

i.sd // SS 2025 // DESIGN STUDIO EM 2

ECOLOGIES OF SCIENCE – Science Center Innsbruck ... encore!

Instructors: Robert R. Neumayr & Maja B. Wolf



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ECOLOGIES OF SCIENCE – Science Center Innsbruck ... encore!

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Robert Neumayr Beelitz & Maja Wolf

Weekly Reviews:

Every Thursday @ 13:00 – Institute

Language:

English & German

First Meeting – Kick Off:

06.03.2025 – 13:00

THE COURSE

As part of this year's vertical studio project at the i.sd, this semester's design studio EM2 will encourage students to speculate about the urban, architectural, educational, economic, socio-cultural and environmental potential of implementing a new science centre for Tyrol within Innsbruck's existing city fabric, making use of the historical landmark building of the Rauchmühle.

Today, conducting organising, archiving, and communicating high-quality research has become more important than ever, helping to broaden scientific understanding and to jointly tackle the big issues of our time, from climate change to human health. At the same time, the free practice of science and education is endangered by political and social agendas, questioning its values and merits, resulting in the need to strengthen and manifest its position within contemporary society.

We as architects are called to provide the conceptual, spatial, and architectural framework to strengthen scientific work and knowledge collection, storage, transfer, and dissemination by developing novel concepts and typologies for spaces, in which scientists, educators and the general public can work, evolve and collaborate by exchanging thoughts, information, and ideas.

In teams, students will develop individual strategies and architectural concepts by using novel digital and analogue design tools. The goal of the studio is to design contemporary spatial organisations, based on spatial, programmatic, material and geometric explorations. Abstract architectural concepts and spatial prototypes will be contextualised on the specific historical site of the Rauchmühle, at the same devising strategies about the sustainably reuse of the existing (infra)structures, tapping into topics such as re-use, carbon neutrality, embedded energy and life cycle considerations.

Within the framework of this studio the question of "Ecology of Science" will be addressed simultaneously on various different yet interconnected levels:

On an abstract level, students are encouraged to develop strategies for the research, collection, organisation, and transfer of scientific knowledge by developing a series of conceptual ecologies with networks of collaboration and interaction between the actors in question.

On an architectural level, students are required to think about the physical and semiological spaces (spatial ecologies) that frame and foster the social interactions connected to these modes of knowledge transfer. All architectural interventions, in turn, must be carefully balanced with the historic building on the site, making careful (re)use of the existing spaces and infrastructures.

THE SITE

The historic “Rauchmühle”, located along the Haller Straße in Innsbruck, will serve as the site for this semester’s design studio. This industrial complex, which has witnessed significant events and transformations over the last century, stands as a testament to the evolution of industrial architecture in Austria. The Rauchmühle site, still operational today, is not only a modern milling facility but also a symbol of resilience and innovation, having been rebuilt multiple times after devastating incidents in the early 20th century.

The existing buildings, characterized by their robust industrial design and historical significance, alongside the surrounding site, will be the focus of this semester’s exploration. The challenge lies in reimagining and transforming this industrial heritage into contemporary, innovative spaces that reflect today’s technological, societal, and cultural shifts. Students are encouraged to critically examine the existing structures, explore their historical and functional layers, and envision new interventions that honor the past while pushing the boundaries of architectural design. This studio will serve as a platform to experiment with volumetric concepts and sustainable solutions (considering CO2 footprint, embedded energy, life cycle assessments, and the like) that breathe new life into this iconic site.



RESEARCH TOPICS

Preliminary research will focus on three areas of investigation:

1. The examination of contemporary modes of scientific and artistic research, knowledge transfer, and art education.
2. The analysis of existing science centres and other buildings for the exchange of scientific and artistic knowledge such as the Science Centre Wolfsburg (ZHA), Zeitz MOCAA Cape Town (Heatherwick Studio), National Studio for Contemporary Arts - Le Fresnoy (Bernard Tschumi), and others.
3. The discussion of contemporary lightweight constructions, technologies and material systems, in the light of environmental impact and sustainability.

Teams of students will conduct this research during the first weeks of the semester in preparation for the design project ahead.



METHODOLOGY

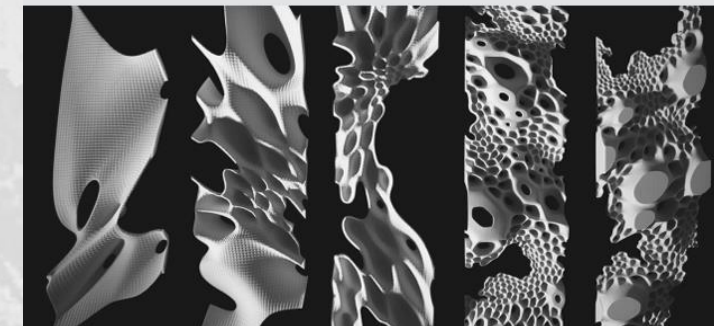
Students will analyse and explore a variety of best practice examples of relevant building typologies, strategies for knowledge transfer and education, contemporary construction technology, and sustainable building theory. In combination with input lectures by the tutors, the students collective research will help to develop a fundamental understanding of the topic's key aspects.

The referenced projects will be understood as complex architectural systems, consisting of a series of interrelated subsystems that together contribute to the building design as a coherent and functional architectural space. Systems and Sub systems to be analysed include program, circulation, spatial organisation and hierarchy, structure, materiality and facades. In this course, students are challenged to select and thoroughly rethink one of these systems, developing new and experimental solutions for it. The studio's underlying assumption is that a profound shift of one significant building system will - due to the interwovenness of all the building's systems - push the building design towards an entirely new and novel typological solution.



1 RESEARCH

Contemporary references will be examined to build a catalogue of collective knowledge, these and projects.



2 PROCESS & STUDY MODELS

Research based design thesis will be explored and developed in prototypical spaces and diagrams.



3 CONCEPTUAL DIAGRAMS

Architectural ideas and processes shall be visually communicated via conceptual diagrams. The diagram is therefore not only an instrument for documentation but a design tool itself.



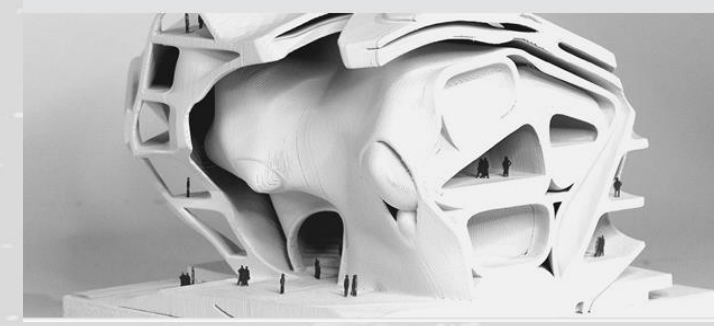
4 ARCHITECTURAL DRAWINGS

Typology and programme will be refined and represented using architectural drawings and illustration techniques.



5 DIGITAL REPRESENTATION

Spatial and atmospheric qualities will be explored and demonstrated in threedimensional digital models.



6 PHYSICAL REPRESENTATION

Spatial and atmospheric qualities will be explored and demonstrated in threedimensional physical models.

STUDIO CULTURE & RESOURCES

This design studio is organised as a collaborative studio, based on the idea that participants in this studio will learn as much from each other as from professors or tutors of the institute. Students will, therefore, form teams of two persons each to develop, present and submit their design thesis together. Within the framework of the studio's brief, teams will work on their own schedule and organise themselves to meet deadlines, prepare presentations and subdivide the design and research work. Reviews will take place once a week. Meetings will be held at the institute, online only or hybrid.

Also, all teams are encouraged to discuss and exchange ideas, tools, techniques, and skills and contribute to a large studio archive of ideas and concepts furthering their experience and fostering their architectural knowledge. This constant exchange of information will – in addition to the weekly meetings in person – largely rely on digital tools. The university and the institute, therefore, will provide a series of tools and resources which we will use throughout the design course to upload, structure, organise, store, distribute, share, and present information and knowledge among all participants. Additionally, the studio will make use of online tutorials, courses, and other resources about digital design tools and technologies that are available on the internet.

OLAT will be used to upload, collect and distribute the weekly briefs and other important documents and information, such as access links, reading lists, or submission materials. MIRO will be used to organise, structure and display the (preliminary) results of your work. All work will be uploaded to the respective

MIRO board and remains there throughout the entire design process. In that way a comprehensive digital archive of all work is assembled that can be used for collaboration, information exchange and presentations. A link to the board will be sent out in time. Every week, all work in progress and other materials for discussion will be uploaded to MIRO before the review and presented from the MIRO board during the review.

Work includes research, analysis, and synthesis in order to deduct and organize one's ideas to form a coherent architectural proposal. Design research is conducted via state-of-the-art design methodologies, that will be individually developed in digital and physical models. The architectural proposals will be represented via diagrammatic and architectural drawings, visualisations and physical model building to communicate the individual concept of the students' work.

A reading list will be provided.

ABOUT THE INSTRUCTORS



Robert R. Neumayr

Robert studied architecture in Vienna and Paris and received a M.Sc in architecture from the Technical University Vienna before completing his M.Arch II with distinction at London's renowned Architectural Association Graduate School Design Research Lab (AADRL). He holds a doctoral degree from the University of Applied Arts in Vienna.

Since 2000 he has been researching contemporary digital design practice, focusing on responsive architecture, parametric urbanism, algorithmic design, evolutionary design strategies, and machine learning and AI in architecture. His research and projects have been published and exhibited internationally and been awarded numerous prizes.

He has been teaching at Studio Zaha Hadid and Studio Kazuyo Sejima at the University of Applied Arts in Vienna, as well as at the University of Pennsylvania (US) and the Institute of Experimental Architecture with Patrik Schumacher. He is currently a lecturer at the i.sd at the University of Innsbruck.



Maja B. Wolf