

MARB/MAIB14 design studio ‘On circular materials and processes – PART 1’

Semester	1
Start week	studio on Wednesday starting September 23
Reviews	Permanent evaluation, final reviews on December 16 and January 6
Credits	15
Studio tutors	Laurens Bekemans, Catherine Mengé, BC architects & studies

Important!

This studio MARB / MAIB14 together with the subsequent studio MARB / MAIB24 is based on the objectives set within the ADO (Academic design office) project ‘Designing for an uncertain future’.

Students can choose for this studio without necessarily also for the follow-up studio in semester 2 ‘On circular materials and processes- PART 2’. However, it is highly recommended as both studios are seen as one and the program is designed for a complete academic year. Moreover a 2-week workshop on Rammed Earth at the LUMA foundation in Arles will be organized in semester 2. This 2-week workshop is very interesting for all students of this studio, given the opportunity to gain building experience with local circular materials. It can be followed voluntarily or within the elective with the name ‘Participation in an international project’ (5 credits for 2021-2022). A report is expected as a separate output for the elective.

https://onderwijsaanbod.kuleuven.be/syllabi/e/A33984E.htm#activetab=doelstellingen_idm872496

Three consecutive years will deal in depth with specific (circular) building materials.

Academic year 20-21: earth

Academic year 21-22: natural stone

Academic year 22-23: fiber

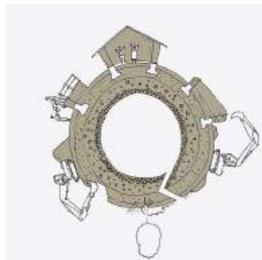
ACADEMIC YEAR 2020-2021: EARTH

A) CONTEXT



Climate mitigation requires a new attitude to materials and innovation in ecological and environmental engineering. Architects must research building materials and design the process of construction as much as its architectural outcome.

The earth is a closed system and our stay here is only temporary. That’s why we need to behave responsibly and consciously deal with everything that makes our stay possible on this planet. However, we have created a system that focuses on continuous, exponential growth, which means that products have to be produced in a more and more increasing amount. That is why many people already argue to organize our economy in a fundamentally different way: where it is no longer about ‘take, make and waste’ but about a circular economy where we re-use products, where waste becomes a ‘new’ raw material, where locally (bio)sourced materials are mainstream and where design is thought for the long-term.



Circular economy is necessary and promising. Due to the energy, materials and climate transition, our environmental laws will soon become stricter. Long transport chains will push up the price of products. Residuals and waste will need to become the resources for tomorrow's economy. This offers opportunities for shorter and closed production chains. These circular chains are most promising in places where many people live: in and around the city¹.

Within this context the pre-industrialized concept of a master-builder might just come back. It reflects the idea of an integral approach to architecture, embedded in local context, local materials and local craftsmanship. The professional architect should become more hybrid again. He should understand the flows and larger network that is touched by his design. He should research and understand design as the result of materials and processes. He should test / make / fail again on scale 1:1.

B) STUDIO APPROACH



The studio is partly organized at the campus Brussels and partly on a permanent off-site school workshop space on the Tour and Taxis site. This combined on/off-site studio makes it possible to develop a dynamic and hands-on studio.

The Brussels campus will be used for most lectures, architectural theory classes, design discussions/meetings, etc. whereas all material research, prototyping, modelling, workshops, etc. would take place in the laboratories at the Tour and Taxis site. This gives the possibility to the students to test materials, understand construction on scale 1:1, prototype details on scale 1:1, build walls, build corners, etc.

The final goal of the studio is to design a structure based on a self-designed stackable earthen building element.

C) DESIGN APPROACH

Theory and Research

The first semester will focus firstly on an analysing the country of Belgium from the perspective of a building material researcher. We'll look at the Belgian territory and its cities as a quarry, as a material and resource supplier. The goal of this first part of the research is to study cartographies, map out all earth-based resources and their volumes and to create a public catalogue of samples of the local Belgian earth materials.

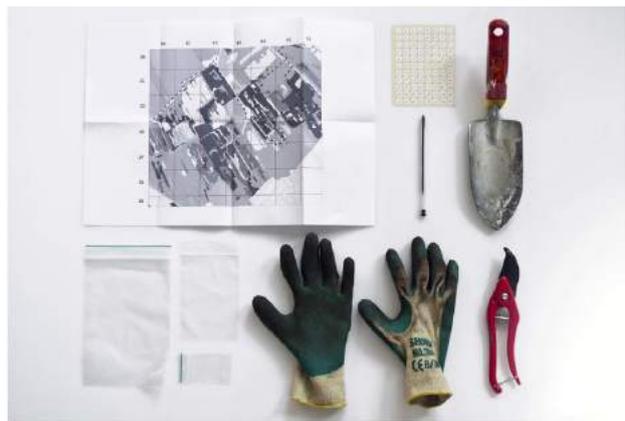


¹ Inspired by the text From A Good City Has Industry booklet for the exposition in Bozar in the winter of 2017

The map will be a public tool for you and all architects to understand the potential of local earth-based materials. This study has as goal re-orienting the current economical construction landscape towards a more bioregional economy.



In the second half of the semester students will firstly be asked to develop and prototype an earth object which can be stacked and secondly design a structure with it.



The main goal of this first semester is to have 1) an introduction to earth as a construction material 2) map the potential of the territories of Belgium and research the impact earth construction/waste has on our environment 3) create an earth sample library of Belgium 4) design and built an object on scale 1:1 5) draw a structure by developing a stacking technique with their designed earth object.



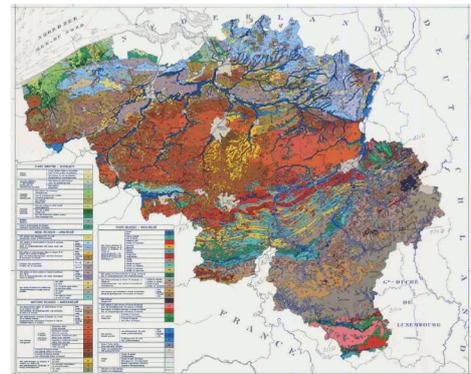
D) AIM

The student is challenged to understand in a more holistic way the meaning of Architecture as a profession in the world in transition. The student will develop affinities with earth as a local and circular resource, production processes, construction techniques, materiality, structure, bioclimatic principles and executional drawings. These explorations will bring students closer to materials and their constructive features. Bridging the existing gap between architectural education and the craftsmanship of architecture.

1) A map:

We will develop an earth territorial map of Belgium showing all the locations/colours/quarries/... of Belgian soil. The 11 provinces of Belgium will be divided between the students in groups of 2/3 students.

A collaboration with the first year Bachelor Architecture will be set-up as follows: Each group of Master students will allocate max. 10 reference projects in their province which 10 students of the first year Bachelor will analyse. The Master students will follow up their work.



2) A catalogue:

The students will develop a comprehensive sample catalogue of the Belgian soils. This library will contain the resources in their raw state and 1 material prototype (plaster, rammed earth block, etc.) representing in the best way the soil of a specific province.



3) A prototype:

The students will firstly design and prototype an object out of earth with which they will design a structure. In other words; The student will develop a building material which they will then use to design their structure with. The building material should be designed as a stackable component.



E) BC materials production hall

The off-school site is located at the BC materials production hall:

Havenlaan 104

1000 Brussels

BC materials opens during the studio hours parts of their workshop to the students.

The students will be able to use tools, test materials, ... under the supervision of BC materials.



F) PROGRAM AND ORGANIZATION

The studio will alternate between the campus Brussels and the BC production hall. The place of teaching is written in the calendar (see below). Changes will be communicated by mail.

Working method design studio: groupwork

1. A map
2. A catalogue
3. A prototype

G) CALENDER

Week 1	Tuesday Sept 23	9h	start of studio	Brussels Campus
Week 2	Wednesday Sept 30	9 h 10h–18h *	intro of studio Workshop - introduction to earth 1	<u>BC materials</u>
		12h	lecture BC materials	
Week 3	Wednesday Oct 7	9h-18h 9h	A map lecture on the research + earth in Belgium	Brussels Campus
Week 4	Wednesday Oct 14	9h-18h	A map	Brussels Campus
Week 5	Wednesday Oct 21	9h-18h	A map	Brussels Campus
Week 6	Wednesday Oct 28	9h-18h	The final map	Brussels Campus
Week 7	Wed Nov 4 +Thur Nov 5	**	Workshop - introduction to earth 2	<u>BC materials)</u>
Week 8	Wednesday Nov 11		A catalogue	Brussels Campus
Week 9	Wednesday Nov 18		A catalogue	BC materials
Week 10	Wednesday Nov 25		Set-up A design	Brussels Campus
Week 11	Wednesday Dec 2		design A design	Brussels Campus
Week 12	Wednesday Dec 9		design A design	Brussels Campus
Week 13	Wednesday Dec 16		*** Final exposition	TBC
CHRISTMAS HOLIDAY				
Week 14	Wednesday Jan 6		**** PUBLICATION + EVENT 1	TBC

* WORKSHOP – INTRODUCTION TO EARTH 1 – 1 DAY: carazas test + field tests + samples

** WORKSHOP – INTRODUCTION TO EARTH 2 – 2 DAY: learning how to make their own formwork for the samples + RE samples - plaster samples - BTC sample?

*** OUTPUT PRESENTATIONS AND REVIEWS:

All expected output for the presentations and reviews will be communicated by email during the course of the design studio.

**** PUBLICATION

All design studio students will collaborate together in the making of a high-quality book publication about the final exposition and the results.

H) METHOD OF EVALUATION

Ects file see: https://onderwijsaanbod.kuleuven.be/syllabi/e/A41310E.htm#activetab=doelstellingen_idp2588640&bl=all

Permanent evaluation and reviews

Evaluations are a combination of permanent Design-Studio assessments of students' performance during group- and individual work and close follow-up on development of group-work as well as individual projects. One or more reviews are organized followed by a final and conclusive evaluation on the 26th of May, requiring students to present their work concisely along pre-set common guidelines and minimum output along the entire development of their design project.

Part of the permanent evaluation criteria, students must attend at least 80% of this course's designated 'contact-hours' and engage actively during all sessions. Students found to be regularly absent, or who fail to contribute to the group project and / or to develop their individual project and/or skirt team-based output may be declined participation to the final review.

For the final evaluation, partner institution professors may be invited. Reviews can be presented using various formats such as power-point presentations, desk-crit sessions, exhibitions, peer-reviews, digital delivery, presentation on paper format, discussions, ...

Submission procedures and detailed output requirements per review will be communicated at least two weeks prior to presentations and/or final submission dates.

All deliveries are to be handed-in strictly on time and must be in line with requested output criteria to pass this course.

Failure to deliver any requested materials or output of any kind for any sub-task within the given deadlines is without exception considered as 'non-delivered' and will result in a NA mark or Not Participated (Niet Afgelegd).

Students who cannot attain deadlines or attend evaluations / presentations must deliver their task 'as its stands' within the given deadline, either in person, or delivery by a third-party in exchange for an acceptance-receipt.

I) REFERENCES

- The Act of Building, BC architects & studies, Exhibitions International, isbn 978-94-92-567-09-3 - Material Matters, Thomas Rau and Sabine Oberhuber, isbn 978-946-156-22-58
- Fuck concepts! context! San Rocco summer 2012
- Cradle to cradle, Michael Braungart, isbn 978-0-099-535-47-8
- Massive Change, Bruce Mau, Phaidon Press, isbn 978-0714844015
- Towards a phenomenology of architecture, Norberg-Schulz Christian, Genius Loci, Academy editions, 1980
- A good city has industry: http://www.architectureworkroom.eu/documents/ABXL_Bozar_GUIDE_ENG_DEF_webres.pdf - - Missing link iabr: https://www.iabr.nl/en/editie/iabr2018_2020
- How Buildings Learn, Stewart Brand, isbn: 978-0140139969