiphysics coupling in materials
- Finite element simulation
- Instrumentation electronics, MEMS and actuators
- Computer-aided design
- Design of experiments
- Physics for autonomous wireless systems
- Embedded control and computer science
- Architecture and robotics
- Data science
- Security: protect the system from intrusion

Projects:

- **Intellectual property** 5 ECTS
To study a published patent related to a mechatronic system - 125h
- **Research** 6 ECTS
To take part in the research project of a member of the academic staff or proposed by a Master 2 student, to study a bottleneck of this project and to propose a solution - 150h
- **International challenge** 4 ECTS
To take part in a collective project in the framework of an international challenge - 100h





MASTER YEAR 2



SEMESTER 9

Courses: 10 ECTS

- Embedded systems 
- Introduction to supervision methods, models and tools 
- Intellectual property, Contracts, Law 
- Scientific diffusion and Ethics 
- Research funding and Ph.D 
- Communication 

Projects:




- **Research** 5 ECTS
To write a scientific article based on the S8 research project or the state of the art on a given mechatronic issue - 125h
- **Research** 10 ECTS
To take part in the research project of a member of the academic staff or proposed by a Master 2 student, to study a bottleneck of this project and to propose a solution - 250h
- **International challenge** 5 ECTS
To take part in a collective project in the framework of an international challenge - 120h

SEMESTER 10

Internship: 30 ECTS

- From 4 to 6 months

3 orientations in the curriculum:

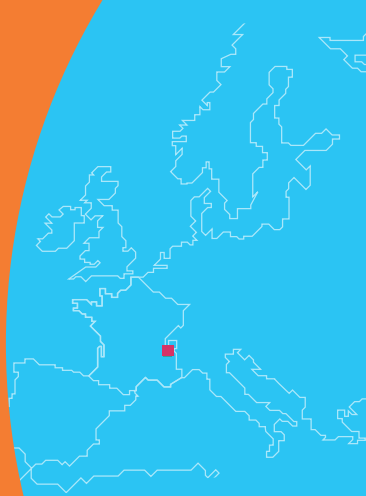
-  Innovative mechatronic product design
-  Autonomous wireless systems
-  Monitoring and control of mechatronic systems





CONTACT

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