

MMI102

**Experimental methods in Mechanics**

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Nb of ECTS : 3



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### *Course description*

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The objective of this course is to provide the basics of experimental methods in mechanics. Several fields of mechanics are covered: fluid mechanics, solid mechanics, and vibrations.

The first part of the course is mainly made up of lectures that will deal with the physics and the use of the main sensors in each field, and with the notions of signal acquisition and processing.

In the second part, three projects of practical work will be proposed (one for each field).

### *Course evaluation*

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Three graded reports.

### *Course content*

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- 1. Introductory course**
  - Measurements principles
  - Uncertainty
  - Data acquisition principles
  - Signal processing basics
  - Exercises : Uncertainties / signal processing
- 2. Experimental methods in solid mechanics**
  - Principles and methods in solid mechanics
  - The main experimental methods, the sensors
  - Classroom exercise on experimental data
- 3. Experimental methods in fluid mechanics**
  - Principles and methods in fluid mechanics

The main experimental methods, the sensors  
Classroom exercise on experimental data

**4. Experimental methods in vibrations**

Principles and methods in fluid or solid vibrations  
The main experimental methods, the sensors  
Classroom exercise on experimental data

**5. Practical work in solid mechanics (2 sessions)**

Proposer ici un ou deux sujets

**6. Practical work in fluid mechanics (2 sessions)**

Proposer ici un ou deux sujets

**7. Practical work in vibrations (2 sessions)**

Proposer ici un ou deux sujets

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