

ARC-HEST 2022-2023

Architecture for Human Environment with Smart Technologies

스마트 기술을 이용한 인간적 환경의 건축

Swiss-Korean Academic Exchange Program:
Study of the synergy of **architectural design**,
human factors, and **technologies** in the office
buildings and their combined effect on the
indoor environmental quality and human-
building interaction in the context of the local
culture and architecture *in the post pandemic
era*

Natural Environment

Climate - Landscape - Weather

Building

Architecture - Construction - Design - Envelope - Materials - Surroundings

Technology

Automation - Energy - HVAC - Machine Learning - Operation - Sensing & IoT

IEQ

Acoustics - Air Quality - Lighting - Temperature

Humans

Behaviors - Comfort - Health
Perception - Performance



The strong traditions, use of advanced technologies and direction towards a sustainable society, that Switzerland and South Korea share, pave the way to the international cooperation **ARC-HEST** between two countries to raise awareness about urbanism and related social issues and facilitate solutions inspired by different cultures and policies. Through the collaborative work of Swiss and Korean academicians and students from different disciplines, the program aims to comprehensively study the working environment in each country in conjunction with the local culture and architecture.

This **second edition** of the joint pedagogical program in the framework of two-week long Exchange Schools, a **Summer School 2022** in Switzerland, and **Winter School 2023** in South Korea, will consist of lectures, workshops, and studios. The essential part of each Exchange School is the visit of case study buildings by students and the analysis of the building design, operation, indoor comfort, occupant's satisfaction, and behaviour by different student groups, especially after the pandemic has changed the ways of work and building uses. The main task of the student groups is to design a building assessment method, and to collect, process and evaluate data from the existing buildings **in the post pandemic era**. Based on the findings, the groups will need to develop innovative solutions for the improvement of the built indoor environment, the satisfaction of the occupants with the building, and human-building interaction in the context of the diversity of occupants and architectural design across Switzerland and South Korea.

Behaviour of buildings and indoor environmental quality are generally different for heating (winter) and cooling (summer) seasons. For these reasons, the topic of **summer comfort** will be investigated in Switzerland during the **Summer Exchange School** in **22 August - 1 September 2022** and the topic of **winter comfort** will be studied in South Korea during the **Winter Exchange School** in **6 -17 February 2023 (tbd)**.

Each Exchange School will involve a total of selected **30 students** equally shared between 2 countries; the students *must be committed* to participating in both Exchange Schools and *have good communication and written English*. Each country coordinates the selection of students that have applied at the three individual universities. However, the trans-disciplinary approach has been identified as the *fundamental element* for the generation of innovative solutions applied to the built environment within the framework of this Exchange Program. Therefore, the common selection guidance is to aim for an interdisciplinary mix of excellent students.

Targeted Outcomes:

- Establishment of the long-term cooperation programme between the partners, facilitate the exchange of ideas among students and enhance creativity.
- Increased mutual knowledge of Swiss and Korean cultures and traditions in architecture, engineering, and technology.
- Reinforced Swiss scientific and cultural presence in the fields of architecture and construction in East-Asia and vice versa.
- Dissemination of the results of the two Exchange Schools - production of the short video and publication of the illustrated book based on the contribution of students.
- Joint research topics originated from the meeting of different competencies among the academicians of the universities involved in the programme.
- Long-term research cooperation and scientific publications as a result of the joint research.

