

Course PM, ARK641, Master's thesis preparation course 3p

Autumn semester, 2020

Building Design for Sustainability



Collage of selected recent Master thesis in 'Building Design for Sustainability'. Students focused on a large variety of themes and chose very different scales, from urban regeneration to building detail. Some of the thesis had a theoretical focus and were generic, others very practical and site specific.

This course will be a digital course.

Course description and aim

The purpose of the course is for the students to develop and finalize their project plan.

The course prepares the students for their master's thesis under the guidance of assigned examiner(s) and supervisor(s). It explores specific theories and/or design methods associated with a particular niche of architecture and urban design.

It trains the students' ability to use design studies, precedent studies, context studies, material studies and/or theoretical texts as a basis for formulating a design problem and/or research query.

Department of Architecture and Civil Engineering

Chalmers tekniska högskola
412 96 Göteborg
Webb: www.chalmers.se/arch



Description of direction

Keywords: resources, climate change, circular design, environment, Anthropocene, resilience, building for adaptability, global-local, renewables, low-impact design, systems thinking, transformation, biophilic design, opposing greenwash, learning from the vernacular, empowerment, paradigm change, role of aesthetics for transition, self-initiated architecture

Humanity stands in front of its largest challenge, to mitigate and stabilise the on-going climate change and environmental pollution and simultaneously prepare for its already visible consequences. Radical changes are needed in the way we envision, plan, design and use the built environment. The challenges for architects are exponential, we need to be prepared to become meaningful drivers for change by using of design thinking to create visions, structures and strategies as well as finding new narratives – a new story for human species.

We welcome and strongly support master thesis which wish to contribute to the urgent transitions towards a sustainable future. In this direction, you can explore the design of new buildings or interventions as well as transformation of existing built environments as a means to support sustainable development and with the ambition to create values for humans and nature. A specific aim is to contribute with knowledge about how architectural design, space, form, aesthetics, tectonics and materiality as well as cultural identity can support long-term sustainable development.

Areas we encourage are circular design, low-impact design, resilience, sustainable and local materials, building transformation, and socio-material relationships of the built environment. Knowledge building tradition includes theories related to sustainability of the built environment such as regenerative design, resilience, cradle-to-cradle, circularity, sharing economy based on life cycle thinking, systems thinking, co-creation of knowledge, visualisation and dialogue, (spatial) narratives, questionnaires and interviews.

The direction emphasises the exchange between scientific and design research and collaboration with stakeholders in industry, the public sector and the civil society. Master thesis can range from theoretical explorations to speculative design and co-creation; and they can take advantage of on-going research projects and partner networks from all over the world.

Method & Process**Presentation with discussion of Building Design for Sustainability**

- 31 August, 14:15 – 15:00

Content and structure

- 17 September, 09.00-17.00, lecture and presentation
 - The teacher gives a short lecture
 - The students present their proposals and get feedback (15 minutes per student)

Department of Architecture and Civil Engineering

Chalmers tekniska högskola
412 96 Göteborg
Webb: www.chalmers.se/arch



- Ideas, background and relevance to direction and get feedback

The following further dates are relevant for the course:

- 06th of October, 09.00-17.00, lecture and presentation
 - The teacher gives a short lecture
 - The students present their proposals and get feedback
- 13th of October, 09.00-16.00, Individual work
- 20th of October, 09.00-16.00, Individual work
- 10th of November, deadline 09.00. hand-in for mid-critic on Canvas
- 10th of November, mid-critic
 - The students present their project plan and receives feedback based on the presentation
- 17th of November, 09.00-16.00, Individual work
- 17th of November, deadline 17.00, Hand in project plan
- 24th of November 09.00-16.00, Final presentation and feedback
 - The examiners have read the project plan and gives feedback
- 8th of December, deadline 12.00, final hand-in for the course on Canvas
- 8th of December, deadline 12.00, final hand-in for initiating the MT term
 - Deliver final project plan and registration form
 - There will be a folder in the reception on the 3rd floor
- 12th of January, deadline 12.00, Deliver a final project plan for the exhibition
 - Starting the master's thesis term
 - There will be a folder in the reception on the 3rd floor

Submission requirements

We use Canvas course page for all our deliverances. As the course only has one Canvas page, please make sure you are uploading to the right thesis direction.

Specific requirements to be included in Project Plan at Urban Challenges:

formal requirements for the project plan:

- on the cover: date, name of student, course name, tutors
- max 8 pages of A4 (excluding cover)

content requirements for the project plan:

1. abstract (max 300 words)
2. problem statement, motivation
3. background, aim, goals
4. delimitations
5. research questions,
6. methods and approaches
7. theoretical framework, background, connecting research done in the field, reference projects
8. expected outcome and expected impact
9. audience, who is the thesis for?

Department of Architecture and Civil Engineering

Chalmers tekniska högskola
412 96 Göteborg
Webb: www.chalmers.se/arch



10. short "CV" - works and projects done previously, courses taken on master level, relevant skills needed to carry out the project and compared to the ones that the student already possesses (max. 1 page)

Evaluation criteria's

Grading: Approved/not approved

The evaluation foremost considers the level of comprehension of the project plan. Furthermore, the participation in the feedback sessions (both within the student groups and with the teachers) will be included.

Literature

- Ellen MacArthur Foundation (2015). *Delivering the Circular Economy: A Toolkit for Policymakers*. Cowes, UK.
https://www.ellenmacarthurfoundation.org/assets/downloads/publications/EllenMacArthurFoundation_PolicymakerToolkit.pdf
- Gorgolewski, M. (2018). *Resource Salvation: the Architecture of Reuse*. Hoboken, NJ : John Wiley & Sons, Inc., 2018.
- Francart, N., Malmqvist, T., & Hagbert, P. (2018). 'Climate target fulfilment in scenarios for a sustainable Swedish built environment beyond growth', *Futures*, 98: 1–18. Elsevier.
- Du Plessis, C., & Brandon, P. (2015). 'An ecological worldview as basis for a regenerative sustainability paradigm for the built environment', *Journal of Cleaner Production*, 109: 53–61.
- Raworth, K. (2012). 'A safe and just space for humanity: can we live within the doughnut', *Oxfam Policy and Practice: Climate Change and Resilience*, 8/1: 1–26.
- Robinson, J. (2004). 'Squaring the circle? Some thoughts on the idea of sustainable development', *Ecological Economics*, 48/4: 369–84. DOI: <http://dx.doi.org/10.1016/j.ecolecon.2003.10.017>
- Thorpe, A. (2010). 'Design's role in sustainable consumption', *Design Issues*, 26/2: 3–16. MIT Press.
- Sveriges Arkitekter (2020) Vägen framåt: Handlingsplan för hur arkitekter kan bidra i omställningen till ett ekologiskt hållbart samhällsbyggande.
- Janda, K. B. (2011). Buildings don't use energy: people do. *Architectural science review*, 54(1), 15-22. IPCC report: <https://www.ipcc.ch/report/ar6/wg1/>
- Voraakhom, Kotchakorn 2018, "How to transform sinking cities into landscapes that fight floods" https://www.ted.com/talk/kotchakorn_voraakhom_how_to_transform_sinking_cities_into_landscapes_that_fight_floods
- Häkkinen, T., & Belloni, K. (2011). Barriers and drivers for sustainable building. *Building Research and Information*, 39(3), 239–255. <https://doi.org/10.1080/09613218.2011.561948>
- Szokolay S. (2014) *Introduction to architectural science – the basis of sustainable design*. Architectural press. Elsevier.

Faculty

Walter Unterrainer, Paula Femenías, Liane Thuvander, Krystyna Pietrzyk, Anita Ollár, Janneke van der Leer

Department of Architecture and Civil Engineering

Chalmers tekniska högskola
412 96 Göteborg
Webb: www.chalmers.se/arch

