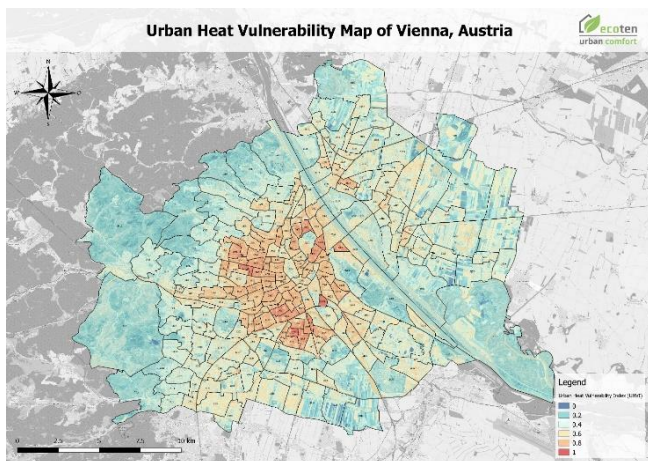




### Background

Climate change impacts are more and more noticeable in cities. Overheating of buildings in summertime is increasing. Therefore, climate change adaptation in cities is of high priority. At the same time, the demand for temporary housing is increasing in cities.

There is growing concern about an intensifying urban heat island effect in cities. Vulnerable groups, in particular, are affected, as they often live in buildings prone to summer overheating and at the same time do not have the means to avoid the city climate during heat waves, causing an increase in heat-related deaths. The project addresses persons, who are most affected by heat waves: senior citizens, families with small children or babies and pregnant women, that live in unfavourable, overheated accommodations.



Suggested measures of the Viennese strategic plan "Urban heat islands"<sup>1</sup> should be taken into consideration.

Figure 1: Hitzekarte (<https://www.wien.gv.at/stadtentwicklung/energie/hitzekarte.html>)

<sup>1</sup> <https://www.wien.gv.at/umweltschutz/raum/uhi-strategieplan.html>

## Design Task

In this design studio, we explore temporary living solutions on the water for Viennese residents during heat waves. The idea is to propose a design for floating units which can accommodate four to six people for a limited duration. Contrary to typical house boats already available on the market, we aim to develop a rather functional (non-luxurious) solution which incorporates the necessary facilities for a temporary accommodation.

To guarantee a maximum of flexibility regarding the positioning, the units should be mobile not only on the water surface but also on standard flat-bed trucks. Therefore, the overall size should not exceed the measurements of a standard shipping container.

In general, house boats on the Danube river have to be registered motor vessels and therefore comply with the legal requirements and may only be anchored in marinas/harbours<sup>2</sup>. However, as that the proposed solutions are in public interest and do not serve recreational or commercial purposes, we will assume that the floating units do not include its individual propulsion system and may merely be towed by tugboats.

Suitable locations will be defined but could be along side arms of the Danube with low flow speeds or nearby lakes.

## Design Requirements

- A creative design: we want to prove that these shelters can be architectural sophisticated structures.
- Dimensions: Overall dimensions should not exceed standard container sizes.
- Stability and Floatation: Although, the units will be anchored on rather calm waters, towing on river (such as the Danube) should be possible. Sufficient buoyancy has to be considered which requires a rough calculation of the overall weight.
- Autarchy: A connection to the public energy/water/waste water grid cannot be guaranteed at all locations. A self contained solution is preferred.
- Sustainability: Materials used should incorporate a high level of sustainability. In our case of alternating users and transportability, choosing durable materials have to be considered. Structures on the water suffer will be strained to a high degree. Therefore, the detailed design has to allow easy repair or replacement of exposed building materials (surfaces in particular).
- Space allocation plan will be discussed in detail during the introduction.

## Methods

An integral component of this course will be the implementation of 3D-Visualisation technology – not only as a final-presentation tool but also during the design process.

In this studio we will cooperate with the newly established DAVIS (Data Visualisation Space)<sup>3</sup> at TU Wien's main library. DAVIS is designed as an experimental learning space for faculty and students. A 3D-capable, floor-to-ceiling LED wall provides an intuitive and immersive experience of complex interrelationships of digital data through visualization. A nearly five-meter-long touchwall is used to develop and deliver interactive content.

At the beginning of the semester, the library will host a blocked course 040.007 (3 ECTS VU, Transferable Skills) which will make the participants familiar with the basic use of hard- and software.

However, it is absolutely necessary that all participants have already good skills in 3D drawing, design and visualisation as the introductory course will only teach the transfer of your existing data to the 3D wall. Students with "3ds Max" are preferred as this software serves as a mediator between your own CAD Software and the software environment (COVISE)<sup>4</sup> of the 3D Wall.

During the semester we will have our regular meetings at DAVIS and you will have the option to test your designs on a regular basis. The final presentation will also be take place in that 3D environment. Physical models will not be necessary.

<sup>2</sup> <https://www.derstandard.at/story/2000041303476/hausboote-oesterreicher-nicht-nahe-am-wasser-gebaut>

<sup>3</sup> [https://forschungsinfrastruktur.bmbwf.gv.at/de/fi/data-visualisation-space-davis\\_5324](https://forschungsinfrastruktur.bmbwf.gv.at/de/fi/data-visualisation-space-davis_5324)

<sup>4</sup> <https://www.hlrs.de/solutions/types-of-computing/visualization/covise>



Team work is a must (!) with 2 participants per group. The reason is the limited capacity at the 3D-Lab which can only handle the smaller amount of projects.



Figure 2: DAVIS at the main library

## Schedule

**12.10.2023, 1:00pm**  
**DAVIS**

### **Introductory meeting**

Attendance is absolutely compulsory for all participants – no exceptions!  
 Students not attending this first appointment will be deregistered from this course.

**16.10. – 20.10.2023**  
**Check TISS**

### **Compulsory VR Course (Block 1-2)**

040.007 Scientific Work: Data Visualisation in Virtual and Augmented Reality  
 VU, 2.0h, 3.0EC, to be held in blocked form. Mo-Fri 10:00-17:00

**7.11.2023 – 18.1.2024**  
**Weekly meetings**

### **Consultations**

In order to pass this design studio it is necessary to attend the consultations on a regular basis. We will meet at DAVIS at 1:00pm

**23.11.2023, 1:00pm**  
**DAVIS**

### **Intermediate Presentation (compulsory attendance!)**

Each group gets 10 minutes to present their project.

**22.1. – 26.1.2024**  
**DAVIS**

### **Compulsory VR Course (Block 3)**

040.007 Scientific Work: Data Visualisation in Virtual and Augmented Reality  
 VU, 2.0h, 3.0EC, to be held in blocked form. Mo-Fri 10:00-17:00

**26.01.2024, 1:00pm**  
**DAVIS**

### **Final Presentation (compulsory attendance!)**

Each group gets 10 minutes to present their project. Please prepare a digital presentation AND an A3 PDF folder with high resolution.

## Requirements and ground rules:

### **Registration:**

Registration to this course only via the faculty's Pool Application system.  
 Please upload your portfolio in the application system which proves your 3D drawing and visualization skills.  
 We do not accept any other applications via email, phone or personally!

**Compulsory attendance:** To pass the design studios, personal attendance is necessary at intermediate presentations, final presentation and at 50% of the regular consultations. Participants who do not fulfill the required attendance will automatically receive a negative evaluation without any exceptions. The reason for absence (illness etc.) is not relevant.

**Always be on time:** Always be on time and pay attention to the consultations of other projects. This saves your and our time as we don't have to explain the same issues and have more capacity for individual topics.

**Language of tuition:** International students are welcome! We will try to communicate most information in English. However, some documents will be available in German only – we will help you to translate the most important information in English upon request. All participants must have good English proficiency and the final presentation (plans, project description) will be in English.

**Attention English speaking students:** Do not merely pick this course because it is conducted in English. If you do not provide the necessary skills, it makes no sense to participate.

### Required skills:

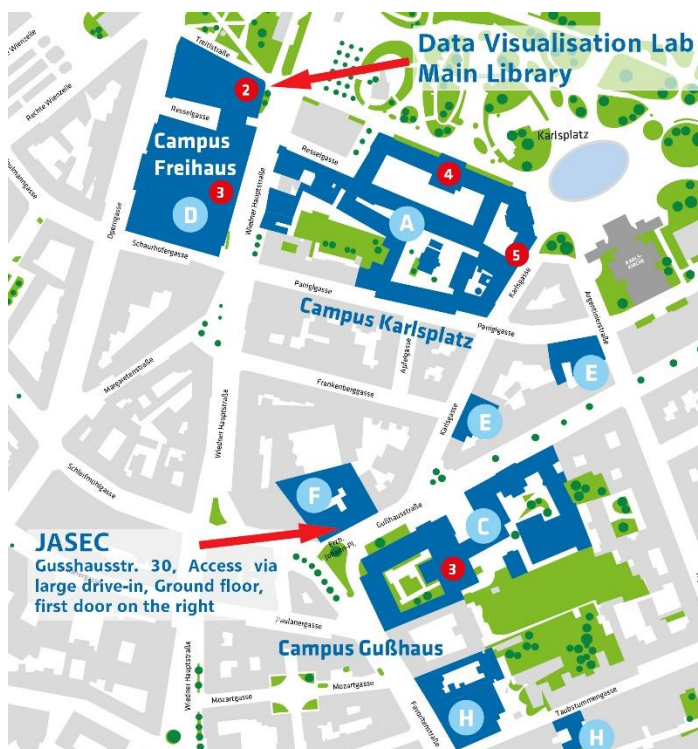
- Design Competence: Aesthetic skills are basic requirements
- Construction and physics: We expect a feasible and sustainable solution.
- CAD and 3D Design: 3D design and visualizations skills and are an absolute must!  
Applications from students familiar with 3ds Max will be preferred.

**Evaluation criteria:** Design quality, functional and structural solution, quality of the 3D model and presentation skills

### Location: DAVIS (Data Visualisation Space)

Library Building, Campus Freihaus, Resselgasse 4

Enter via the main entrance and stay on the right -> DAVIS is located on the ground floor



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