Design of structures

ECTS
7 crédits

Hourly volume
79h

Introducing

Objectives

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

The student will be able to:
Finite element module :
- Perform finite element analysis using a commercial finite element code (Abaqus for example) following the presented principles and good practice.
- Identify the features offered by these numerical tools and the associated potentialities.
- Create relevant models related to the target objectives.
- Analyse and postprocess the obtained results.
- Analyze the impact of the modeling assumptions.
- Assess the risks inherent to the wrong interpretation of the results.

Reliability and Design of experiments module :
- Apply to practical case analyses the basics of reliability
- Build a design of experiments for the modeling of a physical system from numerical or experimental data.

Mechanics of vibrations module :
- Develop a linear dynamic model of a mechanical structure: a lumped parameters model for a discrete elements structure, or a distributed parameters model for a continuous structure.
- Determine the vibrations of these structures undergoing transient or permanent excitation.

Bibliographic work module :
- Carry out a literature review and establish a state of the art on a research topic that will be developed in I4GMPJ21 formation unit.
This state of the art will present :
- past history (previous studies, de facto situation, necessity of research)
- the main results of these past studies
- The elements that could guide future work in UF I4GMPJ21.

Necessary prerequisites

Finite element module :
Computer aided design (CAD)
Finite element concepts.

Mechanics of vibrations module :
Basics in solid mechanics, strength of material, dynamic systems.

Practical info

Location(s)

Toulouse