

## Climate Friendly Buildings - Then and Now



### Lecturers:



Wolfgang Stumpf

### Description

The effects of climate change are already clearly visible. In Austria summers mark new heat records, extreme weather events occur more often, onset of winter comes much later – if at all. The heating demand decreases, but some of our residential buildings already need active cooling systems. In the European Union about forty percent of the total energy is consumed by the building sector.

It is about time to counteract climate change. During the last few decades we have searched for efficient building energy concepts, defined certificates for holistic sustainable building, developed innovative building technology to save energy and reduce greenhouse gas emissions.

There have been always people living under extreme climate conditions. They have adapted their way of life, habitation and culture to such hard circumstances respectively they used the environmental conditions for a passable indoor climate. The buildings were constructed with materials and heated by resources from the region. The people from these days already knew how to benefit from solar energy and wind. Didn't they?

In the morning you get theoretical information combined with practical examples. In the afternoon we visit historic and ancient buildings in and around Vienna or work in groups on our projects.

The first week "Climate & Buildings" gives you basic information about climate and the state of the art of sustainable buildings. The second week "Discovery & Application" focuses on some historic buildings situated in Vienna, we analyze their sustainability and building techniques to provide a comfortable indoor climate. We will compare this kind of building tradition with architecture influenced by extreme climate in other regions of the world. In teamwork you will develop a small design project, so you can apply your new information on a one-room-house and share your ideas with international colleagues.

Six professors and scientists from Austrian universities and research institutes will support the course with lectures and the newest research results.

In this course you will learn about the interaction between outdoor and indoor climate and

its impact to the building's shape, material, energy and user. You will be able to analyze the thermal functionality of buildings, new and existing ones, high-tech, low-tech and no-tech. During the project work you will experience the integrated design approach for the thermal and ecological optimization of a building. Together we will find measurements to adjust a building to different climate conditions, calculate the energy demand and indoor climate with simple simulation software and discuss the results. After the winter course you should be sensitized for the wisdom that lies in our built tradition and be motivated to find energy sufficient solutions for the buildings of the future. Be inspired from the existing!

## Schedule

### Daily routine

- Mornings: 4 teaching units (lectures, practical examples, discussions, group work)
- 6 afternoon excursions to sites in and around Vienna
- Evenings and weekend: INNES social program (optional)

### First Week: Climate & Buildings

- Introduction (Climate Change | Outdoor Climate)
- Innovation (Smart Cities & Smart Buildings | Design Strategies | Building Energy Concepts) Project Kick-Off | Excursion
- Tradition (Earthen Architecture | Low-Tech Solutions) | Excursion
- Building (Building Optimization | Thermal Comfort | Simulation) | Excursion
- Technology (Heating - Cooling - Ventilation - Automation | Ventilative Cooling)

### Second Week: Discovery & Application

- Energy (Balance to Zero Energy and Zero Emission) | Excursion
- History I: Vienna and its Growth Towards a Modern Metropolis | Excursion | Project Work
- History II: Historic Climate Friendly Buildings | Excursion | Project Work
- Refurbishment | Outlook | Project Work
- Project Presentation

### Project

Joint design project "Zero Emission One-Room-House" discussed with your international colleagues

### Details

<b>Location</b>	Vienna (Austria)
<b>Tuition fee</b>	Student EUR 1200 , Professional EUR 2500
<b>Start-End</b>	01.07.2019. - 12.07.2019.
<b>Recommended Credits</b>	8
<b>Target group</b>	Students and professionals with background in architecture, civil engineering, environment technology or art history
<b>Level</b>	Undergraduate, Graduate, Professional

<b>Duration</b>	two weeks
<b>Kind of exams</b>	ProjectWork
<b>Facebook</b>	innesvienna