

# ARC-HEST

## 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



### 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, paves 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.

The joint pedagogical program in the framework of two-week long Exchange Schools, a **Summer School 2019** in South Korea, and **Winter School 2020** in Switzerland, will consist of lectures, workshops, and studios. The essential part of each Exchange School is the visit of 3 *case study buildings by students* and the analysis of the current state of the building design, operation, indoor comfort, occupant's satisfaction, and behaviour by different student groups. 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. 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 South Korea during the **Summer Exchange School in 18-30 August 2019** and the topic of **winter comfort** will be studied in Switzerland during the **Winter Exchange School in 2-14 February 2020**.

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.



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