Course: Master's in Mechatronics

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Clerk of the course : Mechatronics

1- General Presentation of the Program: The Master's program in Mechatronics aims to provide students with the knowledge and skills necessary to develop and design intelligent and advanced systems in various fields such as:

• Robotics
• Embedded systems design and intelligent control
• Analysis and design of mechanical and electronic systems
• Artificial intelligence applied to industrial applications

Thus, the Master's program in Mechatronics is an integrated program that meets all the academic needs of students throughout their studies.

2- Key Elements of the Program: The Master's program in Mechatronics consists of several subjects combining mechanical engineering, electrical engineering, control engineering, and computer science, enabling students to work in the fields of industrial automation, robotic design, and intelligent systems.

The main components of the program are as follows:

• Mechanical Engineering and Applied Mechanics:
 o Mechanical Design o Computer-Aided Design and Manufacturing
o Diagnostic by Vibration Analysis

• Control Engineering and Automation:
o Robotics and Control
 o Architecture and Programming of Industrial Programmable Controllers
o Automation
o Modeling and Diagnosis of Mechatronic Systems
 o Industrial Regulation

• Electrical and Electronic Engineering:
 o Applied Electronics
o Signal Processing
o Fundamental Technology of Mechatronic Elements

• Industrial Electronics and Embedded Systems:
 o Industrial Computing
o Embedded Systems

• **Sensor Technologies and Metrology:**

o Sensors and Actuators

o Non-Destructive Testing and Evaluation

3- Admission Requirements: Access to the Master's in Mechatronics is subject to classification and depends on the specialties of the bachelor's degree graduates, according to the following table:

Field	Harmonized Master's Program	Licenses Granting Access to Master's	Ranking Based on License Compatibility	Coefficient Assigned to the License
Electromechanics	Mechatronics	Electromechanics	1	1.00
		Industrial Maintenance	1	1.00
		Electronics	2	0.80
		Automation	2	0.80
		Mechanical Construction	3	0.70
		Other Licenses in the ST Domain	5	0.60

4- Basic Training Units: The fundamental units of the program include:

 • Applied Electronics

 • Automation

 • Mechanical Design

 • Robotics and Control

• Diagnostic by Vibration Analysis

• Non-Destructive Testing and Evaluation

 • Modeling and Diagnosis of Mechatronic Systems

 • Fundamental Technology of Mechatronic Elements

5- Advanced Training Units: The specialized units include:

• Sensors and Actuators

 • Signal Processing

 • Architecture and Programming of Industrial Programmable Controllers

• Industrial Computing

 • Embedded Systems

• Industrial Regulation

6- Training Costs: The costs associated with the Master's in Mechatronics mainly cover equipment for practical work (labs). Additional costs include providing presentation materials (Data Show).

It is worth mentioning that most practical work is carried out through simulation due to the lack of available equipment at the Faculty of Technology.

7- Language of Instruction: Currently, the instruction is provided in French.

8- Training Plan: The training plan for the Master's in Mechatronics requires students to hold a bachelor's degree in one of the following disciplines:

• Electromechanics

• Industrial Maintenance

• Electronics

• Automation

• Mechanical Constructions

The training plan is based on the following elements:

• **Specialized Units:** Advanced studies in mechanical engineering, electronics, control, and robotics

• **Practical Units and Laboratories:** Experiments and applied projects for a better understanding of theoretical concepts

• **Industrial Internship and Final Year Project**: Included in the fourth semester to help students prepare their final dissertation and facilitate their integration into the job market.