

## Teaching portfolio

### 1. Teaching CV: A list of any lecturing and supervision tasks, including specification of academic fields, scope, level (bachelor, master, continuing education, PhD) as well as any external examiner tasks.

#### *General description*

My teaching activities include the development and organization of course modules (5-10 ECTS) and project modules (20-30 ECTS), lectures in different formats, 2-10 day workshops and supervision of bachelor and master student projects at the architectural program. I have developed and organized 20+ unique projects and workshops from scratch, supervised 30+ project groups and 300+ solo projects within course modules amounting to more than 5000 hours of teaching activities within architecture and architectural engineering.

Recent teaching activities include Acoustic Tectonics (MA.), Tectonic Architecture (MA.), Utzon(x) Summer School (MA., PhD.), Thermal Responsive Systems (MA.) Environmental Tectonics (MA.) and Research by Design (MA.).

I also organize and develop the Utzon(x) Lectures Series and Utzon(x) Summer School. The lecture series is providing a platform for inviting and discussing architectural approaches by invitation of peers in practice and research. Lectures are open to students at all levels and to the public. The summer school is open to A&D and non-AAU students across levels. It invites a series of peers to interact with research and education condensed in an intense 9-12 day workshop with the aim to explore and build through a research by design methodology.

I periodically act as invited critic at the CITA Studio (MA.) at the Copenhagen School of Architecture, where student projects are discussed based on the attempt to integrate advanced computational design methods into architectural design processes.

#### *Detailed description*

Topics listed include: Lectures, Supervision, Workshops, Coordination, Constructions

MA4Arch.: 4<sup>th</sup> semester master program in Architecture (Thesis project)  
MA3Arch.: 3<sup>rd</sup> semester master program in architecture (Design Research)  
MA2Arch.: 2<sup>nd</sup> semester master program in architecture (Sustainable Architecture)  
MA1Arch.: 1<sup>st</sup> semester master program in architecture (Tectonics Architecture)  
BA5DigitalArch.: 5<sup>th</sup> semester bachelor program in digital architecture  
BA5Arch.: 5<sup>th</sup> semester bachelor program in architecture  
BA4Arch.: 4<sup>th</sup> semester bachelor program in architecture  
BA3Arch.: 3<sup>rd</sup> semester bachelor program in architecture  
MA1Urb.: 1<sup>st</sup> semester master program in urban design  
BA3Urb.: 3<sup>rd</sup> semester bachelor program in architecture

### 2016

#### *Lectures*

'Dynamic Responsive Architectures', MA2Arch, AAU

'Environmental Tectonics', MA2Arch, AAU

'Sustainable Urban Housing' MA2Arch, AAU

#### *Supervision*

2 student groups, 'Sustainable Architecture', MA2Arch, AAU

4 student groups, 'Thesis project', MA4Arch, AAU.

#### *Coordination (organisation)*

'Thesis project' (30 ECTS), MA4Arch, AAU

#### *Workshop*

'Sustainable Urban Housing' (2 days), MA2Arch, AAU

### 2015

#### *Lectures*

'Environmental Tectonics', MA1Arch, AAU

'Architectural Acoustics – Theory', MA1Arch, AAU  
'Architectural Acoustics – Applied', MA1Arch, AAU  
'Experimental Design Processes', MA1Arch, AAU  
'Manufacturing of Responsive Models', MA and PhD level, Aarhus School of Architecture

*Supervision and Examination*

96 students, 'Acoustic Tectonic Studio, MA1Arch, AAU  
4 student groups, 'Tectonic Architecture', MA1Arch, AAU  
20 students, invited reviewer 'CITA Studio', MA.Arch, Copenhagen School of Architecture  
1 student, 'Long thesis projects', MA4Arch, AAU  
1 student, 'Design Research, MA3Arch, AAU

*Coordination (development and organisation)*

'Acoustic Tectonic Studio' (5 ECTS course module), MA1Arch, AAU  
The module explores and applies architectural acoustics through early design processes to manufacturing processes and production of 1:1 prototypes. It integrates in this course; aspects of architectural acoustics, architectural parametric design, architectural theory and computer numerical controlled (CNC) manufacturing processes.  
Web: [www.acoustictectonics.wordpress.com](http://www.acoustictectonics.wordpress.com)

'Tectonic Architecture' (20 ECTS project module), MA1Arch, AAU

*Constructions in teaching*

'Acoustic Tectonics Pavilion 2015' Full-scale pavilion in plywood, MA1Arch, AAU

**2014**

*Lectures*

'Environmental Tectonics', MA2Arch, AAU  
'Environmental Simulation Models', MA.Arch, Utzon(x) Summer School, AAU  
'Dynamic Architectures', MA2Arch, AAU  
'Architecture and Mathematics', Teacher's Mathematics Association, Denmark

*Supervision and Examination*

18 students, 'Utzon(x) Summer School', MA.Arch and PhD level, AAU  
20 students, Invited reviewer 'CITA Studio', MA.Arch, Copenhagen School of Architecture

*Workshop (coordination, instructions and supervision)*

'Tectonics Beyond Technology' (3 ECTS), Utzon(x) Summer School 2013, MA.Arch, AAU

*Constructions in teaching*

'Complex Brick Assembly Prototypes' Full-scale brick prototypes, MA.Arch, AAU

**2013**

*Lectures*

'Material Dynamic Systems', MA.Arch, Copenhagen School of Architecture  
'Cellular Automata in Architecture', MA1Urb, AAU  
'Information Systems', MA1Urb, AAU  
'Environment as a Generator for Architectural Design', MA.Arch, AAU  
'Experimental Tectonics', MA.Arch, Copenhagen School of Architecture  
'Environmental Tectonics', PhD programme, Copenhagen School of Architecture

*Supervision and Examination*

3 students, 'Design Research', MA3Arch, AAU  
20 students, 'Utzon(x) Summer School', MA.Arch, AAU  
70 students, Aero Architectural Studio, BA4Arch, AAU  
xx students, 'Internship in practice', MA3Arch, AAU

*Coordination (development and organisation)*

'Design Research' (30 ECTS project module), MA3Arch, AAU

'Aero Architectural Studio' (5 ECTS course module), BA4Arch, AAU

The studio is organised in a series of 4 phases emphasizing on the shaping, organisation and construction of architectural structures driven by aerodynamic experiments evaluated through spatial, structural and environmental perspectives. In parallel to aerodynamic studies through CFD simulation, investigations into advanced methods of digital production

techniques allow above to be explored from constructive principles, focusing on joints, fabrication and assembly techniques. Web: <http://aerostudio2013.wordpress.com>

'Constructing Performative Urban Environments' (10 ECTS course module), MA1Arch, AAU

The aim of the course is the construction and design of performative urban structures and environments. It explores the role of new technologies and their ability to develop performative urban structures, environments and designs in an integrated design process. The module presents theories of parametric design, cellular automata, material and structure in relation to theories of instant urbanism, cultural grafting and city life. The course will present concepts and the use of analogue and digital technologies related to performative urban spaces.

*Workshop (coordination, instructions and supervision)*

'Tectonics Beyond Technology' (3 ECTS), Utzon(x) Summer School 2013, MA.Arch, AAU

'Materials and Photovoltaic Cells' (2 days), MA2Arch, AAU

'Mass, Volume and Orientation' (3 days), MA2Arch, AAU

*Constructions in teaching*

'Tetraleaf Pavilion' Full-scale pavilion in plywood, MAArch, AAU

'Aero Pavilion 2013' Full-scale construction in plywood, BA4Arch, AAU

## 2012

*Lectures*

'Environmental Tectonics', MA2Arch, AAU

'Natural and Human made Ecologies', BA4Arch, AAU

*Supervision and Examination*

70 students, 'Parametric Urbanism', BA3Arch, AAU

4 student groups, 'Sustainable Architecture', MA2Arch, AAU

xx students, 'Internship in practice', MA3Arch, AAU

*Coordination (development and organisation)*

'Parametric Urbanism' (5 ECTS course module), BA3Urb, AAU

The aim of the course is the construction and design of performative urban structures and environments. It explores the role of new technologies and their ability to develop performative urban structures, environments and designs in an integrated design process. The module presents theories of parametric design, material and structure in relation to theories of instant urbanism, cultural grafting and city life. The course will present concepts and the use of analogue and digital technologies related to performative urban spaces.

'Sustainable Architecture' (20 ECTS project module), MA2Arch, AAU

*Workshop (coordination, instructions and supervision)*

'Kinematic Drawing Machines', BA3Art, AAU

'Materials and Photovoltaic Cells' (2 days), MA2Arch, AAU

'Mass, Volume and Orientation' (3 days), MA2Arch, AAU

## 2011

*Lectures*

'Kinetic Systems', BA4, AAU

'Responsive Architectural Systems', BA5DigitalArch, AAU

'Generative Architectural Systems', BA5DigitalArch, AAU

'Architectural Representation through History', BA3Arch, AAU

'Aerodynamic Architecture', BA4Arch, AAU

'Dynamic Architecture', MA.Arch, Oslo School of Architecture

'Adaptive Tectonic Architecture', MA1Arch, AAU

*Supervision and Examination*

6 students, 'Responsive Architectural Systems', BA5DigitalArch, AAU

6 students, 'Generative Architectural Systems', BA5DigitalArch, AAU

70 students, 'Aero Architectural Studio', BA4Arch, AAU

4 student groups, 'Minimalist Housing Design', BA3Arch, AAU

4 student groups, 'Office Building Design', BA6Arch, AAU

*Coordination (development and organisation)*

'Responsive Architectural Systems' (5 ECTS course module), BA5DigitalArch, AAU

The Responsive Architectural Studio investigates adaptive behaviour through continuous feedback between developed models and climatic data. It pursues questions of dynamic expressions and performances in architectural design and aims towards a readable relation between the built and the natural environment.

'Generative Architectural Systems' (5 ECTS course module), BA5DigitalArch, AAU

The Generative Architectural Studio introduces computer-based strategies for generative systems within an environmental oriented architectural framework. Programming skills are developed and inserted into a design methodology that investigates the organisation of a membrane connecting an existing building with the climatic environment.

'Aero Architectural Studio' (5 ECTS course module), BA4Arch, AAU

The studio is organised in a series of 5 phases emphasizing on the shaping, organisation and construction of architectural structures driven by aerodynamic experiments evaluated through spatial, structural and environmental perspectives. This resembles a morphogenetic procedure through looping experiments, observations, registrations and alterations focusing on air velocity, pressure zones, turbulence and material and spatial composition towards new aerodynamic architectural design solutions. In parallel investigations into advanced methods of digital production techniques allow above to be explored from constructive principles, focusing on joints, fabrication and assembly techniques. Web: <http://aerostudio.wordpress.com>

*Workshop (coordination, instructions and supervision)*

'Environmental Modulation' (2 days), MA2Arch, AAU

'Materials and Photovoltaic Cells' (2 days), MA2Arch, AAU

'Mass, Volume and Orientation' (3 days), MA2Arch, AAU

*Constructions in teaching*

'Aero Pavilion 2011' Full-scale pavilion in plywood, BA4Arch, AAU

## 2010

*Lectures*

'Responsive Architecture', MA.Arch, Workshop, AAU

'Design Thinking', MA1Arch, AAU

'Design Intelligence', MA1Arch, AAU

'Design Methods', MA1Arch, AAU

'Design Models', MA1Arch, AAU

'Performative Architecture', MA.Arch, University of Bologna

*Supervision and Examination*

90 students, 'Tectonic Studio', MA1Arch course module, AAU

5 student groups, 'Tectonic Architecture', MA1Arch, project module, AAU

*Coordination (development and organisation)*

'Tectonic Studio' (7 ECTS course module), MA1Arch course module, AAU

The studio is organised as an intensive 'laboratory' on aesthetic, theoretical, scientific and practical issues defining tectonics as a discourse within architecture. Teachings in tectonic terminology, its historical outline and key people within this approach are illustrated and discussed, while hands-on intensive workshops seek to link from theoretical descriptions, via taught methods to applied tectonic representations in built models and drawings. The design progression leads from systemic investigations to the formation of a pedestrian bridge. The tectonic approach within the studio is based upon the key terms material, joint, assembly, system, geometry, addition and formation. Web: <http://tectonicstudio.wordpress.com>

'Tectonic Architecture' (23 ECTS), MA1Arch, project module, AAU

## 2009

*Lecture*

'Form-finding in Architecture', MA1Arch., AAU

## 2008

*Lecture*

'Computational Sustainable Architecture', MA2Arch., AAU

*Workshop*

Paracloud parametric modeling, MA.Arch, AAU

2007

*Lecture*

'Computational Sustainable Architecture', MA2Arch., AAU

**2. Study administration: A list of any study administration tasks, e.g. study board membership, head of studies or semester or course coordinator, accreditation, etc.**

2016 – current

Member Board of Studies, Department for Architecture, Design and Media Technology

2015 – current

Coordinator of 1st semester project module in Tectonic Design, master program.

Coordinator of 1st semester course module in Acoustic Tectonics, master program

2013 – current

Coordinator of Utzon(x) Summer School, master program (open to non-AAU students)

2014

Coordinator of 3rd semester project module in Research by Design, master program

2013

Coordinator of 5th semester course module Aero Tectonic Studio, bachelor program

Coordinator of 1st semester course module Parametric Urbanism, master program

2012

Coordinator of 5th semester course module Parametric Urbanism, bachelor program

2011

Coordinator of 5th semester course module Responsive Architecture, bachelor program

Coordinator of 5th semester course module Generative Architecture, bachelor program

Coordinator of 4th semester course module Aero Architecture, bachelor program

2010

Coordinator of 1st semester course module Tectonic Studio, master program

Coordinator of 1st semester project module Tectonic Architecture, master program

**3. University pedagogy qualifications: A list of any completed courses in university pedagogy, PBL courses, workshops, academic development projects, collegial guidance and supervision, etc.**

Type your answer here...

**4. Other qualifications: Conference attendance, editorials, presentations, etc. relating to education, 'University Teaching Day', etc.**

Type your answer here...

**5. Teaching activity development and teaching materials: A list of any contributions to the development of new modules, teaching materials, study programmes, e-learning, collaboration with external business partners, etc.**

**5.1 New teaching modules**

2015'Acoustic Tectonic Studio' (5 ECTS course module), MA1Arch, AAU Collaboration with Keflico (material sponsor)

2015'Tectonic Architecture' (20 ECTS project module), MA1Arch, AAU

2013'Design Research' (30 ECTS project module), MA3Arch, AAU

2013'Aero Architectural Studio 2013' (5 ECTS course module), BA4Arch, AAU Collaboration with Keflico (material sponsor)

2013'Constructing Performative Urban Environments' (10 ECTS course module), MA1Arch 2012'Parametric Urbanism' (5 ECTS course module), BA3Arch, AAU

2011'Responsive Architectural Systems' (5 ECTS course module), BA5DigitalArch, AAU

2011 'Generative Architectural Systems' (5 ECTS course module), BA5DigitalArch, AAU  
2011 'Aero Architectural Studio 2011' (5 ECTS course module), BA4Arch, AAU Collaboration  
with Keflico (material sponsor)  
2010 'Tectonic Studio' (7 ECTS course module), MA1Arch course module, AAU

## 5.2 New teaching workshops

2014 'Bricks Beyond Technology' (3 ECTS), Utzon(x) Summer School 2014, MA.Arch, AAU  
Collaboration with Randers Tegl, Weber, Utzon Center  
2013 'Tectonics Beyond Technology' (3 ECTS), Utzon(x) Summer School 2013, MA.Arch, AAU  
Collaboration with Keflico, AKT II, 3XN Architects, Utzon Center  
2012 'Kinematic Drawing Machines' (2 days), BA3Art, AAU 2011 'Environmental Modulation'  
(2 days), MA2Arch, AAU  
2011 'Materials and Photovoltaic Cells' (2 days), MA2Arch, AAU  
2011 'Mass, Volume and Orientation' (3 days), MA2Arch, AAU  
2010 'Responsive Design' (5 days), MA.Arch, AAU Collaboration with Festo (sponsors of  
sensors, actuators, valves etc.)  
2008 'Paracloud parametric modeling' (2 days), MA.Arch, AAU

## 5.3 Analyses and Reports

'Post-analysis of student knowledge growth report'

Survey made to get deeper understanding of the MSc1Arch student's knowledge, competences and skills on the subjects, 'digital design' and 'design knowledge'. The basis for the survey was to find ways to improve the master programme towards thesis and bachelor programme towards master programme. The learning from the study was implemented into the 'IT Progression at A&D report 2015' submitted to the A&D Study Board.

'IT Progression at A&D report' (2015)

Further development of the IT Progression report (2011), but including the master programme. The report is also based on the direct feedback from students during teaching and by a survey among MSc1Arch students ('post-analysis of students knowledge growth'). The report concludes with written suggestions and graphs how to integrate digital and advanced computational tools and methods during the whole A&D education, particularly aimed at the architectural design branch.

'IT Progression at A&D report' (2011)

Development of an IT progression study at the A&D education to integrate digital tools and methods through the bachelor education. The document is based on a survey made to rank relevant design software for its pedagogical level, complexity to handle design tasks and when and how to integrate into education in relation to the specific curriculum at A&D. The report concludes with written suggestion, supported with a graph of when to integrate what digital tools and how many lectures that are required.

## 6. Teaching awards you may have received or been nominated for.

'Teacher of the year' (2010) Institute for Architecture & Design, Aalborg University

## 7. Personal reflections and initiatives: Here you may state any personal deliberations as regards teaching and supervision, any wishes and plans for further pedagogic development, plans for following up on feedback/evaluations from students, etc.

I teach because I enjoy the direct relation to like minded students and colleagues, to discuss openly the field of architecture and to advance, as a community, architectures capacities to increase the quality of life for humans. I teach through an integrative approach, both in terms of knowledge and pedagogics. All teaching is based on integrated architectural design processes (IDP), which operate on cross-disciplinary methods, often involving the making of full-scale prototypes. This approach (of making) I believe to increase the focus on both solution- and problem-solving at the same time (co-evolution), advancing the iterative process towards better design proposals.

And, all teaching (lectures, workshops, summer schools, pin-up sessions, supervision and making) is based on the idea of a dialogue, rather than a monologue. The latter, however, should not be understood as an idea that 'everything goes'. Rather, it invites personal perspectives and critique of all aspects during teaching.

Commonly, I organize teaching in intensive 'modules' that are situated in a line of progression. This means specified and focused design tasks that are based upon a selected design method, a limited set of materials and restricted functional requirements. It trains the students to critically select and apply design aspects that will have the largest positive impact on a design problem. It follows, often, the idea of applying 'primary-generators' (Darke, 1978), which are a single of a few specified drivers that co-evolve the design from concept to application. Following these design processes, students are intended to gradually understand and integrate more aspects, yet, focus is maintained on a few central aspects to maintain clarity and consistency within the design proposition.

**8. Any other information or comments.**

Type your answer here...