

Solid Mechanics

Linear and non-linear structure mechanics

IDENTIFICATION

CODE : GM-4-S1-EC-MEMDS
ECTS : 3.0

HOURS

Lectures : 16.0 h
Seminars : 26.0 h
Laboratory : 0.0 h
Project : 0.0 h
Teacher-student
contact : 42.0 h
Personal work : 10.0 h
Total : 52.0 h

ASSESSMENT METHOD

Final exam (2h)

TEACHING AIDS

TEACHING LANGUAGE

French

CONTACT

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AIMS

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*Knowledge:

Structural non-linear mechanics, solid mechanics, advanced finite element method, finite element analysis of structures, software implementation

*Capacity:

- to be able to have a unified vision of continuum mechanics and thermodynamics (thermal, solid, fluid)
- to be able to use and master an industrial finite element code for non-linear problems
- to be able to develop resolution algorithms for structural mechanics.

CONTENT

- 1) Thermodynamics for continuous materials
 - Kinematics of large strains
 - Local and global conservation equations, non-linear behaviors for solid materials
- 2) Computational structure mechanics
 - Non-linear finite elements analysis : Matlab and Abaqus

PRE-REQUISITE

Deformable solids mechanics (small transformations)
Numerical methods (differential equations and numerical solvers)

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