



INTEGRATIVE/S DESIGN
EXTREMES
BUILDING BIOSPHERIC

INTRODUCTION

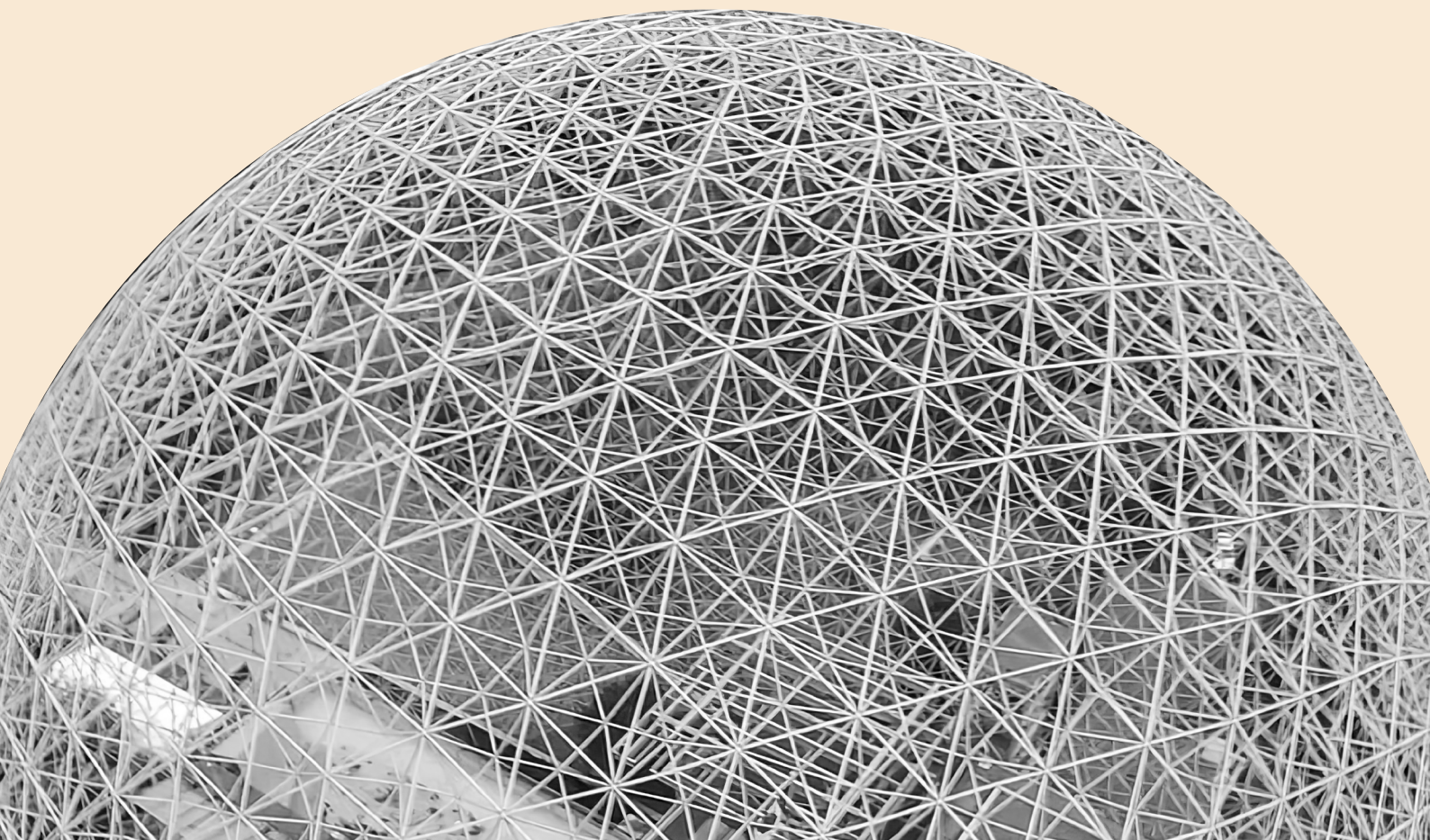
Dear students,

We are happy to present you our new E2 studio: Building Biospheric Architecture. The course has been designed to teach you a variety skills reflecting the heart of Integrative Design | Extremes and the team's expertise.

Prof. Barbara Imhof is a space architect and design researcher which has been educated in architecture in Vienna, London and Los Angeles. She is co-founder and leader of LIQUIFER, a firm specialising in space architecture which collaborates with NASA and ESA. Mathias Bank is from Denmark, and has a background from The University of Applied Arts in Vienna while also having worked for BIG Architects in the past. He just finished his PhD on generative AI processes in early architecture design. Layla van Ellen is from the Netherlands/Belgium and she studied building technology at TU Delft and holds a PhD from Newcastle University in living architecture, her focus is on sustainability transitions.

On the following pages you can find a structured design brief and details about how we will approach designing architecture as a living organism.

Good luck picking a studio!
Barbara, Mathias, and Layla





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DESIGN BRIEF

Building Biospheric reimagines architecture as a living organism - a structure that breathes, grows, and sustains life. The task is to design a self-sustaining, biospheric architectural complex that provides shelter for both humans and the ecosystems they coexist with. This will involve creating systems that are entirely independent of traditional infrastructure, such as energy grids, centralized waste treatment or industrial food production. The focus is on achieving complete circularity, where material and energy flows are fully integrated and self-sustaining. You will receive a detailed brief of the systems before being tasked with integrating them into an existing building that can no longer fulfill its intended function. The goal is to design an architectural complex that is a closed-loop, efficient and permeable system, which not only supports human needs but also nurtures the surrounding environment, fostering a deep interdependence between architecture and nature.

Working in groups, you will creatively repurpose contemporary churches in Innsbruck, adapting and expanding them into thriving, self-sustaining ecosystems. The studio will guide you to develop design solutions that address environmental, social and technical challenges on an architectural scale.

BACKGROUND

For a sustainable future, the built environment needs to detach itself from the intensive use of resources. We need to use circular economy principles to re-use existing structures that have become obsolete, recycle materials and generate renewable energy. But being self-sustaining goes beyond the technical and environmental aspects, it is about creating communities that can thrive together and rely on each other, not just for the people but for the whole ecosystem.

The environmental impact of the building industry is a pressing issue, as it contributes 30–40% of the carbon dioxide that's heating our planet. A fundamental question for any architectural development is whether constructing a new building is necessary at all. In this context, adaptive reuse emerges as a powerful solution - repurposing existing structures to meet evolving societal needs while minimizing environmental impact. In many cases, the most sustainable building is the one that already exists.

Beyond technical solutions, this studio emphasizes the importance of creating spaces that foster thriving communities - interdependent systems of people, plants, animals and natural processes. By blending architecture with living systems, you will reimagine how we design and inhabit the built environment, contributing to a future where humanity can coexist harmoniously with the natural world.



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METHODS & TOOLS

Participants in the studio will engage with a range of methods and tools to develop key skills in Biospheric Architecture. These include understanding core concepts such as self-sufficiency, regeneration, and circular economy, and applying creatively at programmatic and technical scales. Through workshops and group activities, participants will explore the integration of programmatic aspects into three-dimensional space and learn to merge technical systems with architectural design.

The program emphasizes systematic research, critical analysis of existing projects and implementing lessons learned into design work. Participants will refine their ability to focus on essentials, filter relevant information and enhance personal working methods, including self-organization and collaboration within teams. These tools and methods aim to foster both independent and collective learning while encouraging creativity and critical thinking.

The studio will be a mix of informal design crits, PIN-UPS and workshops to guide you in the design process. The two PIN-UPS are designed for you to learn from the whole group by sharing your progress and ideas on how to tackle different challenges. The studio starts with an analysis workshop on adaptive re-use & biospheric communities to help broaden your understanding of the topic. After the midterm, a second workshop, which will be hosted by guest Nico Schouten (TU Delft & Sustainability manager at Royal BAM Group, NL), will explore tools and methods on how to design self-sufficiency at a technical level, to help you advance your design into a realistic self-sufficient system.

The studio will be taught mostly on Thursdays (with the exception of workshops and around public holidays) and in English | German.

IMPORTANT DATES

06.03	Introduction workshop
27.03	PIN-UP
30.04	MIDTERM
02.05	Workshop Tools for Self-Sufficiency
tbd	PIN-UP
26.06	FINAL REVIEW

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5. *Arcosantis Experimental Town* by Arcosantis Foundation, AZ (USA)
6. *ReGenVillages* by EFFEKT in Almere (The Netherlands)
7. *Eden Project* by Grimshaw Architects in Cornwall (UK)
8. *BIOSPHERE II* in Arizona (USA)