Material behavior - Plasticity

ECTS credits
2 credits

Semester
Fall

In brief

Course langage: French

Presentation

Prerequisites

Continuum mechanics, algebra and tensor analysis (1st year Mechanics course)

Learning objectives

Going beyond the framework of linear elasticity under the assumption of small perturbations:
- Discover the main types of nonlinear behavior of materials
- Know the thermodynamic framework in which the general models must fit
- Master several behavior models

Description of the programme

- Demonstration on simple tensile tests
- Thermodynamics of irreversible processes as a framework for writing behavior models
- Three examples of elasto-(visco)-plasticity models
- An example of an elasticity-damage model

Generic central skills and knowledge targeted in the discipline

- Know how to identify the appropriate behavioral model for the problem at hand

- Model complex problems with advanced behavioral models
- Propose behavior models adapted to new materials

How knowledge is tested

DS: written evaluation, 2h (100%)

Bibliography

- J. Lemaître et J.-L. Chaboche, Mécanique des matériaux solides, 2004
- D. François, A. Pineau et A. Zaoui, Élasticité et plasticité, 2009

Teaching team

Thierry Désoyer

Total des heures		**24h**
CM	Master class	14h
TD	Directed work	8h
TP	Practical work	2h

Useful info

Name responsible for EU

Lead Instructor

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