Date: 29-01-18

Place: Zilnia

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SMS Training Visit to DTU

Technical University of Denmark (DTU)

Department of Civil Engineering (DTU-BYG)

DTU Civil Engineering
Department of Civil Engineering

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- *MAIN INFORMATION*
- *LAB PROJECT*
- *TEACHING ACTIVITIES*

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MAIN INFORMATION

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TIME FRAME AND MAIN ACTIVITIES

1st week: Monday 12 March – Friday 16 March (*WEEK 11*)

- Fire Lab: preparation of experiments for teaching activities
- MSc Education: Fire Dynamics on Friday 16 March (8-12)
- Pedagogical seminar and other seminar related to teaching

2nd week: Monday 19 March – Friday 23 March (*WEEK 12*)

- MiB Education: 11B05 Fire Risk Management on Mon 19 and Tue 20 March
- MiB Education: 11B27 Complex buildings on Thu 22 and Fri 23 March
- MSc Education: Fire Dynamics on Friday 23 March

OBS: This is a tentative plan and can be subjected to changes

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PRACTICAL ASPECTS

Theoretical background:

- The project work and the teaching activities are focused on fire safety design. It is therefore desirable that you have a general background in this area.
- In particular, it is good if you have some lab experience and interest either in fire risk or in fire safety design of complex buildings.
- Please note that you will have plenty of time to study and prepare on your own or in small group before attending lectures and doing experiments.

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PRACTICAL ASPECTS

Daily activity:

- Daily activities include: attendance to seminars and lectures, preparation for lab project, participation in lab experiments, possible participation in teaching (to be agreed upon), as well as group-work and self study.
- Daily activities will be organized within the time frame 8.00 to 16.00. On the days when there is no participation in courses, the activities will be limited to the time frame 9-15.
- A social event will be organized (costs covered by yourself)

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PRACTICAL ASPECTS

Travel and accommodation

- Activities will start later on the first day and finish earlier on the last day, so that it is possible to arrive/leave on the same day
- DTU Campus is in the commune of Lyngby, about 15 km from Copenhagen city center. It is well connected with bus 150S from Nørreport metro station in Copenhagen and with bus 190 from Lyngby train station (S-stog).
- Unfortunately, DTU has no guest-houses or accommodations to offer. Finding an accommodation in Copenhagen is neither cheap or easy, so please start looking for one as soon as possible.

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LAB PROJECT

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FIRE LAB EXPERIMENT PLAN

Experiments to support Fire Dynamic / Fire Chemistry education:

Learn from established experiments:

1. Pool fires
2. Bomb calorimeter
3. Flame spread
4. Time to ignition

Development of new student experiment:

1. Fire extinguishing
2. Toxicity
3. Other ?

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TEACHING ACTIVITIES

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PARTICIPATION IN COURSES

WEEK 11 – Msc Education (spring semester - 13-week period):

- 11020 Fire Dynamics (Thu 8-12)

  The course will introduce the students to methods for undertaking a rational fire risk assessment and an ensuing fire risk management process for the built environment.

- 11050 Super-light structures (Fri 8-12)

  The course gives competence to design super-light structures and pearl-chain reinforcement, which are new concrete structures invented at DTU Civil Engineering that open possibilities for new shapes of building structures and for reducing price and resources.

- 11376 Probabilistic modeling in civil engineering (Thu 8-12)

  The course introduces basic concepts of probability and probabilistic modeling with emphasis on civil engineering applications (probabilistic mechanics, structural reliability analysis, risk assessment, …).

www.dtu.dk/english/education/msc/programmes/civil_engineering#study_programme__study-lines-2017

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PARTICIPATION IN COURSES

WEEK 12 – MiB Education (2nd module of the 3rd semester):

- 11B05 Fire Risk Management (Mon 9-16 & Tue 9-12)

  The course will introduce the students to methods for undertaking a rational fire risk assessment and an ensuing fire risk management process for the built environment.

- 11B05 Performance-based design (Tue 13-16 & Wed 9-16)

  Introduction to application of performance based design in Denamark

- 11B27 Fire Safety of Complex buildings (Thu 9-16 & Fri 9-12)

  The course is aimed at presenting prescriptive regulation as well as advanced numerical methods for the design of fire installations and safe evacuation of complex or tall buildings

http://www.brand.dtu.dk/english/education/courses

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PARTICIPATION IN COURSES

WEEK 12 – MiB Education (2nd module of the 3rd semester):

- 11B05 Fire Risk Management (Mon 9-16 & Tue 9-12)

1. Historical fires of relevance
2. Scenarios development – QRA method
3. Introduction to Probability Mathematics
4. *Occupant safety and evacuation scenarios*
5. *Basic probability calculations*
6. *Introduction to Bayesian Networks*

covered in 2nd module (?)

7. Risk analysis and decision theory
8. Introduction to influence diagrams and decision graphs
9. Probabilistic modelling of fire risk
10. Case studies

http://kurser.dtu.dk/course/11B05

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PARTICIPATION IN COURSES

WEEK 12 – MiB Education (2nd module of the 3rd semester):

- 11B13 Performance-based design (Tue 13-16 & Wed 9-16)

1. Introduction and history
2. Fire safety strategy and process
3. Operation and maintenance
4. Exercise 1
5. *Presentation of exercise 1*
6. *Evacuation, fire and smoke spread*
7. *Risk and event-tree*
8. *Exercise 2*

covered in 2nd module (?)

9. Construction and Eurocodes
10. Danish certification as fire advisor

http://kurser.dtu.dk/course/11B13

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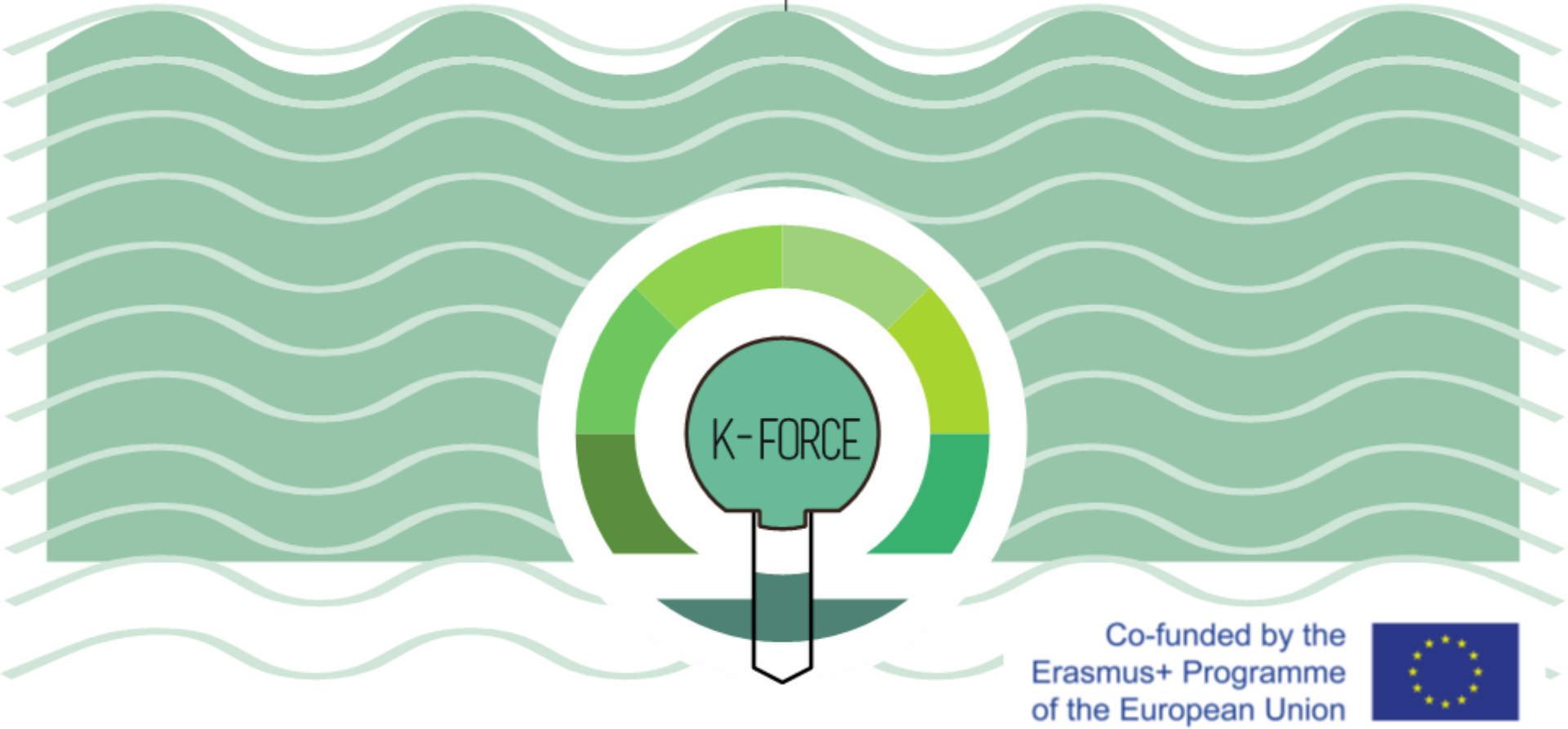

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Thank you for your attention

Luisa Giuliani & Frank Markert

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