

Core Program Master-Thesis HS 2021:

## ECONOMICAL DURABILITY

Cooperation Partner 1: IEA, chair of Prof. Theriot

Cooperation Partner 2: ITA, Architecture and building system, Prof. Dr. Arno Schlueter

Cooperation Partner 3 (optional): x

Picture (optional):

Poster

Title and short description (ca. 300 words):

## HYPERCOMFORT

Today the answer to the energetic crisis is often found in the increasing of standard of comfort hence thickening of the walls. More insulation, more material, more separation between inside and outside.

The façade is merely a question of composition, and beyond being a thin line on a plan or a section it could become potentially an expandable space to be inhabited. Stretching this membrane to disclose a buffer area between climatically distinct zones.

The building skin greatly impacts how much heat has to be added or removed in order to retain a comfortable indoor climate. Given that these processes vary throughout the year, it will thus be a question of looking more in depth into this question of the role of the building skin and its capacity to become adaptive and performative rather than a permanent border.

The building skin is therefore a potential device to stretch the spaces and a performative device to balance the energy input and loss in the building.

Zero emission buildings and cities is the core research of the chair of Architecture and building systems to design efficient building systems that operate in synthesis with architectural and urban design as well as state-of-the-art construction technologies, adaptive to occupant needs and climatic conditions.

Both chairs will invite the students to develop a specific analysis and project challenging the performance of the building skin and its capacity to adapt throughout the year and be responsive to the different climatic conditions.

Description of preparation and elaboration phase in key-words:

CHAP 1: MYTHOLOGY	7 weeks (Group work)
Research / atlas	
Urban site analysis	
Energetic site analysis:	
Tool assessment for energetic analysis and functional skin calculation and demands	
Flow visualization	
CHAP 2: FINDING FREEDOMS	5 weeks (individual work)
Program	
Structure	
Energy & resources	
Envelop	
CHAP 3: BINDING FRAGMENTS	3 weeks (individual work)
Narrative	
representation	

Work to be done in preparation phase: teaching formats (crits, seminars, lectures; individual, group work, ...), inputs (lectures, visits, ...), research and working formats (literature review, archival research, lab work, site survey or analysis, experiments, ...), expected outcome (ca. 300 words):

The diploma will be organized around the three sub-mentioned chapters.

The mythology chapter will be a group work which correspond to the Master thesis preparation phase. It will include a research on a given topic and a reference and it will be compiled in an iconographic presentation. The realization of a built fragment will synthesizes this preliminary phase.

The site will be given shortly after the semester start to allow the students to collect information, conduct a precise site analysis from an energetic and urban perspective and produce models, maps and diagrams. The students will also analyze key references regarding specific building skin system.

In the elaboration phase, chapter 2 finding freedom and chapter 3 binding fragments, the student will become autonomous and work individually.

S/he will look more precisely at the elements of the program to come up with a spatial device and an envelope that will be responsive to a wide range of constraints such a temperature, wind, heat, opacity, transparency, user's adaptability and responsiveness.

Throughout the semester the students will participate in specific integrated workshops with specialists such as:

Raphael Hefti, Art,  
Johannes Schwarz, Photography  
Julie Peeters, graphic design and publication  
Olivier Campagne, 3D visualization  
Gontran Dufour, facade engineering  
Luis Enrique Monzo, structure

Those experts will support the students by offering a complete range of input lecture. A site visit is also included in the program as well as architecture visit of remarkable buildings.

The outcome of the studio is to understand and translate spatial, urban, energetic, structural, technical and programmatic features and translate them into a complex device that has the ambition to answer both climatic concern and urban concern.

Ratio of grading by cooperation partners for preparation and elaboration phase:

Preparation phase:

Percentage designer(s): 50%

Percentage non-designer: 50%

Elaboration phase:

Percentage designer(s): 75%

Percentage non-designer: 25%