



WORKSHOP ASSIGNMENT - 2

Construction solutions for a given project.

Task formulation:

The students will work on the projects from the first intensive course in Vienna, going deeper into problem solving and construction management. The participants from the first workshop will explain the concept of the projects to the new team members.

The focus of the course lies on: timber technology, construction system, connections, load bearing structures, detailing of different building elements, solutions for fire protection, acoustics, durability, sustainability, and thermal insulation.

The students should elaborate the following task components:

Load bearing structures.

Components of the analysis

- Plans with the structural grid (static system)
- Explanation of the vertical and horizontal load transfer (primary and secondary constructions, bracing concept, spanning (e.g., which roof system), foundation.
- Timber technology, connections (adjustment of architectural concept, if needed)

Construction system

Components of the analysis

- Assembly, joining technology, prefabrication, modularity.
- Assembly sequence from the foundation to the roof in chronological order
- Sustainability concept: temporary approach, combinability, recyclability, and deconstructability (dismantling)
- **Components:** construction system from foundation to roof
 - Roof system explanation: Warm roof vs. cold roof/ventilated structures
 - Wall system explanation: bar-shaped or flat components, mixed forms, bracing, prefabricated elements and modules, constructive moisture protection.
 - Facade design with energy aspects
 - Cantilevers (construction system)

Building Physics

- **Superstructure catalogue (Details):**
 - **Exterior wall-roof:** detail 1:5, 1:10 (material selection, thermal envelope, constructive moisture protection, noise protection concept)
 - **Exterior wall-ceiling:** detail 1:5, 1:10 (material selection, impact sound insulation and airborne sound insulation, wet/dry screed)
 - **Interior wall-ceiling:** detail 1:5, 1:10 (material selection, wet/dry screed, impact sound insulation and airborne sound insulation)
 - **Plinth (exterior wall):** detail 1:5, 1:10 (material selection, constructive moisture protection)
 - **Interior wall-roof:** detail 1:5, 1:10 (material selection,
 - **Cantilevers:** detail 1:5, 1:10 (material selection, sealing, waterproofing and thermal separation)



Aspects to be considered:

- Thermal insulation (u-value) - thermal envelope, seals and thermal break
- Sound insulation (Rw, Lnw) - noise control concept (impact sound insulation):
 - Interior wall-ceiling
 - Interior wall-roof
 - Exterior wall-ceiling
 - Plinth (exterior wall)
 - Exterior wall-roof
- Constructive moisture protection
- Concept node/connection details (sound insulation / structural engineering)
- Separating components between utilization units

Type of assessment: Group work (international teams, group of 6 students)

Prerequisite: Course 1

Learning materials: Course 2 and Course 3

Number of hours: 50h

Aim of the task: The students will elaborate the constructive execution of a given project (residential building, 3-4 floors) through a real-life, problem-based and learning-by-doing approach. They will go through the real project phases and look at key aspects (timber technology, structural systems, building physics) holistically, which will make significant impact on the learning outputs.

Applied during: O4 intensive course in Cracow, Poland (Mai 2022, Host University: CUT)