The global need for more housing requires a smart and integrated approach. For example, the Netherlands will need 1 million homes by 2030. With which systems do we deal with; how can we compose with components; how do architecture, technology and flexible use go together? How do we use robots and CNC manufacturing techniques for this purpose? How do we integrate the influence of users; can we make better adaptable, smart and energy efficient housing systems? Are we able to make an affordable circular house? We are working on a catalogue of Mass Customized Building Systems (MaCuB).

Collaborations are sought with the research program of TU Delft for the 1 million homes issue; the Circle House of GXN/3XN; The New Makers and various manufacturers of industrialized building systems. The designing focuses on the one hand on the Dutch and on the other on the Indonesian context.

Tutors:
Thijs Asselbergs
Mauro Parravicini
Anne Snijders
Emiel Lamers
Mo Smit

The global need for more housing requires a smart and integrated approach. For example, the Netherlands will need 1 million homes by 2030. With which systems do we deal with; how can we compose with components; how do architecture, technology and flexible use go together? How do we use robots and CNC manufacturing techniques for this purpose? How do we integrate the influence of users; can we make better adaptable, smart and energy efficient housing systems? Are we able to make an affordable circular house? We are working on a catalogue of Mass Customized Building Systems (MaCuB).

Collaborations are sought with the research program of TU Delft for the 1 million homes issue; the Circle House of GXN/3XN; The New Makers and various manufacturers of industrialized building systems. The designing focuses on the one hand on the Dutch and on the other on the Indonesian context.

Tutors:
Thijs Asselbergs
Mauro Parravicini
Anne Snijders
Emiel Lamers
Mo Smit

The global need for more housing requires a smart and integrated approach. For example, the Netherlands will need 1 million homes by 2030. With which systems do we deal with; how can we compose with components; how do architecture, technology and flexible use go together? How do we use robots and CNC manufacturing techniques for this purpose? How do we integrate the influence of users; can we make better adaptable, smart and energy efficient housing systems? Are we able to make an affordable circular house? We are working on a catalogue of Mass Customized Building Systems (MaCuB).

Collaborations are sought with the research program of TU Delft for the 1 million homes issue; the Circle House of GXN/3XN; The New Makers and various manufacturers of industrialized building systems. The designing focuses on the one hand on the Dutch and on the other on the Indonesian context.
The AMC in Amsterdam is the largest academic hospital in the Netherlands and comprises of about half a million square meters of floor space. In addition to buildings, covered streets and squares, the complex also includes the medical faculty of the University of Amsterdam.

The facades of the 40-year-old AMC are due for renovation. A lot of preliminary research has been done in recent years. The renovation project, with all its possibilities and dilemmas, is a unique opportunity to explore different possible solutions towards a healthy environment. Another factor that plays a role here is that the AMC is and remains in full use during the renovation.

How can we deal with a lifetime of thirty years? How to deal with circularity and how do energy requirements, healthy indoor climate and façade renewal influence each other? What are the lines of thought now that political thinking about energy and material use has been put on the agenda? Which variants are possible and how is this in balance with the sizeable investments aimed at achieving energy neutrality? Which requirements are fixed in 2050? What can we anticipate? At the same time, AMC also has an architectural value and will become a monument. How do we deal with that?

Students, lecturers and researchers from BK TU Delft have been asked by AMC to develop design ideas and visions. These ideas and visions can be a unique and inspiring breeding ground for feeding the agenda of innovation.

It is a challenging and topical subject that demands creativity, inventiveness and visionary thinking from a broad spectrum of generalists and specialists.

Related courses:
AR3AE013 - 9 ECTS - Graduation Studio Research (integrated in AR3AE015)
The Amstel III Lab is focusing on the re-design of the Amstel III area in the south of Amsterdam. The goal is to develop projects which could turn this monotonous business district into a lively neighbourhood for working, living and leisure. The technical and environmental challenge is to re-design the area by applying a circular design approach, for example by using upcycled construction waste from outdated office buildings.

After the Bijlmer district was built, the Amstel III Business Park opened. It became home to many logistics and commercial companies, offices, a few large residential buildings, DIY superstores and an indoor shopping centre. It remained a stable but somewhat uneventful environment for many years. The area is located next to the Bijlmer Arena railway station and ArenApoort, which is now one of Amsterdam’s key economic powerhouses. The ongoing renovation of the area helps to let it flourish into a popular business location. In the south of the area, the Academic Medical Centre and the University of Amsterdam are creating a high-tech cluster for businesses in healthcare and life sciences, and several former office buildings have been converted into a hotel and student housing.

The coming years the Amstel III area will be further developed into a green and sustainable live-work environment. A circular development approach is being stimulated by the City of Amsterdam. In this context the developed projects of aE Studio function as climate proof showcase for circular construction methods.

The Amstel III Lab is focusing on the re-design of the Amstel III area in the south of Amsterdam. The goal is to develop projects which could turn this monotonous business district into a lively neighbourhood for working, living and leisure. The technical and environmental challenge is to re-design the area by applying a circular design approach, for example by using upcycled construction waste from outdated office buildings.

After the Bijlmer district was built, the Amstel III Business Park opened. It became home to many logistics and commercial companies, offices, a few large residential buildings, DIY superstores and an indoor shopping centre. It remained a stable but somewhat uneventful environment for many years. The area is located next to the Bijlmer Arena railway station and ArenApoort, which is now one of Amsterdam’s key economic powerhouses. The ongoing renovation of the area helps to let it flourish into a popular business location. In the south of the area, the Academic Medical Centre and the University of Amsterdam are creating a high-tech cluster for businesses in healthcare and life sciences, and several former office buildings have been converted into a hotel and student housing.

The coming years the Amstel III area will be further developed into a green and sustainable live-work environment. A circular development approach is being stimulated by the City of Amsterdam. In this context the developed projects of aE Studio function as climate proof showcase for circular construction methods.

1. City of Amsterdam, Cities & Neighbourhoods, Amstel III en ArenApoort

Related courses:
AR3AE013 - 9 ECTS - Graduation Studio Research (integrated in AR3AE015)
Shrinkage as opportunity: structures for productive landscapes, energy artefacts and social activity.

Harvest_BK lab is about the connection of design, sustainable development goals and potential of the area. With test site Parkstad, students of architectural Engineering work together with Landscape Architecture to work through all scales on integral designs. With a group of 15 students inspirational ideas and strategies are being created towards the IBA Parkstad conference in 2020 and International Architecture Biennale Rotterdam 2018-2020.

After two transformations, Parkstad Limburg is working on its third where Harvest_BK contributes to, by working on a Gardencity 2.0. This concept is based on the uniqueness of the site, providing a coherent and renewed productive urban landscape. Forests, parks and heathlands as well as agricultural and industrial landscapes are under scrutiny whereby the metabolistic flows, such as energy, water, materials and food are mapped. It examines the demand in relation to resources, nutrients and their cycle influence on the architectural landscape. Where in the Randstad the focus is on greening and climate adaptive policy, this quality is already available in this area. But how are such common city landscapes used, what do they look like and what public value do they generate?

The Harvest studio works together with students and researchers on integrated architectural design solutions at this location, using the energy transition as a handle for a renewed and healthy living environment. In combination with the spatial potential from the area itself, we work on design solutions that strengthen the social activity, economy and its spatial identity.

Related courses:
AR3AE013 - 9 ECTS - Graduation Studio Research (integrated in AR3AE015)
As a result of long time colonization by the Dutch, Indonesia has many shared heritage sites and buildings. The question for (landscape) architects and urban planners is how to give new meaning and use to these culturally significant environments, taking history, present and future into account?

This semester the Shared Heritage Lab focuses on the urban revitalization of the former colonial city of Semarang. “For over four centuries, Semarang has been the focal point of trade in Indonesia, and a destination for people from all over the world.” Because of its high cultural value the city is designated as a Unesco World Heritage site. Many projects are currently being developed by the city in co-creation with local communities, companies and ngo’s. “At the same time the city faces a diverse range of challenges. Tidal flooding and flash floods, sanitation and waste management, congestion, and unemployment, among others, are issues the city currently deals with.” As a consequence, the eco-system of the city and the health of its citizens is seriously under pressure. Centralized urban utility networks for the management of water, energy and waste can’t keep up with the explosive urban growth. A large need for affordable housing for a rapidly growing lower-middle class is putting environmental pressures on the stock of building materials and other resources. Taking these challenges and the UN’s Sustainable Development Goals (SDG’s) into account, the main question of the Shared Heritage Lab is how to turn the former colonial city of Semarang into an inclusive, thriving and healthy environment for working, living and leisure?

The Shared Heritage Lab is a three-year collaboration of aE Intecture, Heritage & Architecture, Urbanism and Landscape Architecture at TU Delft with the School of Architecture, Planning & Policy Development of Institut Teknologi Bandung (ITB, Indonesia). The studio is supported by the Royal Netherlands Embassy in Jakarta (Indonesia) and the Cultural Heritage Agency of the Netherlands (RCE).

Related courses: AR3AE013 - 9 ECTS - Graduation Studio Research (integrated in AR3AE015)
“On Wednesday the 6th of September 2017, the Caribbean island state Sint Maarten got hit by hurricane Irma, leaving an approximate 91% of the built environment damaged. Roofs, boats, personal belongings, cars, entire residences got blown away by the wind and washed away by the heavy rainfall. The already existing solid waste problem has been extended with the additional waste caused by the hurricane. The so called ‘dump’ is over capacity and presents a significant health risk to the general population.

The popular tourist hub saw travellers choose different destinations, cruise ships passed the island, and the tourist industry of which 85% of the population is in some way dependent on, collapsed. Many Sint Maarteners did not just lose their residence, they lost their job as well.”

Shelterlands Sint Maarten focuses on the circular reconstruction of the Caribbean island state, which is a former Dutch colony. A community-based approach is followed to re-establish qualitative housing, public functions, leisure facilities and utility networks, taking the challenge of building in a hurricane prone area into account. Technical topics that are being investigated are for example: how to build with (hurricane related) waste materials, how to develop a local building culture using renewable materials, and how to create a degree of (communal) resiliency towards hurricanes?

The graduation studio collaborates with the MSc1 Extreme course which focusses on the design of a children’s daycare / emergency shelter in collaboration with UNICEF.

Related courses:
AR3AE013 - 9 ECTS - Graduation Studio Research (integrated in AR3AE015)
Robotic Building (RB) focuses on the integration of advanced computational design with robotic techniques in order to produce highly performative buildings. It involves a research driven design approach, which primarily focuses on articulating the complex relationship between social, environmental, spatial, technological and user-based information and physical matter. Focusing on the development of relatively large architectural scale urban inserts, it investigates the aforementioned information sets in an associative i.e. parametric manner by means of Design-to-Robotic-Production and –Operation (D2RP&O). While D2RP links design to robotic production, D2RO integrates robotic devices into building components in order to facilitate spatial and climatic reconfiguration. Together they establish the framework for robotic production and operation at building scale.

This studio is offered in collaboration with Delft Science Centre (DSC) and Hogeschool van Amsterdam (HvA) and it is taking advantage of their Rapid Prototyping and robotic facilities as well as the robotic arm of the RB lab.

The focus of this studio is on utopian/dystopian visions on future habitats by reinterpreting Constant’s New Babylon and revisiting today’s societal challenges such as rapid urban densification, overpopulation, scarcity, migration, pollution, climate change, etc. By introducing static and dynamic functionalities such as mega infrastructures (consisting of structural frame, circulation, water and electricity, etc.) with reconfigurable furnishing designed and produced by means of D2RP&O the studio aims to challenge existing concepts for living and working environments. In particular, it takes the opportunity to reflect on the influence of new technologies such as artificial intelligence, robotics, and 3D printing on architecture. The proposed computationally designed and robotically produced structure relies on these technologies and embeds artificial intelligence in its sensor-actuators mechanisms in order to allow users to customize operation and use of such innovative cyber-physical spaces.

Collaborators:

Science Centre Delft
HvA

Tutors:
Henriette Bier
Arwin Hidding

Code: AR3AE015
Credits: 15 ECTS
Location: Rotterdam
Excursion: Randstad
Costs: €50,-

Related courses:
AR3AE013 - 9 ECTS - Graduation Studio Research (integrated in AR3AE015)

Fall semester 2019