

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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AIMS

"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

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 milieu
- 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

II 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-REQUISITE

Maths (differential equations), Statistics