Master Kick-off

AUDE - Architecture Urban Design and Engineering

Ir. Maarten Willems

The Department of the Built Environment

29 August 2023

Welcome!

On behalf of the globe and the world population:

thank you

… for selecting just the right study program to make a difference.

You *can* make the world a better place.

Welcome!

Structural Engineering & Design

Urban Systems & Real Estate

Architectural & Urban Design and Engineering

Building Physics and Services
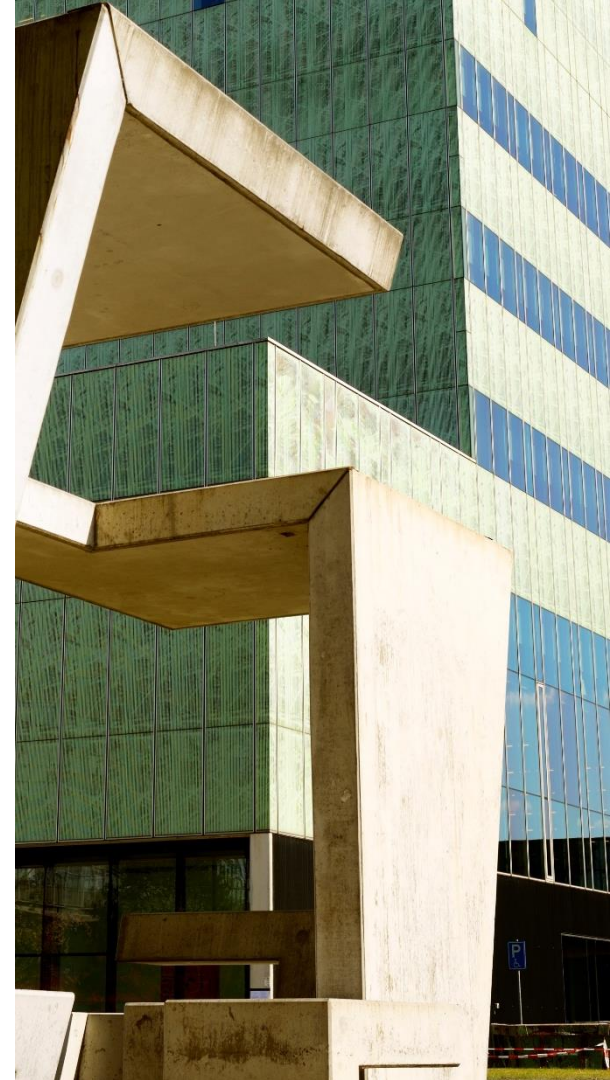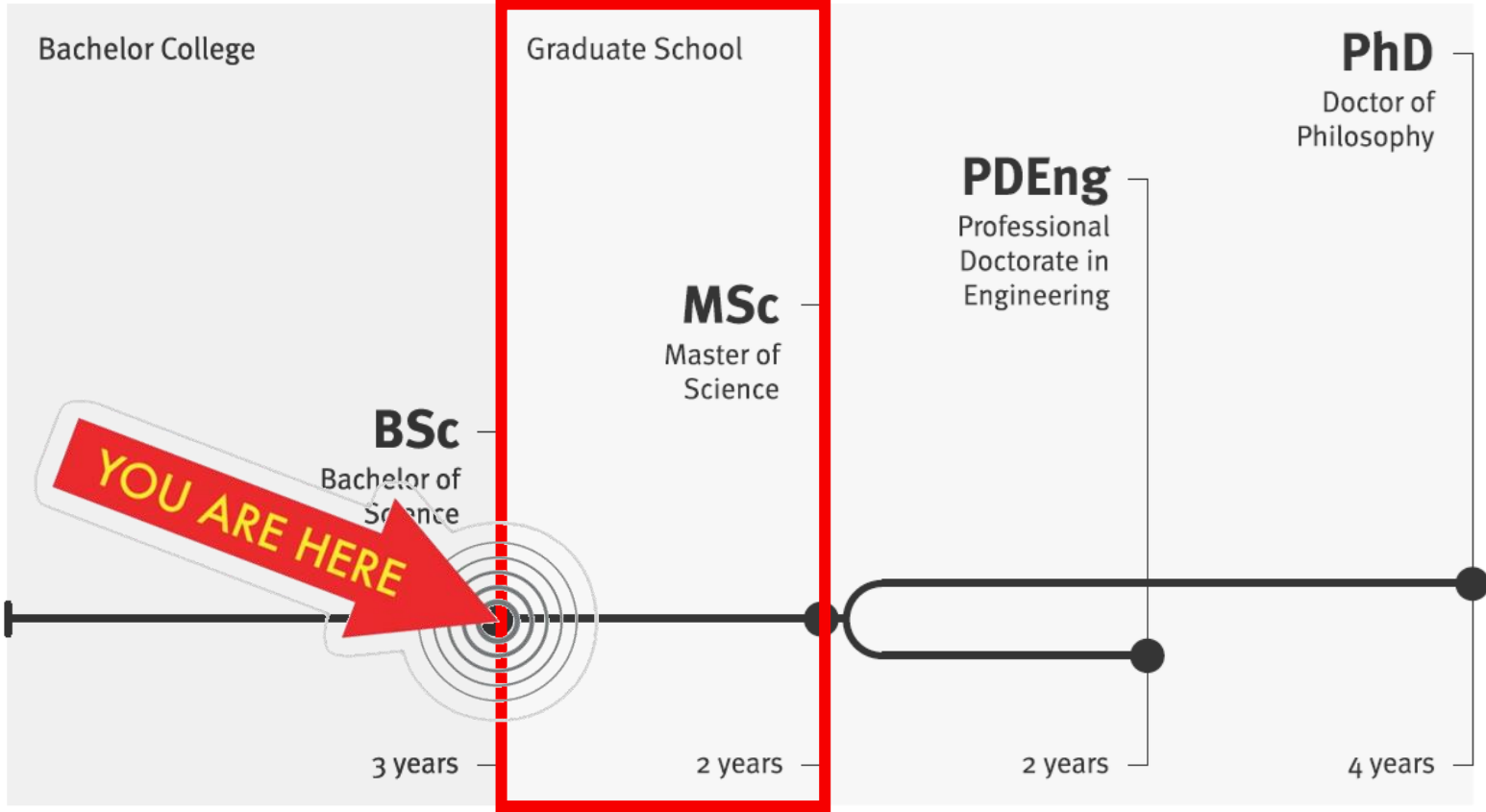
Students

board/management

labs

workshop
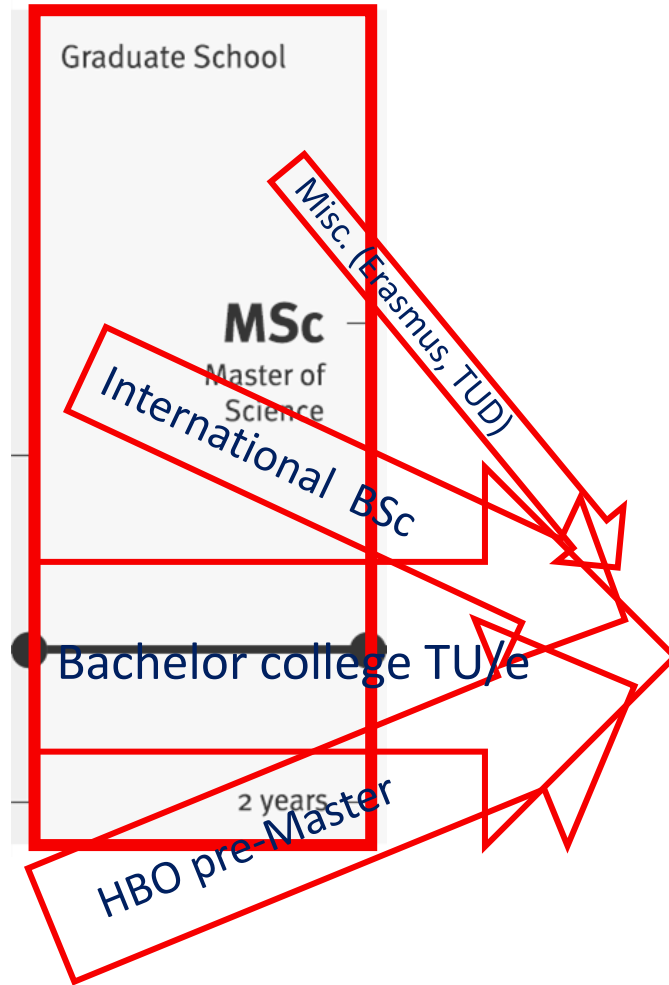
Skybar

Welcome!

Department of the **Built Environment**

Master:

- ± 680 students (+ 780 BSc-students = ± 1460 total)

- ± 15% international students

- ± 41% female students (still increasing)

- ± 160 Master diplomas/year

- ± 48% Architecture and Urban Design

Bachelor College

Graduate School

BSc
Bachelor of Science

MSc
Master of Science

PDEng
Professional Doctorate in Engineering

PhD
Doctor of Philosophy

YOU ARE HERE

3 years

2 years

2 years

4 years

influx

Graduate School

MSc
Master of Science

Bachelor college TU/e

2 years

Misc. (Erasmus, TUD)

International BSc

HBO pre-Master

Master program

Architecture and Urban Design

			Quarter	ECTS
Core courses	7QX5M0	Seminar Urbanism and Architecture	1/2/3/4	5
	7QW5M0	Research in Urbanism and Architecture	2	5
	7QW6M0	Architectural and Urban Theory	1	5

15

Core courses →

Choose 30 ECTS out of 60 ECTS

			Quarter	ECTS
Specialization electives	7QX1M0	Masterproject 1 Architecture	1-2	10
	7QX2M0	Masterproject 2 Architecture	3-4	10
	7QW1M0	Masterproject 1 Urbanism	1-2	10
	7QW2M0	Masterproject 2 Urbanism	3-4	10
	7QX3M0	Architectural Engineering	2	5
	7QQ4M0	Types and Methods in Architecture	4	5
	7QW3M0	Urban Planet	4	5
	7XX9M0	Urban trends and strategies	2	5

30

Specialization electives →

Electives		30

Electives →

Choose one of the graduation projects

7W45M0	Graduation Project Urbanism	45
7X45M0	Graduation Project Architecture	45

Graduation project →

total: 120

Electives (all tracks)

Quarter 1	Quarter 2	Quarter 3	Quarter 4
Masterproject Building Technology	Sports and Building Aero Dynamics	Building Methodology and Technology	Design & Construct of an innovative structural object
Architectural Expression *	Architectural Expression *	Smart Cities	Building Technology with Extreme Complexity
Arts and architecture	Architectural Analysis	Architectural Expression *	Architectural Expression *
Theory and practice of the public domain	Practical assignment 'Bouwkundewinkel' *	Constructing Architecture	Architectural Analysis
Heritage, Urbanization and Global Efficiency		Arts and architecture	The thinking eye
Urban Form		Architecture and Philosophy	Practical assignment 'Bouwkundewinkel' *
Procurement		Urban Form	
The thinking eye		Master project Construction Plan	
Practical assignment 'Bouwkundewinkel' *		History of Housing and Cities	
		Practical assignment 'Bouwkundewinkel' *	

"What kind of professional do I want to be?"
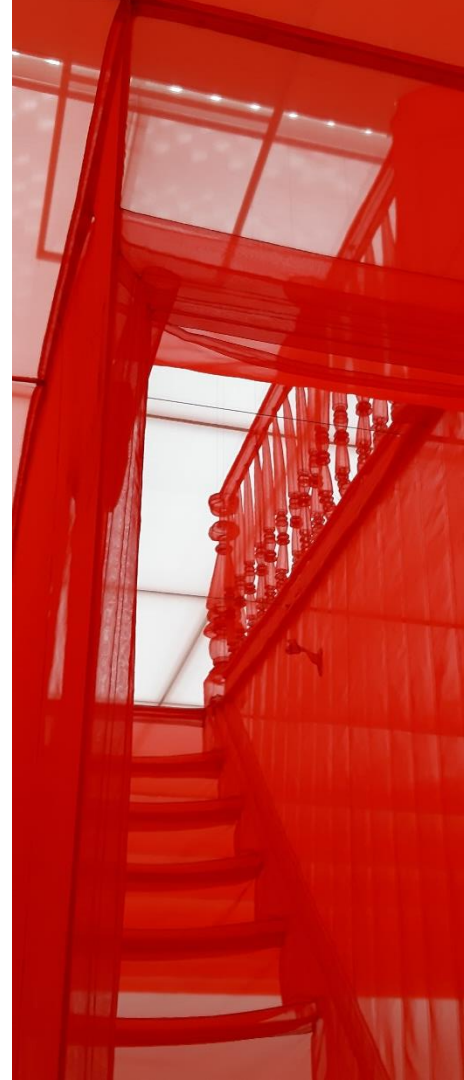
30 ECTS (= 6 electives)

Architecture and Urban Design
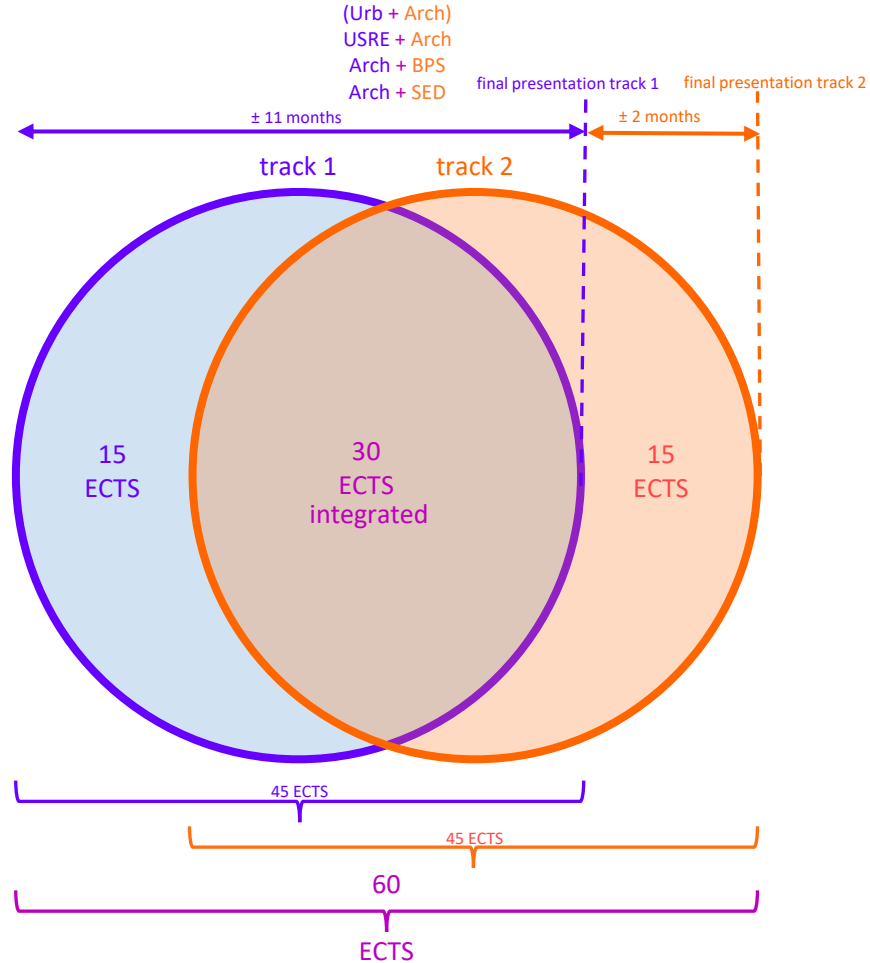
What if the Master program Architecture is not enough?

Architecture Double Tracks

- **Double track combinations:**
- Architecture + Urbanism
- Architecture + Structural Engineering and Design
- Architecture + Building Physics and Services
- Architecture + Urban Systems and Real Estate

- **Characteristics:**
- 150 credits (= + 30 ECTS = + 1 semester)
- For selected group of students
- Both tracks are stated on the diploma

Double track graduation

(Urb + Arch)
USRE + Arch
Arch + BPS
Arch + SED

final presentation track 1

final presentation track 2

± 11 months

± 2 months

track 1

track 2

15 ECTS

30 ECTS integrated

15 ECTS

45 ECTS

45 ECTS

60 ECTS

Architecture and Urban Design

Education guide

- Overview of all:
    - **Seminars** (5 ECTS - 'research project')
    - **Master projects** (10 ECTS - design project)
    - **Graduation studios** (45 or 60 ECTS)
- Published every semester

https://educationguide.tue.nl/programs/graduate-school/masters-programs/architecture-building-and-planning/curriculum/tracks/architectural-urban-design-and-engineering/

Architecture and Urban Design

seminars, master- and graduation
projects architecture + urbanism
semester A, 2023-2024

eindhoven school of architecture,
urban design and engineering

23
24

cover illustration, artwork by Noud Bruins Slot

education guide

A House for 2nd Place

The winner takes it all. Not just a song but also the motto of today's world. Our society is made for protagonists. First place counts, the rest are losers. But if we look more careful, we see that 2nd places not only mean that the[...] one ahead, but that they are characterized by an intriguing [...] fighting spirit, humbleness, resilience and perspe[...] [...] to revalue and rehabilitate those [...] [...]mmodation [...]

ADE03

Computational Clay Protostructure:
At the Intersection between Computation and the Physical, between Low-Tech and High-Tech

Image 1
Armadillo Vault, ETH Zurich's Block Research Group, engineering firm Ochsendorf DeJong & Block and testing specialist The Escobedo Group

Advanced digital fabrication and computational design are profoundly changing the nature of architecture and the construction industry. Their impact on the industry is heightened when used in combination with sustainable and low-carbon materials, such as clay, mud or earth-based systems. The core of this studio is anchored around additive manufacturing for sustainable architecture.

This master studio focuses on the design and the production of a large scale parametric structure based on 3D clay printing. 1:1 prototyping is an essential component of this studio, allowing students to experience all parts of the fabrication and assembly process. Students will participate in the computational design of a full scale 3D clay printed protostructure to be built on the campus of the TU Eindhoven. The structure will showcase advanced material patterning and performance based design. The digital tectonic design of the installation makes systematic use of geometry, structural principles and material behaviour. Constraints of the material (or material systems) and of the physical realities of making and assembly are embedded within the computational process of design. Attention will be given to the curation of joints and of the assembly sequence.

The studio follows a holistic approach: from design to fabrication. Students will follow the steps from computational design, technical detailing, project management and logistics, the fabrication of the elements and the assembly of the full large-scale structure on the campus.

You will build up a theoretical and practical knowledge on computational design, robotic fabrication and parametric performance based design principles. Throughout the 16 weeks of the course you will be introduced to advanced parametric design using Rhino 3D and the visual scripting plug-in Grasshopper. Embedded in the course are a set of carefully curated [...] algorithm-aided design, run by [...] collaboration with [...]

Le musée imaginaire

Image 1
Carlijn Kingma: The Waterworks of money, https://www.rijks-museumtwenthe.nl/content/3013/nl/carlijn-kingma-het-waterwerk-van-ons-geld

Image 1
https://www.architectural-review.com/essays/books/juhani-pallasmaas-sense-and-sensibility

Pallasmaa's works often discuss the importance of sensory and atmospheric experiences in architecture. He emphasizes in his writings the idea that architecture should engage and evoke a range of emotions and sensations in its users. In his famous book "The Eyes of the skin: Architecture and the senses" he explores the multisensory aspects of architectural experience.

In this project, we are going to meticulously investigate how a building can be designed so that each space produces a specific imaginary and experience. By very precisely addressing composition, light, materiality and detail, you will be challenged to design space by space a museum of the imagination.

Collages, perspectives, drawings and models will be used to explore how spaces work, how light falls, high spaces versus low spaces, soft and velvety versus hard and smooth. The museum's collection should enter into a symbiotic relationship with the architecture.

Spatial principles such as the labyrinth, the staircase, the colonnade, the hypostyle hall, the poche, the enfilade will form the ingredients of the architecture. You will study them and use them as ingredients for your design. Like a collage, they will be modelled into a whole. The topic you will address is not just the design but also the way you represent the design: the drawings, models, collages and assemblages, form part of the outcome of your project.

The location is a bare landscape and part of the assignment is to design the connection between landscape and the building.

The design process is preceded by a collective group study of museums and the architectural drawing. The results will be collected in a (beautifully designed) research-book.

Part of the studio is an excursion at a location to be determined. Also part of the studio is that during the semester, you will have drawing lessons and representation techniques tutorials.

To participate in this studio, it is desirable that you have good drawing and representation skills.

prof. ir. Juliette Bekkering
Drawing and representation tutorials with Hélène Aarts

Intermediate Architecture and the Porous City

Image 1
Passage Choiseul, ca. 1910
Roger Viollet / The Image Works

Image 2
Passage des Panoramas, excursion Paris March 2023;
L. Bijlsma

In the essay 'Naples' (1925) the radical thinker and cultural critic Walter Benjamin together with actress Asja Lācis characterize Naples as a porous city. Here the main element of architecture is not the house or building block - let along the type. Instead, Benjamin and Lācis call attention to its in-between spaces, like caves, cellars, courtyards, arcades, staircases, windows, gateways, and balconies. This porous domain - where the public is inextricably entangled with the private - allows for a new reading of urban spaces and their relation to architecture: porosity connects the built environment with social as well as with natural elements; it participates in scripting the rituals of upper and lower classes and its impermanence suggests a tension with order and planning.

With this socio-spatial concept of the porous city in mind, the studio investigates the urban function of 'Intermediate Size' buildings (De Tussenmaat, 2006). In this semester we will look into the emergence and further development of Intermediate Size typologies in Paris - from the bourgeois Hotel to the workers street - until modern times. Which specific typological, functional and architectural elements are used and how do they relate to urban and dwelling cultures? How do Intermediate Size typologies accommodate the complexity of the present city-life and its rapidly changing patterns?

This studio is the third of a sequence of graduation studios. Both research and design work will contribute to a body of work for a follow-up publication. In this stage of the research, we study the most relevant urban specific architectural elements which directly or indirectly relate to a specific urban culture and dwelling type. It therefore includes not only the usual typo-morphological aspects such as distribution, spatial transitions, and scenography but also other aspects such as social function, cultural representation, phenomenological interpretation and their changing roles in different time periods. By looking at the city along the [...] sections, we read the city from pre-modern, to present-day, and the [...]scheduled late September 2023.)

Architecture: models, thought, design

Image 1
Thomas Demand: "Repository", 2018 (photo paper model)
https://www.takaishii-gallery.com/en/archives/3536/

Image 2
Philip Dujardin: "Memorial V", 2020 (photomontage)
https://www.artsy.net/artwork/filip-dujardin-memorial-v

Architects don't build buildings, they design them. They do so through the creative exploration of possibilities and then by making solid design decisions backed up by evidence. That evidence is of two sorts, it is rational evidence and empirical evidence, and these always work together. The empirical basis of an architectural design decision rests on the architect's experience and causal knowledge of lived space: how good is she at understanding spaces, materials, structures, organisations of elements and spaces, their various uses? To acquire that causal knowledge, we analyse existing buildings both as historical precedents and as living labs. And we explore possibilities, using models. The rational basis of an architectural decision is that it fits in a coherent view of what architecture is about and what this specific project is about. The success of the architect then rests upon her ability to express and communicate her intentions accurately, precisely, and evocatively. We do this using models. Models play a seminal role in architecture. We use them to think with, just like we do in science, in the other arts and in philosophy. Through simulations and their careful evaluation, we avoid the social, environmental, economic, and reputational cost of making bad design decisions. With simulations we explore the qualities of designed spaces that have not yet been built. In this studio we are going to investigate the working and power of models, digitally rendered models, sketch models, presentation models, full scale mock-ups, models of thought, and we are going to analyse and critique them so that we acquire a much deeper appreciation of the role of models in design and design thought. We are going to interview model-makers and people with a special position regarding models. We are going to make models; beautiful models, and we shall use all that knowledge to design and make explicit the qualities we believe a good building should have.

dr. Jacob Voorthuis
ir. Jan Schevers

7X45Mo
semester A, quartile 1 (1·2·3·4)
45 ects
10 students

14

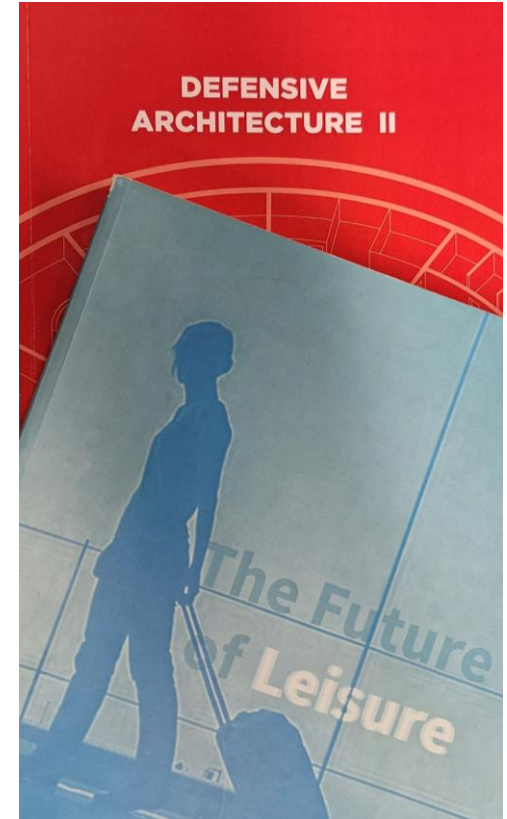# Student results

Master project, 2020

Architecture and Urban Design

Student results – graduation projects

Graduation studio *Masterly Apprenticeship*, Dutch Design Week Exhibition
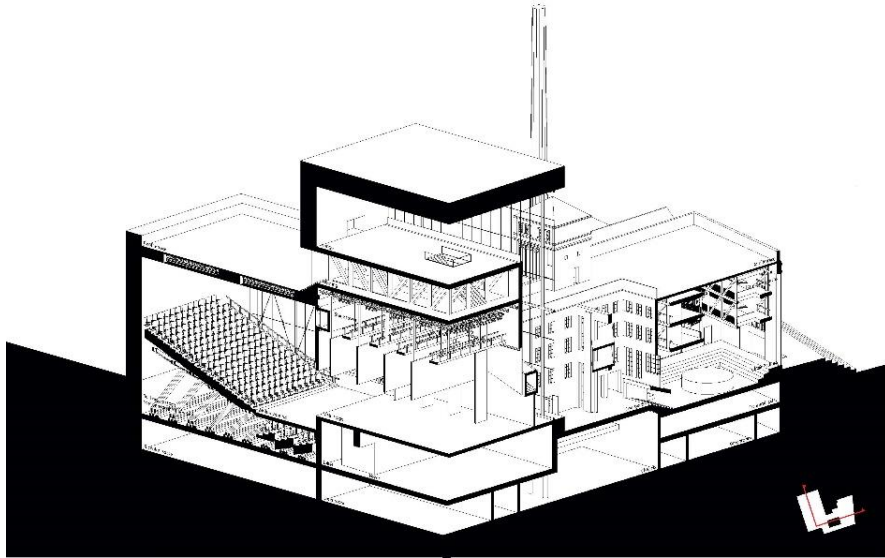

Group research books

Architecture and Urban Design

Student results – graduation projects
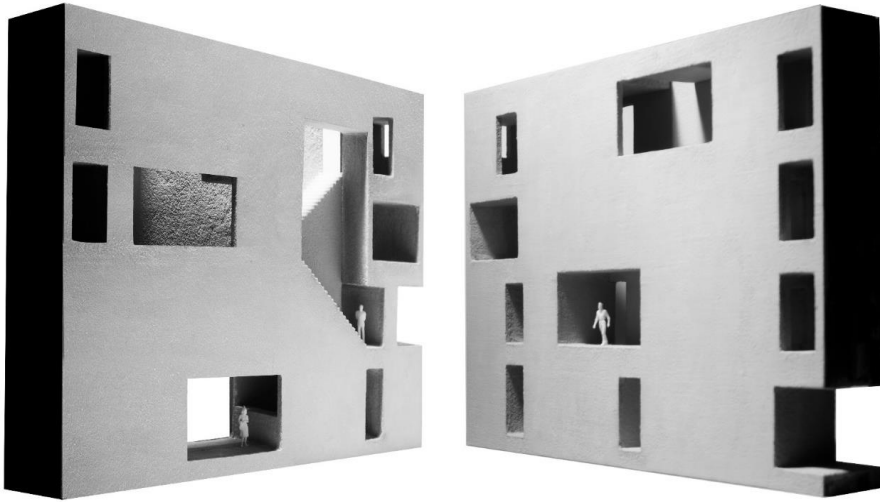
Moniek Kamphuis, *A school of Architecture* (Cum Laude)

Valentijn Kersten, *A School of Architecture*

Architecture and Urban Design
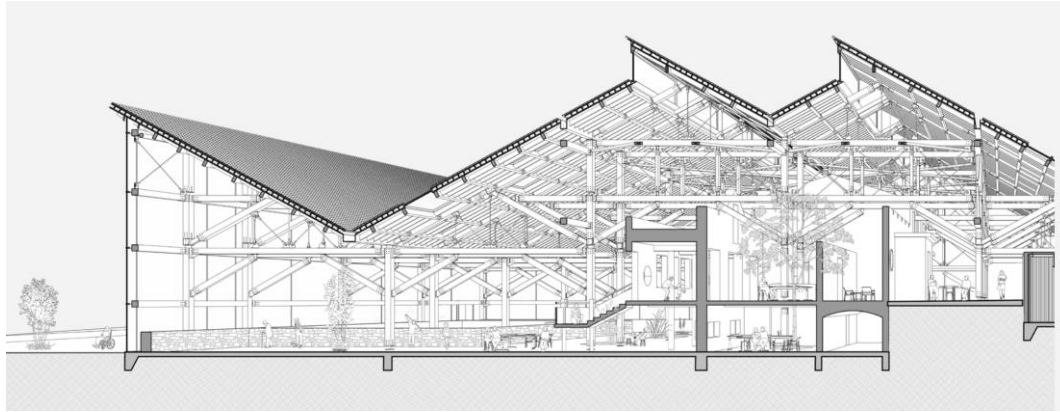
Student results – graduation projects

Lex Lagendijk, *Eisfabrik Berlin* (Graduation studio *Transformation*)

Steven Geertzen, *Red Hook grain terminal New York* (Graduation studio *Transformation*)

Architecture and Urban Design

Student results – graduation projects

Hugo Hu - *Your skin is the skin of the world* (Graduation studio *Stimulating Healthy Environments IV*)

Gerrit Knappers (Graduation studio *Defensive Architecture II)*

Architecture and Urban Design

Study trips

Future of Leisure
Porto

Building for the Masses
Istanbul

Densified Living
Innsbruck

Architecture and Urban Design

After graduation

Architecture and Urban Design

Professional traineeship

BEP (*BeroepsErvaringsPeriode*)
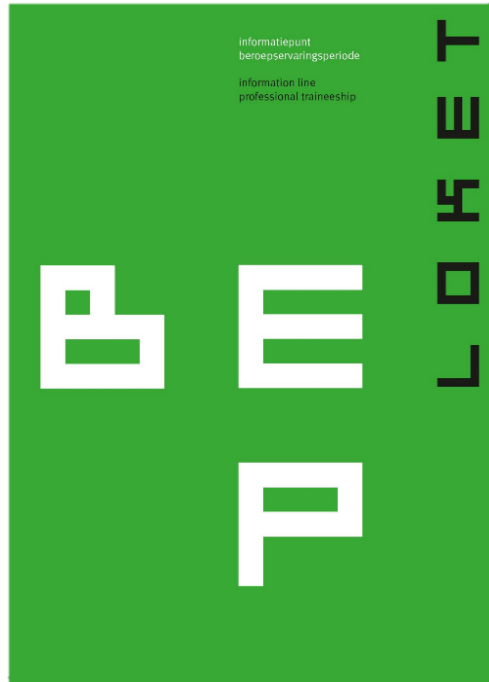
Architecture and Urban Design

Professional traineeship

Legally protected titles:

ARCHITECTEN   STEDENBOUW-KUNDIGEN   TUIN- EN LANDSCHAPS ARCHITECTEN   INTERIEUR-ARCHITECTEN

- Only professionals who are enrolled in the Dutch **Register of Architects** are permitted to use these titles.

- It includes a **2 years professional traineeship** (Beroepservaringsperiode - PEP) after receiving your (Master's) diploma before you can enroll in the Register of Architects.

Options:
- Independent route
- Integrated program *(PEP)*

http://www.beroepservaringperiode.nl/en
http://pepnl.eu/

Architecture and Urban Design

Register program – Architecture   Urbanism

Architecture

			Quarter	ECTS	
Core courses	7QX5M0	Seminar Urbanism and Architecture	1/2/3/4	5	
	7QW5M0	Research in Urbanism and Architecture	2	5	
	7QW6M0	Architectural and Urban Theory	1	5	
	7QX1M0	Masterproject 1 Architecture	1-2	10	
	7QX2M0	Masterproject 2 Architecture	3-4	10	
	7QX3M0	Architectural Engineering	2	5	
	7QQ4M0	Types and Methods in Architecture	4	5	
	7QQ1M0	Architectural Expression	1/2/3/4	5	
	7QQ2M0	Constructing Architecture	3	5	
				55	

Choose 5 ECTS out of 20 ECTS

			Quarter	ECTS	
Specialization electives	7QX6M0	Architecture and Philosophy	3	5	
	7QW8M0	Heritage, Urbanization and Global Efficiency	1	5	
	7QX7M0	Architectural Analysis	2/4	5	
	7QX8M0	Urban Form	1/3	5	
				5	

Electives				15

7X45M0	Graduation Project Architecture			45

Architecture and Urban Design

total: 120

Urbanism

			Quarter	ECTS	
Core courses	7QX5M0	Seminar Urbanism and Architecture	1/2/3/4	5	
	7QW5M0	Research in Urbanism and Architecture	2	5	
	7QW6M0	Architectural and Urban Theory	1	5	
	7QW1M0	Masterproject 1 Urbanism	1-2	10	
	7QW3M0	Urban Planet	4	5	
	7QW7M0	Theory and Practice of the Public Domain	1	5	
	7XX9M0	Urban trends and strategies	2	5	
				40	

Choose 10 ECTS out of 20 ECTS

			Quarter	ECTS	
Specialization electives	7ZW3M0	Urban Planning II	1	5	
	7QX8M0	Urban Form	1/3	5	
	7QW8M0	Heritage, Urbanization and Global Efficiency	1	5	
	7ZWM0	Built Environment and Smart Mobility	4	5	

Choose 10 ECTS out of 20 ECTS

			Quarter	ECTS	
	7QW2M0	Masterproject 2 Urbanism	3-4	10	
	7ZU2M0	Project Redevelopment of problem areas	3-4	10	
				20	

Electives				15

7W45M0	Graduation Project Urbanism			45

total: 120

Discuss your program and planning with your mentor

- **PSP** – *Personal Study Plan*
  - Register program, internship, exchange, honors, electives, double track, certificates, etc.

- **Mentor** = tutor of your 1st Master project
  - If you start your Master without starting a project -> Maarten Willems = mentor

"What kind of professional do I want to be?"

Pierre Cuypers

We don't look like this anymore…..

Le Corbusier

Jean Nouvel – Frank Gehry – Rem Koolhaas

We might not even look like this anymore…..

Architecture and Urban Design

"What kind of professional do I want to be?"

We might not even look like this anymore…..

Architecture and Urban Design

"What kind of professional do I want to be?"

The world evolves;

challenges evolve;

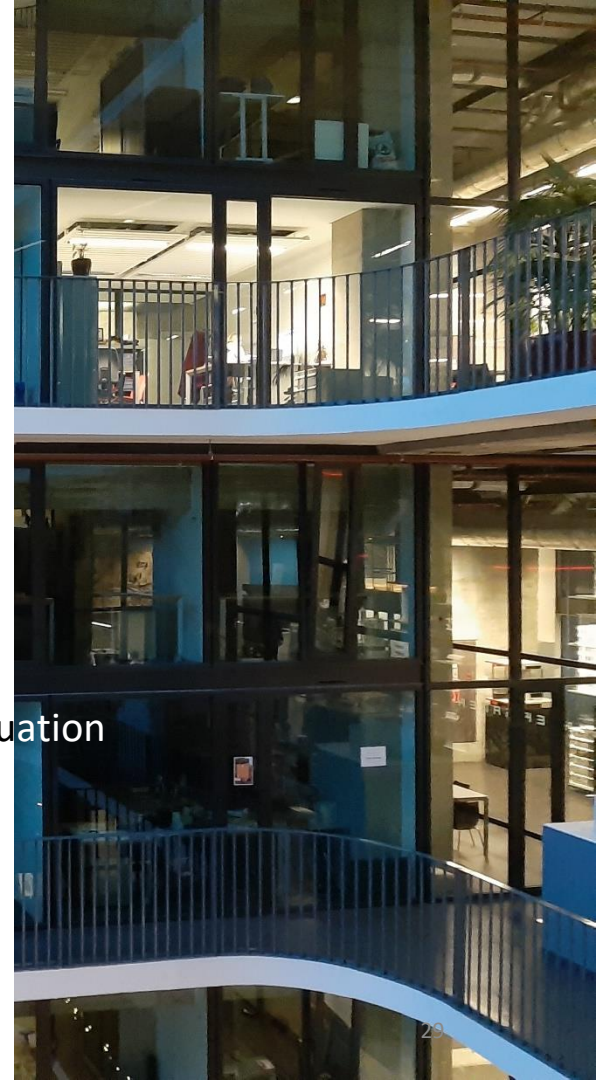technology evolves;

professions evolve;

architecture evolves.

Architects are not (only) what they used to be....

inclusiveness

mobility

energy transition

climate

circularity

rising sea levels

privacy

healthy ageing

"How do I want to make the world a better place?"

Architecture and Urban Design

Master Program – recurring topics

- internship
  - optional (self-responsible, coordinator Anne Marie Peters)
  - 5 ECTS   (work experience)
  - 15 ECTS   (research, academic)

- work/job combined with study
  - possible, if limited (study requires ± 40 h/w)
  - requires discipline and planning
  - try to have your hands free during the final stage of graduation

- allocation to projects / seminars
  - end of this week

Architecture and Urban Design

Questions?

Results of *Architectural Analysis*