

1ST HW – STRUCTURAL ANALYSIS (PRESENTATION)

Form groups of two or three (four), choose a building from the list (see below) and present its *structural analysis* at the 4th or 5th practical class complemented by a one-A4-page long *abstract*. Maximum 12 groups can be formed due to the time limitation of the practical. Practical teachers are available during the office hours to answer questions related to the homework.

The presentation should cover the following topics:

- a *brief history* of the building, its *parameters* and main *architectural characteristics*
- description of the buildings *structural model* with *self-made sketches*: plans, sections, and structural details of the connections
- constructing a *3D model* of the buildings load-bearing structure (or a typical part) is recommended, it can be either a *CAD* or a *physical model*
- specify the *building materials* and the (*typical, characteristic*) *loads* of the structure
- *evaluate* the building's structural, economic and architectural properties
- *highlight the specific structural component* that will be considered as inspiration for the 2nd HW

The structural analysis of the building should comprise 70-80% of the presentation. The presentation should contain *referenced* pictures and self-made drawings, figures and concluded by a *list of references*.

The length of each presentation is *12 minutes* followed by questions and feedbacks for *+3 minutes*. *Each member of the group should take part in the presentation*. On the day of the presentation, a laptop and a projector will be provided. Presentations should be taken to the class on a USB drive in *.ppt or .pdf format*. In addition, *one A4 page long written summary* of the presentation is also required including the description of the individual work of the group members. Maximum points: 45 points.

Topics can be found and groups can be formed in the following link:

<https://docs.google.com/spreadsheets/d/1cJ9ynnwZ1X8hZnFA7ZNtAt-hzKvxtGxZoNmufGwwvtc/edit?usp=sharing>

DEADLINES:

- group forming and choosing a building: until the 2nd week (21.02)
- oral presentation, slides in .pdf or .ppt, A4 summary 4th-5th week respectively (06/13.03)

Due to its format (oral presentation) delayed submission in general is NOT possible (exceptions might apply in case its reasonable). For a late submission of the *written part* until 20.03 the earned points are reduced to 80%. Any homework submitted thereafter earns 0 points, with an ultimate deadline of 22.05. Submitted and accepted homework is a requirement for the signature.

13th February 2020
Orsolya GÁSPÁR

2ND HOMEWORK – STRUCTURAL DESIGN

Work in groups and design a pavilion-scale building whose form is driven by its structure, inspired by a structural element of the building selected and analysed in HW 1.

REQUIRED PARTS: *Part 1 and Part 2 are both required, but only one of the options of Part 2 should be worked out.*

Part 1. A brief description of the structure

max. two A4 pages

Including:

- its structural model
- factors having an impact on the design (loads, function etc.)
- advantages, disadvantages of the structure (material, form, function, structural model, economic aspects, aesthetic aspects)

Part 2. Option A: Create a physical model

it should be *conceptually* analogous to the designed structure regarding its material and joints

- the material choice of the physical model should reflect the properties of the structure (e.g.: Is it homogeneous or made of smaller elements? Can it bear compression or tension or both?)
- the joints should work the same as they would in the real structure (pin-joint, fixed joint etc.)

The aim of the physical model is to genuinely illustrate the behavior of the real structure in a simple way.

Part 2. Option B: Create a digital documentation of the structure including:

- floor plans
- sections
- 3D drawings
- details of the typical joints

The digital documentation must include measurements, materials, cross-sections of the structural elements.

The scale of the physical model or the drawings should be discussed with the instructor.

DEADLINES:

15.05 12:00: physical or CAD model + description of the structure, either electronically or printed, as agreed

For a late submission until *18.05* the earned points are reduced to 80%. Any homework submitted thereafter earns 0 points, with an ultimate deadline *22.05*.

Submitted and accepted homework is a requirement for the signature.

13th February 2020
Orsolya GÁSPÁR