

DPT GENIE MECANIQUE INSTITUT NATIONAL DES SCIENCES APPLIQUÉES Domaine Scientifique de la DOUA - Bât, A. de Saint-Exupérit

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Vibration of Mechanical Systems

Acoustic and signal analysis

IDENTIFICATION CODE : GMCIP-4-S1-EC-TSA ECTS : 2.0 HOURS

Lectures :	11.0 h
Seminars :	13.0 h
Laboratory :	8.0 h
Project :	0.0 h
Teacher-student	
contact :	32.0 h
Personal work :	28.0 h
Total :	60.0 h

ASSESSMENT METHOD

final exam (2H)

TEACHING AIDS

Slides

TEACHING LANGUAGE

French

CONTACT

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"This CE is part of the Vibration and transversal tools teaching unit and contributes to: Engineering skills in engineering sciences:

- 1. Analyze a system (real or virtual) or problem
- 2. Exploit a model of a real or virtual system
- 3. Implement an experimental approach
- 4. Design a system that meets a set of specifications
- 5. Process data

AIMS

School skills specific to the specialty:

- 15. Establish an experimental approach
- 16. Establish a problem solving process

By allowing the student to work and be evaluated on the following knowledge:

- acoustics, noise, noise
- wave propagation in infinite and infinite mileu
- acoustic transmission
- measurement and signal processing
- By allowing the student to work and be evaluated on the following abilities:
- Analyze a noise problem
- Implement an experimental diagnostic procedure
- propose and quantify noise reduction solutions"

CONTENT

"I Basics: Sound pressure, frequency analysis, decibels, human ear, dB (A), sound level meter, environmental noise, noise at work

Il free propagation: propagation of plane and spherical waves, harmonic regime, particle velocity, intensity, power, geometric attenuation

III Propagation in confined space: Waveguides, standing waves, sound absorption, room acoustics, reverberation time, diffuse field, Sabine theory

IV Transmission through the walls: solid / overhead noise, insulation and weakening of walls, transmission of screens"

PRE-REOUISITE

Maths (differential equations), Statistics

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