



## MÉCANIQUE DES SOLIDES DÉFORMABLES ASPECTS EXPÉRIMENTAUX

### EXPERIMENTAL ANALYSIS IN CONTINUUM AND SOLID MECHANICS

**Lecturers:** Francesco FROILIO, Lyes NECHAK

| Lecturers : 0.0 | TC : 0.0 | PW : 16.0 | Autonomy : 0.0 | Study : 4.0 | Project : 0.0 | Language : FR

#### Objectives

- (1) become aware of physical phenomena in mechanics,
- (2) know different techniques for measuring useful variables in mechanics (extensometry, accelerometry, photoelasticimetry, stroboscopy, etc.),
- (3) develop the practical implementation of theoretical concepts and thus promote their assimilation,
- (4) knowing how to validate experimental results: critical analysis of the quality and relevance of the measurements carried out, comparing experimental results and results from theoretical or numerical approaches,

**Keywords :** Deformations, stresses, eigenmodes, resonance phenomenon, static and dynamic measurements, experimental and numerical methods, finite element method

#### Programme

Discovery lab

TP1: Study of the resonance phenomena of a flexible structure;

Practical work 2: Photoelasticimetry – Visualization of the stress field in 2D solids, measurement of stresses by photoelasticimetry.

Practical work Measurements and analysis

Practical work 3: Determination of the eigenmodes of continuous elastic structures;

Practical work 4: Extensometry (measurements by strain gauges) – Analytical examination, application to the determination of the stress field.

#### Learning outcomes

- Master the basic notions of deformations and stresses for the deformable solid
- Understand the link between assumptions, modeling and associated physical phenomena
- Know how to identify the elements of a measurement chain
- Know how to write a report of practical work and design office

#### Independent study

**Objectifs :** Be aware of the requirements and rigor of an experimental analysis.

**Méthodes :** Learning and mastering the instruments by direct handling during the measurement sequences, with assistance from the teachers

#### Core texts

#### Assessment