

AR-301(ag)

**Théorie et critique du projet BA5 (Fröhlich M. & A.)**

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Cursus	Sem.	Type
Architecture	BA5	Obl.
HES - AR	H	Obl.
Mob. AR	H	Opt.

Langue d'enseignement	français / anglais
Crédits	12
Retrait	Non autorisé
Session	Hiver
Semestre	Automne
Examen	Pendant le semestre
Charge	360h
Semaines	14
<b>Heures</b>	<b>6 hebdo</b>
Cours	2 hebdo
Projet	4 hebdo

**Nombre de places**

**Il n'est pas autorisé de se retirer de cette matière après le délai d'inscription.**

**Remarque**

Inscription faite par la section

**Résumé**

Greenhouse Studies explore le potentiel des structures de serres dans le contexte des défis contemporains. Les ateliers de projet étudient les serres comme un type architectural sensible au climat, capable de transformer des structures existantes en espaces collectifs et communautaires.

**Contenu****GREENHOUSE STUDIES II**

'Clothing as an extension of our skin helps to store and to channel energy, ...If clothing is an extension of our private skins to store and channel our own heat and energy, housing is a collective means of achieving the same end for the family or the group. Housing as shelter is an extension of our bodily heat-control mechanisms - a collective skin or garment.'

*Marshall McLuhan, Understanding Media: The Extensions of Man (Cambridge: MIT Press, 1911)*

Following a first design studio on greenhouses, Laboratory EAST presents Greenhouse Studies II - The collective (Fall semester), and Greenhouse studies III - The common (Spring semester), the laboratory's second and third interaction with a unique element in the history of architecture. The studio is interested in the multiple uses of greenhouse spaces outside the horticultural context. In Greenhouse Studies I, the design studio took a cross-sectional look at domestic greenhouses as a space for expanding the individual home. The greenhouse served as garden for vegetables, as passive heating device, or extra living room. Through superposition, juxtaposition, or all-over solutions, the greenhouse spatial structure constituted a new thermal buffer zone that interacted differently with the existing volumes. In Greenhouse Studies II and III, the studio will continue the survey, aware of new dimensions: from the individual to the collective, from the collective to the common, from the small villa scale to the collective housing, from collective housing to common programs. Together we will build on these concepts while exploring greenhouse-like solutions. What are the implications of such change? The results will contribute to an open-source, collaborative database that will grow each semester.

**Type and Typology as framework**

Typology is recognised as a fundamental concept for a better understanding of architecture and its history. It serves as a basic framework, a kind of tacit backbone for the organisation of architectural knowledge and can also be a tool for generating new architectural solutions. Some argue that typology is as old as architecture itself, as it involves the reproduction of dominant types and models that are deeply rooted in socio-cultural realities. Alternatively, it can be said that architecture responds to new social and economic needs by inventing or revising existing types. Typology and types

traditionally interact with the formal dimension (buildings organised by a common form or element) and the functional dimension (buildings organised by a common function). However, this focus has often overlooked other, less tangible possibilities, such as structural relationships between types and climate in architecture.

### **Climatic Type as central theme**

Conservatories, greenhouses, glasshouses, forcing houses, hothouses, invernaderos in Spanish, orangeries, jardins d'hiver or serres in French - many are the terms associated with the idea of housing plants. All of these artefacts have a common goal: to create a climate adapted to plant life. Although greenhouses were conceived with a very precise objective, this climatic space quickly became an exhibition space, a social space, and even a space for celebrations before it fell into disuse. In the second half of the 20th century, greenhouse-based solutions made a comeback, fostering solar architecture and reinforcing the foundations of bioclimatic architecture in western societies. During this time, horticulture continued developing greenhouses as productive spaces, and innovations led to intensive fields of production. In absolute terms, it is not the form or function that characterizes the greenhouse but the definition of a space with specific climatic conditions. In most cases, using wood or metal structures and transparent materials such as glass, these structures keep a very low ratio between the material used and the enclosed space, offering the most with the least. The characterization of the greenhouse as an artefact of a climatic nature suggests that the greenhouse as a type does not depend on scale or size. Since its inception, the multiform and multifunctional greenhouse space has been transformed into a social space with very specific microclimatic characteristics.

### **The collective**

'The luxury of unused space! This was also an attempt to test an idea. The space changes independently. Rooms change in space through the growing and dying of plants. It should be attractive for the interior designer to experience such autonomous spatial changes.'

*In LOG ID (ed.), Gruene Archen-Harmonie mit Pflanzen leben das Modell der Gruppe LOG ID (Frankfurt am Main: Fricke Verlag, 1983)*

Unfolding over the course of two semesters, both design studios will explore the dynamics between greenhouses, greenhouse components or greenhouse functions and existing building structures as architectural forms, climatic spaces and temporary uses of space:

### **Greenhouse Studies II**

The collective, the design studio will focus on the renovation of collective residential architecture in the Romandie. When renovating existing monotonous buildings from the construction boom of the 1970s, the potential for conversion is overlaid with the climate aspect of the greenhouse. The goal is to renovate the building, enhance its existing features, explore scenarios of densification, expand existing programmes or introduce new ones, enrich living comfort, and consider passive heating and cooling solutions. The design should prioritise the collective dimension, and wherever possible, test greenhouse-like solutions by focusing on concepts such as seasonal living, microclimatic diversity, and synergy of living spaces. Extending the building's lifespan involves considering materials, as well as exploring typological structures capable of accommodating change and a range of use cases. The development of both phases will be undertaken in groups consisting of two or three students, and a Seminar Day will comprise a series of multidisciplinary theoretical contributions from external experts.

We will investigate the possible interactions between two different architectural spaces, and gain a better understanding of the typological transfers and climatic synergies between them. Greenhouse-like structures offer the opportunity to investigate prefabricated systems, test designs for deconstruction and reversibility in design thinking, and ultimately find a 'lighter' way to redesign existing buildings.

By looking at greenhouses as specific built environments, the studio will formulate solutions based on the concept of architecture as atmosphere, while exploring its transformative potential. In addition, the studio will examine greenhouses as climate-responsive artefacts, exploring how seasons can change spaces, or, in other words, what it means to inhabit spaces seasonally. If we change clothes according to the seasons, should our buildings change too?

### **Practicalities**

Each semester will be composed of two parts. The first part - Research on precedents - will be developed individually to expand the corpus of references and help us learn from existing buildings. The studio will collectively build a visual atlas made of peculiar, strange or remarkable case-studies. The design study will analyse the characteristics of the case studies, like: flexible use of space, evaluate their thermal behaviour throughout the seasons, formmaking aspects, thermal airflow and mechanics of openings. The key findings from this body of references will inform the design phase. In the second part - Design Studio - participants will develop their own design in groups of two or three.

### **Learning outcomes**

By the end of the course, the student must be able to:

Apply and present research capable to inform a design project

Analyse and interpret critically an architectural work  
 Formulate a problem and provide design-based solution  
 Represent accurately a design proposal with drawings and models at multiple scales  
 Develop a narrative and present arguments to specialised and non-specialised audiences  
 Develop awareness about the implicit and explicit messages of an architectural project  
 Work collaboratively and integrate knowledge from different disciplines

### Mots-clés

Type / Typology  
 Greenhouse  
 Atmosphere  
 Bioclimatic Architecture / Biophilic design  
 Climatic Types / Thermodynamics  
 Transformation / Reuse  
 Energy Resources  
 Collective Housing / Intermediate spaces / Inclusion

### Acquis de formation

A la fin de ce cours l'étudiant doit être capable de:

- Catégoriser
- Comparer
- Evaluer
- Formuler une hypothèse
- Visualiser
- Explorer

### Méthode d'enseignement

The course is designed to provide a rich learning experience through a variety of teaching methods. The course includes:

- Case-study analysis: basic research on type development, examining significant works that are incorporated into a shared knowledge database;
- Flipped Classroom: work in the design studio, where students develop their own positions on the topic using a building as a case study;
- In-hands workshop: learning and developing various presentation techniques such as 3D printing;
- Seminar day: organise and participate on a public seminar day where experts come together to discuss various aspects of the studio topic,
- Fieldtrip: The design studio includes a field trip to visit case-studies and enrich the learning experience.

Progress checks and constructive feedback are provided, and individual and round-table presentations are held. Autonomous group discussions and supportive roundtables are encouraged throughout the semester.

### Travail attendu

- to develop its own design work, contribute to team's work, and collaborative hands-on construction
- to present the project by means of drawings, visualisations, oral presentations and models ranging from 1:200 to 1:5 scale, practical and manual skills.
- to work both independently-autonomously, and collaboratively sharing common goals of the design studio
- to active participate in the course, including lectures, roundtables, peer-to-peer discussions, mid-term and final presentation.
- to active participate in the field trip, the seminar day, in the common research and collective design survey
- to active participate in the design of the working environment in the studio

### Méthode d'évaluation

The course employs a continuous assessment method that combines a set of assignments and factors:

- Enquiry and research phase (30%). This includes data survey, rigor and critical reasoning, graphic and verbal communication.
- Project design and development (55%) with a focus on design concept, graphic implementation, model making and complex thinking. This includes conceptualization, spatial quality and architectural expression, site, programmatic strategy, process and progress, graphic and verbal communication, innovation and critical thinking.
- Multiformat representation and effective oral communication (15%)

The participation of the student is expected throughout the course. Student engagement and self-assessment forms will support the evaluation throughout the semester.

After each phase - Research / Seminar Day / Design reviews-a joint evaluation is carried out in an open dialogue with the entire group. The common goals, improvements and successes of the course are assessed and discussed.

## Encadrement

Office hours	Oui
Assistants	Oui
Forum électronique	Non
Autres	<b>The course is held in english.</b> TEAM Tiago Borges, Martin Fröhlich and Guests

### Voyage d'étude

The design studio includes a study visit to different collective housing projects from the second half of the 20th century and other more recent examples. The visit includes works by Rolf Schoch, Atelier 5, Log Id, Lacaton & Vassal, Clauss Kahl Merz Atelier and Esch Sintzel. The proposed itinerary includes Lausanne-Bern-Basel-Mulhouse (FR)-Rixheim (FR)-Niffer (FR)-Bien-Lausanne. The study trip will take place between september 20th to 23rd. Estimated cost per student: 170 CHF (includes visits, travel and 2 nightsaccommodation). Travel support grant by the school is only available during the spring semester.

### Remarques

This design studio will work closely with the course AR-442. While not mandatory, it is recommended to take AR-442 Comfort and architecture: sustainable strategies, as it provides training in specific software tools for climate analysis that will support the studio work.

## Ressources

### Service de cours virtuels (VDI)

Oui

### Bibliographie

will be provided with a reader in Sept 2025