

## Design projects

### Instrumentation Engineering Projects

#### IDENTIFICATION

CODE : GM-3-S2-EC-PTI  
ECTS : 2.0

#### HOURS

Lectures : 0.0 h  
Seminars : 24.0 h  
Laboratory : 0.0 h  
Project : 0.0 h  
Teacher-student  
contact : 24.0 h  
Personal work : 24.0 h  
Total : 48.0 h

#### ASSESSMENT METHOD

#### TEACHING AIDS

#### TEACHING LANGUAGE

French

#### CONTACT

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#### AIMS

"Based on a simple mechanical system, students will be asked to :

- 1/ set up experiments to measure key parameters of the mechanical system,
- 2/ create a numerical model of the mechanical system,
- 3/ compare experimental results with numerical model predictions.

The skills and knowledge acquired in semetre S5 of 3GM will be mobilized, and in particular Data Science and Orders of Magnitude and Physical Sense.

Cross-disciplinary learning will be implemented by mobilizing what has been seen in Lagrangian dynamics/mechanics or Mathematics or Design and analysis of mechanical systems.

Finally, the environmental impact of the project will be assessed in terms of the use of IT resources and the FabLab, for example."

#### CONTENT

"The work is carried out in triads.

Based on a mechanical system and a problem provided with a set of specifications, the project work will address the instrumentation of the device, in particular measurements, via Arduino technology, for example. The entire acquisition chain will be developed, and actuators may be integrated.

Experimental results are then compared with a model of the problem. "

#### PRE-REQUISITE

Transversal competencies including Mechanical modeling, sizing order, analysis of mechanical systems, Mathematics, signal processing.