LEVEL OF EDUCATION

<table>
<thead>
<tr>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>M1</th>
<th>M2</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACHELOR</td>
<td>MASTER</td>
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</tbody>
</table>

GENERAL PREREQUISITES

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

LOCATION: Annecy

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)
MASTER YEAR 1

SEMESTER 7

Courses:  
- 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  
  To study the scientific and technological answers proposed to solve a given problem - 125h  
- Research  
  To propose a technological solution of a problem which is part of a research project - 150h  
- International challenge  
  To take part in a collective project in the framework of an international challenge - 100h

SEMESTER 8

Courses:  
- 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  
  To study a published patent related to a mechatronic system - 125h  
- Research  
  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  
  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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