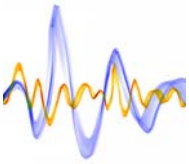


Dynamics of structures

Practical Details

Arnaud Deraemaeker (aderaema@ulb.ac.be)
Dimitris Aggelis (daggelis@vub.ac.be)

1

Course content

- The course studies the time 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).
- Signal processing tools are also presented.

---------- Prof A. Deraemaeker

- The course continues with a short description of the origin of earthquakes and their interaction with civil structures.
- Then, basics on wave propagation are presented, as another aspect of the dynamic behavior of structures.
- Examples of structural health monitoring based on elastic wave and vibration techniques are discussed.

---------- Prof D. Aggelis

2

Practical Details

***Course schedule :**

- Theory (24h) : Prof A. Deraemaeker (ULB) Vibrations – 14h
  Prof D. Aggelis (VUB) Wave propagation - 10h

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

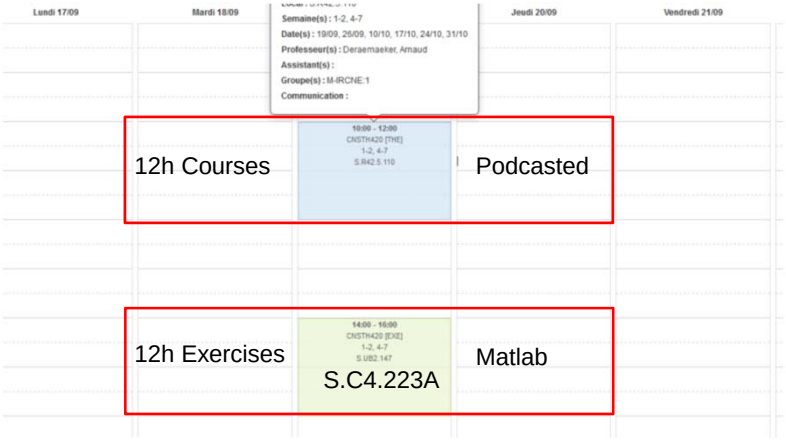
- Practice (24h) : Vibrations exercises : 12h
  Wave propagation exercises : 4h
  Experimental projects : 8h

compulsory

3

Practical Details

Vibrations : Prof A. Deraemaeker



+ Tuesday Nov 13 from 8 to 10 am (2h course)

4

Course support

Vibrations course slides and info available at:
https://arnoresearch.com/cnst-h-420/

Course podcasting

5

Course support

Vibrations course slides and info also available at:
https://uv.ulb.ac.be

6

Some of the difficulties

***Coming to another country is not an easy thing:**
-Administrative problems : be patient …
-Cultural changes : be open-minded
-Language : French, Dutch and English

***Learning in another country is a challenge, be prepared !**
-Different teaching/learning system : adapt yourself
-Notations/methods/background may be different
-Theoretical courses, practical exercises + home working
-Overall, be prepared to work between 40-60 hours a week …

*Learning in English
-Requires adaptation period

-> Be prepared to work hard
-> Ask the 'local' students for help !

7

Practical Details

Evaluation :

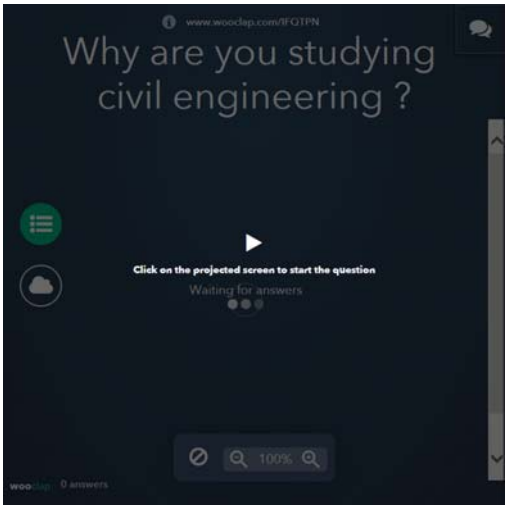
-Theory : Oral examination (January) : *75 pts*

-Practice :
Exercises and projects: *25 pts*

- 50/100 : pass
< 50/100 : fail -> Second session in August/September

8

Your expectations



9

Objectives of the course

My main objectives

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

-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.

10

Evaluation to reach the objectives

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

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

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

Exercise sessions -> 1 final exercise -> Oral individual assessment

11

My 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, representative of what is expected from you to advance in your career.

No spoon feeding

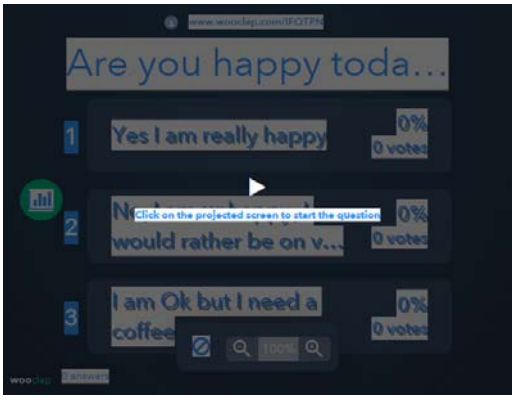
-> You learn by doing yourself and by doing mistakes. Listening and copying is not learning

12

Continuous evaluation

- Wooclap sessions
- Exercise sessions in parallel with course

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



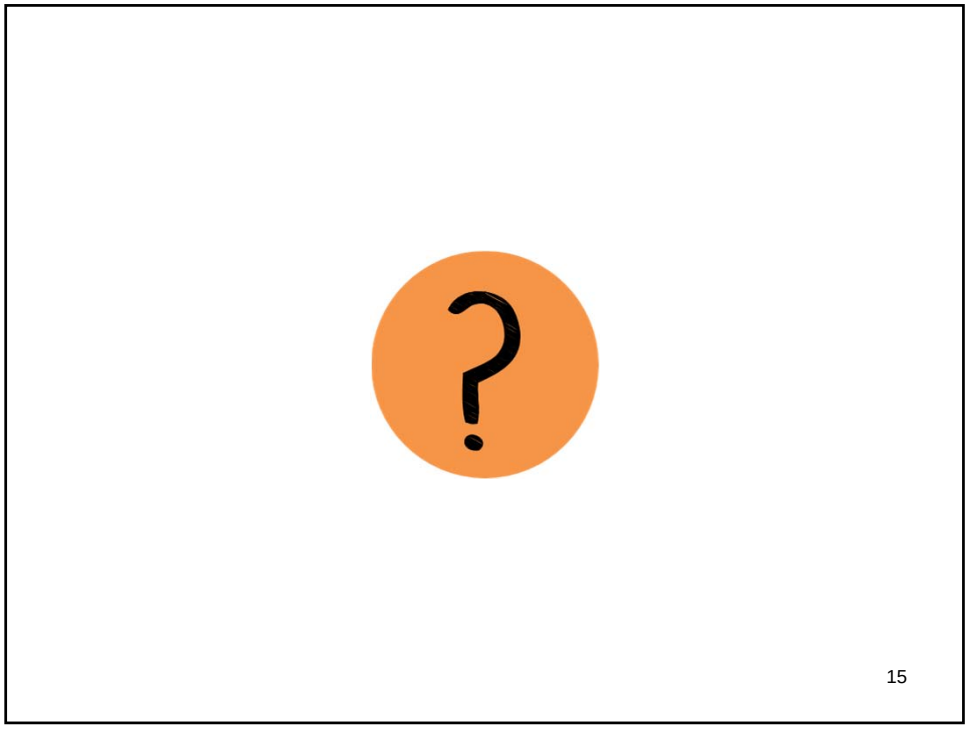
13

Course and exercises content

Course :
- Presentation of test cases to introduce necessary theory
- Presentation of the theory
- Illustration with movies
- Wooclap session to assess the understanding of the key concepts

Exercise sessions :
- Matlab exercises related to the theory (morning)
- Discussion on practical applications
- Open questions session (padlet)

14


15