POLYTECH
ANNECY-CHAMBÉRY

FICHE MASTER

Advanced Mechatronics (AM)

Location :
Université Savoie Mont Blanc
Polytech Annecy-Chambéry
Campus Annecy-le-Vieux

Contact :
resp-am-polytech@univ-smb.fr
www.polytech.univ-smb.fr

Mechatronics is a synergistic and integrated process of several sciences and skills (among which control and computer sciences, electronics and mechanics) which allows to conceive and to design products and systems with augmented or improved functionality and which requires to consider the conception of the product or system in its overall lifecycle in a cooperative interdisciplinary approach.

OBJECTIVES

The graduated students are prepared for Ph.D studies. They can also work as engineers or occupy high level and scientific positions in research centers, in research and development departments and in specialised consulting firms.

SKILLS AND EXPERTISE

The Master's students gain the skills to meet the requirements of a multidisciplinary mechatronic project and they become familiar with the requirements of a research activity through blended learning including project-based learning.

Three main competencies are developed during the curriculum through supervised sessions, on-line courses and projects :

> Design and achieve a mechatronic system
> Manage a research project
> Master the skills required for research activities

PROGRAM

4 semesters (30 ECTS/semester) based on blended learning, allowing the customization of the student cursus according to his/her background, his/her research project and his/her professional project and providing 3 orientations:

Innovative mechatronic product design, Autonomous wireless systems, Monitoring and control of mechatronic systems.

Language: English
Possibility to integrate 1 ou 2 semesters through Erasmus+ agreements.

UNIVERSITÉ
SAVOIE
MONT BLANC

POLYTECH
ANNECY-CHAMBÉRY

PROGRAM

NB: the organization of the program below will probably be modified as of the start of the 2021 school year, but without any change in the content or project-based learning.

		Master AM	ECTS	L*	T*	Labs	E-L*	Project
M1	S7	**UE 701: Mechatronics framework** (Mechatronics common framework, Metrology for mechatronic systems)	10	7.5	12	8	85	125
		UE 702: Research project tools (Bibliographical tools, Communication for research, Project management)	11	3	37	0	27	125
		Orientation 1: Innovative mechatronic product design						
		UE 703: Materials and physics for mechatronics (Materials for Mechatronics, Heat transfer in mechatronic systems)	9	4.5	10.5	0	15	150
		Orientation 2: Autonomous wireless systems						
		UE 703: Control and Physics for mechatronics (Heat transfer in mechatronic systems, Signals and systems, Continous control)	9	0	4.5	8	45	150
		Orientation 3: Monitoring and control of mechatronic systems						
		UE 703: Control and computer science for mechatronics 1 (Signals and systems, Continuous control, Development and deployment frameworks)	9	3	0	16	30	150
	S8	**UE 801: Toolbox for research in mechatronics** (Modelling, simulation and numerical analysis, Core skills, Research organisations and standards)	7	9	18	0	30	100
		Orientation 1: Innovative mechatronic product design						
		UE 802: Design tools for mechatronics 1 (Design of experiments, CAD, Instrumentation, electronics, MEMS, Actuators)	12	0	7.5	38	60	125
		UE 803: Design tools for mechatronics 2 (Multiphysics coupling in materials, Finite element simulation)	11	3	3	21	35	150
		Orientation 2: Autonomous wireless systems						
		UE 802: Design tools for mechatronics 1 (Design of experiments, CAD, Instrumentation, electronics, MEMS, Actuators)	12	0	7.05	38	60	125
		UE 803: Design tools for mechatronics 3 (Physics for autonomous wireless systems, Embedded control and computer science)	11	6	7.5	16	55	150
		Orientation 3: Monitoring and control of mechatronic systems						
		UE 802: Control and computer science for mechatronics 2 (Embedded control and computer science, Data science)	12	12	9	24	60	150
		UE 803: Control and computer science for mechatronics 3 (Architecture and robotics, Security : protect the system from intrusion)	11	15	15	28	48	125
M2	S9	**UE 901: Embedded systems and supervision** (Embedded systems, Introduction to supervision methods, models and tools)	13	3	7.5	12	12	250
		UE 902: Rights, ethics and scientific diffusion (Intellectual property, Contracts, Law, Ethics and Scientific diffusion)	9	13.5	13.5	0	23	125
		UE 903: Preparation for doctoral studies (Research funding and PhD Communication)	8	6	18	0	15	125
	S10	**UE 1001: Internship devoted to a research topic and Master Thesis**	30					

* ***L** = Lectures / **T** = Tutorials / **E-L** = e-learning*

PARTNERS

SYMME LISTIC LOCIE LAPP libm

UNIVERSITÉ SAVOIE MONT BLANC