Doctoral Education

Towards an improved educational framework for doctoral studies in Architecture and the Built Environment

Strengthening Architecture and the Built Environment Research (SABRE)
Erasmus+ Partnership

Frank van der Hoeven, Inge Meulenberg

TU Delft
BauHow5

September 2020

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August 2020

Judit Ferencz, PhD (current student),
sketch of streetlife in Whitechapel, UCL Bartlett

Content

Positions on Circularity in the Built Environment

March 13th, 2017

TUM Department of Architecture

Circularity concerns different areas such as urban design, architecture, building technology and building management. The event will bring together key expertise across the BauHow5 universities, TU Delft, The Bartlett UCL, Chalmers, TU Munich and ETH Zurich.

BauHow5 Event
MONDAY 13.03.2017 12:30 -18:00

LOCATION
TUM Department of Architecture
Arcisstraße 21, 80333 Munich, Germany
Main building 'alte Poststelle' – room 0009

MODERATION
Tillmann Klein

Please confirm attendance
graduatecenter@ar.tum.de

12:30 Registration
13:00 Welcome – Thomas Auer
13:15 The idea of BauHow5 – Yolande Hoogendoorn

SESSION 1 – URBAN LEVEL
13:30 **Ellen van Bueren**, TU Delft – Perceived opportunities and risks of resource exchange projects
13:50 **Mark Michaeli**, TU Munich – Challenges in Urban Transformation
14:10 **Bob Geldermans**, AMS/TU Delft – Circular Cities, Context and Time
14:30 **Ben Croxford**, UC London – Circular Economy Lab (CircEL)

14:50 Coffee break

SESSION 2 – BUILDING LEVEL
15:20 **Krystyna Pietrzyk**, Chalmers - Circularity aspects of building design – accounting for uncertainties
15:40 **Werner Lang**, TU Munich – Circularity: The Key for Building with a Positive Footprint
16:00 **Liane Thuvander**, Chalmers – Multi-scale urban transformation with multi-stakeholder involvement

16:20 Coffee break

SESSION 3 – COMPONENT LEVEL
16:50 **Tillmann Klein**, TU Delft/ TU Munich – Towards a Circular Building Construction
17:10 **Klaus Peter Sedlbauer**, TU Munich / Fraunhofer IBP – Disruptive Changes in Construction
17:30 **Matthijs Prins**, TU Delft – Circular Economy – Models, Tools and Rules

17:50 Discussion
18:00 Drinks

CHALMERS
UNIVERSITY OF TECHNOLOGY

The Bartlett
UCL Faculty of the Built Environment
UCL

TUDelft

ETH zurich

Technical
University
of Munich   TUM

BauHow5 event on Circularity in the Built Environment,
2017 Munich

BauHow5

BauHow5 is a European alliance of five leading research intense European universities in Architecture and the Built Environment.

The alliance aims to push the boundaries of current practices in pedagogies, research and practice and raise awareness of the value of research and innovation in Architecture and the Built Environment for the broader benefit of society, economy and cultural life. BauHow5 Partners are:

— Chalmers, Department of Architecture and Civil Engineering
— ETH Zürich, Department of Architecture
— TU Delft, Faculty of Architecture and the Built Environment
— TUM, Department of Architecture
— UCL, The Bartlett

SABRE Erasmus+ project

Architecture and the linked Built Environment disciplines have been taught at various universities across Europe for over a century. Still, the situation bears many of the characteristics of an emerging field of knowledge:

— it lacks recognition for specific research outputs in the field (both in academia and outside);
— it lacks sufficient sources and amounts of research funding;
— it has only recently started to gain acceptance of design as an academic activity;
— the esteem of the doctorate title within the built environment sector remains comparatively low.

The potential for a deeper embedding of research into faculties/schools of Architecture and the Built Environment at higher education institutions, as well as outside academia, has not yet been developed sufficiently. The BauHow5 consortium secured funding for its SABRE project to address these issues.

SABRE is the acronym for Strengthening Architecture and Built Environment Research. SABRE is funded through the Erasmus+ project.

Core Curriculum PhD education

One on the outputs of the SABRE project concerns the creation of "a European core curriculum for PhD education in Architecture and the Built Environment". This report concerns that output:

— a core curriculum for doctoral education in Architecture and the Built Environment.

Collaboration with ResArc

Throughout the SABRE project, a fruitful collaboration with the Swedish Research School in Architecture (ResArc) developed. Partners in ResArc are Chalmers University of Technology, Lund University and KTH Royal Institute of Technology.

BauHow5 and ResArc provide the main components for the core curriculum for doctoral education.

Nicholas Jewell, PhD (2013),
mapping of shopping malls in Beijing, UCL Bartlett

Introduction

The Bologna Accord describes three cycles of education: Bachelors, Masters and Doctoral education. Many of the higher education institutions in the field of architecture and the built environment struggle with facilitating the transition from the second cycle to the third cycle. The current gap between Masters education and Doctoral education is big, perhaps too big.

In most cases, the necessary pre-doctoral phase of research training lacks in the MSc education for architects, urban designers and other built environment professionals. The MSc programmes in this field tend to mainly address the training of students for their employment as practising designers, planners, engineers and managers. Students acquire high-quality design skills, but not so much research skills.

Furthermore, higher education institutions in the field of architecture and the built environment face a problem of capacity in doctoral education. Most institutions expect their doctoral candidates to acquire specific research skills, personal transferable skills and associated professional skills alongside the obvious scientific competences.

Because a critical mass in terms of student numbers is usually lacking, universities struggle to provide all aspects of research training. Doctoral candidates in the field have to search for appropriate research training courses through national and international networks of supervisors. On one side, this has benefits in that each doctoral project can gain more perspective and significance by placing it within a broader context early in the review process. But a bigger problem is that there is still manifestly a shortage of lively, high-quality doctoral programmes and courses in architecture and the built environment that can facilitate this level of intellectual exchange. BauHow5's Erasmus SABRE-project addresses this problem head-on.

Currently, the most common form of doctoral education within the field are those programmes whose focus is on preparing for an academic career, even though only a minority of those with doctorates are likely to end up working in academia. Besides, in most European countries, the Doctorate doesn't necessarily improve one's career prospects in architecture and the built environment. A distinct intellectual gap exists between research on the one hand and design/engineering/planning/management on the other.

We regard BauHow's SABRE-project as an opportunity to link the third cycle of education more directly to the architectural services industry and construction industry through more adaptable, flexible doctoral tracks – including the use of online teaching techniques such as MOOCs and short-term sandwich courses. We should be able to deliver highly qualified and academically trained designers and engineers and other built environment professionals, with an added emphasis on developing values of entrepreneurship and social responsibility.

The purpose of BauHow5's SABRE-project in this respect is to use the strategic partnership:

— to identify best-practice examples and to learn generally from each of the other institutions in the partnership;
— to support the participating partners, along with other European institutions of higher education in architecture and the built environment;
— to either set up, expand or strengthen their current doctoral programmes, especially regarding how to integrate these more closely with the needs of the architectural services industry and construction industries.

This report provides an extensive overview and evaluation of the doctoral provision being offered already at the Faculties/Schools of architecture and the built environment that are involved in these strategic partnerships. One can read the report as input for adaptable and flexible doctoral training courses among the partner institutions in this project, as well as target groups beyond academia in European countries.

Our goal is to create a better understanding of the needs, opportunities and restrictions within the built environment disciplines in Europe in terms of doctoral research training and links to industry partners. To arrive there, we need to establish an active network between the partner institutions, other leading European universities in this field and industry.

The used methods here are:

— Round-table discussions and meetings between the partner institutions;
— Questionnaires circulated to partner institutions;
— Investigation and mapping and evaluating of the survey findings;
— Workshops (virtual and actual) to develop innovative proposals;
— Internet surveys/research studies of existing doctoral provisions in Europe and around the world.

Academic landscape

Most (but not all) higher education institutions (HEIs) in the field of architecture and the built environment are part of universities of technology. This embedding explains why the universities of the BauHow5 consortium are predominantly part of international networks in the technology domain, whereas UCL illustrates that there are exceptions to that rule.

We mention four university networks at this point: the **IDEA League**, the **EuroTech Universities Alliance**, **CESAER**, and the **League of European Research Universities**.

IDEA League

The IDEA League is an alliance among five leading European universities of technology: **Chalmers University of Technology**, **Delft University of Technology**, **ETH Zürich**, Polytechnic University of Milan, and RWTH Aachen University.

EuroTech Universities Alliance

The EuroTech Universities Alliance is a strategic partnership of universities of science & technology in Europe: Technical University of Denmark (DTU), École Polytechnique Fédérale de Lausanne (EPFL), École Polytechnique (L'X), The Technion, Eindhoven University of Technology (TU/e), and **Technical University of Munich (TUM)**.

CESAER

CESAER is a non-profit association of leading universities of science and technology in Europe. CESAER was founded on May 10, 1990, seated in the Castle of Arenberg in Leuven, Belgium. The association unites over 50 leading universities of science and technology in 25 countries:

Aalborg University, Aalto University, Ben-Gurion University of the Negev, Brno University of Technology, Budapest University of Technology and Economics, **Chalmers University of Technology**, Communauté Université Grenoble Alpes, Czech Technical University in Prague, **Delft University of Technology**, Ecole Polytéchnique Fédérale de Lausanne, **ETH Zurich**, Gdańsk University of Technology, Ghent University, Graz University of Technology, Institut National des Sciences Appliquées Lyon, Instituto Superior Técnico, Istanbul Technical University, Karlsruhe Institute of Technology, Kaunas University of Technology, **KTH Royal Institute of Technology**, KU Leuven, Leibniz Universität Hannover, **Lund University**, Norwegian University of Science and Technology, ParisTech, Politecnico di Milano, Politecnico di Torino, Poznan University of Technology, Riga Technical University, RWTH Aachen University, Tallinn University of Technology, Technical University of Madrid, Technion - Israel Institute of Technology, Technische Universität Berlin, Technische Universität Braunschweig, Technische Universität Darmstadt, Technische Universität Dresden, Tomsk Polytechnic University, TU Wien, Universidade NOVA de Lisboa, Universitat Politècnica de Catalunya, Universitat Politècnica de València, Université Catholique de Louvain, Université Paris-Saclay, University College Dublin, University of Porto, University of Sheffield, University of Strathclyde, University of Stuttgart, University of Surrey, University of Twente, University POLITEHNICA of Bucharest, Warsaw University of Technology

League of European Research Universities

The League of European Research Universities (LERU) is an association of research-intensive universities: League of KU Leuven, University of Copenhagen, University of Helsinki, Sorbonne University, University of Paris-Sud (University of Paris-Saclay), University of Strasbourg, University of Freiburg, Heidelberg University, University of Munich, Trinity College Dublin, University of Milan, University of Amsterdam, Leiden University, Utrecht University, University of Barcelona, Lund University, University of Geneva, University of

Zurich, Imperial College London, **University College London**, University of Cambridge, University of Edinburgh, University of Oxford.

There is no overarching university alliance that combine all five BauHow5 partners. When we look to the more specific alliances or associations for architecture and the built environment, we do find common ground. The three most comprehensive networks here are **EAAE**, **AESOP** and **ARENA**. All BauHow5 partners are part of EAAE and AESOP. Chalmers, TU Delft and UCL Bartlett participate in ARENA.

EAAE - European Association for Architectural Education

The European Association for Architectural Education is a non-profit bilingual association that aims to increase the knowledge and the quality of architectural and urban design education, for the benefit of teachers, students, citizens, and society. Today, the association counts among its members over 140 European and international schools of architecture, representing some 5000 teaching staff and over 120,000 students.

AESOP - Association of European Schools of Planning

With over 150 members, AESOP is the only representation of planning schools of Europe. Given this unique position, AESOP strengthens its profile as a professional body. AESOP mobilizes its resources, taking a leading role and entering its expertise into ongoing debates and initiatives regarding planning education and planning qualifications of future professionals. AESOP promotes its agenda with professional bodies, politicians and all other key stakeholders in spatial and urban development and management across Europe.

ARENA - Architectural Research Network

ARENA is an open, inclusive and comprehensive network for architectural researchers across Europe. It offers a shared platform that aims to promote, support, develop and disseminate high-quality research in all fields of architecture in the broadest sense. It includes its links to building technology, environmental design, sustainable development, interior design, landscape architecture and urban design/urbanism, operating in domains from science and technology to arts and humanities. To do so, it works alongside all existing bodies to promote the quality, breadth and significance of architectural research to the key institutions involved.

Research schools

The EAAE, AESOP and ARENA networks provide potentially platforms for the dissemination of Doctoral Education programs in the field of architecture and the built environment. However, none of the mentioned networks provides an offering from which the partners in the BauHow5 consortium or other European HEIs in the field of architecture and the built environment can benefit.

At a national level, several research schools exist that do provide a joint curriculum of doctoral courses. The Chalmers University of Technology participates together with LTH Lund and KTH School of Architecture in **ResArc**, the Swedish Research School in Architecture. TU Delft participates with most Dutch planning schools in **NETHUR**, the Netherlands Graduate School of Urban and Regional Research, and in **OSK**, the Netherlands Research School for the History of Art. No national research school on architecture exists in the Netherlands, Switzerland, Germany or the UK.

ResArc - Research School in Architecture

The Swedish research school ResArc is a collaboration between the schools of Architecture at KTH, Chalmers University of Technology and Lund TH to strengthen architectural research, education and collaborative projects at national and international levels. ResArc was launched in February 2012 and is coordinated and administered by the Department of Architecture and Built Environment at Lund University. ResArc received funding from the Swedish Research Council FORMAS 2011 in a total effort that also includes the two strong research environments Architecture in Effect (KTH) and Architecture in the Making (Chalmers).

NETHUR - Netherlands Graduate School of Urban & Regional Research

The Netherlands Graduate School of Urban & Regional Research (NETHUR) covers the fields of urban, regional and housing research. It is a joint initiative of the Universiteit van Amsterdam (UvA), Delft University of Technology (TU Delft), Radboud University Nijmegen (RU), Technische Universiteit Eindhoven (TU/e), University of Groningen (RuG) and Utrecht University (UU) which hosts the secretariat.

NETHUR studies cities and regions, both as built environments and as social entities. NETHUR has a dual mission: to generate a solid base of knowledge about cities and regions and to train young scholars to conduct independent research in these fields. The collaboration within NETHUR concerning education and research brings the scope of urban and regional studies into better perspective.

OSK - Netherlands Research School for the History of Art

The OSK is a national organisation, founded in 1995, which connects the departments of art- and architecture history of eight Dutch universities. The OSK aims to maintain and support a high level of specialised research in the field of art history by offering education and regularly organising meetings for her members. The education program aims at research master students and PhD students working on a doctoral thesis. Six sections are active within the OSK. Each focuses on a specific field within art historical research:
— Architecture and Urban Planning;
— Fine Arts until 1850;
— Historic Interior and Decorative Arts;
— Italian Art studies;
— Modern and Contemporary Art;
— Workshop Practice;
— History of Art Production.

Re3 Glass: Research by Faidra Oikonomopoulou and Telesilla
Bristogianni at TU Delft into a Reduce, Reuse and Recycle
strategy for a dry assembly building system out of waste glass.

The third cycle of education at BauHow5 institutions

The Master of Science in architecture and the built environment is well developed and harmonized throughout Europe. The implementation of the European Credit Transfer and Accumulation System (ECTS) successfully facilitates the mobility of students between HEIs. In return, the HEIs seem to have adjusted their curricula to benefit the most from the ECTS system by adopting comparable study loads and courses.

The third cycle of education shows much more diversity between HEIs. We have conducted a comparative analysis between the doctoral programmes at Chalmers, ETH Zürich, TU Delft, TUM, and UCL Bartlett, and the differences are remarkable. In this paragraph, we provide an overview of the main characteristics on several critical aspects of the third cycle: institutional setting, admission, status, topics/fields, supervision, duration, dissertation, didactics, course work, course categories.

Institutional setting

Chalmers, Department of Architecture and Civil Engineering

3 graduate schools and 1 national research school

— Graduate School of Architecture
— The Civil and Environmental Engineering Graduate School
— The Applied Acoustics Graduate School
— The Swedisch research school ResArc

ETH Zürich, Department of Architecture (D-ARCH)

D-ARCH Doctoral School with 3 doctoral programmes + Individual Doctorates

— Doctoral Programme in Architecture and Technology
— Doctoral Programme in History and Theory of Architecture
— Doctoral Programme in Landscape and Urban Studies

TU Delft, Faculty of Architecture and the Built Environment

TU Delft Graduate School

— Graduate School of Architecture and the Built Environment

TUM, Department of Architecture

TUM Graduate School

— Graduate Centre Architecture

UCL, The Bartlett

UCL Doctoral School

11 doctoral programmes:

— Centre for Advanced Spatial Analysis
— Bartlett School of Architecture
— Bartlett School of Construction and Project Management
— Development Planning Unit
— Bartlett School of Planning
— UCL Energy Institute
— UCL Institute for Environmental Design and Engineering
— UCL Institute for Global Prosperity
— UCL Institute for Sustainable Heritage
— UCL Institute for Sustainable Resources
— UCL Institute for Innovation and Public Purpose

Admission

Chalmers, Department of Architecture and Civil Engineering

— Vacancies

ETH Zürich, Department of Architecture

— Board of program
— Direct contact supervisor
— Some vacancies

TU Delft, Faculty of Architecture and the Built Environment

— Vacancies
— Admission FGS ABE
— Direct contact supervisor

TUM, Department of Architecture

— Direct contact supervisor

UCL, The Bartlett

— Direct contact supervisor
— Faculty committee
— Some vacancies

Status

Chalmers, Department of Architecture and Civil Engineering

— Employee
— Scholarship
— Industrial PhDs

ETH Zürich, Department of Architecture (D-ARCH)

Doctoral students

— Employee
— Scholarship
— External

TU Delft, Faculty of Architecture and the Built Environment

PhD candidate:

— Employee
— Scholarship
— External

TUM, Department of Architecture

Doctoral candidates

— Employee
— Scholarship
— External

UCL, The Bartlett

Research students:

— Employee
— Scholarship
— External

Topics/fields

Chalmers, Department of Architecture and Civil Engineering

— Architecture
— Civil and environmental engineering
— Acoustics

ETH Zürich, Department of Architecture

— Architecture & technology
— History and theory of architecture
— Landscape and urban studies

TU Delft, Faculty of Architecture and the Built Environment

— Architecture
— Architectural engineering + technology
— Urbanism
— Management in the built environment

TUM, Department of Architecture

— Architecture
— Urbanism
— Landscape Architecture
— History & Theory
— Restoration

UCL, The Bartlett

— Architecture
— Construction and Project Management
— Development Planning
— Planning
— Energy
— Environmental Design and Engineering
— Global Prosperity
— Sustainable Heritage
— Sustainable Resources
— Innovation and Public Purpose

Supervision

Chalmers, Department of Architecture and Civil Engineering

Main supervisor + one or more assistant supervisors & examiner

ETH Zürich, Department of Architecture

One supervisor, co-supervisor, potentially additional mentors

TU Delft, Faculty of Architecture and the Built Environment

One supervisor + at least one (co)supervisor or subsidiary

TUM, Department of Architecture

One supervisor + mentor + additional supervisors possible

UCL, The Bartlett

Principal and subsidiary supervisors, potentially additional members of collaborating bodies

Duration

Chalmers, Department of Architecture and Civil Engineering

4 years with a maximum contract of 1+2+2 years

ETH Zürich, Department of Architecture

3-4 years, maximum 6 years

TU Delft, Faculty of Architecture and the Built Environment

4 years, officially

TUM, Department of Architecture

5 years average

UCL, The Bartlett

Full time 3 years, part time 5 years

Dissertation

Chalmers, Department of Architecture and Civil Engineering

— Article based thesis (preferred)
— Monograph

ETH Zürich, Department of Architecture

— Monograph

TU Delft, Faculty of Architecture and the Built Environment

— Monograph
— Article based thesis (preferred)

TUM, Department of Architecture

— Monograph
— Article based thesis (allowed)

UCL, The Bartlett

— Monograph + CD/archive box

Didactics

Chalmers, Department of Architecture and Civil Engineering

— Courses
— Workshops
— Activities

ETH Zürich, Department of Architecture

— Colloquia
— Seminars
— Chapter deadlines
— Workshops
— Conferences

TU Delft, Faculty of Architecture and the Built Environment

— Colloquia
— Lectures + assignment
— Learning on the job
— Workshops
— MOOCs

TUM, Department of Architecture

— Colloquia
— Seminars
— Summer/winter schools
— Workshops

UCL, The Bartlett

— Courses
— Workshops
— Summer schools
— MOOCs
— Lectures

Course work

Chalmers, Department of Architecture and Civil Engineering

60 ECTS

ETH Zürich, Department of Architecture

12 ECTS

TU Delft, Faculty of Architecture and the Built Environment

15 ECTS

TUM, Department of Architecture

6 contact hours

UCL, The Bartlett

8-10 ECTS

Course categories

Chalmers, Department of Architecture and Civil Engineering

— Generic and transferable skills
— Subject specialisation

ETH Zürich, Department of Architecture

— Generic and transferable skills

## TU Delft, Faculty of Architecture and the Built Environment

— Transferable skills
— Discipline related skills
— Research skills

TUM, Department of Architecture

— Subject-related courses + qualification
— Transferable skills training
— Career support

UCL, The Bartlett

— Knowledge + intellectual abilities
— Personal effectiveness
— Research organisation + governance
— Communication, influence + impact
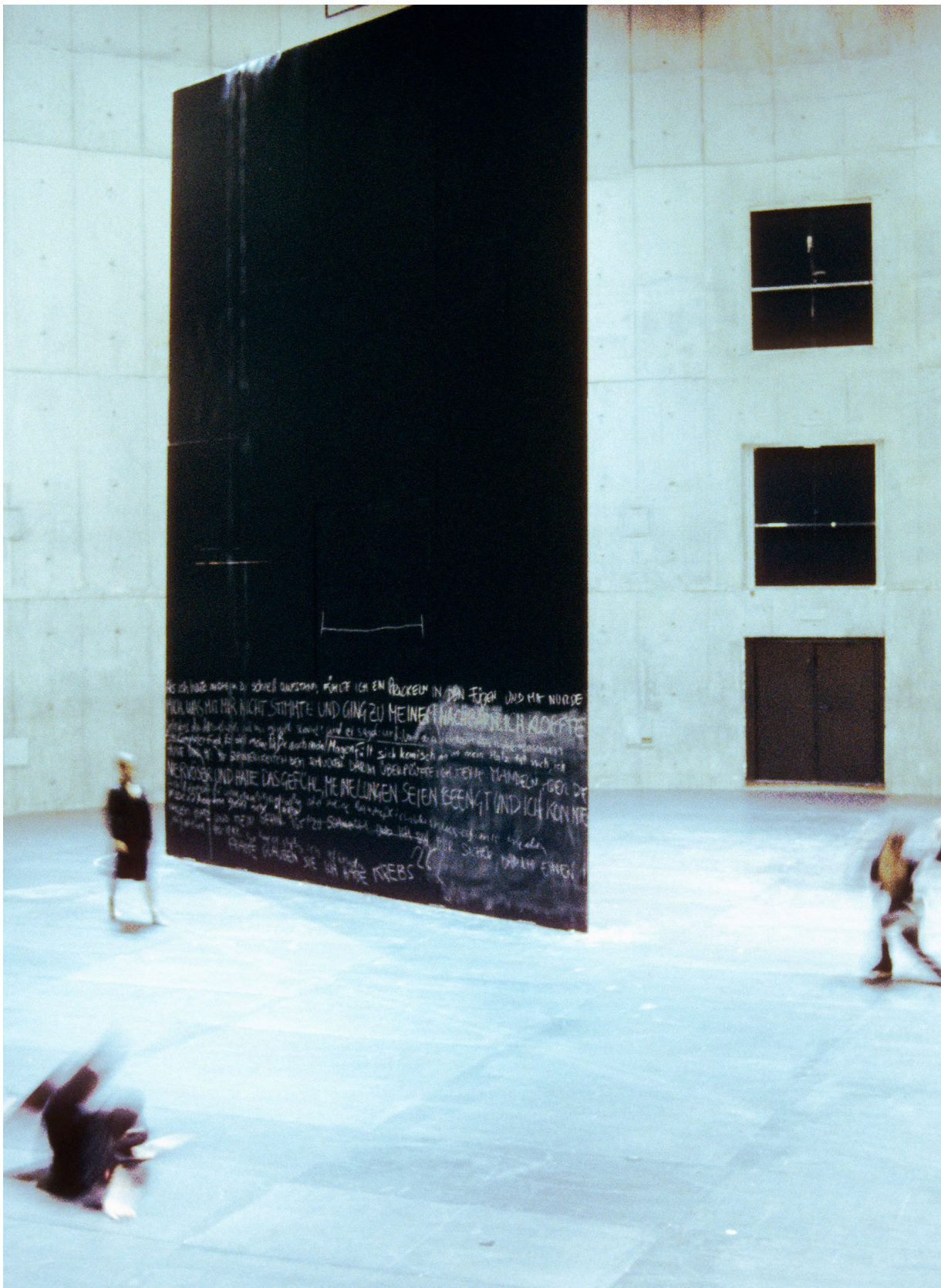
Katharina Voigt (current doctoral student); Topic of doctoral dissertation: Spaces of Action - Photo credit: Foto Credit: ‹Körper› by Sasha Waltz & Guests, 2000 (© Bernd Uhlig)

Doctoral Education courses

We can divide Doctoral Education into categories. At each of the BauHow5 partners, these categories differ. We can nevertheless distinguish more general courses (personal effectiveness, transferable skills) and more specific courses (subject-related and research skills).

Each of the institutions offers a decent set of general courses. When it comes to the courses that are specific to the field of architecture and the built environment, things are different. Compared to the second cycle of education, the student numbers of the third cycle are relatively low. And that insufficient number of students makes it difficult to justify the development of a fully developed curriculum.

Chalmers and TU Delft offer at this point (partly through their national research schools) the broadest packages. In this paragraph, we present a brief overview of significant courses offered by TU Delft GSABE, NETHUR, OSK, ResArc, Chalmers GS Civil and Environmental Engineering KTH ABE/Architecture.

Added to this overview are also courses offered at Columbia's GSAPP. MIT's GSD provides no information at this point.

We used the synopsis of these courses in workshops with students and an online questionnaire. These exercises aimed to understand which courses seem to appeal to doctoral students/candidates, which courses have the potential to add something to the curricula at BauHow5 partners that is currently not available. In this paragraph, we present the courses. In the next section, we give the outcome of the questionnaire.

TU Delft Graduate School for Architecture and the Built Environment (GSABE)

Design and Planning Analytical Tools

This course introduces spatial analyses and design support tools using Space Syntax and ArcGIS, a geographic information system. The participants learn to relate spatial data from various sources with place bounded socio-economic data through the use of GIS and Space Syntax. The main focus will be on centrality analyses using the Space Syntax method and network analyses from GIS. Additionally, an introduction to spatial statistics is provided.

The variety of tools introduced allows the participants to support planning and design decisions from the local to the regional scale. The participants will be presented with a set of technological-based tools for urban and regional analyses and modelling and test and apply the knowledge gained through this course during the workshop sessions and the assignments.

Teaching Method

Lectures, workshops and assignments. The cities, urban areas or buildings students use in their research will be used during the workshops and exercises. At the end of the course, the participants have to submit a report with their analyses followed with a text with a description and reflection on their analyses.

Theories of Regionalization, Territories and Networks, and their Application in Urban Design

The aim of this course of eight seminars is to help students engage with concepts such as Regionalization, Globalization, the City, Society, Public Domain, Territory, Network, etc. The aim of examining these concepts is to see how they can be usefully applied to urban studies.

By the end of this course, students will be expected to demonstrate the ability to meaningfully engage with concepts such as the ones listed above (and others) but also, and more importantly, show that they are able to formulate their own ways of thinking about them. They will do this via a series of seminar discussions on set readings (students are free to propose their own). Students will then be expected to take a position on one or more of the topics and develop them into a position paper which they will present in draft form to receive feedback from the course leaders and their classmates.

Teaching Method

For the seminars the students are expected to have read the readings; actively participate in the group discussions; demonstrate they have understood the readings by taking positions of their own; and finally, critique one another's positions.

Regional Strategies and Territorial Governance

The objective of the methodology course is to examine European experience in strategic spatial planning and regional design to gain a critical understanding of theory and practices. We ask a number of deceptively simple questions. What is a plan? What is a strategy? What does participation mean? How are plans made and by whom? How can plans influence spatial development when the private sector plays a dominant role?

Teaching Method

Lectures, workshops, seminars and presentations.

Advanced Architectural Theory Research Seminars

The Theory Chair of the Architecture Department is offering ABE 008 seminar to PhD candidates and academic research staff, whose research topics relate to architectural and urban theory, philosophy, and contemporary concerns of spatial, socio-political, ethico-aesthetic, cultural and scientific relevance to the disciplines of design.

The course is framed within a seminar structure every second/third Monday from 14:30-18:00 during the Spring term, in which participants will engage in guided readings and group discussions on the thematic of each session. The aim is to generate an environment in which all participants will gain knowledge on a specific topic while developing a set of useful methodologies and research skills.

Teaching Method

This course will follow a seminar structure and advanced research methods. Depending on the individual seminar leaders, the seminar will follow a series of formats. Generally it will be based on fortnightly research output presentations, followed by a discussion on sources, references and bibliographies, which will involve the creation of an information nexus for the seminar discussions.

Research Proposal for Architecture and the Built Environment

The course introduces themes in research design for architecture and the built environment. Based on these introductions each candidate's initial research proposal will be discussed and partly rewritten and/or elaborated. The course is mandatory/'strongly advised' for all PhD-students as part of the 'Research and discipline-based competences and skills'.

Themes

— discriminating between different types of research in architecture and the built environment
— formulating research problem and research questions
— elaboration of research questions
— plan or proposal to conduct the research

Teaching Method

— two introductory lectures about (1) what is science and what is research, and about (2) what is design and what is design research
— workshop discussing PhD-students' initial research proposals
— workshop discussing PhD-students' rewritten/ elaborated research proposals

Qualitative Research Methods for Architecture and the Built Environment

The course presents qualitative research methods for research in architecture, housing, urban planning, management of the built environment and related fields. The course explains qualitative methods in theory and practice and how to select specific qualitative methods to answer a particular research question. Qualitative methods such as case study, discourse analysis, interviews, focus groups, and historical analysis methods are introduced, together with an overview of mixed methods (qualitative & quantitative). In addition, the course offers an overview of content analysis and hands-on skills of data coding using software such as Atlas.ti. Finally, the course also discusses issues of research integrity and ethical treatment of human research subjects.

Teaching Method

The course consists of a series of lectures, complemented by in-class assignments. The lectures will include interactive elements and critical discussions of sample peer-reviewed papers, and computer learning and practice of software Atlas.ti.

Advanced Urban Theory Research Seminars

METAPHYSICS FOR MILLENNIALS: FACING THE FUTURE

Advanced doctoral research seminar on big questions and new conceptual developments in architecture and urbanism today. Crises of climate change and inequality have exposed contradictions in the assumptions of our relations with the world, the future, and others. An introduction to emerging modes of thought and practice for the Anthropocene

Teaching Method

This course will follow a seminar structure and advanced research methods. Depending on the individual seminar leaders, the seminar will follow a series of formats, but generally will be based on fortnightly research output presentations, followed by a discussion on sources, references and bibliographies, which will involve the creation of an information nexus for the seminar discussions. The ultimate goal of each seminar is to assist the participants in developing a reasoned and convincing argument, as well as to develop scholarly research papers for publication.

Topics in global flows and dynamic landscapes: Port Cities between global networks and local transformations

The course focuses on specific topics in global flows and dynamic landscapes, addressing the theme of networks in planning and urbanism. This semester, it focuses on the global networks of port cities. Throughout history, the access to large bodies of water facilitated the foundation, rise and prosperity of human settlements. Since centuries, oceans, seas, rivers and lakes allowed for transportation, exchange and trading. Thereby, they connected places around the world and enabled a direct connection between different cities, states and cultures on a global scale. Over time, these distant places faced similar challenges and took part in related developments.

The lectures will deal with a variety of built form and urban layouts and demonstrate their transformation. A focus lies on the unique way of intercontinental exchange of knowledge and specific solutions.

Teaching Method

Lecture and discussion, final paper.

Geographic information system (GIS), data, tools

This course is meant for PhD students interested in learning GIS (Geographic Information System) theory and tools. Because of the combination of knowledge domains as taught by the four European universities, this course offers a broad overview of what is possible in GIS and Geomatics. After attending this course, students should be able to use GIS data and tools in their own research projects.

From the 20 students attending this course (Introduction to GIS), a maximum number of 10 students will be selected to follow the contact week of the second course (GIS applied in various domains), together with 30 students from our partner universities: Lisbon, Glasgow, and Florence. The contact week of the second course consists of lectures and workshops (in Delft), followed by two months of e-learning (MOOCs).

Teaching Method

Blended learning: lectures, lab assignments, GIS project, tests, exam, workshops and e-learning (MOOCs)

GIS applied in various domains

Geographic information system (GIS) applications, with specialised topics related to current societal and environmental issues

The goal of this course is to provide students with GIS applications to society and environmental issues. GIS sectors and labour market and possible career paths in this field will be addressed. Students will make a choice from 8 topics. The GIS application domains, offered as e-learning modules (MOOC's), are:

— Sustainable development
— Sustainable environment
— Land administration
— Architecture & built environment/ nD-modelling
— Sustainable agriculture, farming and forestry
— Sustainable rural development
— Smart cities & urban social issues
— Climate change & renewable energy sources

Teaching Method

Blended learning: lectures, lab assignments, GIS project, tests, exam, workshops and e-learning (MOOCs)

The Sustainable City: Theories on Urban Design

During this course we will explore the dynamics of urbanised landscapes and the role of adaptation (and its limits), resilience (anticipation, robustness), transition and transformation, dynamic performance and affordance, sustainability and liveability in spatial planning and design. Methods and techniques will be explained to describe and assess physical, ecological, socio-economic and political systems focusing on narratives and values. The theoretical background will be given in both scientific articles and a series of lectures and workshops on the transformation of landscapes and inner cities.

Teaching Method

Lectures, group discussion and workshops.

Discovering Statistics Using SPSS

This course teaches the PhD candidate to process data, to make graphs, compute simple statistics and to analyze data using various statistical techniques using the statistical software package SPSS.

Schedule for 2018

— introduction, working with SPSS; Frequency tables
— simple descriptive and graphic techniques
— normal distribution, Testing hypotheses
— relationships between two nominal variables
— the measurement and analysis of relationships between two variables
— how to predict?
— analyzing group differences in the case of two independent groups
— analyzing group differences in the case of more than two independent groups

Teaching Method

Eight interactive sessions with lectures and computer exercises.

Research Data Management for Architecture and the Built Environment disciplines

Research data management (RDM) is an important research skill that concerns careful handling and organizing all types of research materials. It is a professional competence that you can assess, identify, and resolve relevant data management issues in your research. In addition, RDM is also closely related to other components in Open Science, such as Open Access publishing, research ethics, research integrity and so on. Practising good data management helps to minimize the impact of unexpected data loss, make your work better organized and more visible to others.

Research data in the field of architecture and built environment is diverse in terms of the type (content-wise) and the format (digital, non-digital). Managing and publishing research data in this field is still at an early stage and requires more awareness and advocacy from the research community. This course is the starting point to understand the disciplinary insights regarding data management and provides guidance to start managing the research data properly.

Expected outcome

After following the course, the participants are expected to have a good understanding of:

— Role of data management in research
— Life-cycle of research data management, including important issues at each stage
— Data management plan (DMP)
— Data publishing and archiving
— General ethical issues in doing research in architecture and the built environment
— General sensitivity and privacy concerns in research in architecture and the built environment

OSK - Netherlands Research School for the History of Art

Progress Report

At the Progress Reports, PhD candidates give a presentation of the status of their research for a learned audience, among which the promotors and peer reviewers. After the presentation, the course of their research will be evaluated and discussed by a specialist who will provide them with useful feedback. If you would like to join by presenting your current PhD research status, please inform OSK.

During the PhD trajectory, there will be two presentation moments: one after approximately one year in which the student presents his or her fine-tuned research plan, and a second presentation at the beginning of the third year during which research results will be presented and discussed.

NETHUR - Netherlands Graduate School of Urban & Regional Research

Urban and Regional Research

Urban and Regional Research is an intensive course dealing with approaches to academic research on urban and regional issues. The lectures and discussions expand on various research themes, research theories and related methodologies. Participants are expected to contribute actively by presenting their PhD project proposals and by participating in the discussions.

Goal of the course is to identify the most promising avenues of research, confront research cultures with each other, and initiate an exchange of ideas that crosses disciplinary boundaries.

After completion of the course, participants will be able to:

— position their own research within the larger framework of research on cities and regions;
— understand and appreciate various approaches to a particular theme;
— explore and possibly adopt research directions that have proven their value in other thematic areas of urban and regional research.

In addition, this course provides a setting in which new NETHUR PhD members can get to know each other and learn about new projects being started in the research school.

Research Design

CC2 introduces themes in research design and planning, as well as a study of the background literature. Based on these introductions, each candidate's initial research proposal will be discussed and partly rewritten and/or elaborated. Every research project has its own particular emphasis on theory, methods and techniques, and its own choices with respect to contributions from various disciplines. Analytical techniques bridge the gap between the theoretical framework of the research and the empirical data to be used. Given the conceptual model and the nature of the observations, the PhD candidate must be able to make a well-argued selection of analysis techniques and use them properly. The goal of the course is for the participants to become engrossed in their research proposals. In consultation with their advisors, they will adapt and elaborate on these proposals to reflect their individual preferences.

This is a three-day course in Utrecht, with two meetings two weeks apart and a follow-up meeting about one months later. The course is scheduled at least every autumn/winter and as often as the number of registrations requires.

Quantitative Research Methods

Quantitative Research Methods provides an introduction in the most useful and current quantitative research methods for social sciences. The course is meant for PhD students whose knowledge of (certain) quantitative research techniques is insufficient.

In the first module, basic knowledge of statistics in social sciences is brushed up. For the next modules, this basic knowledge is supposed to be present. In each of the following modules, a different statistical technique is discussed. Each module consists of a morning part with a lecture on the specific method and an afternoon part with computer exercises on these techniques.

Qualitative Research Methods

The course will start with a reflection of the research questions prepared by the students from their own project and then move on to learn the design and conduct of in-depth interviews, focus groups and participant observation. Then qualitative data management training will include transcription, translation and coding. Further data analysis is carried out with the use of computer-assisted qualitative data analysis software. Finally, students will learn different ways to write and present qualitative data.

ResArc - Research School in Architecture

Communications - Staging the Message. The Architecture of Communication

The ResArc Communication course intends to offer participants in-depth theoretical and practical tools for communication and media production.

With the course Staging the Message. The Architecture of Communication we will analyze, discuss, learn, test and develop – with the support of excellent scholars and practitioners from the field of the image, writing, editing, and curating architecture publications and exhibitions - how the form(at) of your dissertation/research – right from the start, and during the development of your research as a whole – can enable you to critically reflect and develop its content through the interplay between content and form; while the chosen and developed form also will enable you to broadcast, (edit, communicate and mediate) your ideas (content) to an audience within our information age at large.

While Module 1 will look into different formats, editing and communicative strategies of the architecture book (including the one of dissertations) Module 2 will specifically address how you as an architecture researcher can edit/ stage the message through the format of the exhibition. Module 3 (optional, for another 2.5 credits) invites all participants to present their individual PhD dissertation formats for a panel of different research, curating and media experts in the field of architecture communication.

Philosophies

This course aims to address how the researcher in architecture can make use of the plethora of philosophies available to them, both from within and from without the discipline. We will place a particular emphasis on the two-way conceptual traffic between architecture and philosophy, in recognition of the reciprocal relationship of influence these two disciplines have historically maintained with respect to each other. What are the strategies and tactics that can be fruitfully employed to engage in diverse philosophies from the point of view of the discipline of architecture? How does the architectural researcher maintain a creative and critical relay between theory and practice? How can concepts and arguments (drawn from philosophy and elsewhere) be mobilized by the architectural researcher?

In light of past, present and looming crises, environmental, social, mental and technological, this Philosophies PhD course will take up the near-exhausted concept of the Anthropocene in order to explore how current research in architecture and cognate fields locates itself in relation to pressing matters of care.

We will discuss ways of: radically rethinking the literature review; reframing our research problems; expanding our methodological practices, with an emphasis on critical thinking and practice; and exploring possibilities for ethics in action.

Approaches | From theory to practice - methods for knowledge production in architectural research

The ResArc PhD course Approaches will be devoted to an introduction and to training in research skills. The focus will be put on the research methodologies characteristic for the fields of Architecture and Design. Special attention will be given to a critical understanding of different approaches to ecologism, including sustainability, sustainable development and beyond sustainability. The course will consist of three modules with a three-fold objectives: (i) orientation and positioning in broader landscapes of knowledge and research strategies (ii) architectural approach to the discourse of sustainable development and beyond (iii) studying, assessing and disseminating scholarly assessment.

— Module 1 Modes of Knowledge Production and Research Strategies
— Module 2 Perspectives on Ecologism - from Conservation to Regeneration
— Module 3 Assessing Research strategies - Reviewing a Doctoral Thesis

Tendencies - Architectural and urban research: Focusing on Everyday Life

Theories in Spatial Morphology

Within architectural theory, as well as within the social sciences in general, a renewed interest has emerged regarding how actions and phenomena of everyday life – like eating, walking, travelling, gathering, breathing, listening, and so on – can be studied in relation their social and material settings. The course Focusing on everyday life deals with research on the mundane through new perspectives on the impact that seemingly trivial phenomena may have on the built environment, as well as how architecture and urban design are essential for the formation of quotidian life. The course provides opportunities to achieve an overview of everyday life as a subject of study, as a research approach and as a design practice.

The course will give an overview of theories and methodologies, with a special focus on the ethnographic approach inspired by Actor-Network-Theory (ANT), which follows the principles of no hierarchy, attention to the detail, symmetry as regards noticing what happens between humans and non-humans, undivided attention to words and the gestural and non-verbal language. The ANT-inspired ethnography denotes an approach that pays specific attention to the texture of ordinary life of designers and generates 'thick descriptions' of the knowledge practices of different participants in design and city-making.

Urban space is the primary medium whereby urban processes are structured and shaped in urban design. The field of spatial morphology is therefore critical for research in urban design; as a means to support future urban design, as a means to deepen our understanding of the performance of cities both as wholes and in their parts, and as a means to understand the evolution and development of cities over time. This course gives a comprehensive introduction to the field of theory in spatial morphology with some in-depth investigations on particular contemporary theories.

The objectives of the course are to give PhD-students a good introduction to the field as a whole and its history and origins so that they will be able to position their own work as well as others in relation to different directions and traditions within the field. The students will also be given a developed presentation of the principal traditions of the field with emphasis on some contemporary theories with particular interest for architectural research. The second module will give an introduction to spatial morphology as a research methodology where the students will be given opportunities to develop ideas and reflect on how this could be applied and be made to support their own PhD-projects.

Chalmers Graduate School of Civil and Environmental Engineering

How a material becomes a product

The building industry generally has few proven and cost-effective technologies for energy-efficient building envelopes. Emerging class of novel materials and material combinations open possibilities for lighter, thinner or more durable building envelopes than the ordinarily available solutions, while providing all base functions as the ordinary ones. The journey that a novel material needs to pass from a research lab to become a product at the market is long. A lack of knowledge and apparent risks of implementing insufficiently tested materials prevent their development and implementation in novel building envelopes.

The main objective of this course is to address overall technical characteristics and performance of novel materials, i.e. the knowledge that needs to be built-up before materials are placed on the market as products.

The course is the first out of four parts of a forum for knowledge building and exchange of expertise across the research disciplines gathered within the theme Building System Design and Performance of the Swedish Universities of the Built Environment. Other parts include:

— Design for moisture safety and avoidance of water damages;
— Improved sound insulation performance with new materials and building systems;
— Techniques and tools for fire safety and moisture protection of materials and components.

Value of information analysis (VOIA)

Collection of different types of information, e.g. rock characterization in tunnels, sampling of contaminated soil, and measurements of groundwater levels is fundamental in civil and environmental engineering projects. An important, but often rather complex, issue is to decide what amount of information that is reasonable to collect for the specific task at hand. Optimizing the collection of information requires experience, knowledge of the environment we are working in and clear objectives. We also need methods for handling the inherent uncertainties. One of several approaches to optimize the collection of information is Value of Information Analysis (VOIA). In this approach, the reduced economic risks of making an erroneous decision that is the result of an information collection program are compared to the costs for obtaining the new information. By comparing alternative information collection strategies, the best alternative from a risk-cost perspective can be identified.

The aim of the course is to provide a fundamental theoretical understanding of Bayesian Value of Information Analysis. The student shall after completion of the course be able to apply VOIA on a basic level in the evaluation of their own information collection programs.

Economic Valuation of Environmental Change

Collection of different types of information, e.g. rock characterization in tunnels, sampling of contaminated soil, and measurements of groundwater levels is fundamental in civil and environmental engineering projects. An important, but often rather complex, issue is to decide what amount of information that is reasonable to collect for the specific task at hand. Optimizing the collection of information requires experience, knowledge of the environment we are working in and clear objectives. We also need methods for handling the inherent uncertainties. One of several approaches to optimize the collection of information is Value of Information Analysis (VOIA). In this approach, the reduced economic risks of making an erroneous decision that is the result of an information collection program are compared to the costs for obtaining the new information. By comparing alternative information collection strategies, the best alternative from a risk-cost perspective can be identified.

The aim of the course is to provide a fundamental theoretical understanding of Bayesian Value of Information Analysis. The student shall after completion of the course be able to apply VOIA on a basic level in the evaluation of their own information collection programs.

Advanced Concrete Engineering

Advanced concrete engineering deals with structural materials, components, connections, structural systems and unique applications of reinforced and prestressed concrete. Issues related to different phases are treated such as conceptual design, design and detailing, production, operation and assessment. The course content is complementary to education about concrete structures at undergraduate and master's levels. The content of the course can be described with the following main areas:

— material behaviour, mechanics and modelling of various types of concrete, reinforcement and prestressing units,
— behaviour, modelling, design and detailing of components and connections in concrete structures,
— design issues, problems and solutions in modern types of structural systems,
— development of solutions with regard to efficient use of resources and sustainability during production and operation.

The course aims to promote the development of a deeper understanding of reinforced and prestressed concrete and to widen the knowledge of various modern applications and current design issues.

KTH ABE/Architecture

Architectural Historiography

The course consists of five seminars organised around central concepts, methods and references within architectural historiography. Also, there are two tasks of more in-depth studies: a review of a prominent historical case study and an essay in which an independent application of the subject area is developed in relation to the student´s plans or ongoing research project. The tasks are supervised in a group and/or individually and presented in a final review session.

The specialisation course in Architectural Historiography aims to:

— Introduce basic concepts, methods and references within Architectural Historiography.
— Further delve into studies of central work within the subject area.
— In essay-form develop an application of Architectural Historiography in relations to one´s own planned or ongoing research project.

Ethical approach:

— All members of a group are responsible for the group's work.
— In any assessment, every student shall honestly disclose any help received and sources used.
— In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.

Theories in Urban Morphology

The course is based on a series of lectures/ seminars that addresses central topics in the field of urban morphology, stressing academic context, historical development, critical traditions, current trends and methodological application. The format combines lectures and seminars.

A central point of departure is the exchange and tension between the two major fields concerned with urban space: Architecture and Geography. Particular attention will be given to the traditions Theory in Urbanism, Urban Morphology, Spatial Analysis and Space Syntax. Some lectures and seminars particularly address the methodological use of urban morphology in research, where the students get the chance to apply such methods in their current research projects. This is also the theme in the paper assignments where the students with their research projects as a point of departure will discuss and present ideas on how urban morphology can be applied in these projects.

After taking the course, the students should be able to:

— recognise the origins, history and major traditions in the field of urban morphology
— have a certain familiarity with a couple of the major contemporary directions in the field of urban morphology
— have a good understanding of urban morphology as a research methodology
— have an understanding of the position of urban morphology in a context of urban and architecture theory

Ethical approach:

— All members of a group are responsible for the group's work.
— In any assessment, every student shall honestly disclose any help received and sources used.
— In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.

Columbia Graduate School of Architecture, Planning and Preservation (GSAPP)

DOCTORAL COLLOQUIUM I

The purpose of this doctoral colloquium is two-fold: to (1) reflect on the intellectual basis of scholarly work and (2) consider the various roles associated with the development and dissemination of knowledge. In the course, for example, we will investigate differences among technical knowledge, opinion, experiential knowledge, and ignorance and among experts, public intellectuals, scholars, and political activists. Of primary concern will be how theory enables facts and experiences to become meaningful while varying in form and content.

To the extent that this is a course for doctoral students in urban planning, action will never be far from considerations of thought. Pedagogically, the course will require 'close reading' of scholarly texts.

Selected topics to be discussed:

— varieties of knowledge
— ideas and public policy
— public intellectuals
— experts
— scholarship
— formal theory
— critical theory
— reflective practice
— phronetic social science

DOCTORAL COLLOQUIUM I AND III

The purpose of this doctoral colloquium is two-fold: to (1) reflect on the intellectual basis of scholarly work and (2) consider the various roles associated with the development and dissemination of knowledge. In the course, we will investigate differences among technical knowledge, experiential knowledge, and ignorance and among experts, public intellectuals, scholars, and political activists. Of primary concern will be explanation and interpretation and how theory enables facts and experiences to become meaningful while varying in form and content. To the extent that this is a course for doctoral students in urban planning, action will never be far from our considerations. Pedagogically, the course will require 'close reading' of scholarly texts.

Assignments. In addition to doing all of the course readings and discussing them in class, the student is responsible for writing two, short papers. The first paper will focus on a theme (chosen by you) from the first seven weeks of the course. The second paper will consider the role of theory in scholarly work. Additional guidelines will be posted on the Courseworks web site.

Mapping for Architecture, Urbanism, and the Humanities

This hybrid theory/practice course provides an introduction to critical mapping discourse and geographic information systems tools. Of particular interest to humanities students, it examines both historical and contemporary questions with reference to the technology of mapping. Additionally, through the use of open-source GIS software (QGIS), browser-based technologies (Mapbox, Mongo DB), and open data (OpenStreetMap), students will learn how to critically use mapping tools and geographic data for spatial analysis and representation. Each class has two parts: in the first half of each meeting, we will discuss weekly readings, while the second half serves as a flipped-classroom to address technical and conceptual issues arising from take-home GIS tutorials. The final weeks of the semester will be devoted to developing students' own critical cartographic research.

By the end of this course, students will be able to:

— critically read a map
— investigate the cultural attitudes and technologies behind cartographic practices
— use QGIS to analyze and present geographic information
— build location-aware dynamic maps for mobile devices
— make intentional design decisions when creating maps

Cultural Strategies + Production NOW

Our immersive cultural experiences have often been framed as part of a recent phenomenon catalyzed by the advent of technology. And yet, the use of space to inspire transcendence is a centuries-old formula. One need only to time travel to the early sixteenth century at the height of the Renaissance. Patrons and worshippers sought to absolve their sins in the naves of soaring Gothic cathedrals whose flying buttresses reached for the heavens, while the light of God passed through intricately designed stained glass windows that induced biblical wonder. Subsequently satisfied and forgiven, they filled their churches' coffers and thus provided us with the original blueprint for the experience economy.

Five hundred years on, religion and its fraught relationship to nationalism remain more politicized than ever. Cultural spaces have supplanted the church as the "go-to" for enlightenment. Museums in the United States alone generate more than $13 billion annually, and the global industry for live performance made an impressive $26 billion in 2016. The production of immersive cultural experiences has never been more varied, engendering a dynamic ecosystem where museums and malls, theaters and train stations, cinemas and consoles, and augmented, mixed, and virtual realities are just a few of the physical and digital "contemporary cathedrals" beckoning us to enter…

ARCHITECTURE DOCTORAL COLLOQUIUM I

This doctoral colloquium is addressed to the question of what other (or alternatively cast) histories of architectural modernism might be told. The class will assume some acquaintance with the more familiar extant narratives of the history of modern architecture and the key topoi through which they have been conceptualized— standardization and industrialized mass production, capitalist rationalization, nationalism, secularism, urbanization, circumscribed social and gender relations and class structures, labor and leisure, health and hygiene, media and the public sphere, Kantian aesthetics, abstraction, enlightenment notions of progress, technological invention and environmental control, utopian ideals and revolutionary upheavals, public programs, regionalism, etc. The ambition is not to refuse or reject the importance of such critical frameworks and the variegated and contingent stakes that motivated and subtended them. Rather, taking them as an important discursive and disciplinary archive, the ambition of the seminar is to ask how, why, and to what ends additional historical materials and foci, as well as critical and conceptual frameworks might be introduced to complicate such already variegated narratives.
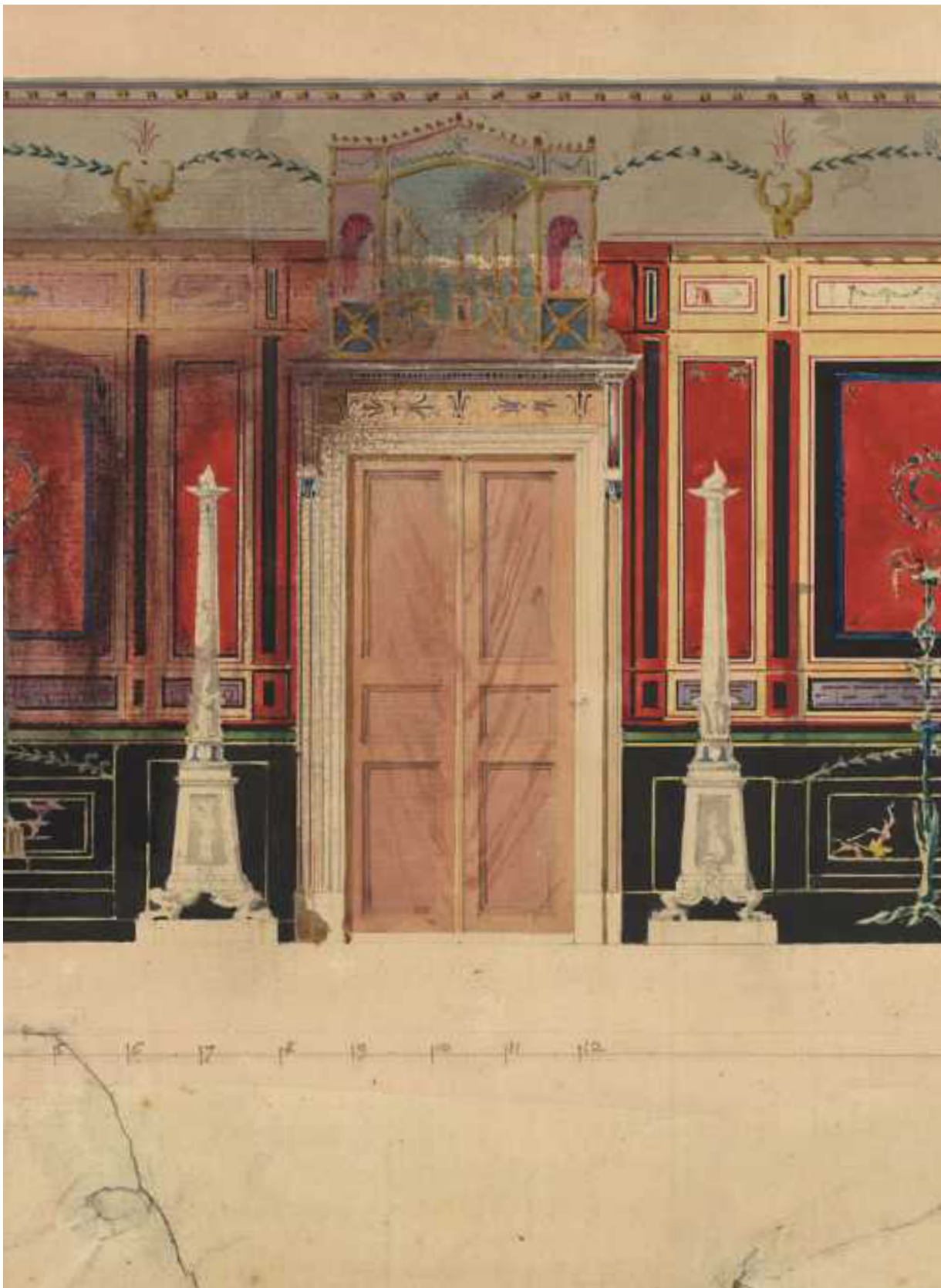
gta Archives: Gottfried Semper, Ornament

Questionnaire

We invited doctoral students at BauHow5 institutions to reflect on the courses offered in the Netherlands and Sweden. More concrete, we asked them:

Hello, we are contacting you because we were told you work on a doctoral or PhD research at one of the institutes that are part of BauHow5: the Chalmers University of Technology, Delft University of Technology, ETH Zurich, UCL Bartlett, TU Munich.

http://www.bauhow5.eu

Together these five institutes can provide better doctoral education by joining forces. Before we start improving our courses, we would like to learn from you by asking a few questions.

Tell us first at which of the BauHow5 institutes you conduct your studies

238 out of 238 people answered this question

41.6%	UCL Bartlett	**99** responses
23.1%	Delft University of Technology	**55** responses
21.8%	TU Munchen	**52** responses
11.8%	ETH Zurich	**28** responses
1.7%	Chalmers University of Technology	**4** responses
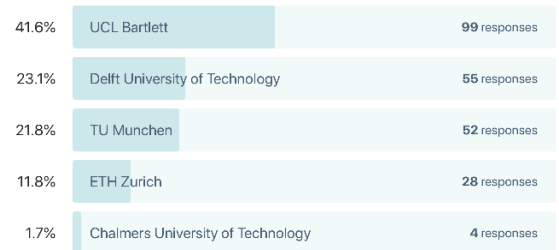
Your institute may require that you participate in doctoral education. Such courses often come in categories. Which category of courses would you prefer most (or oppose least)?

236 out of 238 people answered this question

54.7%	research skills with an emphasis on various research me...	129 responses
33.9%	discipline related courses that focus on the body of know...	80 responses
11.4%	transferable skills like teamwork, leadership, personal mo...	27 responses
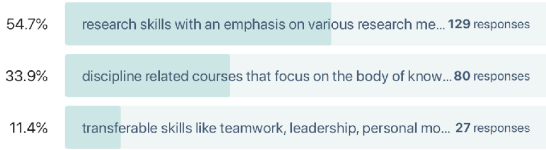
First we present a selected list of course titles offered at TU Delft. Tick three courses you might consider attending.

234 out of 238 people answered this question

71.4%	Qualitative Research Methods for Architecture and the ...	167 responses
48.7%	Design and Planning Analytical Tools	114 responses
41.5%	Geographic information system (GIS), data, tools	97 responses
36.8%	The Sustainable City: Theories on Urban Design	86 responses
31.2%	Advanced Architectural Theory Research Seminars	73 responses
28.6%	Discovering Statistics Using SP	67 responses
24.4%	Theories of Regionalization, Territories and Networks, an...	57 responses
17.5%	Topics in global flows and dynamic landscapes: Port Citie...	41 responses

Next we present a list of course titles offered by ResArc and at Chalmers. Tick again three courses you might consider attending.
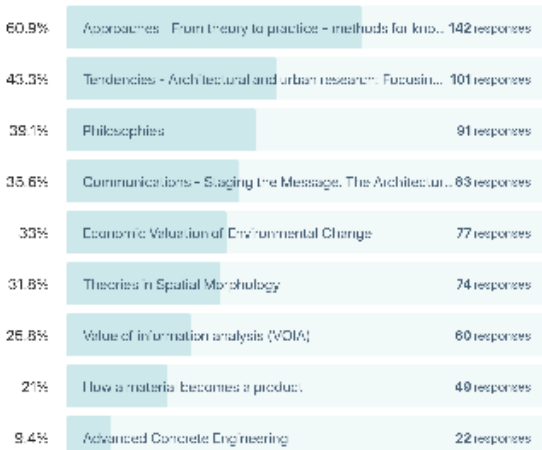
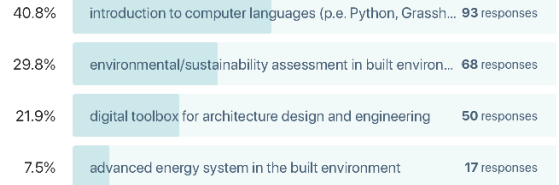## Finally we have some course titles suggested by PhD candidates. Pick one.

233 out of 238 people answered this question

228 out of 238 people answered this question

%	Course	Responses
60.9%	Approaches - From theory to practice - methods for kno...	142 responses
43.3%	Tendencies - Architectural and urban research: Focusin...	101 responses
39.1%	Philosophies	91 responses
35.6%	Communications - Staging the Message. The Architectur...	83 responses
33%	Economic Valuation of Environmental Change	77 responses
31.8%	Theories in Spatial Morphology	74 responses
25.8%	Value of information analysis (VOIA)	60 responses
21%	How a material becomes a product.	49 responses
9.4%	Advanced Concrete Engineering	22 responses

%	Course	Responses
40.8%	introduction to computer languages (p.e. Python, Grassh...	93 responses
29.8%	environmental/sustainability assessment in built environ...	68 responses
21.9%	digital toolbox for architecture design and engineering	50 responses
7.5%	advanced energy system in the built environment	17 responses

If you were allowed to initiate doctoral education yourself, could you give one or two titles of courses that would be great to attend?

170 out of 238 people answered this question

This open question resulted in a very long list of unsorted course suggestions.

We compiled an overview of keywords including the times they appeared in the course titles.

We also grouped the course titles in a limited number topics.

Keywords

— 47 x research
— 34 x design
— 26 x architecture/architectural
— 26 x methods
— 18 x urban
— 15 x theory
— 15 x data
— 12 x advanced
— 11 x environment
— 10 x planning
— 10 x analysis
— 10 x writing
— 10 x built
— 8 x introduction
— 8 x practice
— 6 x qualitative
— 6 x statistics
— 6 x building
— 6 x studies
— 6 x history
— 6 x digital
— 6 x energy
— 5 x methodologies
— 5 x understanding
— 5 x approaches
— 5 x critical
— 5 x doctoral
— 5 x science
— 5 x spatial
— 5 x cities
— 5 x social
— 4 x development
— 4 x literature
— 4 x management
— 4 x analytics
— 4 x economics
— 4 x creative
— 4 x students
— 4 x theories
— 4 x applied
— 4 x review
— 4 x python
— 4 x using
— 4 x field
— 4 x phd

Design

- Design research methodology
- Methods of Design Research
- Research design and methods
- Architecture & design research methods
- Design theory
- Design as research and research through design: histories, methodologies, agencies urban history and theory
- Methods for design research and methods to determine user preferences
- Theories and methods for collaboration in the architectural design process
- Advanced Design Research
- A lineage of research methodologies in design
- Changing Paradigms in Design Theory and Practice
- Design Research and STS (science and technology studies)

- Design for additive manufacturing
- Introduction and Advanced training in Generative Design
- Advanced vector design
- Collaborative Design methods
- Digital toolbox for architecture design and engineering
- Coding (and its application) for research by design students
- Data analytics for design and urban planning

- Designing with nature, passive design strategies for nearly zero energy building
- Artificial Intelligence for Architectural Design
- A pattern book - the way of designing architecture of regions, cities and neighbourhoods
- Urban Design in Planning in the Global South
- Smart City Design
- Built Environment Design
- Design as violence

Architecture / architectural

- Architecture on the ground: indigenous and local approaches to knowledge and building
- Ethnographically-informed approach in architectural research
- Research methods for architects
- Mind mapping the architectural theories
- Flight assembled architecture
- Advanced architectural digital photography
- Digital techniques for practice-led architectural research
- Opening up the black box of architectural practice: kinds of knowledge, kinds of research
- Architectural research tactics - focused on method rather than methodology theory
- International cooperation and collaboration in architecture and urban planning
- Data science and data analysis for architectural research
- A pattern book - the way of designing architecture of regions, cities and neighbourhoods
- 'It is not about modern, it is about suitable' architecture beyond style and fashion
- The historiography of the history and theory of architecture poststructuralist approaches to architectural history and theory
- Quantitative and qualitative methods in architectural research
- Writing architectural history / writing architectural criticism: methods and models
- The materiality of architecture
- Research in architecture and its relevance in practice or digital transformations in architecture - significance for research and practice
- Architecture & design research methods
- Theories and methods for collaboration in the architectural design process
- Numerical analysis methods for architectural computation
- Artificial intelligence for architectural design
- Digital toolbox for architecture design and engineering
- Developing analytical tools for writing a dissertation in the field of architecture

Methods

- Research design and methods
- Methods for graphical representation of data
- Methodologies for data processing from on-site surveys to digital analyses
- A lineage of research methodologies in design
- Introduction to the scientific method

- Design as research and research through design: histories, methodologies, agencies urban history and theory
- Advanced Design Research, Collaborative Design methods
- Design research methodology
- Methods of Design Research
- Architecture & design research methods
- Theories and methods for collaboration in the architectural design process
- Methodologies of practice led research
- Research methods in Landscape and urban design
- Methods for design research and methods to determine user preferences
- Research through design - methods on how to conduct, compile and write about research

- Architectural research tactics - focused on method rather than methodology theory
- "Methods for conducting a field study (survey techniques, etc.)"
- Numerical analysis methods for architectural computation
- Quantitative and qualitative methods in architectural research
- Research methods; qualitative and qualitative applied to spatial research
- Between research and practice: methods for scientific communication in Built Environment
- Writing Architectural History / Writing Architectural Criticism: Methods and Models
- Research methods for architects
- Ethnographic methods
- Methodologies and tactics
- Oral and Public History - Interviewing and exhibiting as a Research methodology
- Advanced qualitative methods for social sciences
- Cross-disciplinary / interdisciplinary methods in design research
- Advanced Quantitative Methods

- Impact Evaluation Methods
- Cross disciplinary adaptation of analysis methods - Learning how your methods can be used in other fields
- Quantitative methods/mixed methods research for he built environment
- Using discrete choice experiments for energy studies
- Action Research - Facilitation, mediation and research in real world scenarios
- Multi-level analysis
- How to conduct a literature review
- How to review literature

- Spatial statistics
- Statistics in research
- Understanding and applying advanced statistics and probability
- Statistics for researchers
- Research statistics and observational experiment design in urban studies
- Qualitative research
- Geospatial statistics

- Geographic information technology
- How to crash course: GIS

Urban / city / landscape / planning

— Planning Theory
— Planning theory
— Debates in critical urban theory
— Applied planning theory
— Urban and regional systems analytics
— Housing Planning and Applications

— Planetary urbanization theory
— Understanding Informality: Uncovering the links between the formal and the informal in cities across the world
— Social and sustainable transformations in Latin American cities
— Landscape character analysis for doctoral research
— Urban Design in Planning in the Global South
— Understanding urban poverty and inequality

— Comparative urbanism: localities, regions, peripheries and centres
— Urban planning and social resource utilization
— Holistic approaches to urban planning and development
— Participatory approaches to urban design and development
— Urban Research: Sociology and Anthropology of Space and Place
— Data analytics for design and urban planning
— International cooperation and collaboration in Architecture and Urban Planning.

— Research methods in Landscape and urban design
— Interdisciplinary Research & Urban Publics
— Urban design for transportation: designing spaces for multimodal transport
— Smart City Design
— Modelling in Urban Form Studies
— Research statistics and observational experiment design in urban studies
— Innovations in Urban Water Sustainability
— Space speculation: trans-scalar approaches to the networks of cities

Theory

— Practical theory, the link between planning and thinking
— Advanced urbanism theories
— Design theory
— Theory of perception
— Theories and methods for collaboration in the architectural design process
— Theory and Analyses in Landscape Architecture
— Design as research and research through design: histories, methodologies, agencies urban history and theory
— Architectural research tactics - focused on method rather than methodology theory
— Theories on practice based research
— Mind Mapping the Architectural Theories
— Planetary urbanization theory
— Planning theory, applied planning theory
— Debates in critical urban theory
— Epistemology

Data

- Data science and data analysis for architectural research
- Data visualisation, advanced vector design
- Methods for graphical representation of data
- Visual representations of qualitative data
- Using data science in spatial analysis
- Advanced data processing
- Data analytics for design and urban planning
- Data analytics
- Data management
- Data collection and analysis with R
- Big Data and BIM
- Methodologies for data processing from on-site surveys to digital analyses
- Including data collection through sensors, and coding them for design generation
- Spatial & Data analytics for Buildings and Cities

Writing

- Research through design - methods on how to conduct, compile and write about research
- Writing Architectural History
- Writing Architectural Criticism: Methods and Models
- Creative writing tools and methods on the everyday life | developing analytical tools for writing dissertation in the field of architecture
- Creative Critical Writing
- Creative writing
- Creative writing
- Writing for doctoral students
- How to produce academic writing

Math / coding / software / digital

— Mathematics for Architects
— Mathematics

— Coding (and its application) for research by design students
— Computational Geometry

— Basic language programming skills (e.g. python)
— Use of Python and/or Grasshopper during PhD research
— Python
— Using software for research
— Advanced computational fluid dynamic (CFD) coding
— Advanced programming (e.g. Python, Matlab, R)
— Spatial Analysis & Mapping using R
— Introduction to R, Introduction to GAMS, Introduction to Stata
— Data collection and analysis with R

— Introduction and Advanced training in Generative Design - including data collection through sensors, and coding them for design generation
— Digital techniques for practice-led architectural research
— Digital graphics intensive
— Advanced Architectural Digital Photography

Self-management

— "Stay calm and keep going" sharing your experience of the doctoral research and writing process
— Work-Life balance studies
— How to keep your thesis at the top of your to do list
— Project management for PhD students

— How to make a good publication (high impact factor etc)
— Publishing strategy for architects

— Developing grass-roots instigated building projects.
— Communication with people on their intellectual level

— Advanced presentation and negotiation skills
— Knowledge sharing
— Navigating the research environment for mature students
— Managing media channels
— Understanding the language of "research"
— Representational practices and communicating meaning
— Effective presentations, 10 to 30 min
— Access paths to current thought and literature

Circular / sustainability / inclusive

— "Material exchange systems for circular economy"
— Green technologies in the modern construction industry
— Beyond energy savings
— Socio-economic effects of energy efficient buildings
— Enable sustainable lifestyles
— Ageing society and its impact on built environment
— Social and sustainable transformations in Latin American cities
— Innovations in Urban Water Sustainability
— Transition Studies and Inclusive Innovations for Development
— Social impact of the built environment and how to assess it
— Energy
— Built environment and income inequality

Practice

— Research in architecture and its relevance in practice
— Digital transformations in architecture - significance for research and practice
— Robotics in construction
— Heritage intervention and management
— Translating academic research for applied practise of municipalities and regions
— Transfer of research themes to built environment practice
— Theories on practice based research
— Representational practices and communicating meaning
— Digital techniques for practice-led architectural research
— Opening up the black box of architectural practice: kinds of knowledge, kinds of research

Overview MOOCs TU Delft

Massive Open Online Courses (MOOCs) are developed at TU Delft but not specifically with Doctoral Education in mind. Under specific conditions, doctoral students at various institutes can get credits for completing them.

MOOCs are of interest in the context of the SABRE project because they allow students to participate over a vast geographical area without the need to travel.

Presented here is a selection of TU Delft MOCs that might be of interest to doctoral students.

https://www.tudelft.nl/en/architecture-and-the-built-environment/
study/online-education/

Zero Energy Design: An Approach to make your Buildings Sustainable.

Reduction of energy consumption of buildings is an important step in the move towards a sustainable economy. How can buildings be made net-zero energy, in different climates?

This course introduces you to zero energy design. It will teach you a stepped approach to design a zero energy climate concept for existing buildings: homes, schools, offices, shops etc. It will demonstrate how an integrated approach, which takes into account both passive measures (such as thermal insulation and sun shading) and active measures (such as heat pumps and photovoltaic panels), can deliver the best results.

It will do so by providing you with an overview of possible measures, and through reviewing several case studies of zero energy buildings in the Netherlands, with lessons for other climates as well. Thus, you will learn which measures are most suitable for individual buildings under local climate conditions. This course is for anyone interested in making buildings more energy-efficient, who already possess basic technical knowledge. You will learn to:

— Analyse the energy use of a building
— Analyse the local climate and select appropriate measures
— Develop an integrated net-zero-energy concept for the building
— Apply a stepped approach to find energy reducing measure

"In line with our mission to support engineers world-wide in gaining new competencies, our foundation contributed to the development of the TU Delft MOOC Zero Energy Design. We are convinced that this course offers new skills to engineers and helps to find solutions for one of the world's grand challenges." - Dutch Foundation PATO

https://online-learning.tudelft.nl/courses/zero-energy-design-an-
approach-to-make-your-building-sustainable/

Solar Energy

In the third edition of Solar Energy, you will learn to design a complete photovoltaic system. This course introduces the technology that converts solar energy into electricity, heat and solar fuels with a main focus on electricity generation. Photovoltaic (PV) devices are presented as advanced semiconductor devices that deliver electricity directly from sunlight. The emphasis is on understanding the working principle of a solar cell, fabrication of solar cells, PV module construction and the design of a PV system. You will gain a greater understanding of the principles of the photovoltaic conversion- the conversion of light into electricity.

This course explores the advantages, limitations and challenges of different solar cell technologies, such as crystalline silicon solar cell technology, thin-film solar cell technologies and the latest novel solar cell concepts as studied on lab-scale. We will discuss the specifications of solar modules and demonstrate how to design a complete solar system for any particular application.

— Starts: Anytime (Self-Paced)
— Free
— Length: Self-Paced
— Effort: 6 - 8 hours per week / 8 weeks

https://online-learning.tudelft.nl/courses/solar-energy/

Co-Creating Sustainable Cities

Around the world, the major challenges of our time, such as population growth and climate change, are being addressed in cities. Here, citizens play an important role amidst governments, companies, NGOs and researchers in creating social, technological and political innovations for achieving sustainability.

Citizens can be co-creators of sustainable cities when they engage in city politics or in the design of the urban environment and its technologies and infrastructure. In addition, citizens influence and are influenced by the technologies and systems that they use every day. Sustainability is thus a result of the interplay between technology, policy and people's daily lives. Understanding this interplay is essential for creating sustainable cities. In this MOOC, we zoom in on Amsterdam, Beijing, Ho Chi Minh City, Nairobi, Kampala and Suzhou as living labs for exploring the dynamics of co-creation for sustainable cities worldwide. We will address topics such as participative democracy and legitimacy, ICTs and big data, infrastructure and technology, and SMART technologies in daily life.

— Starts: Sep 03, 2019
— Free
— Length: 8 weeks
— Effort: 6 - 8 hours per week

https://online-learning.tudelft.nl/courses/citizens-co-creating-sustainable-cities/

Sustainable Urban Developments

Did you know that cities take up less than 3% of the earth's land surface, but more than 50% of the world's population live in them? And, cities generate more than 70% of the global emissions? Large cities and their hinterlands (jointly called metropolitan regions) greatly contribute to global urbanization and sustainability challenges, yet are also key to resolving these same challenges.

If you are interested in the challenges of the 21st century metropolitan regions and how these can be solved from within the city and by its inhabitants, then this Sustainable Urban Development course is for you!

There are no simple solutions to these grand challenges! Rather the challenges cities face today require a holistic, systemic and transdisciplinary approach that spans different fields of expertise and disciplines such as urban planning, urban design, urban engineering, systems analysis, policymaking, social sciences and entrepreneurship.

This MOOC is all about this integration of different fields of knowledge within the metropolitan context. The course is set up in a unique matrix format that lets you pursue your line of interest along with a specific metropolitan challenge or a specific theme.

— Starts: Sep 03, 2019
— Free
— Length: 7 weeks
— Effort: 4 - 6 hours per week

https://online-learning.tudelft.nl/courses/sustainable-urban-development-discover-advanced-metropolitan-solutions/

Managing Building Adaptation; a sustainable approach

Do you have a passion for buildings and want to contribute to a sustainable environment? Then this is your chance to make a difference! The biggest sustainability challenge for cities worldwide is adapting existing obsolescent buildings and making them future-proof. In this course, you will learn about adapting buildings for sustainability.

This course first introduces you to the challenging management task of redeveloping buildings for future use. Then you will learn how different management tools can be used to convert old buildings for sustainable reuse.

Prior experience with studies or jobs related to the built environment is not essential for this course but will be a great advantage.

This MOOC is especially relevant for students who are interested in Real Estate, Project Management, Urban Planning, Architecture, Construction, Engineering, and Sustainability.

— Starts: Anytime (Self-Paced)
— Free
— Length: Self-Paced
— Effort: 4 - 6 hours per week / 6 weeks

https://online-learning.tudelft.nl/courses/managing-building-adaptation-sustainable-approach/

Seismic Essentials: Introduction to seismic essentials in Groningen

Groningen, a province in the northeast of the Netherlands, is experiencing earthquakes due to the extraction of gas. This phenomenon is called induced seismicity. But what is induced seismicity? And how can the risk to life safety and the consequences for the built environment be reduced? The Groningen situation is unique, and for this reason, solutions for the built environment cannot simply be copied from abroad. To contribute to a basic understanding of the various topics in this field, knowledge lectures have been developed as Open Course Ware by a large number of scientists and practitioners.

This Open Course Ware is initiated by TU Delft in cooperation with Arup, TU Eindhoven and TNO. This public and private initiative combines engineering, architecture and management perspectives. The 30 video lectures provide conceptual knowledge of seismicity and basic seismic concepts. This knowledge is then related to the different structures and their behaviour under seismic loading. Finally, in the last theme, more procedural knowledge will be outlined, related to the multidisciplinary challenges in Groningen.

https://ocw.tudelft.nl/courses/introduction-seismic-essentials-groningen/

Healthy Aging in 6 Steps: Let your environment do the work.

Many health complaints, such as cardiovascular disease, diabetes or joint problems seem inescapable diseases of old-age but originate mostly from our lifestyle. A lifestyle that is largely dictated by our environment. The mismatch between our 'old' genes - our evolutionary heritage - and the 'modern' environment is the reason that we cannot resist the constant stimuli that seduce us to make unhealthy choices. Do's and don'ts cannot help us.

This health course will take a radically different approach to show you how to secure a lifestyle, which will keep you healthy throughout the lifespan. We have to let the environment do the work for us. By making small changes at our home, work, school or neighbourhood, healthier choices can become easier and automated.

Practical assignments will give you the skills to re-design your daily environments to promote healthy, longer lives for you and your family, colleagues and neighbours with whom you share your re-designed environments. You will learn how to create your own healthy living zone!

We will take you on excursions to Copenhagen, Denmark and to Ghent, Belgium to show you hands-on how the environment can help you live longer, healthier and happier lives!

— Starts: Anytime (Self-Paced)
— Free
— Length: Self-Paced
— Effort: 2 - 3 hours per week / 6 weeks

https://online-learning.tudelft.nl/courses/healthy-ageing-in-6-steps/

Rethink the City: New approaches to Global and Local urban challenges

(AESOP Excellence in Teaching Award 2017)

Learn about today's urban challenges focusing on developing countries, referred to as the Global South. We will debate the benefits associated with three different themes, going beyond traditional urban strategies and policies:

1 Spatial justice. Spatial justice is undoubtedly one of the greatest challenges of urban contexts in emerging economies.
2 Housing Provision and Management. Increasing demand in the Global South calls for alternative approaches in housing provision and management.
3 Urban Resilience. Understanding resilience not as a mere struggle for survival, but as an opportunity to build better urban environments.

In the course, we will address questions such as:

— Is the 'just city' framework applicable to cities with extreme socio-economic inequality?
— Can community-led housing initiatives provide effective solutions for households in need?
— How can resilience support development instead of perpetuating a disadvantaged condition?

In this architecture and urban planning course, academic urban planning expertise from TU Delft is used to formulate possible answers to these questions and is applied in a range of challenging case studies from Ghana, Brazil, Malaysia, Chile, and China, among others. This course offers you a new perspective to understand and analyze the urban challenges of the Global South.

— Starts: Future dates to be announced
— Free
— Length: 6 weeks
— Effort: 3 - 4 hours per week

https://online-learning.tudelft.nl/courses/rethink-the-city-new-approaches-to-global-and-local-urban-challenge/

Urban Design for the Public Good: Dutch Urbanism

Are you an urban planner, designer, policymaker or involved or interested in the creation of good living environments?

This course will broaden your scope and diversify your take on the field of urban planning and design. We will focus on a unique Dutch approach and analyze how it can help those involved with urban planning and design to improve the physical environment in relation to the public good it serves, including safety, wellbeing, sustainability and even beauty.

You will learn some of the basic traits of Dutch Urbanism, including its:

— contextual approach;
— balance between research and design;
— simultaneous working on multiple scale levels.

You will practice with basic techniques in spatial analysis and design pertaining to these points. You will also carry out these activities in your own domestic environment.

— Starts: Future dates to be announced
— Free
— Length: 8 weeks
— Effort: 4 - 6 hours per week

https://online-learning.tudelft.nl/courses/urban-design-for-the-public-good-dutch-urbanism/

Energy-friendly Renovation Processes

Learn how to improve the energy-efficiency of dwellings through the successful implementation of sustainable, stakeholder-inclusive renovations.

Course Highlights:

— Learn how to successfully collaborate in energy-efficient renovation processes;
— Incorporate multiple stakeholders' perspectives;
— Combine energy-friendly renovations with circular economy principles;
— Learn from best practices in other countries and interact with peers from different countries and institutions;
— Receive feedback from lecturers from top universities.

To address climate change, the world needs to drastically reduce the use of fossil fuels. The construction sector is one of the biggest producers of CO2 emissions. One of the best ways of reducing the amount of energy used by households is by integrating energy-efficient improvements in housing renovation schemes. This course is unique because it focuses on the needs and attitudes of different stakeholders. Their collaboration can make or break the implementation of such measures.

— Starts: Future dates to be announced
— Fee: € 395
— Length: 7 weeks
— Effort: 4 - 5 hours per week

https://online-learning.tudelft.nl/courses/energy-friendly-renovation-processes/

Circular Economy for a Sustainable Built Environment

Building construction is one of the most waste-producing sectors. In the European Union, construction alone accounts for approximately 30% of the Raw Material Input. In addition, the different life-cycle stages of buildings, from construction to end-of-life, cause a significant environmental impact related to energy consumption, waste generation and direct and indirect Greenhouse Gas emissions.

The Circular Economy model offers guidelines and principles for promoting more sustainable building construction and reducing the impact on our environment. If you are interested in taking your first steps in transitioning to more sustainable construction, then this is the course for you!

In this course, you will become familiar with circularity as a systemic, multi-disciplinary approach, concerned with a different scale, from material to product, building, city, and region.

Some aspects of circularity that will be included in this course are maximizing reuse and recycle levels by closing the material loops. You will also learn how the Circular Economy can help to realign business incentives in supply chains, and how consumers can be engaged and contribute to the transition through new business models enabling circular design, reuse, repair, remanufacturing and recycling of building components.

In addition, you will learn how architecture and urban design can be adapted according to the principles of the Circular Economy and ensure that construction is more sustainable. You will also learn from case studies how companies already profitably incorporate this new theory into the design, construction and operation of the built environment.

— Starts: Sep 25, 2019
— Free
— Length: 6 weeks
— Effort: 3 - 5 hours per week

https://online-learning.tudelft.nl/courses/circular-economy-for-a-sustainable-built-environment/

Models in Architecture – Design through Physical & Digital Models.

Physical and digital design skills are key to practitioners in art, design, and engineering, as well as many other creative professions. Models are essential in architecture. In design practice, all kinds of physical scale models and digital models are used side by side.

In this architecture course, you will gain experience that will help and inspire you to advance in your personal and professional development. You will attain skills in a practical way. First, we will focus on sketch models for the early stages of a design process, then we will continue with virtual representations for design communication. Finally, more precise and detailed models will be used for further development of the ideas.

In the theoretical part of the course, you will learn about many different sorts of models: how architects use these and how they are essential in the design process.

The practical part of the course addresses a number of challenges. In small steps, we will guide you through technical and creative difficulties in exciting, playful, and pleasant ways.

— Starts: Anytime (Self-Paced)
— Free
— Length: Self-Paced
— Effort: 4 - 6 hours per week / 8 weeks

https://online-learning.tudelft.nl/courses/models-in-architecture-design-through-physical-and-digital-models/

Design Leadership and Innovation.

By using a three-step approach for leading and managing strategic innovation projects, this course will teach you how to harness your existing design practices – such as envisioning, orchestrating, inspiring, etc. and transform them into powerful innovation drivers. You will learn how to use these practices to impact strategic decision-making, win stakeholders' support, and identify relevant KPIs. You will also learn how to adapt your design practices and design-driven way of working to a particular company. Finally, you will practice some design methods to make your impact durable over time.

Through a combination of short lectures, given by design and innovation experts, practical exercises, webinar and individualized feedback, you will learn which design capabilities and practices are most valued by companies, and how to use them effectively for improving a company's innovation performance. To help you gain a better understanding of innovation, you will:

— Learn how your strategic contributions can help companies create and capture value through innovation.
— Gain an in-depth understanding of the organization you are working in.
— Utilize this understanding to effectively interact with management and other stakeholders.

— Course work & interactions are 100% online.
— Study at the time and place that suits you.
— 24/7 access to course material.
— Learn from world-class experts in their field.

https://online-learning.tudelft.nl/courses/design-leadership-and-innovation/

IMAGE ABILITY – Visualizing the Unimaginable

Students and professionals in science, design and technology have to develop and communicate concepts that are often difficult to comprehend for the public, their peers and even themselves.

This communication course will help you enhance your communication and interpersonal skills and provide insight, tips and tricks to make such complex and seemingly unimaginable concepts and ideas imaginable.

After finishing this course, you will be more skilled in finding the right visual language to convey your ideas, thoughts and vision. You will be able to illustrate concepts and themes, and you will know how to unravel complexity by using diagrams and schemes.

— Starts: Anytime (Self-Paced)
— Free
— Length: Self-Paced
— Effort: 3 - 4 hours per week / 8 weeks

https://online-learning.tudelft.nl/courses/image-ability-visualizing-the-unimaginable/

Nature-based Metropolitan Solutions

This course establishes the priorities and highlights the direct values of including principles based on natural processes in urban planning and design. Take a sewage system or a public space, for example. By integrating nature-based solutions, they can deliver the exact same performance while also being beneficial for the environment, society and economy.

Increased connectivity between existing, modified and new ecosystems and restoring and rehabilitating them within cities through nature-based solutions provides greater resilience and the capacity to adapt more swiftly to cope with the effects of climate change and other global shifts.

• This course will teach you about the design, construction, implementation and monitoring of nature-based solutions for urban ecosystems and the ecological coherence of sustainable cities. Constructing smart cities and metropolitan regions with nature-based ecosystems will secure a fair distribution of benefits from the renewed urban ecology.

— Starts: Future dates to be announced
— Free
— Length: 6 weeks
— Effort: 4 - 6 hours per week

https://online-learning.tudelft.nl/courses/nature-based-metropolitan-solutions/

Forensic Engineering: Learning from Failures

What do collapsed buildings, infected hospital patients, and crashed aeroplanes have in common? If you know the causes of these events and conditions, they can all be prevented.

In this course, you will learn how to use the TU Delft mind-set to investigate the causes of such events so you can prevent them in the future.

When, for instance, hundreds of hospital patients worldwide got infected after having gall bladder treatments, forensic engineering helped reveal how the design and use of the medical instruments could cause such widespread infections. As a result, changes were made to the instrument design and the procedural protocols in hospitals. Learning from failure in this case, benefitted patient health and safety across the world.

After taking this course, you will have obtained an understanding of failures and the investigation processes used to find their causes. You will learn how to apply lessons gained from investigating previous failures into new designs and procedures.

— Starts: Future dates to be announced
— Free
— Length: Self-Paced
— Effort: 3 - 4 hours per week / 6 weeks

https://online-learning.tudelft.nl/courses/forensic-engineering-learning-from-failures/

Engineering Design for a Circular Economy

Products and equipment all around us are made of materials: look around you and you will see phones, computers, cars, and buildings. We face challenges in securing the supply of materials and the impact this has on the planet. Innovative product design can help us find solutions to these challenges. This course will explore new ways of designing products.

The design of products is an important aspect of a circular economy. The circular economy approach addresses material supply challenges by keeping materials in use much longer and eventually returning materials for new use. The principle is that waste must be minimized. Products will be designed to last longer. They will be easier to Reuse, Repair, and Remanufacture. The product will eventually be broken down and Recycled. This is Design for R and is the focus of this course.

Experts from leading European universities and research organizations will explain the latest strategies in product design. Current design approaches lead to waste, loss of value and loss of resources. You will learn about the innovative ways in which companies are creating value, whilst securing their supply chains, by integrating Design for R.

This course is suitable for all learners who have an interest in product design, innovative engineering, new business activity, entrepreneurship, sustainability, circular economy and everyone who thinks that the current way we do things today needs a radical rethink.

— Starts: Future dates to be announced
— Free
— Length: Self-Paced
— Effort: 3 - 4 hours per week / 6 weeks

https://online-learning.tudelft.nl/courses/engineering-design-for-a-circular-economy/

Design in Healthcare: Using
Patient Journey Mapping

In this course, you will learn about the different experiences patients go through in a medical context. The patient journey explores the interaction between the patient and the healthcare providers in all stages of the disease; coping with treatment and dealing with expectations, and interaction with and between different stakeholders.

This course will give designers and specialists in healthcare the knowledge, insights and tools to be able to analyze and improve the patient experience. You will learn how to map complex healthcare scenarios, pinpoint opportunities and create hands-on solutions aimed at improving the patient experience.

This course is an introduction to patient journey mapping; developed at the Delft University of Technology and applied in the improvement of care pathway. Step-by-step, the course visualizes the different stakeholders, phases and actions involved in patient treatment. You will be challenged to pursue new insights and given a unique opportunity to learn about four trending healthcare issues each presented by a partnering institution.

Furthermore, you will learn about healthcare trends from a team of experts in specific technological domains. They are ranging from personalized care to advance manufacturing for healthcare. These sessions will provide you with a technological background that will be useful when developing your design concepts.

— Starts: Anytime (Self-Paced)
— Free
— Length: Self-Paced
— Effort: 3 - 4 hours per week / 8 weeks

https://online-learning.tudelft.nl/courses/design-in-healthcare-
    using-patient-journey-mapping/

Overview MOOCs developed in the context of SABRE

In the SABRE project developed three specific MOOCs.

Approaching Research
Practice in Architecture

This course takes as its point of departure the growing interest in practice-oriented research in the broadest sense, including expanding modes of work in well-established areas of architectural research such as architectural history and theory or urban and landscape studies. This recent "turn to practice" manifests itself, first and foremost, in the flourishing of empirical and performative approaches. It can also be noted in the shift towards contemporary history, critical heritage studies etc., which employ a host of experimental methods, and forms of dissemination. Finally, the workshop also recognises the emergence of research practices by practitioners. Our goal is to reflect upon the multitude and diversity of current research practices. This event also marks the beginning of a doctoral course on research practices.

International doctoral candidates with interest in practice-oriented formats in architecture and adjacent fields, who are either already pursuing or approaching a research project, are invited to participate. Proposals may address processes, performances, outcomes, and/or effects of your research. This two-day synchronous workshop will take place on ZOOM and focus on dialogue. Sessions will be strictly 45-minutes long, allowing for discussion. Days will begin and conclude with a short introductory address.

To amplify, refresh, and expand the discussion on research practices, we welcome two types of contributions: a) Trajectories, sessions with five 5-minute individual presentations and b) Orientations, workshop- or roundtable-based group conversations with three to five participants. Please apply with an abstract, either; a) addressing your research; or b) as a group addressing a research topic or question you consider crucial. Note: The 5-minute Trajectories presentations will be pre-recorded. The contributions to Orientations will be self-moderated.

Advanced Digital Fabrication

This MOOC in advanced digital fabrication is being proposed as an exemplar of the kind of advanced PhD-level skills training that could be offered freely to architectural/design students on doctoral courses in Europe, indeed worldwide.

In doing so, it would augment the teaching provision in universities where currently there are restricted resources. This particular MOOC is based explicitly on the equipment in Here East, the facility which houses the advanced manufacturing laboratory of the Bartlett School of Architecture in London, UK. Through this freely available online MOOC, it would be possible to share the benefits of this kind of high-end teaching equipment more fairly and evenly across European doctoral students.

This proposal assumes that the lessons will be given by a figure like William Victor Camilleri, who is an expert in digital fabrication at the Bartlett School of Architecture and is currently engaged on his PhD there. Helpfully, this means he is also incredibly well versed in using the Bartlett's Here East facilities. With this in mind, the short sample section of the MOOC is filmed using Camilleri as an on-screen tutor, with his input also being introduced at that stage of the project since it will be integral in fleshing out the actual details of the lesson plan for that section. Matei Mitrache, an ex-Bartlett student with expertise in filmmaking, did the actual filming and editing. In total, there are nine separate lessons envisaged for this proposed MOOC, as explained below:

1 Introduction to digital fabrication
2 Basic techniques for milling and cutting
3 Producing an initial prototype model
4 3D-printing techniques
5 Robotic manufacturing
6 Five-axis drilling techniques
7 Scriptwriting for robotic production
8 Rules applying to assembly techniques
9 Final prototype model

Design-to-Robotic-Production and Operation

Design-to-Robotic-Production and -Operation (D2RP&O) focuses on (1) physically built robotically augmented environments and, (2) robotically supported building processes. The course introduces reconfigurable environments incorporating sensor-actuator mechanisms that enable buildings to interact with their users and surroundings in real-time. They require D2RP&O processes that link computational design with robotic production and operation.

Participants are introduced to these D2RP&O processes in online lectures, workshops and tutorials (MOOC's) followed up by on-site prototyping in the Robotic Building lab. For participants unable to attend prototyping session on-site, the session will be live-streamed and recorded for remote access.

Teaching Method

Blended learning involving lectures, D2RP&O project assignments, online workshops and tutorials (MOOC's).

Core curriculum

The overview of the whishes of doctoral students at BauHow5 institutes has produced a long list of course titles. We have condensed these into eight categories or topics:

— Research < > Design
— Architecture
— Urban/Landscape
— Methods
— Theory
— Writing
— Data
— Math / coding / software / digital

The Swedish research school and the TU Delft Graduate School of Architecture and the Built Environment offer the two most comprehensive sets of doctoral education. Four courses from ResArc are in particular interesting:

— Approaches
— Tendencies
— Philosophies
— Communications

Each of these courses equals 7.5 HEC, which equals training programme that consists of three modules of two contact days plus additional assignments. In TU Delft terms this would equal the same amount in GS credits. Chalmers requires in total 60 HEC, TU Delft requires 30 GSC in discipline-related and research skills-oriented courses.

TU Delft's Graduate School of Architecture and the Built Environment could match the ResArc cources with:

— ABE 013 Qualitative Research Methods for Architecture and the Built Environment
— ABE 003 Design and Planning Analytical Tools
— ABE 017 Geographic information system (GIS), data, tools
— ABE 019 The Sustainable City: Theories on Urban Design

Doctoral minors

The initial idea was that instructors and doctoral students would meet at a central location in Europe to start or to close-off courses, In such an approach it makes sense to bundle these courses in small packages: minors. Students can then attend multiple courses in one summer/winter school-like setting, reducing the need to travel multiple times.

The core curriculum consists of sets of coherent Doctoral Education courses: Doctoral minors. We have identified six coherent minors, each 10 - 15 HEC that are the building blocks of a core curriculum.

— Architecture & Urbanism
— Theory & Methods
— Writing & Data
— Design & Research
— Digital fabrication.
— Urban Theory

However, if the current Covid-19 pandemic continues into 2021, and online education becomes the new normal, then it makes sense to offer that core curriculum as stand-alone courses.

Minor Architecture & Urbanism

Tendencies - Architectural and urban research: Focusing on Everyday Life

The Sustainable City: Theories on Urban Design

Within architectural theory, as well as within the social sciences in general, a renewed interest has emerged regarding how actions and phenomena of everyday life – like eating, walking, travelling, gathering, breathing, listening, and so on – can be studied in relation their social and material settings. The course Focusing on everyday life deals with research on the mundane through new perspectives on the impact that seemingly trivial phenomena may have on the built environment, as well as how architecture and urban design are essential for the formation of quotidian life. The course provides opportunities to achieve an overview of everyday life as a subject of study, as a research approach and as a design practice.

The course will give an overview of theories and methodologies, with a special focus on the ethnographic approach inspired by Actor-Network-Theory (ANT), which follows the principles of no hierarchy, attention to the detail, symmetry as regards noticing what happens between humans and non-humans, undivided attention to words and the gestural and non-verbal language. The ANT-inspired ethnography denotes an approach that pays specific attention to the texture of ordinary life of designers and generates 'thick descriptions' of the knowledge practices of different participants in design and city-making.

During this course we will explore the dynamics of urbanised landscapes and the role of adaptation (and its limits), resilience (anticipation, robustness), transition and transformation, dynamic performance and affordance, sustainability and liveability in spatial planning and design. Methods and techniques will be explained to describe and assess physical, ecological, socio-economic and political systems focusing on narratives and values. The theoretical background will be given in both scientific articles and a series of lectures and workshops on the transformation of landscapes and inner cities.

Teaching Method

Lectures, group discussion and workshops.

Minor Theory & Methods

Approaching Research Practice in Architecture

This course takes as its point of departure the growing interest in practice-oriented research in the broadest sense, including expanding modes of work in well-established areas of architectural research such as architectural history and theory or urban and landscape studies. This recent "turn to practice" manifests itself, first and foremost, in the flourishing of empirical and performative approaches. It can also be noted in the shift towards contemporary history, critical heritage studies etc., which employ a host of experimental methods, and forms of dissemination. Finally, the workshop also recognises the emergence of research practices by practitioners. Our goal is to reflect upon the multitude and diversity of current research practices. This event also marks the beginning of a doctoral course on research practices.

International doctoral candidates with interest in practice-oriented formats in architecture and adjacent fields, who are either already pursuing or approaching a research project, are invited to participate. Proposals may address processes, performances, outcomes, and/or effects of your research. This two-day synchronous workshop will take place on ZOOM and focus on dialogue. Sessions will be strictly 45-minutes long, allowing for discussion. Days will begin and conclude with a short introductory address.

To amplify, refresh, and expand the discussion on research practices, we welcome two types of contributions: a) Trajectories, sessions with five 5-minute individual presentations and b) Orientations, workshop- or roundtable-based group conversations with three to five participants. Please apply with an abstract, either; a) addressing your research; or b) as a group addressing a research topic or question you consider crucial. Note: The 5-minute Trajectories presentations will be pre-recorded. The contributions to Orientations will be self-moderated.

Philosophies

This course aims to address how the researcher in architecture can make use of the plethora of philosophies available to them, both from within and from without the discipline. We will place a particular emphasis on the two-way conceptual traffic between architecture and philosophy, in recognition of the reciprocal relationship of influence these two disciplines have historically maintained with respect to each other. What are the strategies and tactics that can be fruitfully employed to engage in diverse philosophies from the point of view of the discipline of architecture? How does the architectural researcher maintain a creative and critical relay between theory and practice? How can concepts and arguments (drawn from philosophy and elsewhere) be mobilized by the architectural researcher?

In light of past, present and looming crises, environmental, social, mental and technological, this Philosophies PhD course will take up the near-exhausted concept of the Anthropocene in order to explore how current research in architecture and cognate fields locates itself in relation to pressing matters of care.

We will discuss ways of: radically rethinking the literature review; reframing our research problems; expanding our methodological practices, with an emphasis on critical thinking and practice; and exploring possibilities for ethics in action.

Qualitative Research Methods for Architecture and the Built Environment

The course presents qualitative research methods for research in architecture, housing, urban planning, management of the built environment and related fields. The course explains qualitative methods in theory and practice and how to select specific qualitative methods to answer a particular research question. Qualitative methods such as case study, discourse analysis, interviews, focus groups, and historical analysis methods are introduced, together with an overview of mixed methods (qualitative & quantitative). In addition, the course offers an overview of content analysis and hands-on skills of data coding using software such as Atlas.ti. Finally, the course also discusses issues of research integrity and ethical treatment of human research subjects.

Teaching Method

The course consists of a series of lectures, complemented by in-class assignments. The lectures will include interactive elements and critical discussions of sample peer-reviewed papers, and computer learning and practice of software Atlas.ti.

Research Data Management for Architecture and the Built Environment disciplines

Research data management (RDM) is an important research skill that concerns careful handling and organizing all types of research materials. It is a professional competence that you can assess, identify, and resolve relevant data management issues in your research. In addition, RDM is also closely related to other components in Open Science, such as Open Access publishing, research ethics, research integrity and so on. Practising good data management helps to minimize the impact of unexpected data loss, make your work better organized and more visible to others.

Research data in the field of architecture and built environment is diverse in terms of the type (content-wise) and the format (digital, non-digital). Managing and publishing research data in this field is still at an early stage and requires more awareness and advocacy from the research community. This course is the starting point to understand the disciplinary insights regarding data management and provides guidance to start managing the research data properly.

Expected outcome

After following the course, the participants are expected to have a good understanding of:

— Role of data management in research
— Life-cycle of research data management, including important issues at each stage
— Data management plan (DMP)
— Data publishing and archiving
— General ethical issues in doing research in architecture and the built environment
— General sensitivity and privacy concerns in research in architecture and the built environment

Communications - Staging the Message. The Architecture of Communication

The ResArc Communication course intends to offer participants in-depth theoretical and practical tools for communication and media production.

With the course Staging the Message. The Architecture of Communication we will analyze, discuss, learn, test and develop – with the support of excellent scholars and practitioners from the field of the image, writing, editing, and curating architecture publications and exhibitions - how the form(at) of your dissertation/research – right from the start, and during the development of your research as a whole – can enable you to critically reflect and develop its content through the interplay between content and form; while the chosen and developed form also will enable you to broadcast, (edit, communicate and mediate) your ideas (content) to an audience within our information age at large.

While Module 1 will look into different formats, editing and communicative strategies of the architecture book (including the one of dissertations) Module 2 will specifically address how you as an architecture researcher can edit/stage the message through the format of the exhibition. Module 3 (optional, for another 2.5 credits) invites all participants to present their individual PhD dissertation formats for a panel of different research, curating and media experts in the field of architecture communication.

Academic Writing Retreat

The retreat is designed to support advanced-level doctoral researchers and early-career researchers in getting their research published in peer-reviewed academic journals. During this retreat, we will be working with your text, with a view to refine the writing such that you are in a position to finalise a manuscript for submission at the end of the retreat. It is hoped that this retreat will address your needs in terms of developing papers that are fairly close to completion. Therefore, it is important that this retreat takes place over three days so that you have the time and space to receive ongoing advice concerning structure, organisation and language to finalise the draft.

During the retreat, we will alternate between short theoretical "lectures", time to write alone, peer feedback and group discussions. It is hoped that the experience on this retreat will give you the confidence to revise and submit your draft to a peer-reviewed academic journal. So, you must have a peer-reviewed academic journal in mind when applying to attend this retreat.

Learning Objectives

The learning outcomes of this concentrated course are that you will be able to:

— identify and critically evaluate different rhetorical devices in academic texts;
— give and take constructive feedback;
— select communication strategies based on forum, audience and genre;
— complete your paper/article, and;
— better deal with and respond to reviewer comments.

Teaching Method

Short lectures, individual reflections/revisions, small group discussions, and one-to-one consultation

Minor Design & Research

Approaches | From theory to practice - methods for knowledge production in architectural research

Advanced Architectural Theory Research Seminars

The ResArc PhD course Approaches will be devoted to an introduction and to training in research skills. The focus will be put on the research methodologies characteristic for the fields of Architecture and Design. Special attention will be given to a critical understanding of different approaches to ecologism, including sustainability, sustainable development and beyond sustainability. The course will consist of three modules with a three-fold objectives: (i) orientation and positioning in broader landscapes of knowledge and research strategies (ii) architectural approach to the discourse of sustainable development and beyond (iii) studying, assessing and disseminating scholarly assessment.

— Module 1 Modes of Knowledge Production and Research Strategies
— Module 2 Perspectives on Ecologism - from Conservation to Regeneration
— Module 3 Assessing Research strategies - Reviewing a Doctoral Thesis

The Theory Chair of the Architecture Department is offering ABE 008 seminar to PhD candidates and academic research staff, whose research topics relate to architectural and urban theory, philosophy, and contemporary concerns of spatial, socio-political, ethico-aesthetic, cultural and scientific relevance to the disciplines of design.

The course is framed within a seminar structure every second/third Monday from 14:30-18:00 during the Spring term, in which participants will engage in guided readings and group discussions on the thematic of each session. The aim is to generate an environment in which all participants will gain knowledge on a specific topic while developing a set of useful methodologies and research skills.

Teaching Method

This course will follow a seminar structure and advanced research methods. Depending on the individual seminar leaders, the seminar will follow a series of formats. Generally it will be based on fortnightly research output presentations, followed by a discussion on sources, references and bibliographies, which will involve the creation of an information nexus for the seminar discussions.

Minor Digital Fabrication

Advanced Digital Fabrication

This MOOC in advanced digital fabrication is being proposed as an exemplar of the kind of advanced PhD-level skills training that could be offered freely to architectural/design students on doctoral courses in Europe, indeed worldwide.

In doing so, it would augment the teaching provision in universities where currently there are restricted resources. This particular MOOC is based explicitly on the equipment in Here East, the facility which houses the advanced manufacturing laboratory of the Bartlett School of Architecture in London, UK. Through this freely available online MOOC, it would be possible to share the benefits of this kind of high-end teaching equipment more fairly and evenly across European doctoral students.

This proposal assumes that the lessons will be given by a figure like William Victor Camilleri, who is an expert in digital fabrication at the Bartlett School of Architecture and is currently engaged on his PhD there. Helpfully, this means he is also incredibly well versed in using the Bartlett's Here East facilities. With this in mind, the short sample section of the MOOC is filmed using Camilleri as an on-screen tutor, with his input also being introduced at that stage of the project since it will be integral in fleshing out the actual details of the lesson plan for that section. Matei Mitrache, an ex-Bartlett student with expertise in filmmaking, did the actual filming and editing. In total, there are nine separate lessons envisaged for this proposed MOOC, as explained below:

1 Introduction to digital fabrication
2 Basic techniques for milling and cutting
3 Producing an initial prototype model
4 3D-printing techniques
5 Robotic manufacturing
6 Five-axis drilling techniques
7 Scriptwriting for robotic production
8 Rules applying to assembly techniques
9 Final prototype model

Design-to-Robotic-Production and Operation

Design-to-Robotic-Production and -Operation (D2RP&O) focuses on (1) physically built robotically augmented environments and, (2) robotically supported building processes. The course introduces reconfigurable environments incorporating sensor-actuator mechanisms that enable buildings to interact with their users and surroundings in real-time. They require D2RP&O processes that link computational design with robotic production and operation.

Participants are introduced to these D2RP&O processes in online lectures, workshops and tutorials (MOOC's) followed up by on-site prototyping in the Robotic Building lab. For participants unable to attend prototyping session on-site, the session will be live-streamed and recorded for remote access.

Teaching Method

Blended learning involving lectures, D2RP&O project assignments, online workshops and tutorials (MOOC's).

Minor Urban Theory

Design and Planning Analytical Tools

Theories in Urban Morphology

This course introduces spatial analyses and design support tools using Space Syntax and ArcGIS, a geographic information system. The participants learn to relate spatial data from various sources with place bounded socio-economic data through the use of GIS and Space Syntax. The main focus will be on centrality analyses using the Space Syntax method and network analyses from GIS. Additionally, an introduction to spatial statistics is provided.

The variety of tools introduced allows the participants to support planning and design decisions from the local to the regional scale. The participants will be presented with a set of technological-based tools for urban and regional analyses and modelling and test and apply the knowledge gained through this course during the workshop sessions and the assignments.

Teaching Method

Lectures, workshops and assignments. The cities, urban areas or buildings students use in their research will be used during the workshops and exercises. At the end of the course, the participants have to submit a report with their analyses followed with a text with a description and reflection on their analyses.

The course is based on a series of lectures/ seminars that addresses central topics in the field of urban morphology, stressing academic context, historical development, critical traditions, current trends and methodological application. The format combines lectures and seminars.

A central point of departure is the exchange and tension between the two major fields concerned with urban space: Architecture and Geography. Particular attention will be given the traditions Theory in Urbanism, Urban Morphology, Spatial Analysis and Space Syntax. Some lectures and seminars particularly address the methodological use of urban morphology in research, where the students get the chance to apply such methods in their current research projects. This is also the theme in the paper assignments where the students with their research projects as a point of departure will discuss and present ideas on how urban morphology can be applied in these projects.

After taking the course, the students should be able to:

— recognise the origins, history and major traditions in the field of urban morphology
— have a certain familiarity with a couple of the major contemporary directions in the field of urban morphology
— have a good understanding of urban morphology as a research methodology
— have an understanding of the position of urban morphology in a context of urban and architecture theory

Ethical approach:

— All members of a group are responsible for the group's work.
— In any assessment, every student shall honestly disclose any help received and sources used.
— In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.

Pilots

To teach the courses, to organise the Doctoral minors and to allow Doctoral students from various places in Europe to participate, we have tested multiple formulas in small pilots using the following courses:

— How a material becomes a product
— Academic Writing Retreat
— Research Data Management for Architecture and the Built Environment disciplines

Online courses

Indeed, the Covid-19 crisis has made it more challenging to finish the project as intended. However, the pandemic has effectively broken down barriers and objections to organising online courses.

The necessity of universities to switch to digital practices and the collective experience with various online tools may very well make it easier to roll out the concept of a shared European curriculum for Doctoral Education.

Administration

In the months ahead we will draw up an agreement between the five BauHow5 partners and the Resarc research school that formalises the collaboration regarding doctoral education and that recognises the courses, including the transfer of obtained credits by students.

The experience in Sweden (Resarc) suggests that we can do this with relatively light arrangements.

Professur Philippe BLOCK: Ultra- thin, curved concrete roof as
part of a roof- top apartment unit called HiLo (NEST project)

BauHow5

BauHow5 is a European alliance of five leading research intense European universities in Architecture and the Built Environment. The partnership aims to push the boundaries of current practices in pedagogies, research and practice and raise awareness of the value of research and innovation in Architecture and the Built Environment for the broader benefit of society, economy and cultural life. BauHow5 Partners are:

— Chalmers, Department of Architecture and Civil Engineering;
— ETH Zürich, Department of Architecture;
— TU Delft, Faculty of Architecture and the Built Environment;
— TUM, Department of Architecture;
— UCL, The Bartlett.

www.bauhow5.eu

ResArc

ResArc is a collaboration between the schools of Architecture at KTH, Chalmers University of Technology and Lund TH that aims to strengthen architectural research, education and collaborative projects at national and international levels. Partners in ResArc are:

— Chalmers;
— KTH Royal Institute of Technology;
— Lund University.

www.resarc.se

Katharina Voigt (current doctoral student TUM); Topic of doctoral
dissertation: Spaces of Action - On the Dynamic Aspect of
Architectural Spaces with reference to the work of Sasha Waltz;
Photo: The dissertation «Spaces of Action - On the Dynamic Aspect
of Architectural Spaces with reference to the work of Sasha Waltz»
explores the question of how contemporary dance can be made
accessible as a tool to understand the sensual and corporeal efficacy
of architectural spaces and its anticipation in architectural design and
conception. Photo credit: Foto Credit: ‹Körper› by Sasha Waltz &
Guests, 2000 (© Bernd Uhlig)

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