DYNAMICS OF STRUCTURES

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Course content

- The course studies the time and frequency dependent behavior of constructions and buildings excited by dynamic forces.
- The course starts with the analysis of systems with one, two and several degrees of freedom, with and without damping, and also deals with simple continuous structures (beams and bars) and finite element models.
- Dynamic excitation sources and their effects are discussed, including wind and earthquakes.
- 4 case studies are presentend and discussed during the course

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Course schedule

Course schedule :

- Theory (24h) : Flipped class

not compulsory (but strongly advised)
- be on time!
- be quiet !

- Practice (24h) : Vibrations exercises : 8h (Matlab/Octave)
  Vibration project (FinElg) : 16h

compulsory

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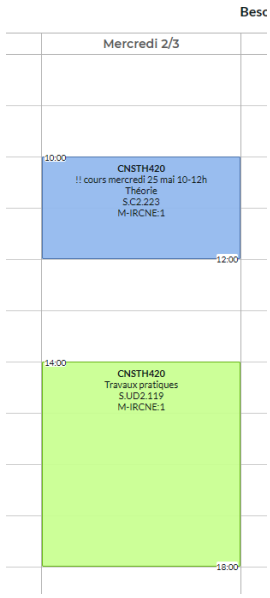
Course schedule



24h Courses Weeks 23-27, 29, 32-37

6x4h exercise session: Weeks 25, 27, 29, 32-34

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Course material and organization

Vibrations course slides and info available at:

https://arnoresearch.com/dynamics-of-structures-2021-2022/

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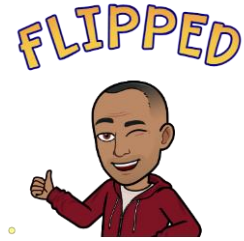
Flipped class principle

- Watching pre-recorded videos/reading material before coming to the class https://youtu.be/FN1gSfpl13I



- During the class :
  - Wooclap sessions to consolidate knowledge
    https://app.wooclap.com/events/YQFDJT/0
  - Questions and answers
  - Clarifications of the concepts not understood by the majority
  - Practical cases discussed in more details

→ Interactions are a necessity for continuous evaluation of the teaching/learning process

→ Flipped class will work if you play the game and will fail if you don't

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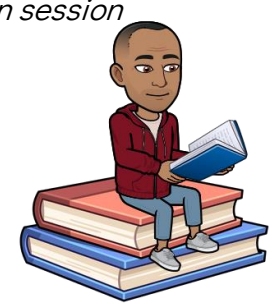
Course evaluation

Evaluation :

-Theory : Oral examination : *75%*

-Practice : Exercises: not part of the evaluation but absence penalized
Project: 25% *evaluated before the examination session*

> 50% : pass
< 50% : fail -> Second session in August/September



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Course objectives

Main objectives

- Understanding the fundamental concepts in vibrations applied to civil engineering problems

-Ability to apply these concepts to practical problems with a design-oriented mind.

→ I care that you become a good engineer useful to our society.

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Evaluations to reach objectives

-Understanding of the fundamental concepts in vibrations applied to civil engineering structures

Theoretical courses -> 4 practical case studies
-> Oral examination (with notes)

-Ability to apply these concepts to practical problems with a design-oriented mind.

Exercise sessions -> Project-> Oral individual assessment

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Philosophy of teaching and learning

Group working vs individual assessment

-> Learn to work in groups and benefit from the others, representative of real working conditions

-> Verify that you have the sufficient knowledge to work as an engineer (individual assessment), representative of what is expected from you to advance in your career.

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Philosophy of teaching and learning

No spoon feeding

-> You learn by doing yourself and by doing mistakes.
Listening and copying is not learning

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Questions ?

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