

Advanced modeling in computational structural mechanics



ECTS
3 crédits



Hourly volume
35h

Introducing

Description

Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):

A few advanced modelling methods in structural mechanics to tackle current real applications such as:

- computation of shell-type structures;
- use of CAD data for the computation;
- model and computation of contact problems between elastic bodies;
- image registration in view of performing data & model comparison in experimental mechanics.

The student will be able to:

On simple cases:

- Formulate and solve by the FEM beam models.
- Apprehend a computational technique based on the exact geometric representation in CAD (NURBS-based isogeometric analysis).
- Formulate and solve using various finite elements algorithms a frictionless contact problem
- Apprehend the data-driven (model-free) paradigm in computational mechanics.

- Identify material properties by image data - model comparison.

Necessary prerequisites

- Continuum mechanics.
- Elasticity modelling.
- Finite element method.

Évaluation

L'évaluation des acquis d'apprentissage est réalisée en continu tout le long du semestre. En fonction des enseignements, elle peut prendre différentes formes : examen écrit, oral, compte-rendu, rapport écrit, évaluation par les pairs...

Practical info

Location(s)

 Toulouse