SUSTAINABILITY IN EDUCATION

Ula Kozminska, MSc.Arch, PhD

PRESENTATION

1. Strategic Contract Objective 2 Sustainability in Education
2. Sustainability and Ecological Thinking at AAA
3. Studio 3A Care
4. Studio 3B Material Matters
5. Arch4Change Project - Digital Curriculum for Climate Emergency (E.Donovan)

Ula Kozminska, MSc.Arch, PhD

STRATEGIC FRAMEWORK CONTRACT 2022-2025
OBJECTIVE 2
SUSTAINABILITY IN EDUCATION

VISION

The objective 2 of the Strategic Framework Contract for 2022-2025 focuses on educating graduates with **clear and relevant competencies within sustainability** and the green transition by offering a curriculum with a strengthened focus on sustainability and knowledge sharing across the school. Moreover, the objective aims to contribute to the green transition by exchanging and transferring sustainability knowledge to the industry to address future climate challenges.

In Aarhus School of Architecture, we will engage with those forthcoming demands on different levels – starting with positioning our design actions as the undertakings of co-existing living beings, through **collectively reframing the notion of architectural sustainability in the education**, to developing sustainable, lifelong learning which addresses rapidly changing requirements of the green transition practices.

VISION

The sustainability approach changes how we engage with architecture impacting our modes of thinking and making. Ecological thinking redirects fundamental design questions, requires transdisciplinary knowledge and processes, aided by **an expanded set of tools**. The field is characterised by the high complexity, accelerated pace of development and the diversity of approaches. Therefore, the vision for the future project-based education at Aarhus School of Architecture is **to integrate sustainability as a natural component by embedding ecological thinking and sustainable making in the design studios and units, and supporting courses**.

This striving for embeddedness avoids the checklist and top-down approaches to sustainable architecture. It acknowledges and creates **awareness of the diversity of the existing expertise** within the institution by unfolding the dialogue and **improving the visibility of sustainable engagements**. Thus, AAA will acknowledge the diversity of thoughts and approaches by developing strategies to address the challenges of the **heterogeneous and constantly evolving** field.

VISION

Finally, the awareness of existing expertise and educational approaches to sustainable architecture at AAA will be developed through **a dynamic culture of sharing knowledge** concerning sustainable architecture among the faculty, students and practitioners by **promoting criticality and developing courses, methods and tools for lifelong learning, self-actualisation and transdisciplinary collaboration necessary to address changing climate challenges and the pro-environmental, societal demands**.

ACTIONS

- AAA will **raise the awareness on sustainable architecture practices among the staff and students** that the faculty engages in knowledge exchange concerning the green transition and the students graduating have an understanding of the methods and processes supporting ecological thinking and sustainable making.
- **AAA will improve the visibility of sustainability expertise and pro-environmental pedagogical practices** by identifying and mapping existing knowledge, skills and approaches to sustainability in the school.

ACTIONS

- **AAA will discuss the possible strategies for embedding sustainability and the green transition issues in the curriculum** by exploring the balance between relevant initiatives within the design studio and specialist courses.
- **AAA will align the vision, goals and actions** developed to support the strategic objective 2 **with the work of the curriculum group**.

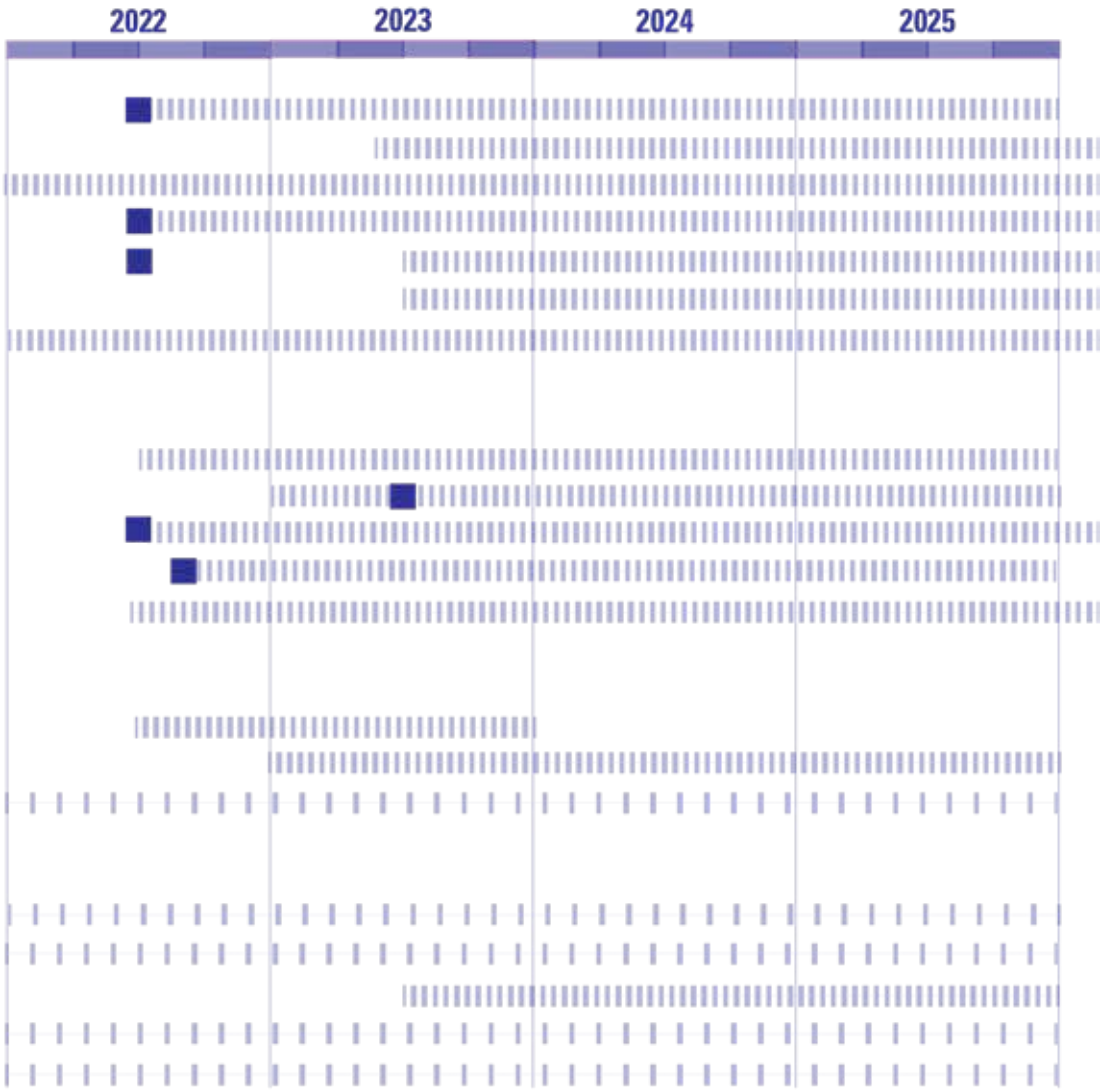
ACTIONS

Curriculum / Students / Study plans
sustainability question in the study plan
stronger learning goals concerning the environmental crisis
formats promoting students' reflection on sustainability
BA lecture series on sustainable architecture
sustainability in the 1st year
MA sustainability workshops
e-learning (Arch4Change)

Mapping of sustainability competencies
visualisation of existing sustainability competencies
sustainability at the teaching day and portoflio reviews
knowledge bank to improve the visibility of existing sustainability expertise
sustainability positioning within research plans
strategic alliances

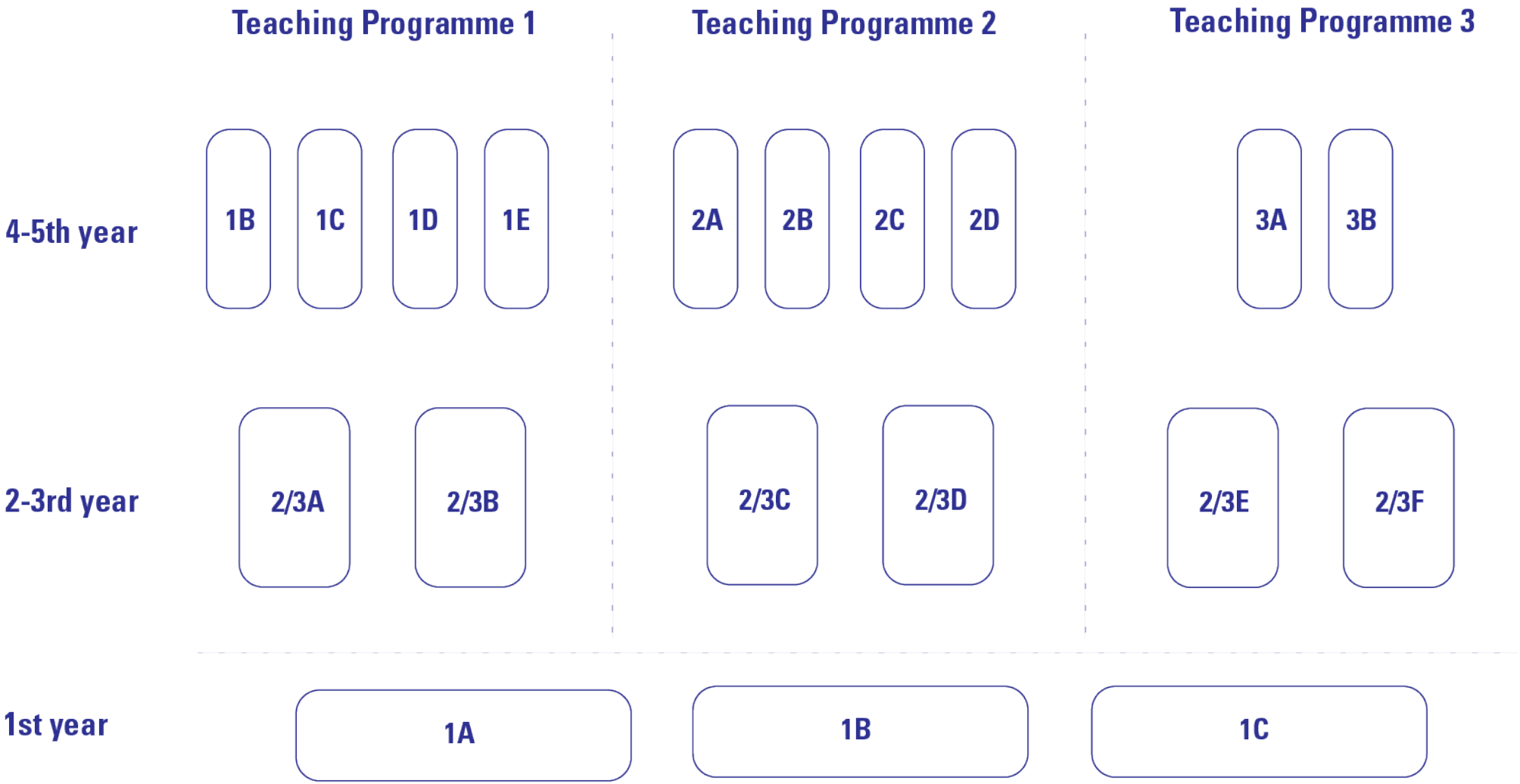
Staff
definition of minimum sustainability competencies among staff
development courses
sustainability agenda in the hiring process

Organisational matters
the budget
programming
didactic projects
internal indicators
tp structure adjustment

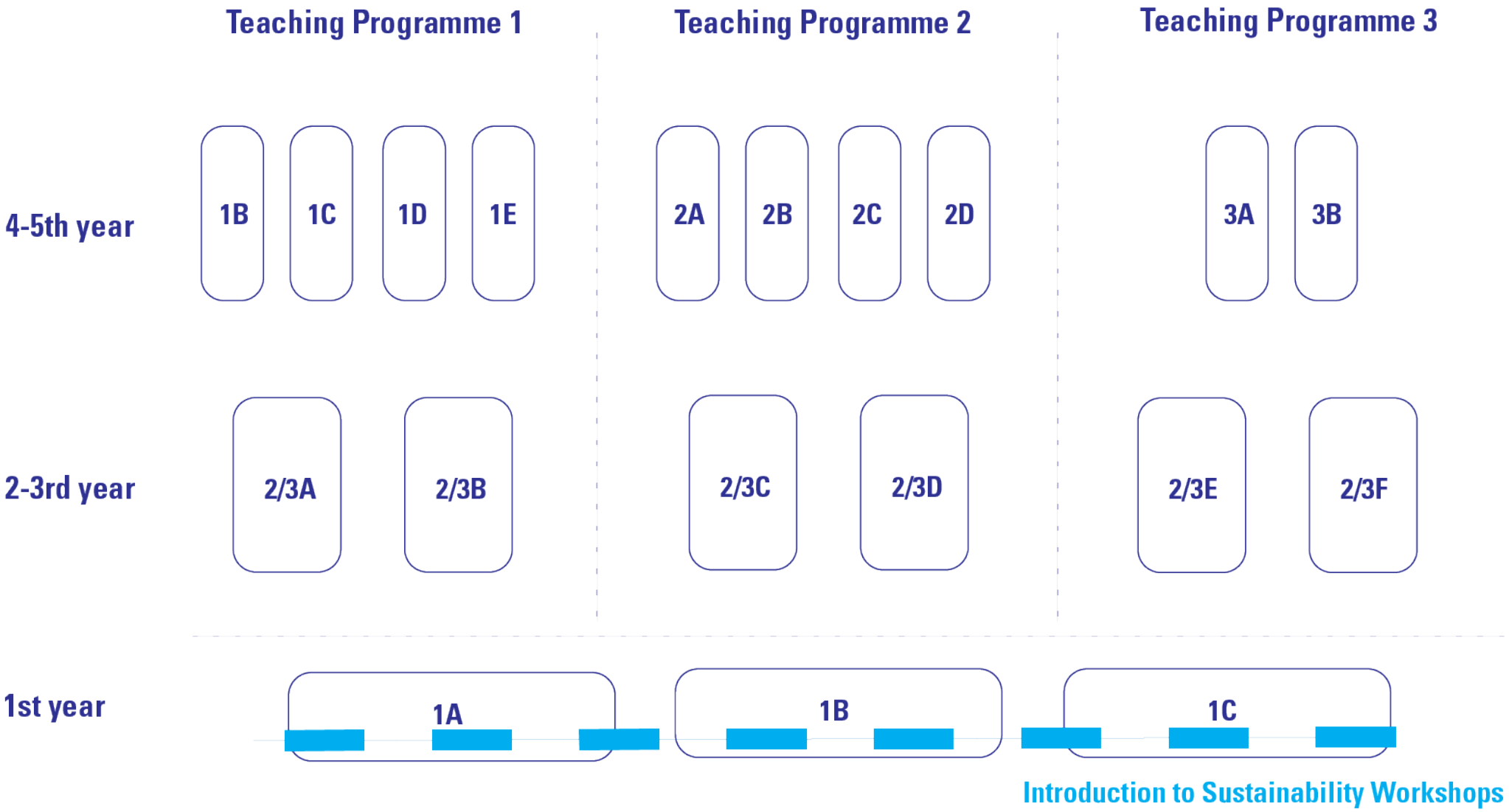


SUSTAINABILITY AND ECOLOGICAL THINKING AT AAA

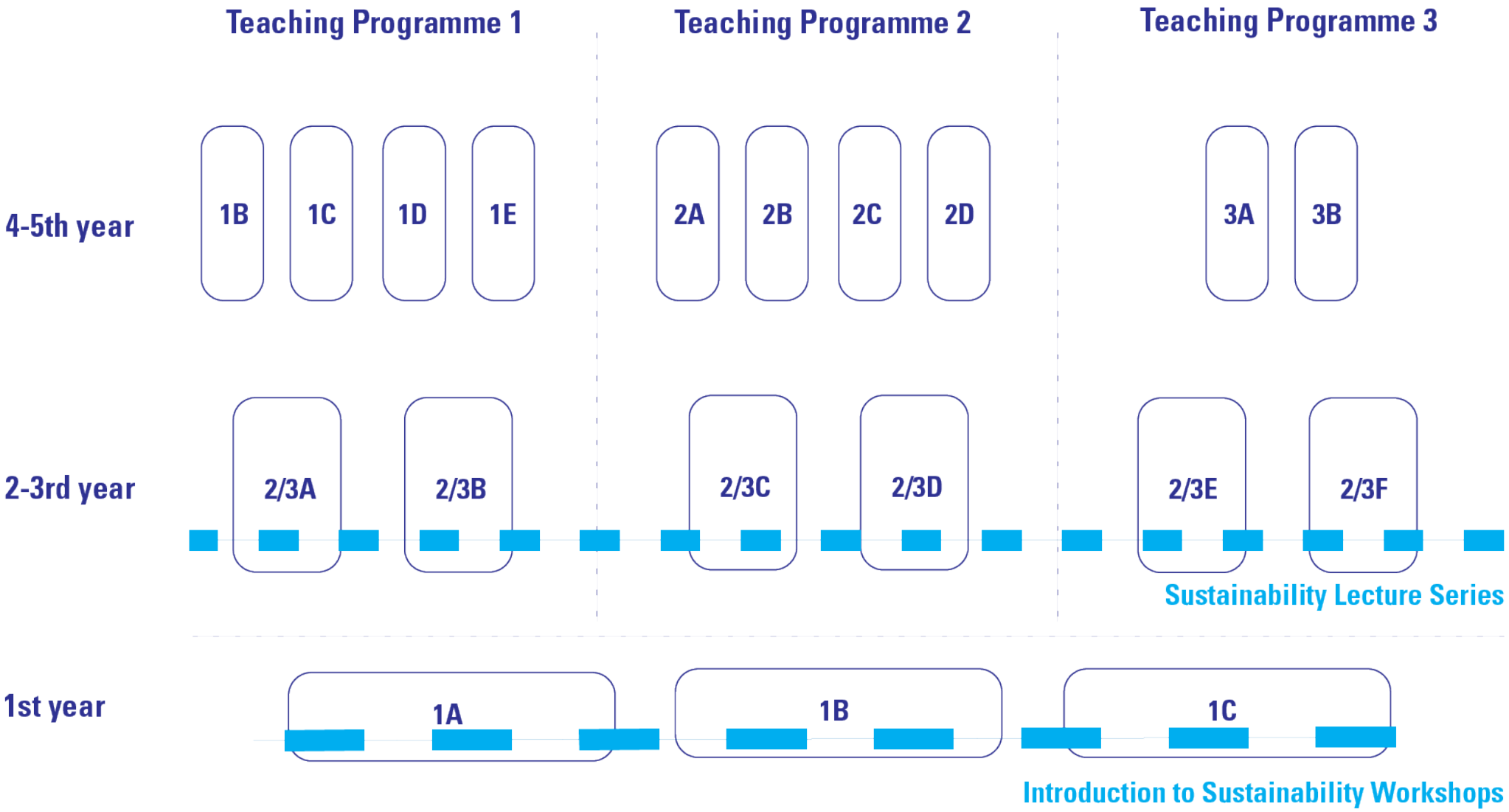
AAA STRUCTURE



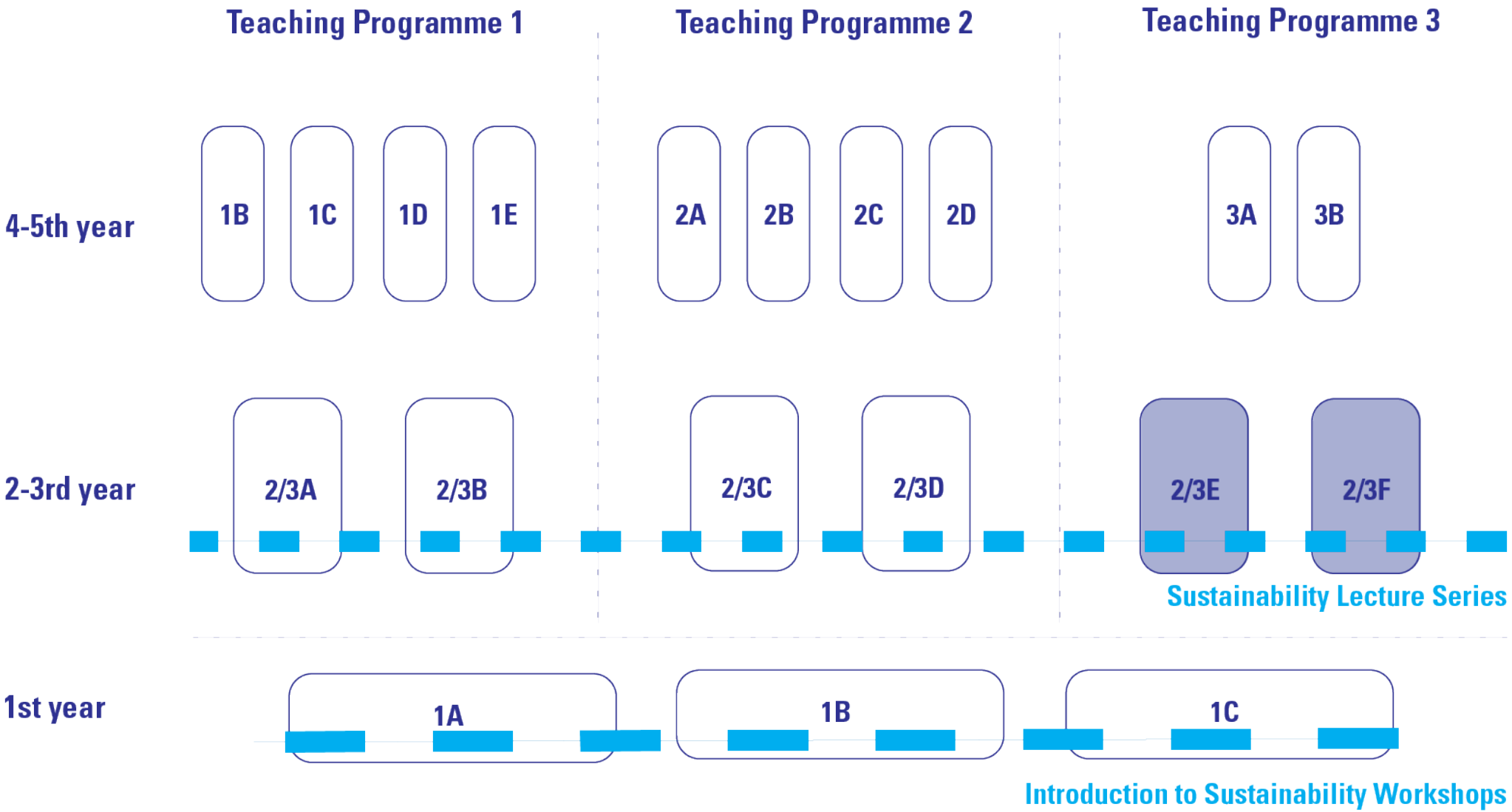
SUSTAINABILITY: FIRST YEAR



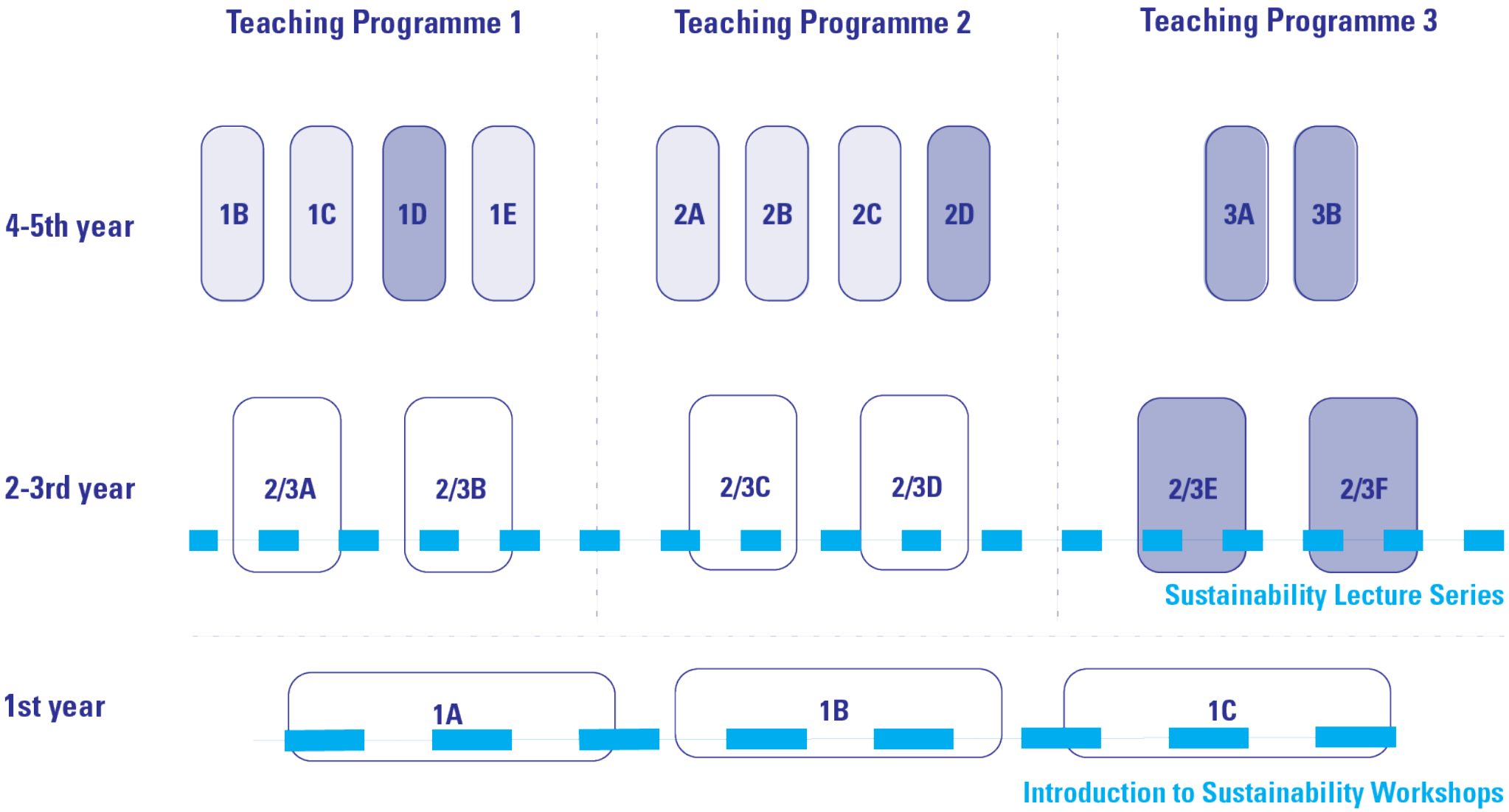
SUSTAINABILITY: BA



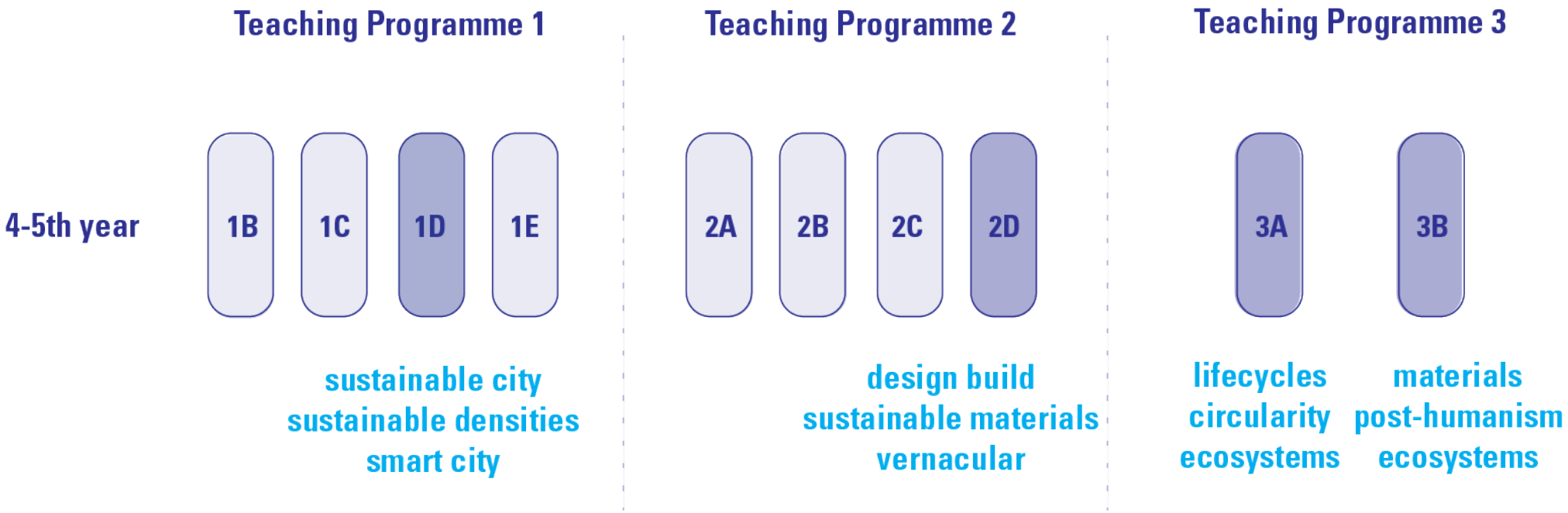
SUSTAINABILITY: BA



SUSTAINABILITY: MA



SUSTAINABILITY: MA



STUDY PLANS 2022 / 2023

DESCRIPTION OF HOW SUSTAINABILITY IN ARCHITECTURE IS INTEGRATED IN THE COURSE

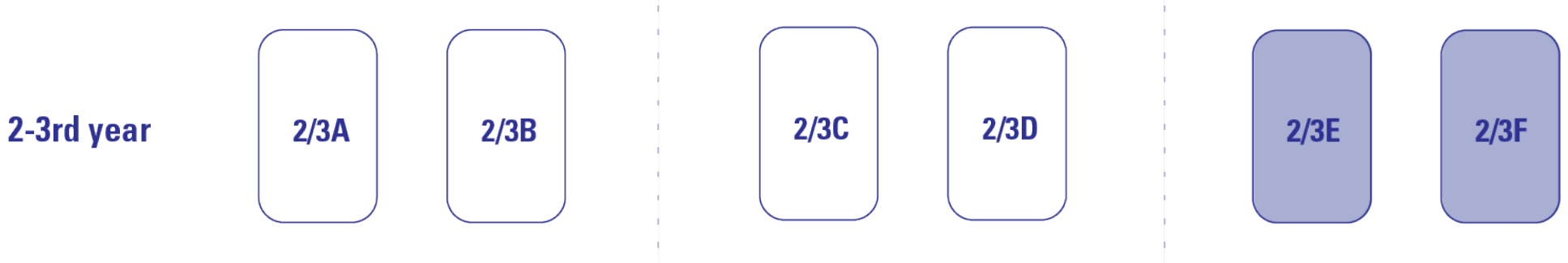
1st year

1A | **1B** | **1C**

- 1A: sustainable densification of an urban settlement, transformation
- 1B: restauration, low carbon materials, energy optimisation, design for disassembly
- 1C: sustainable urban densification, transformation, time, daylight

STUDY PLANS 2022 / 2023

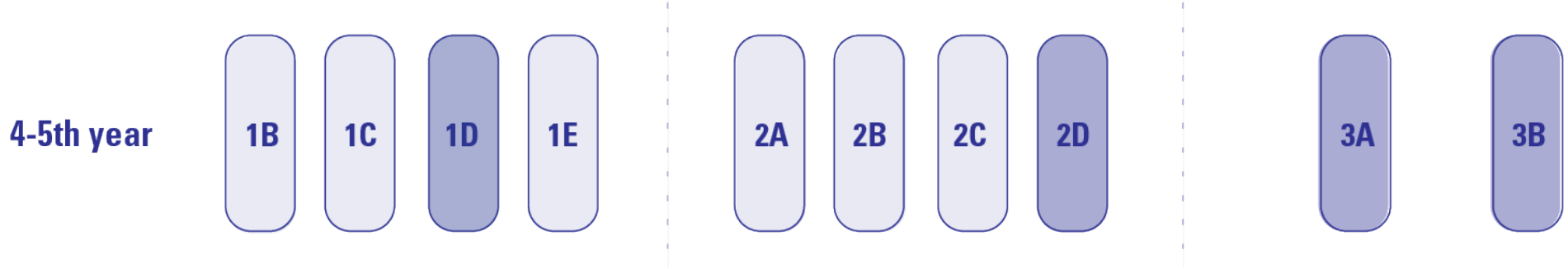
DESCRIPTION OF HOW SUSTAINABILITY IN ARCHITECTURE IS INTEGRATED IN THE COURSE



- 2/3A: reused bricks, urban nature
- 2/3B: indoor comfort, energy efficiency, adaptive reuse, city nature
- 2/3C: social sustainability, collective housing, transformation
- 2/3D: social sustainability, sustainable communities, coexistence with nature
- 2/3E: sustainable materials, construction, ecology and social/cultural concerns
- 2/3F: ecological thinking, human and non-human systems, sustainable consumption

STUDY PLANS 2022 / 2023

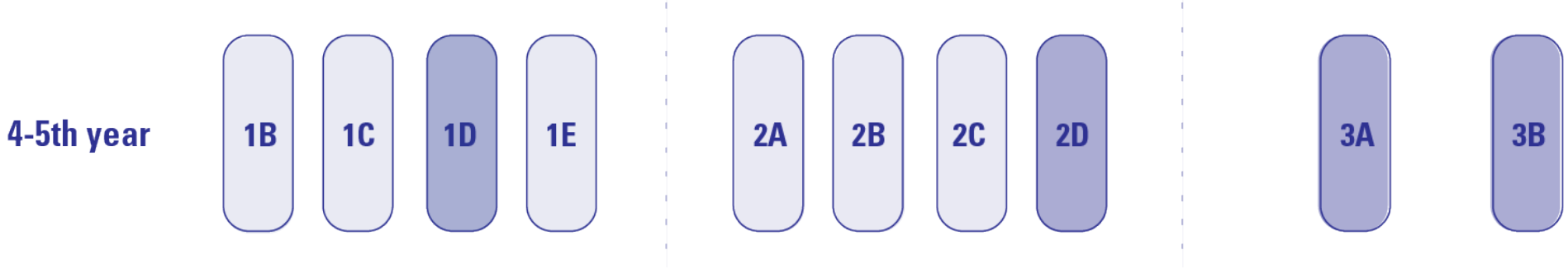
DESCRIPTION OF HOW SUSTAINABILITY IN ARCHITECTURE IS INTEGRATED IN THE COURSE



- 1B: traditional materials, design for disassembly, energy optimisation
- 1C: sustainable transformation, infrastructure reuse
- 1D: environmental and social sustainability, climate adaption of waterfronts
- 1E: sustainable urban density, sustainability of brick as a building material
- 2A: preservation, energy optimisation, durability as lifecycle strategy
- 2B: sustainability of digital thinking pipeline, fabrication efficiency, environmental optimisation

STUDY PLANS 2022 / 2023

DESCRIPTION OF HOW SUSTAINABILITY IN ARCHITECTURE IS INTEGRATED IN THE COURSE



- 2C: sustainable construction systems, flexibility
- 2D: sustainable materials, sustainable construction systems, collective design build
- 3A: ecological thinking, lifecycle strategies, ecosystems, circularity, critical reuse, waste
- 3B: post-humanism, multi-species coexistence, biodiversity, bio-based materials

STUDIO 3A

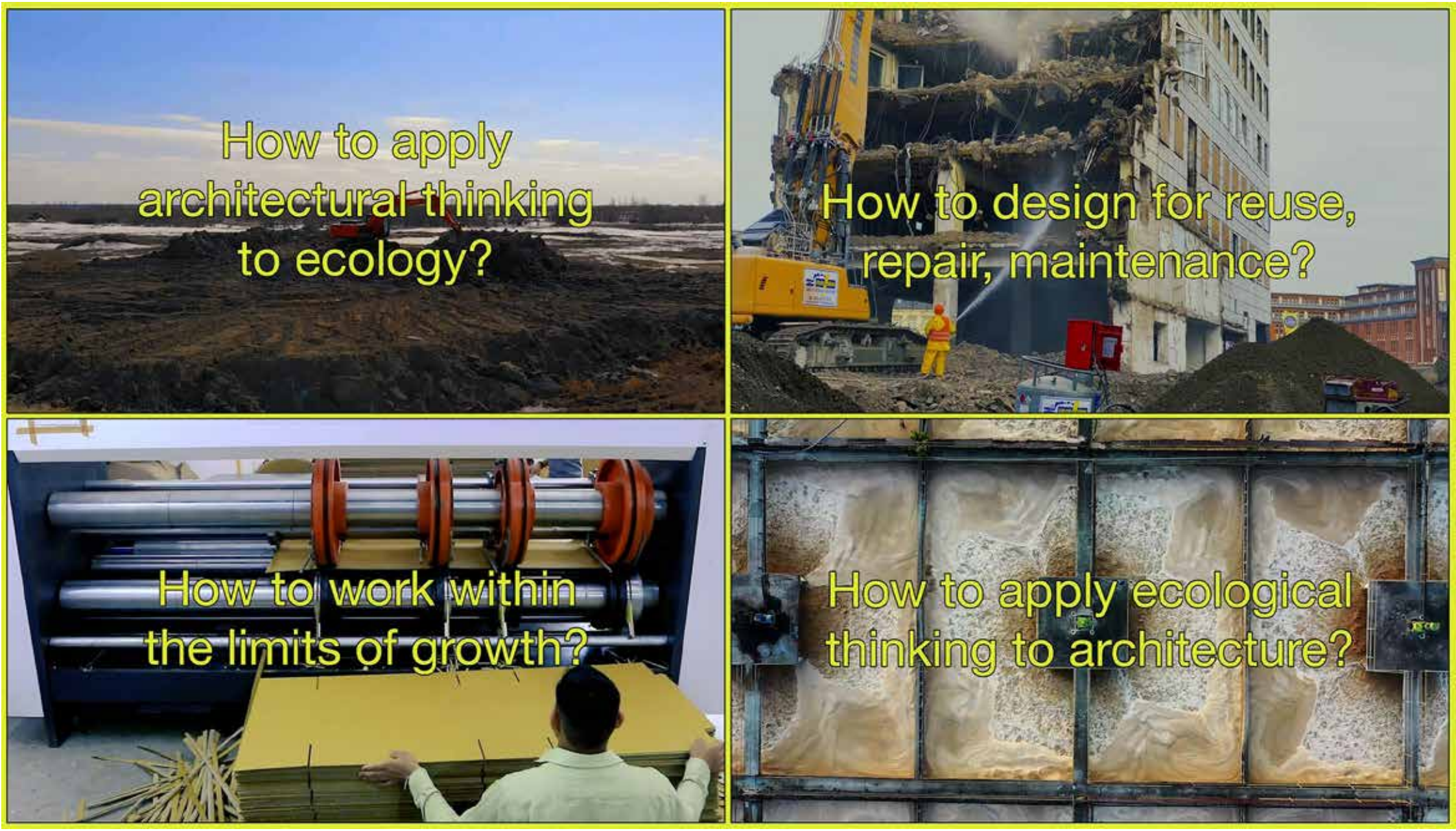
CARE

Ula Kozminska, Associate Professor; Matiss Grosskaufmanis, Teaching Assistan Professor

STUDIO 3A CARE

In Studio CARE explores **ecological thinking in architecture**. We develop architectural positions to make sense of the challenges within our material and immaterial contexts. For us, sustainability is not a mood, style, or technological paradigm, but rather a series of investigations in climate change adaptation. We consider **a building not an object**, and an architectural project is never limited to its circumstances.

Therefore, we work towards **architecture that is aware of both its generative and destructive potentials**. We advocate for **design that maintains, reuses, repairs, mends, refurbishes, adds and subtracts**.



Source: Studio 3A archive

STUDIO 3A CARE

As the narratives of economic growth based in abundance no longer seem to correspond with the environmental realities, we see that **our ways of thinking and designing need to be reformed**. From growing CO2 emissions, material waste and excessive consumption of non-renewable resources to increasingly unbalanced socio-economic conditions, we see **our work being situated in a world that is in a state of multiplying crisis**. The greater frequency of **systemic shocks**—natural, manmade, or most often a combination of both—reveal how **brittle** are the seemingly stable forms of **economic, social, and spatial organization, and we see architecture being closely entangled with these conditions**.

STUDIO 3A CARE

We take time to engage with these urgencies. At a moment when both problems and ad-hoc solutions that intended to address them are multiplying quickly, Studio CARE is **devoted to studying elements and processes of architecture from an eco-systemic perspective, and this necessitates unpacking the notions of sustainability.**

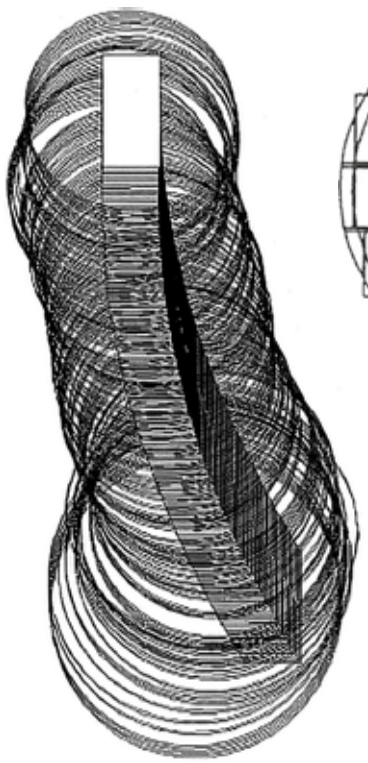
As the built form is always embedded into **multiple contexts and time scales at once**, architects need to develop methods and tools to engage with these modalities. We do this through design briefs, research, and collective reflections that are looking for **architecture that embraces ambiguity, complexity and interconnectedness of the built environment; an architecture that cares.**

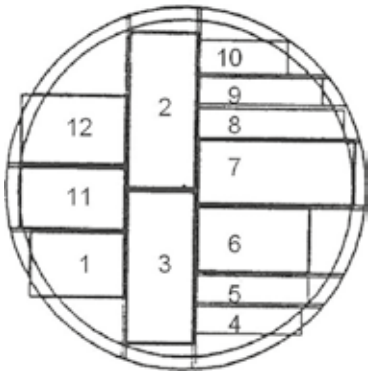
STUDIO 3A 2021- 2022

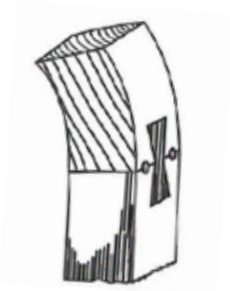
ECOLOGIES OF TIMBER: ARCHITECTURE'S LIFE CYCLE BEYOND THE LIMITS OF GROWTH

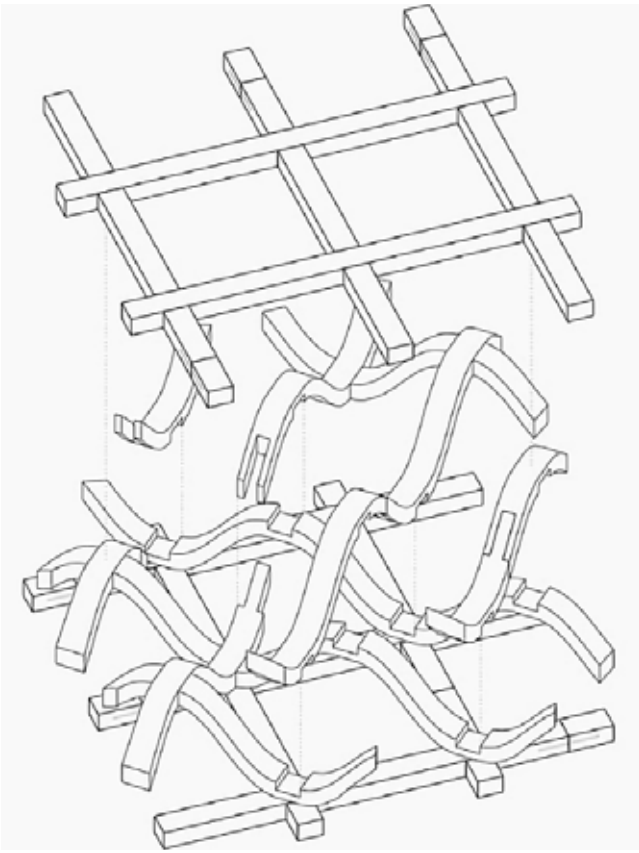
In the semester project of Spring 2022, you will address the question of how to design for growth in an era that necessitates de-growth. The assignment will critically explore timber ecologies and its potential use as a substitute to carbon-intensive construction materials. As a test case, you will study a timber construction principle for a large-span building, tracing its full life cycle—from sourcing and manufacturing to transportation and construction, post-occupancy and the eventual disassembly. This exercise will be situated in the arctic context that is characterized by limited access and scarcity of resources.

The project will be situated in context of the planned urban expansion plan of Bodø, Norway. The city is located north of the Artic Circle, and is geographically constrained in-part by the Norwegian sea, in-part by mountains, limiting its total area to 14 km square kilometres. Its population of nearly 50.000 residents is predominantly involved in service economy, with little presence of industry and material resources. In recent years a major urban development plan has been de-









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STUDIO 3A

FRAGMENT

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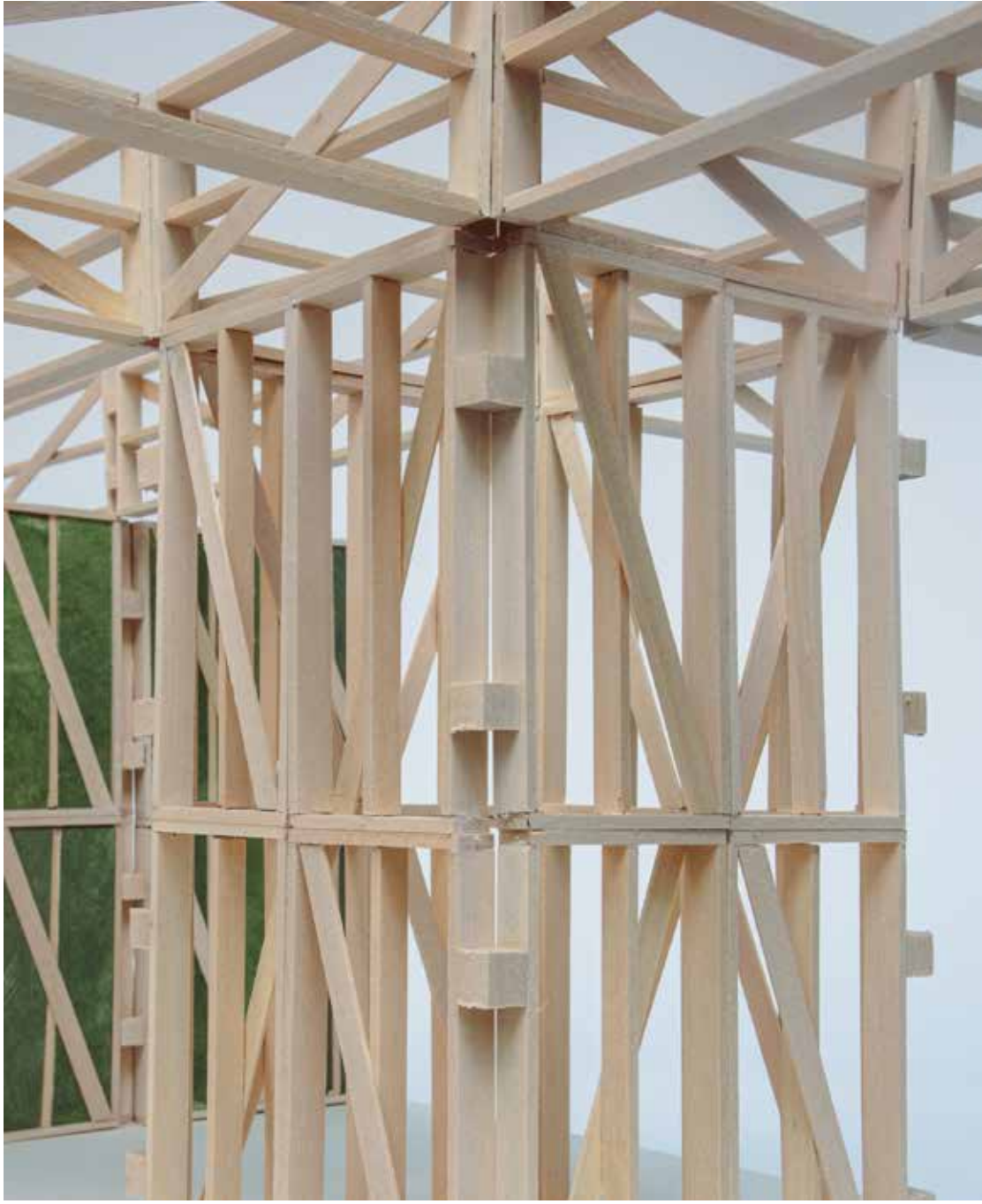

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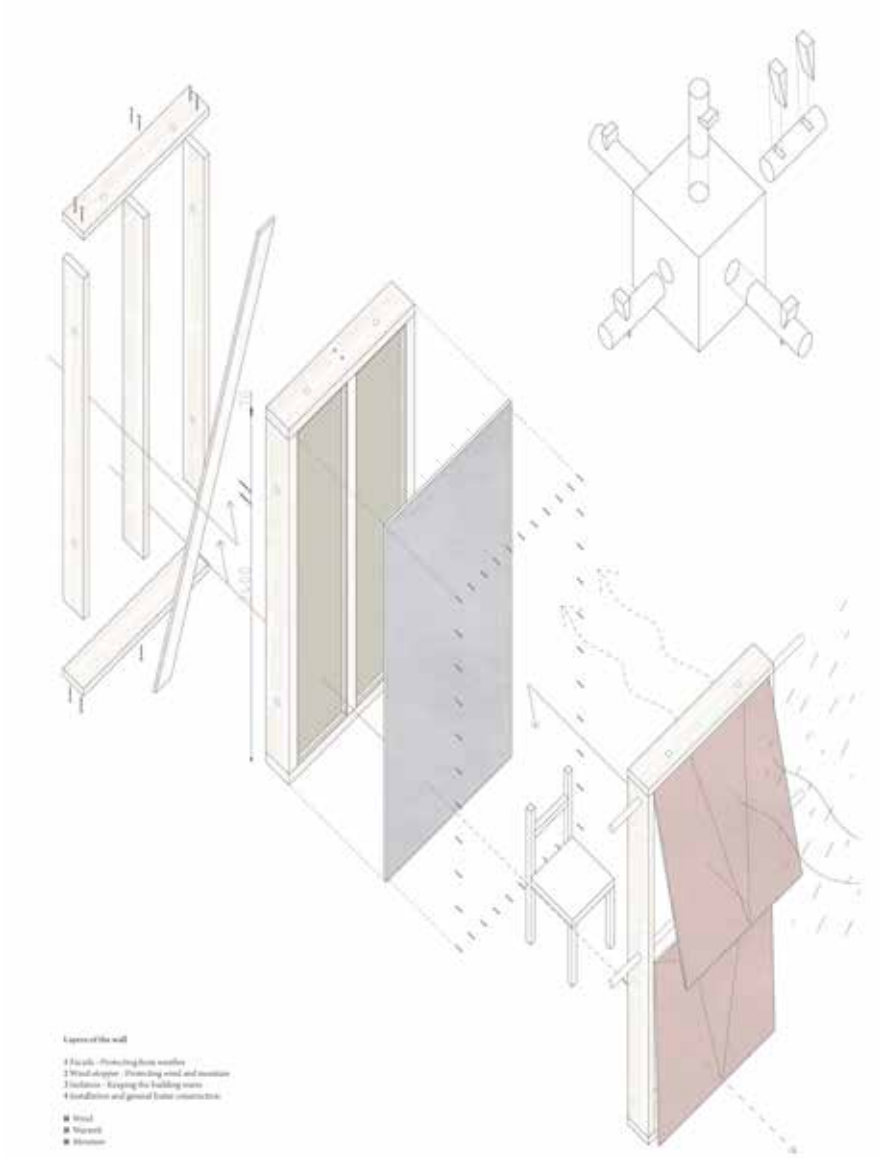

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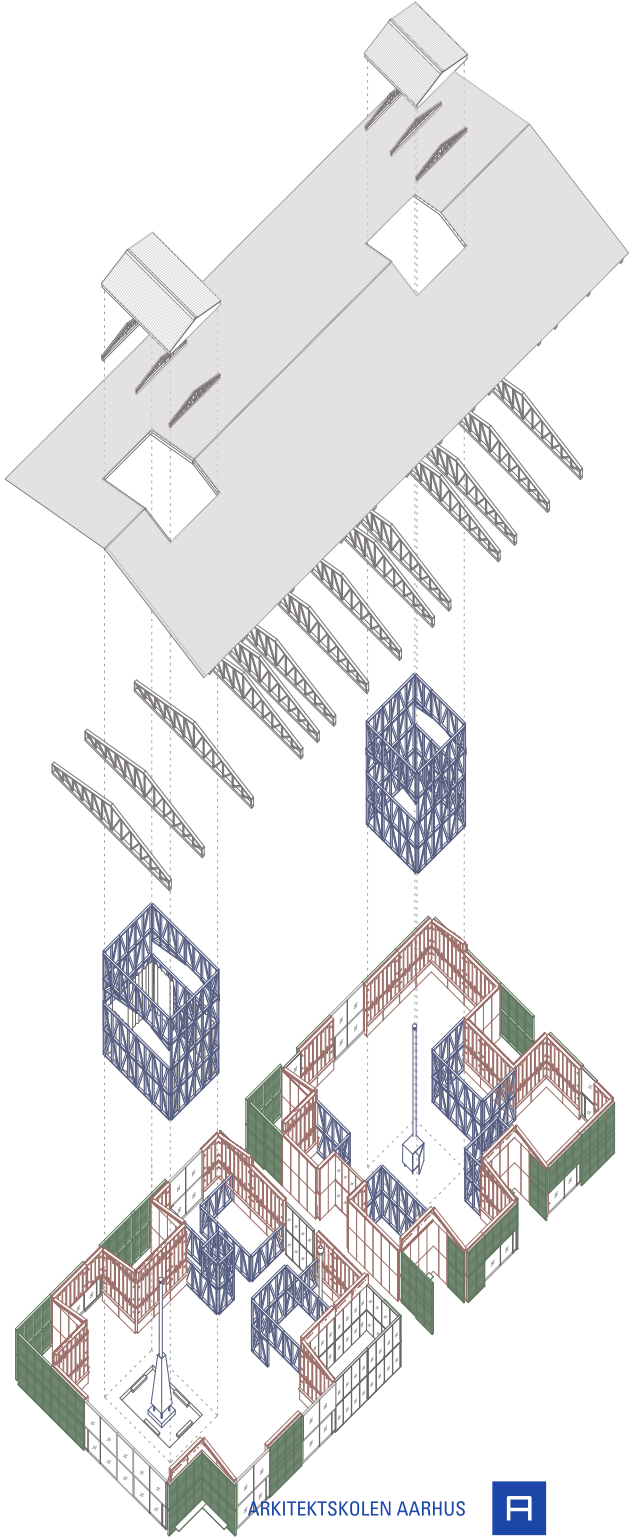

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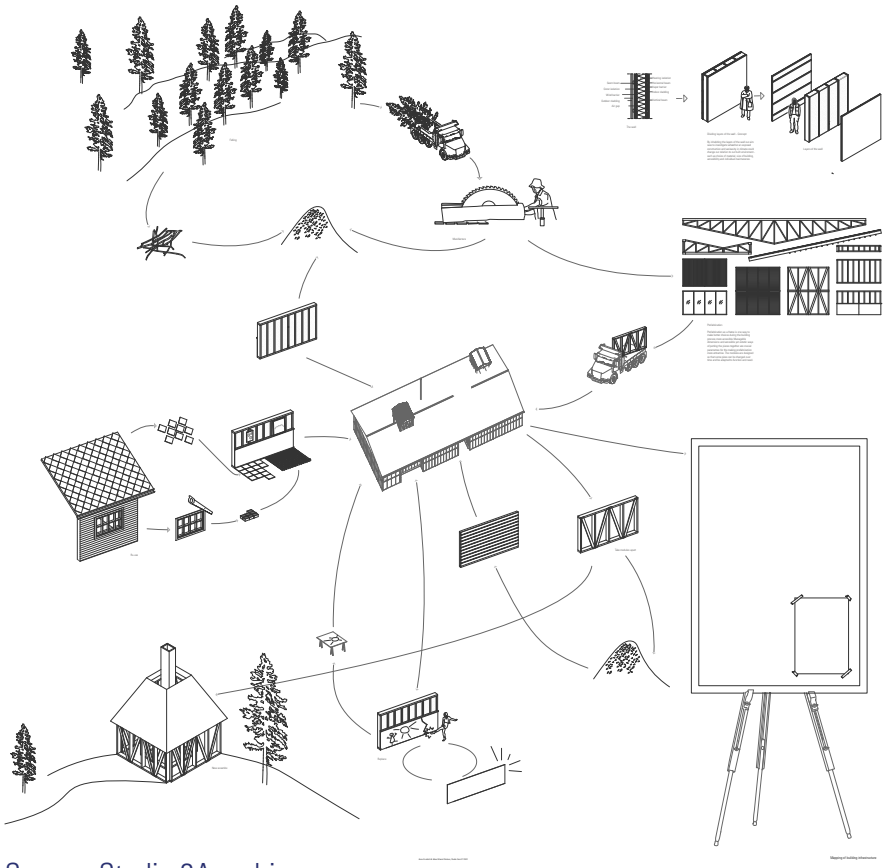

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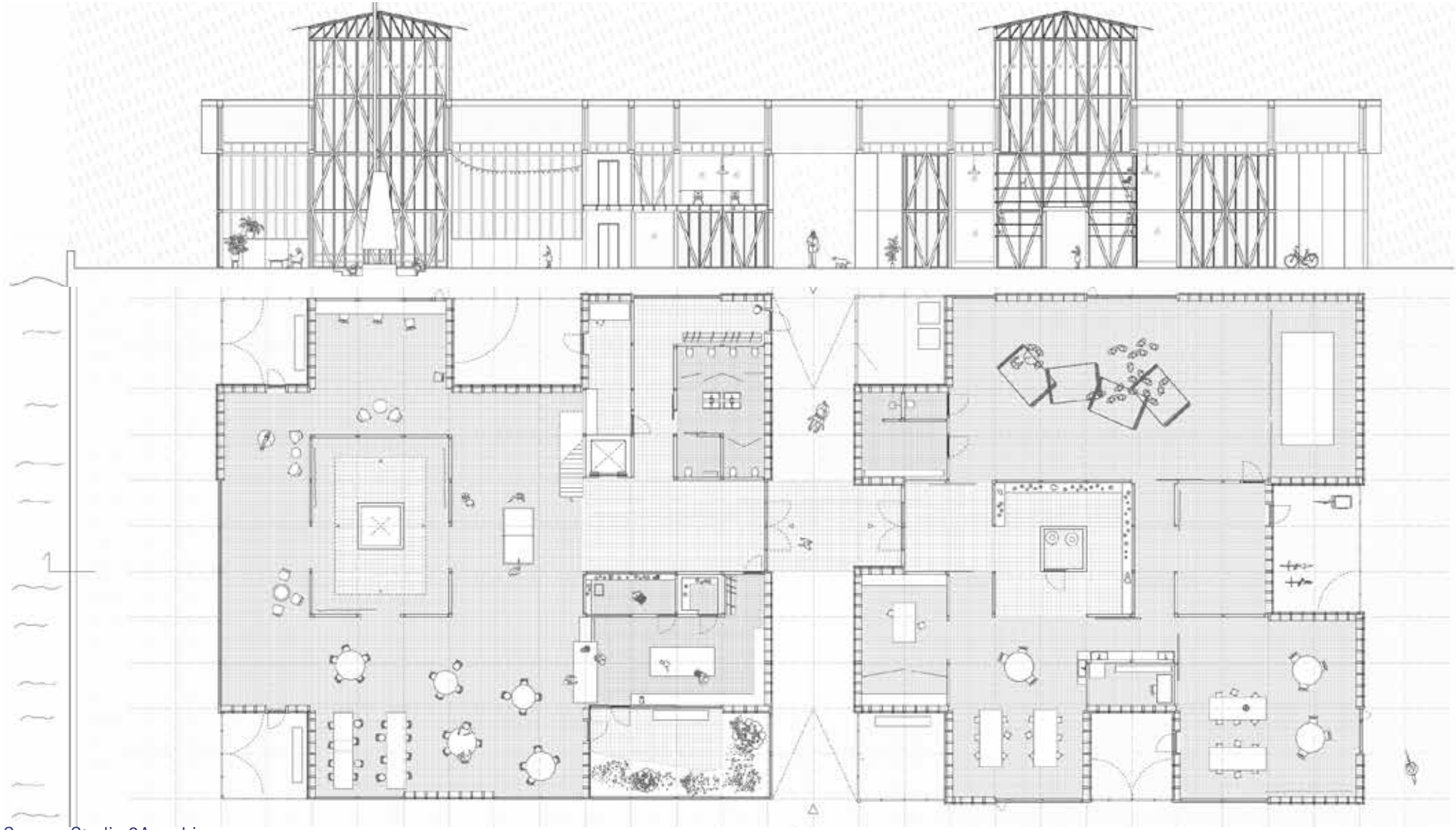

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STUDIO 3A - 2022 / 2023

UGLY WASTE: CONSIDERING THE ARCHITECTURE OF REUSE AND REPAIR

In 1932 the American builder and real estate broker Bernard London published a paper, titled "Ending the Depression Through Planned Obsolescence". He proposed that in order to make the economy prosperous and reduce unemployment, the government should introduce mandatory limits of useful lifespan for all new products—be it machinery, cars, or buildings.[1] Appointed groups of engineers, mathematicians, economists and experts would determine a permissible "lease of life" for different product categories, and at the end of their mandated life they would be collected and turned into waste by a government agency. Those who decided to keep using their products that are deemed "legally dead" would be subject to additional taxation as a form of a penalty for hindering economic growth.[2] While evidently the proposal was never implemented per se, London, in fact, vocalized an idea that by that time has been circulating within industrialized economies for decades, namely the obsolescence is an integral part of the industrial economic system.

Most of today's economic processes are predicated on the generation of excess that sooner or later end up as waste. Yet, in the current point of history that is marked by the emergence of multidimensional crisis (or "polycrisis" as the american economist Adam Tooze, among others, have theorized)[3], it has become necessary to explore the ways the linear product life cycle models can be turned into loops, where waste has the potential to become a usable material again. In another words, we need to reconsider waste. To do so, we can start by acknowledging that waste bears a close relationship to the dimensions of value,

Architecten De Vylder Vinck Taillieu, Renovation, 2017

Discarded building material site in Silkeborg, 2022

STUDIO 3B

MATERIAL MATTERS

Chris Thurlborne, Associate Professor; Alicia Lazzaroni, Teaching Assistant Professor; Anders Kruse, Associate Professor

STUDIO 3B

Studio 3B will explore the agency of **sustainable tectonics and performative approaches** in stimulating a deeper understanding of **ecological thinking.** Engaging in project development using **hands-on/workshop anchored investigations**, the studio will focus on how to: foster innovation “from within“, creatively experimenting with a multiplicity of tools, processes and workflows, facilitating **learning instead of teaching**.

Source: Studio 3B archive

STUDIO 3B

Adopting **an empiric, situated and affective attitude**, creatively embracing **more-than-humans** perspectives, Studio 3B will support processes of **performative testing and prototyping**, engaging with **materialities beyond typical palettes**. We will accept aesthetic anomalies, understand the value of the **used, the rotten, the weak**, embracing inclusive and alternative ideas of beauty and performance. Studio 3B will support hybrid processes and workflows of making, mixing tools from the digital, to the analog, to the virtual spectrum. Intending the classroom as something in between a workshop and a laboratory, we will support horizontal and inverted pedagogies to promote a culture of co-creation.

STUDIO 3B

Studio 3B considers that **designing from the small scale, the detail, the material exploration, the architectural component,** from what is naturally more related to users through visual relations, tactile approach, and spatial experience, is an effective approach to understand **entanglements and ecosystemic connections,** to manage plural agendas, and to design "ecosophical" proposals, sensitive to socio-cultural, economic, and environmental issues.critically unfold established sustainability guidelines to foster new paradigms and performances.

Favoring a situated design approach,Studio 3B will refer to the intellectual production of authors that have attempted to **displace anthropocentric paradigms** in favour of an attitude of thinking-with, questioning a notion of objectivity understood as impartiality – a view from above – in favour of **personally engaged processes** of research and direct observation. Those references, celebrating awkward relations, multiple protagonists, partial connections, assemblages of different natures, etc. will serve as a support to understand an expanding realm of material matters.

STUDIO 3B - 2022 / 2023

MATERIAL STORIES_NEW TALES OF COEXISTENCE

Depending on their chosen content and each student's interest, they will identify aspects related to potential acts of coexistence and draw situated maps across multiple scales and embracing multiple media, trying to unpack the complexity of those territories.

Weeks 10-14 Material Re-sections
Students will approach the design phase through the act of making, exploring performative modeling as a strategy to engage with their contents. In addition, writing will be still pursued as an active tool for enquiry and design, able to suggest speculative stories beyond problem-solving.

Weeks 14-22 Infra-structures of coexistence
Students will proceed to develop their projects, to radically transform the selected stations promoting new forms of living together, with special attention to the capability of architecture to act as a storytelling device, creating structures able to "activate ecological thinking". The material capacities of their proposals will be developed and resolved with rigor and imagination, integrating DR requirements in the project resolution. Reflections across scales and duration will be promoted, with every project being a specific intervention, yet part of a connected infrastructure.

CWR (Fall 2021)
The Autumn semester will integrate CWR as a core tool to develop the students' projects proposition, complementing more hands-on explorations with the contemporary theoretical framework of ecological thinking. Moreover, the format of CWR will be strongly integrated in the Studio requested deliverables, embracing writing as a medium to unfold new ecosophical qualities and agendas, weaving connections across different relational zones, scales and times.

DR (Spring 2022)
DR will be used as a tool to encourage a rigorous approach to architecture within a highly creative discourse, aiming for a successful synthesis of technology, construction and design, with an emphasis on "ecosophically" sensitive detailing in relation to new material agencies. The yearly reflection on coexistence will be therefore approached in its more pragmatic and technical sides, plausibly and tangibly supporting the speculative nature of the semester proposition.

SF (Fall 2021-Spring 2022)
The SF report will be used as a tool for Semester 9 students to identify, expand and map topics of interest and refine their own sustainable agenda in relation to their current and past projects.

Pedagogical Objectives
- approach research and design development with an empirical and performative attitude, fostering innovation "from within", and experimenting with a multiplicity of tools and workflows;

- understand material explorations as a tool to unpack and manage complexity across different scales and durations, establishing novel relations and spatial experiences between multiple actors, being humans or non humans;

- engage with the theoretical framework of ecological thinking through tools of architecture, celebrating awkward relations, multiple protagonists, partial connections, and assemblages of different natures;

- engage with "new waste" beyond the given capabilities of each material, towards new qualities of coexistence and new agendas;

- critically address topics of upcycling and reusing considering their implications and externalities;

- explore hands-on prototyping and digital material processing;
- design interventions that are able to embrace what already exists, generating architectures that benefit not only its users but a larger ecosystem of actors;

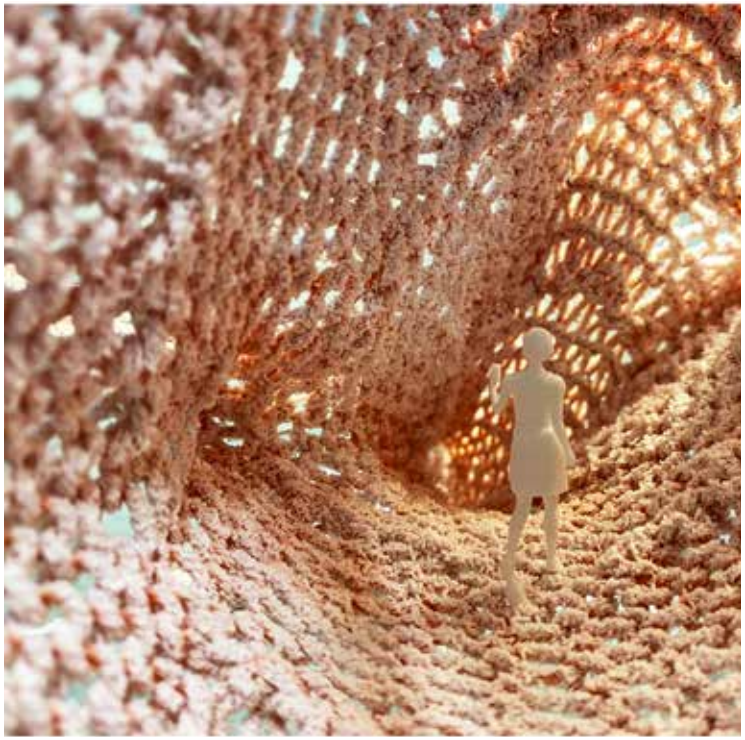
- unfold the capability of architecture to act as a storytelling device, able to activate thinking while asking "what if"?

- learn how to develop architectural propositions through self-programming and self-defined agendas.

Teaching Team: Anders Kruse Aagaard, Mi Koudal Randler, Alicia Lazzaroni, Chris Thurlbourne

Source: Studio 3B archive

STUDIO 3B



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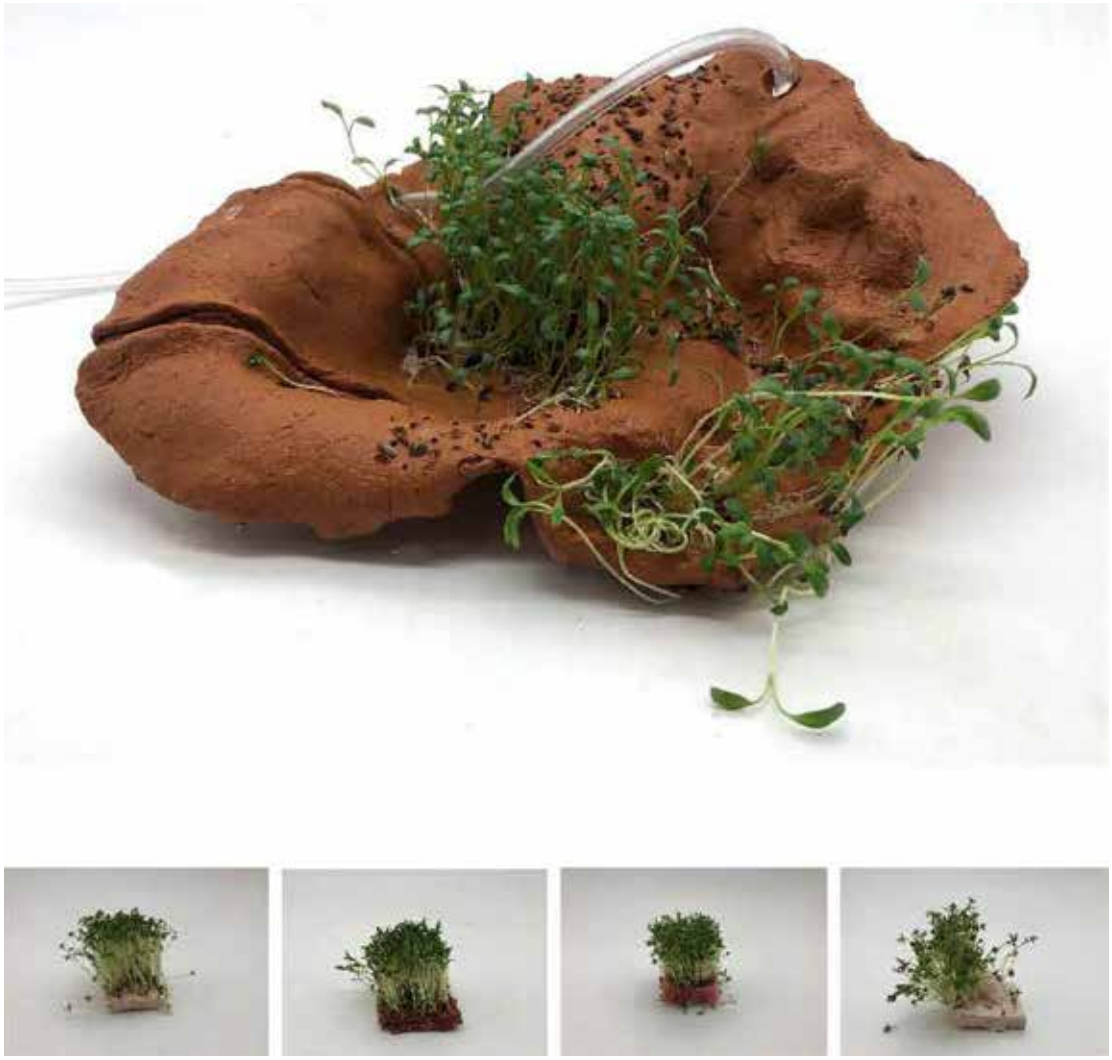

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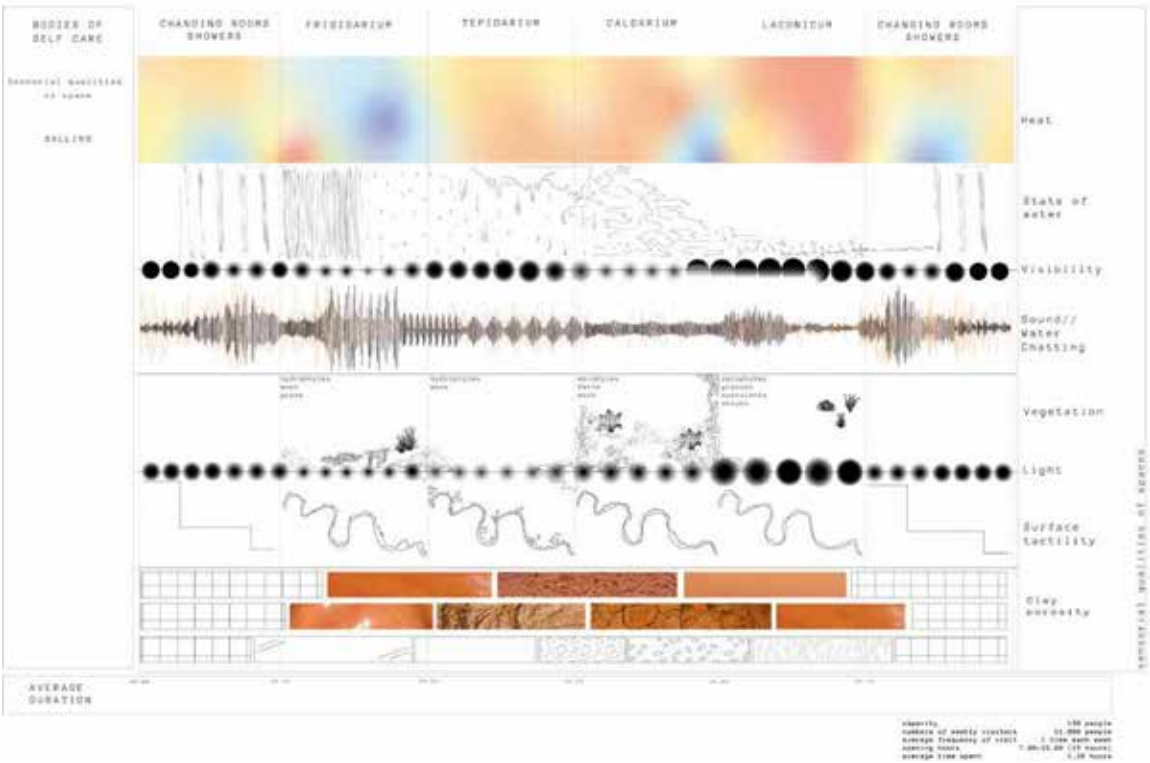

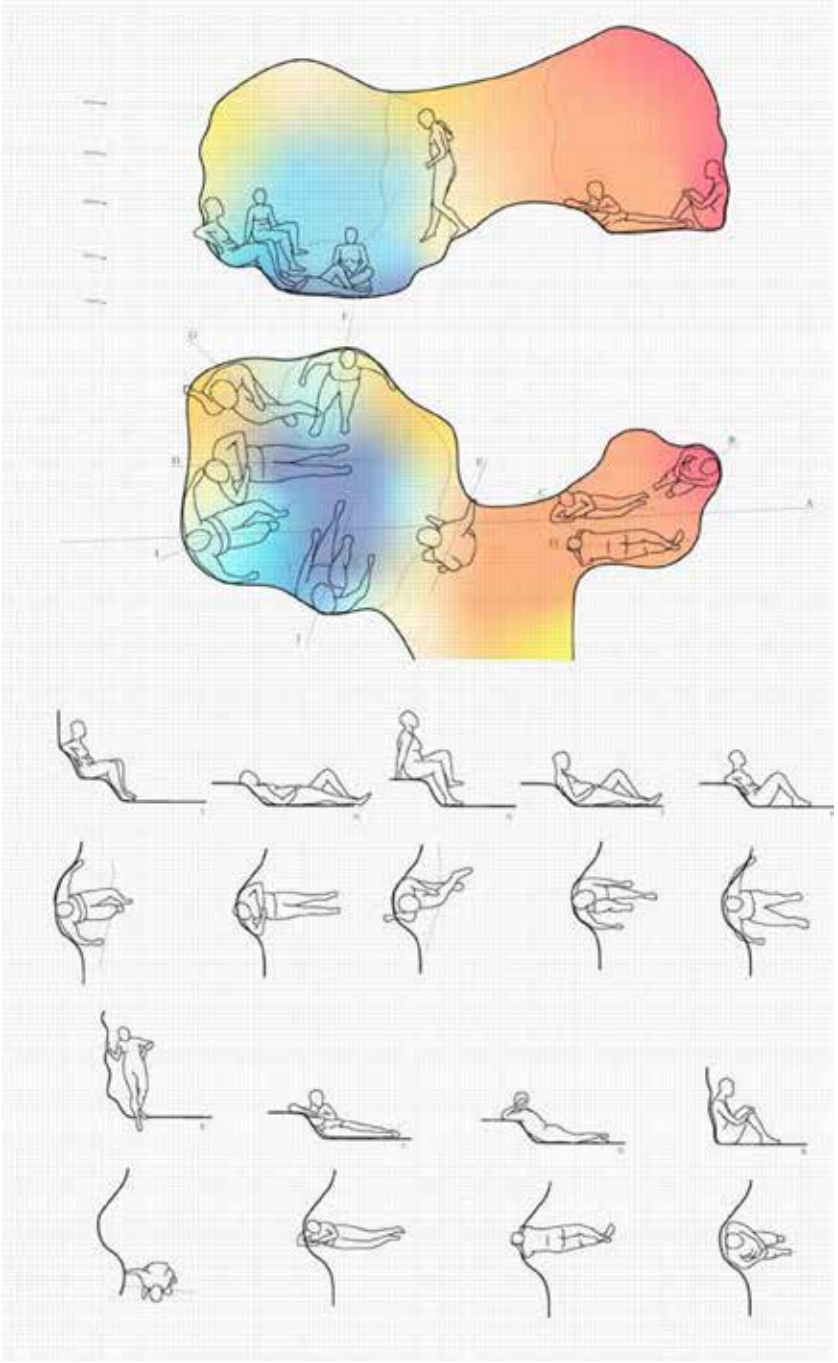

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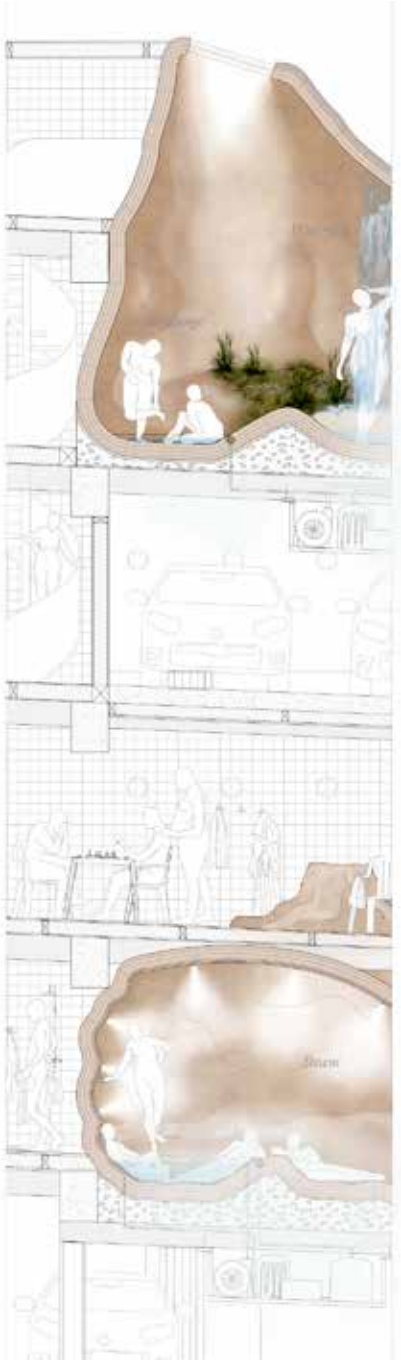

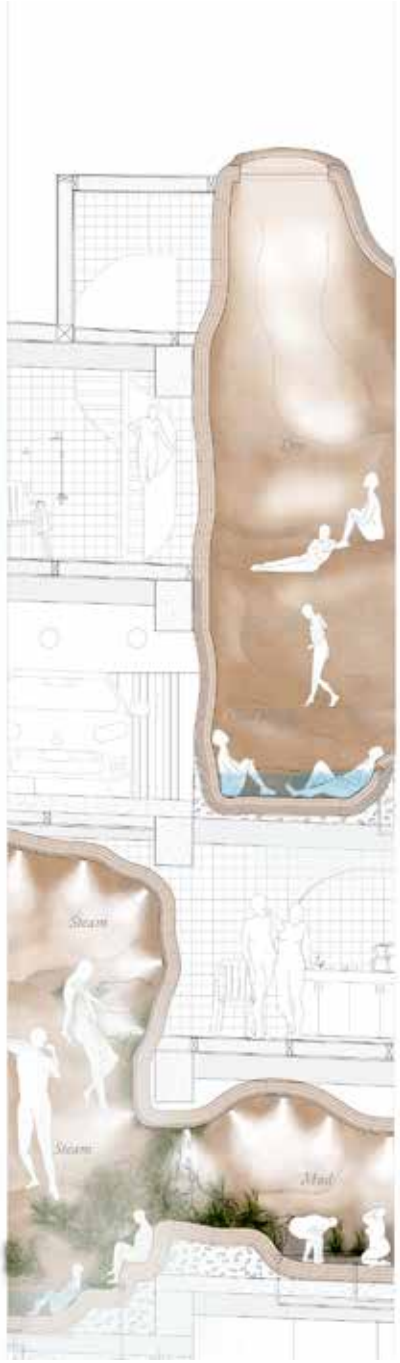

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EXTRA CURRICULUM ACTIVITIES

RADICAL TALKS

Invited guests engage with challenges of sustainable development, climate activism, finite resources, ecology, contextual design, non-anthropocentric paradigms or social equality and inclusivity.

Talk 1. REBEL: Santiago Cirugeda (ES) - 30.09.2021
Talk 2. RETHINK: ROTOR (BE) 28.10.2021
Talk 3. BOTTOM (UP): Leapfrogprojects (FI) 25.11.2021
Talk 4. INGRAINED: RUF (HK) - 16.12. 2021
Talk 5. Students' choice - Material Cultures 27.01.2021
Talk 6. ESSENTIAL: Eko Prawoto (ID) 24.12.2022
Talk 7. ROOTS: EARTH - Yatin Pandya (IN) 31.03.2022
Talk 8. MILITANT: Riwaq (PS) - 28.04.2022

RADICAL TALKS

A series of mini-lectures on sustainable architecture supplemented by a debating session in which lecturer, tutors and audience rearrange themselves in **a non-hierarchical setup**, which provides spatial and technical conditions for both **physical and digital participation**. The aim is to challenge rituals of knowledge exchange by transforming them into an **inclusive and multifocal experience** in which **attendees become contributors.**

THANK YOU.