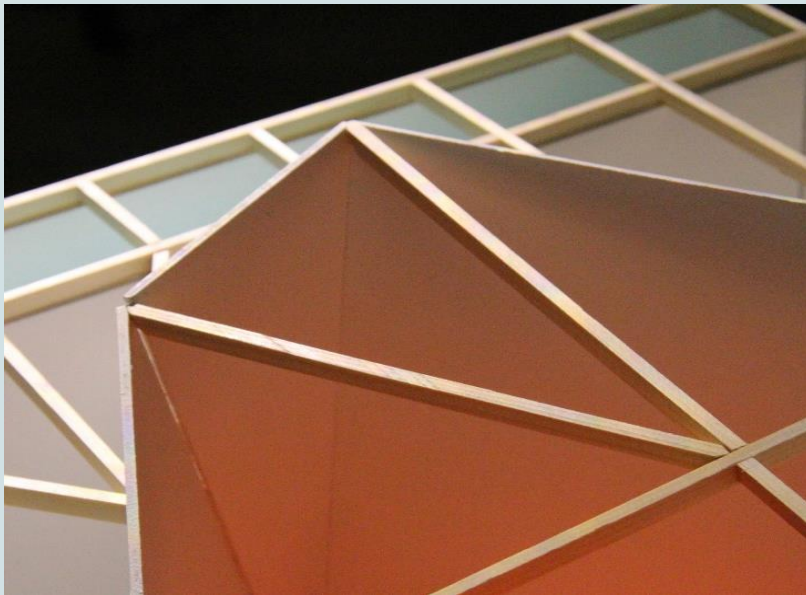
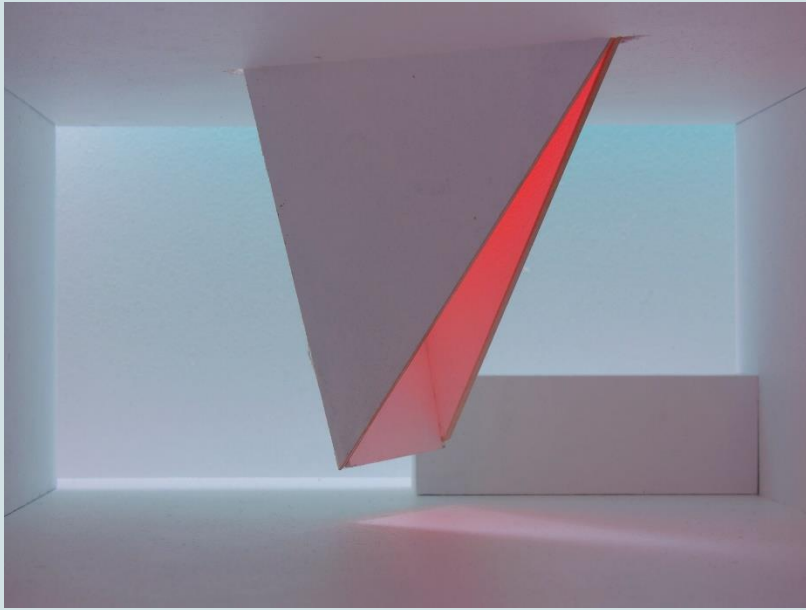


AAR4620 Architectural Design with Light and Colour Autumn 2023



## Information

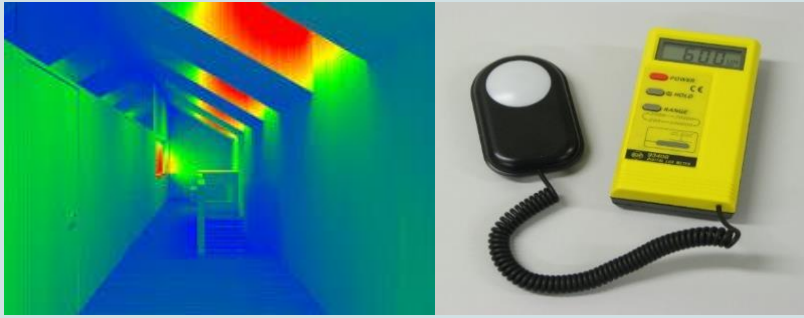
Design Course: **15 credits**  
Responsible teacher: **Kine Angelo**  
Number of students: **18**

Language  
**English / Norwegian**

Time frame – week 34 to 50

**Start: Monday 21<sup>nd</sup> of August**  
**End: Friday 15<sup>th</sup> of December**

Excursion  
**Oslo + Fredrikstad**



## Course content

The course will have specific focus on the effects of light and colour in an architectural context; light in interiors and colours in interiors and exteriors.



## Methods and tools

Seminars, lectures, workshops and practice. Full scale modelling in Roomlab and scale modelling in Daylight Lab.

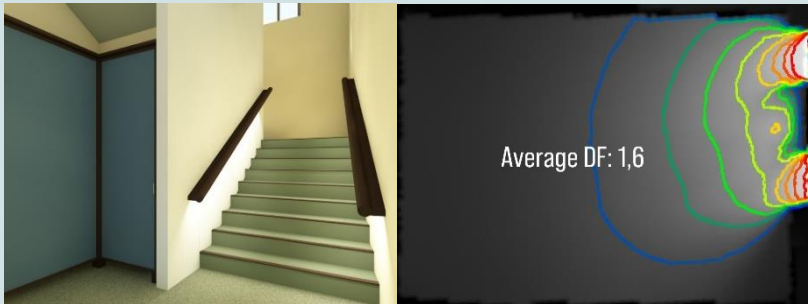


Example of tools available at the course: Roomlab, Daylight lab, Velux visualizer, lux meters, luminance meter, colorimeters and colour reference systems, for example NCS and RAL.



## Learning outcome

- Knowledge in architectural design of architectural space with focus on the coherence between shape, function, colour, natural and artificial light.
- Skills in design methods of light distribution in room with the help of scale models and digital tools, and preparation of colour outlines based on function and aesthetics.
- General competence in architectural design.



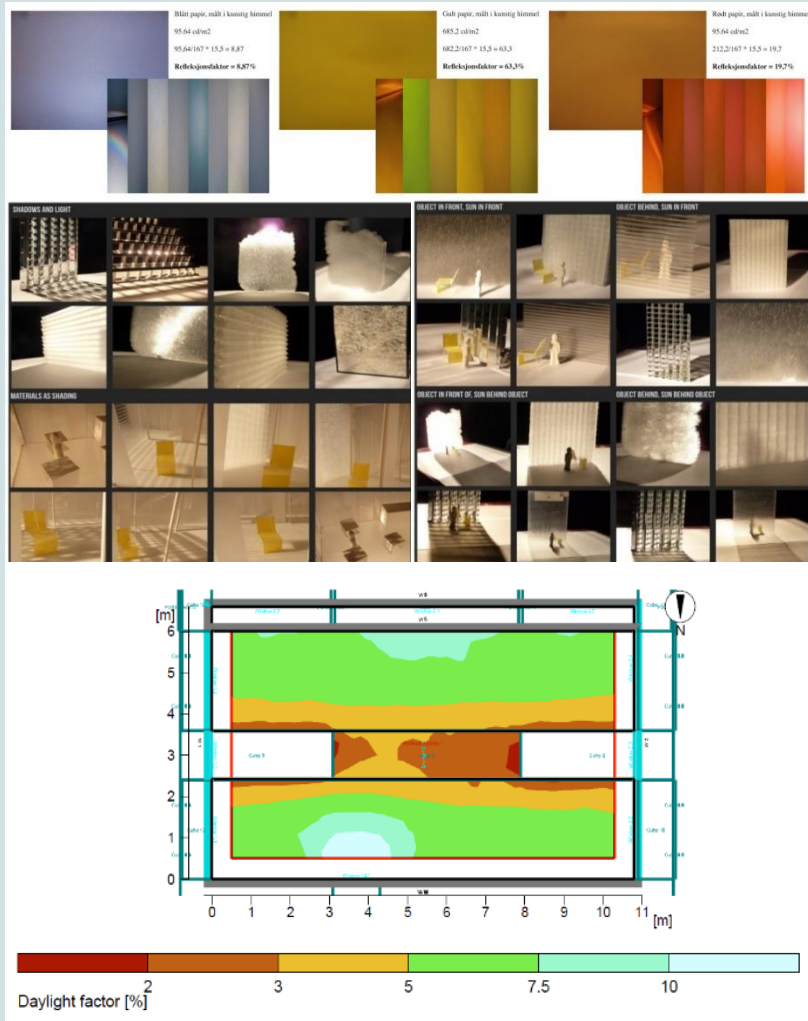
# AAR4850 Light and Lighting

The Design Course requires participation in the Theory Course Light and Lighting (7.5 cr)

Key words

Human visual perception, photometric laws and rules, daylight as a light source and daylighting design, monitoring and evaluation, lighting design, natural light, qualitative and quantitative evaluation of the visual environment in buildings.

Links to course description on NTNU website:



Norwegian: <https://www.ntnu.no/studier/emner/AAR4850#tab=omEmnet>

English: <https://www.ntnu.edu/studies/courses/AAR4850#tab=omEmnet>



## Assignments

Students will be working on three assignments:

- Exhibition
- Vertical Transparency
- Materialized Space



The first assignment consist of design and construction of an exhibition space in full-scale in Room laboratory, and vertical light in architecture will be studied in the second assignment.

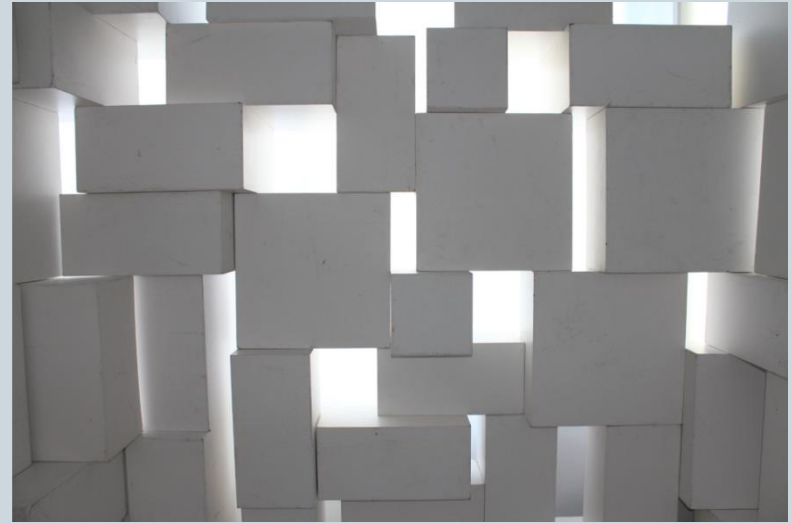
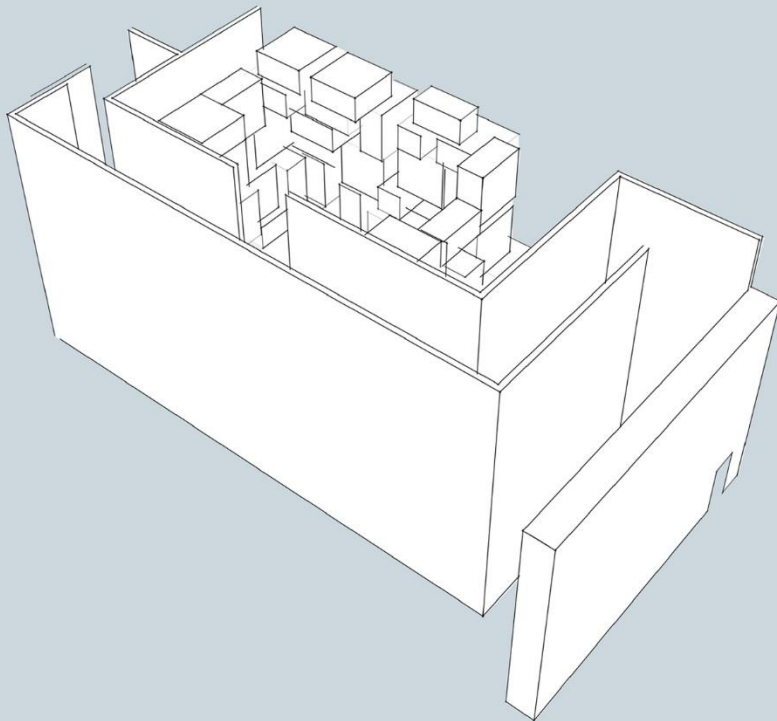
The final assignment varies to reflect and respond to contemporary architectural challenges. This year we will focus on an infill project in Oslo.

# Assignment 1

## Exhibition

Exhibition assignment in Roomlab

Full scale (1:1)





Daylight







Artificial light



Light, space and object

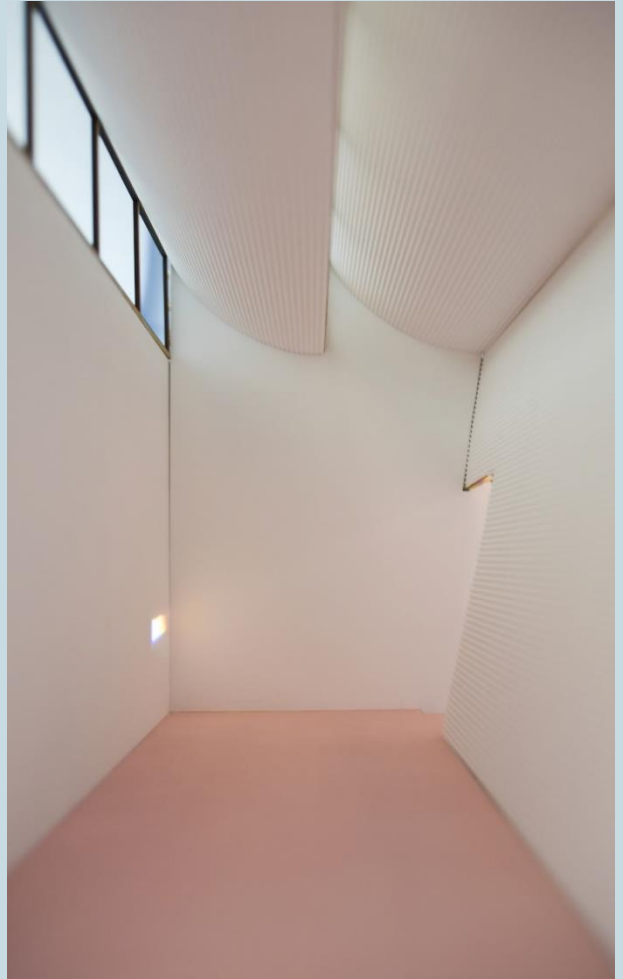
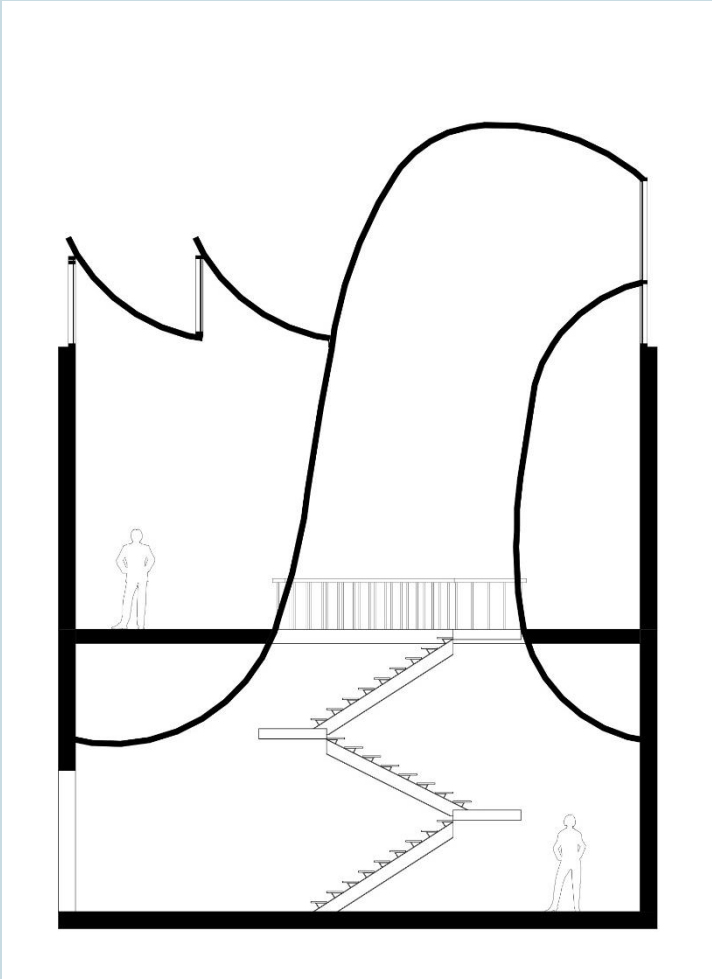
## Assignment 2

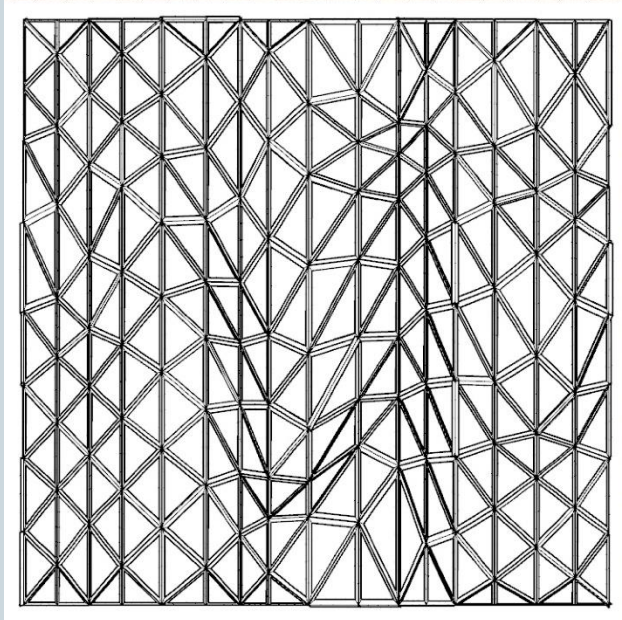
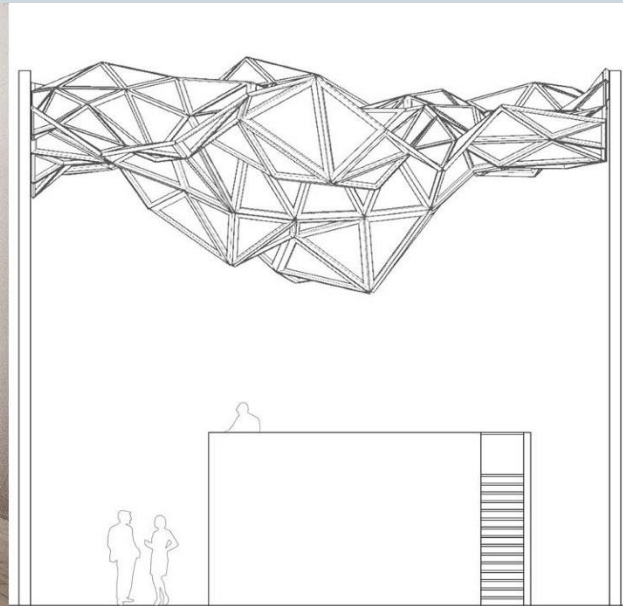
# Vertical Transparency

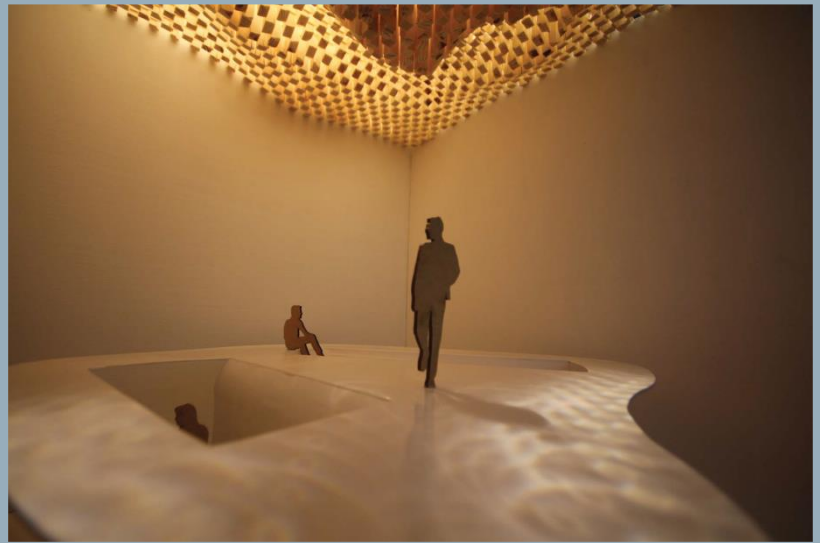
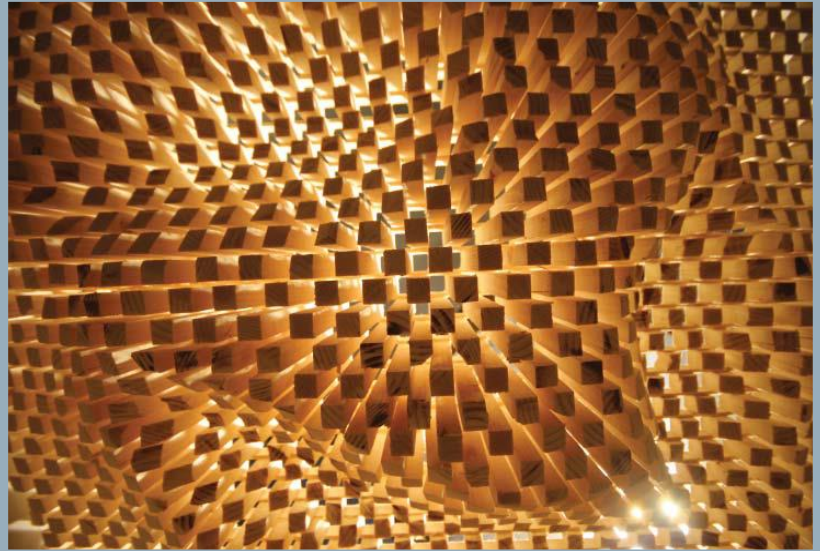
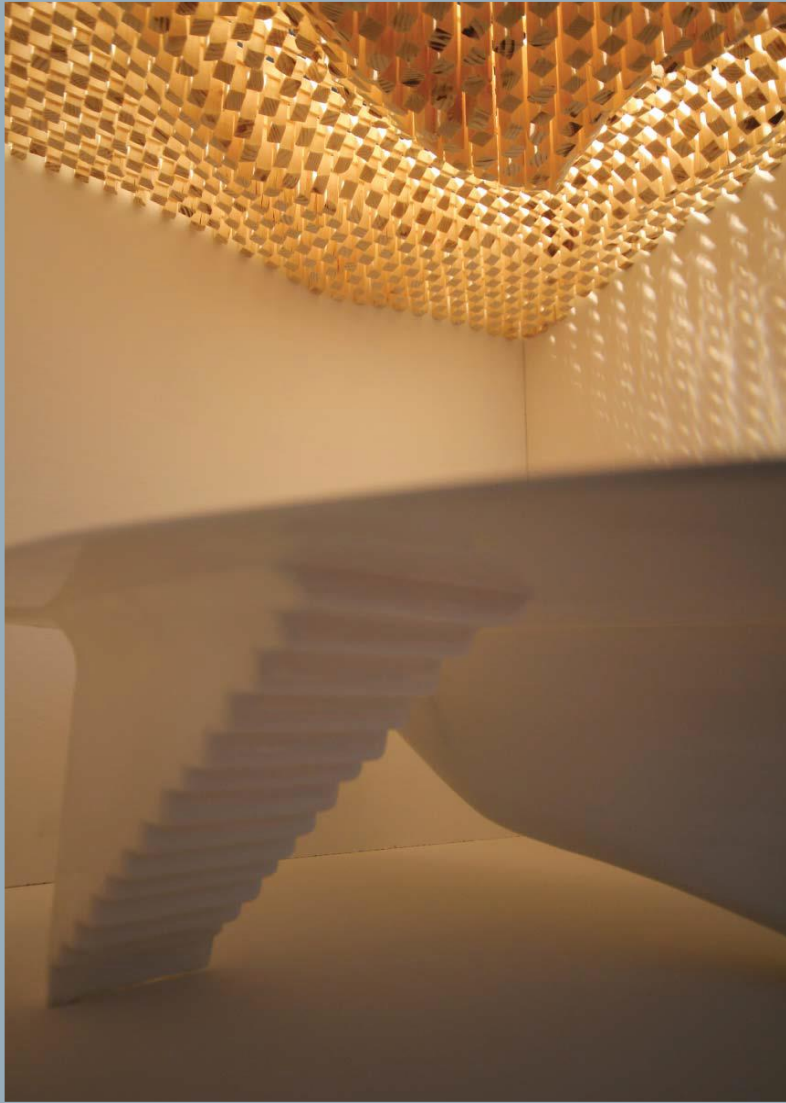
Simple program for workshops  
in Daylight Lab

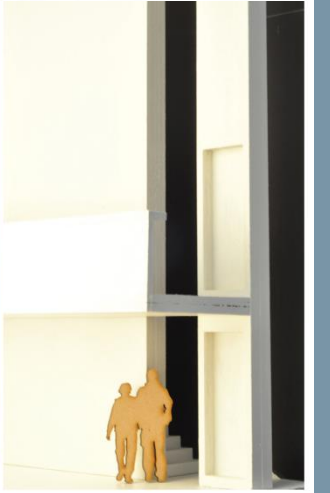
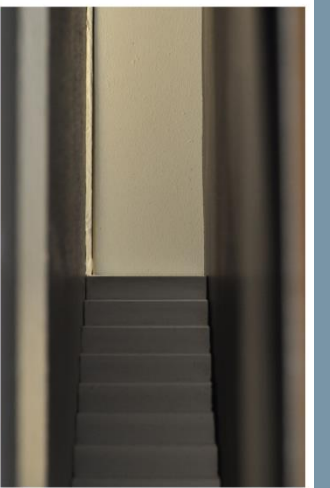
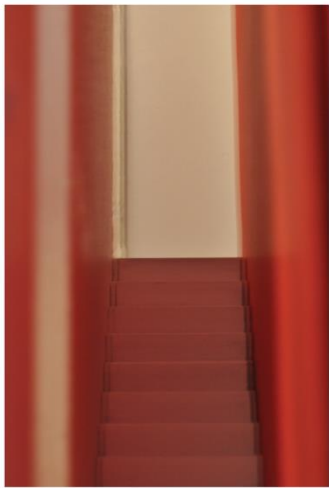
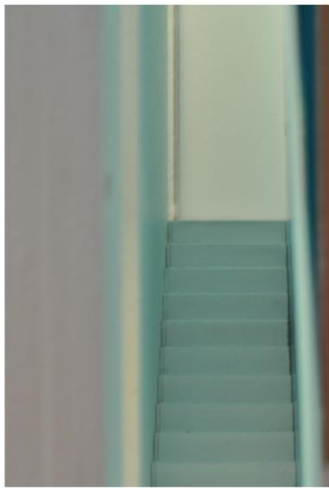
Models in scale 1:20









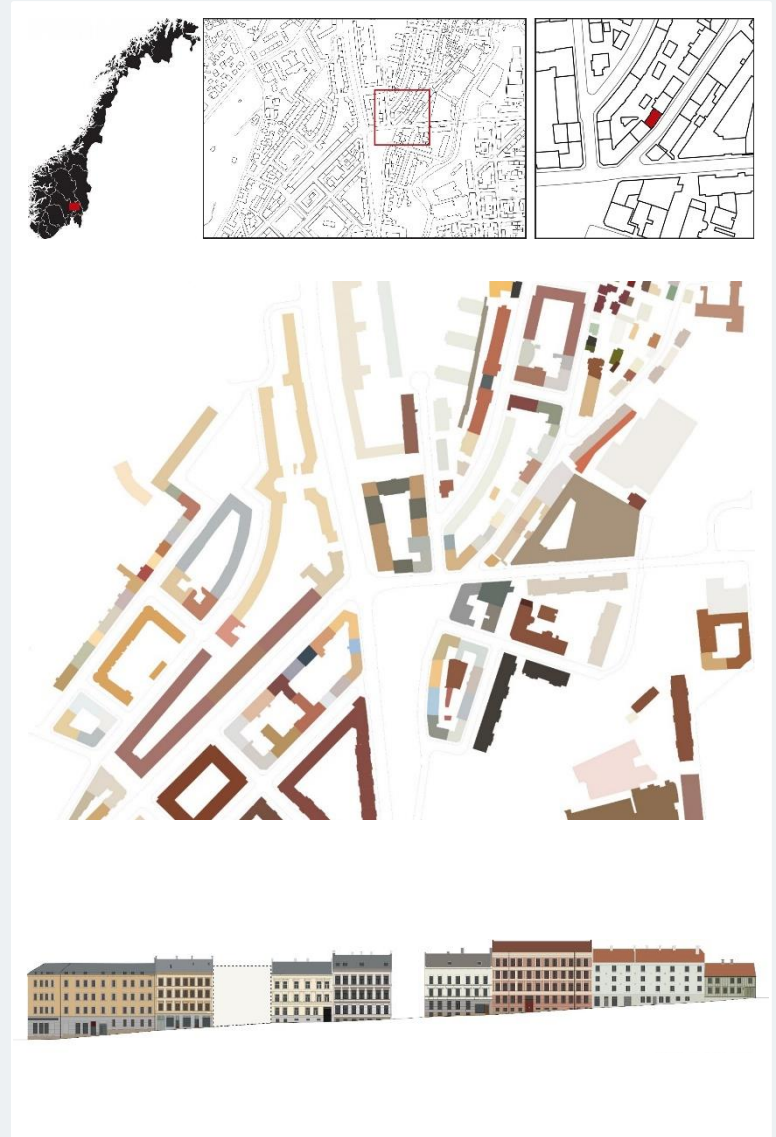


## Assignment 3

# Materialised Space

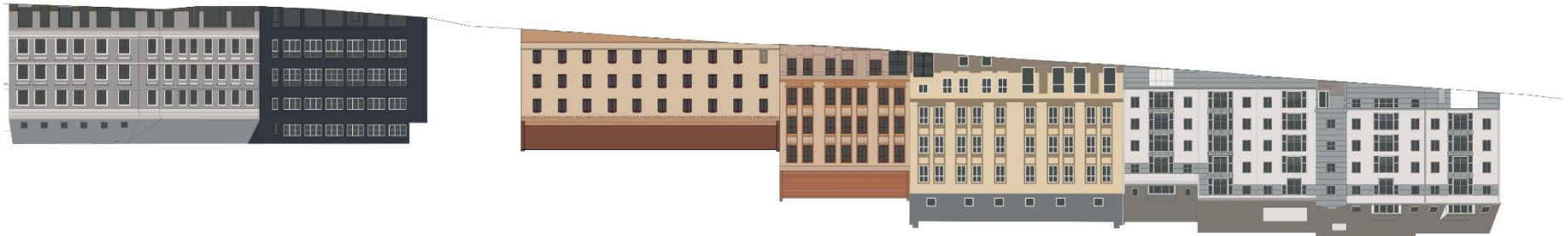
Simple room program utilising light in interiors and colour in interiors and exteriors.

The assignment will have a specific focus on the impact on spatial and aesthetic quality in an urban context.





# Infill project



# Registrations and analysis of context

## History and context



Foto 1964



Foto 1989



Foto 2013



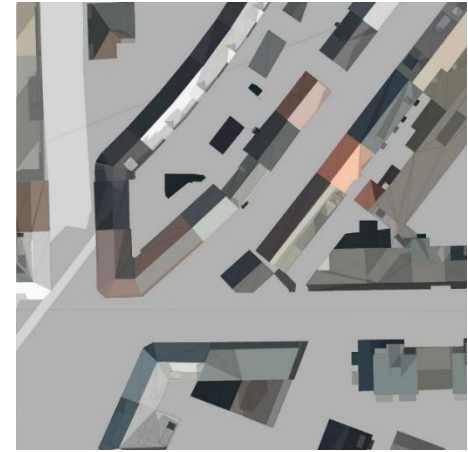
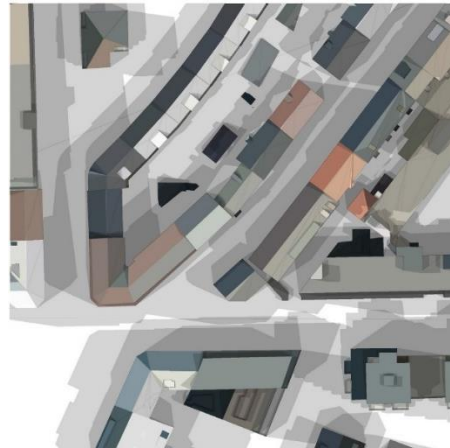
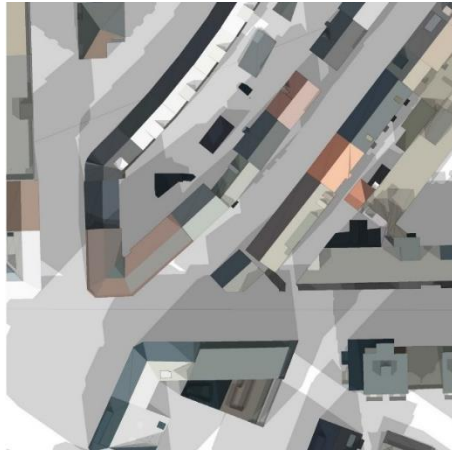
Foto 2013



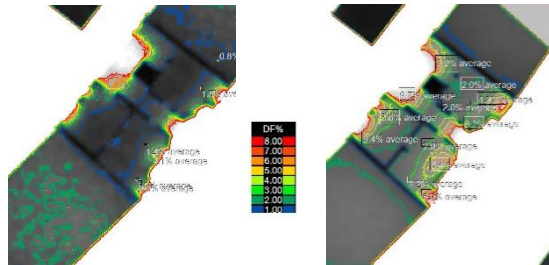
# Registrations and analysis of context



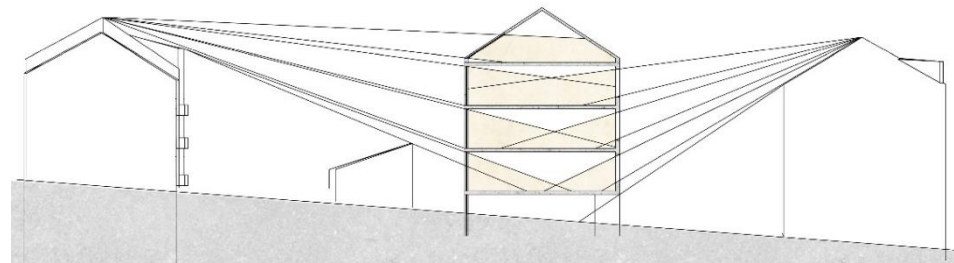
# Light situation



Shadowmap



Daylight Factor



No-Sky-Line

# Registrations and analysis of colours

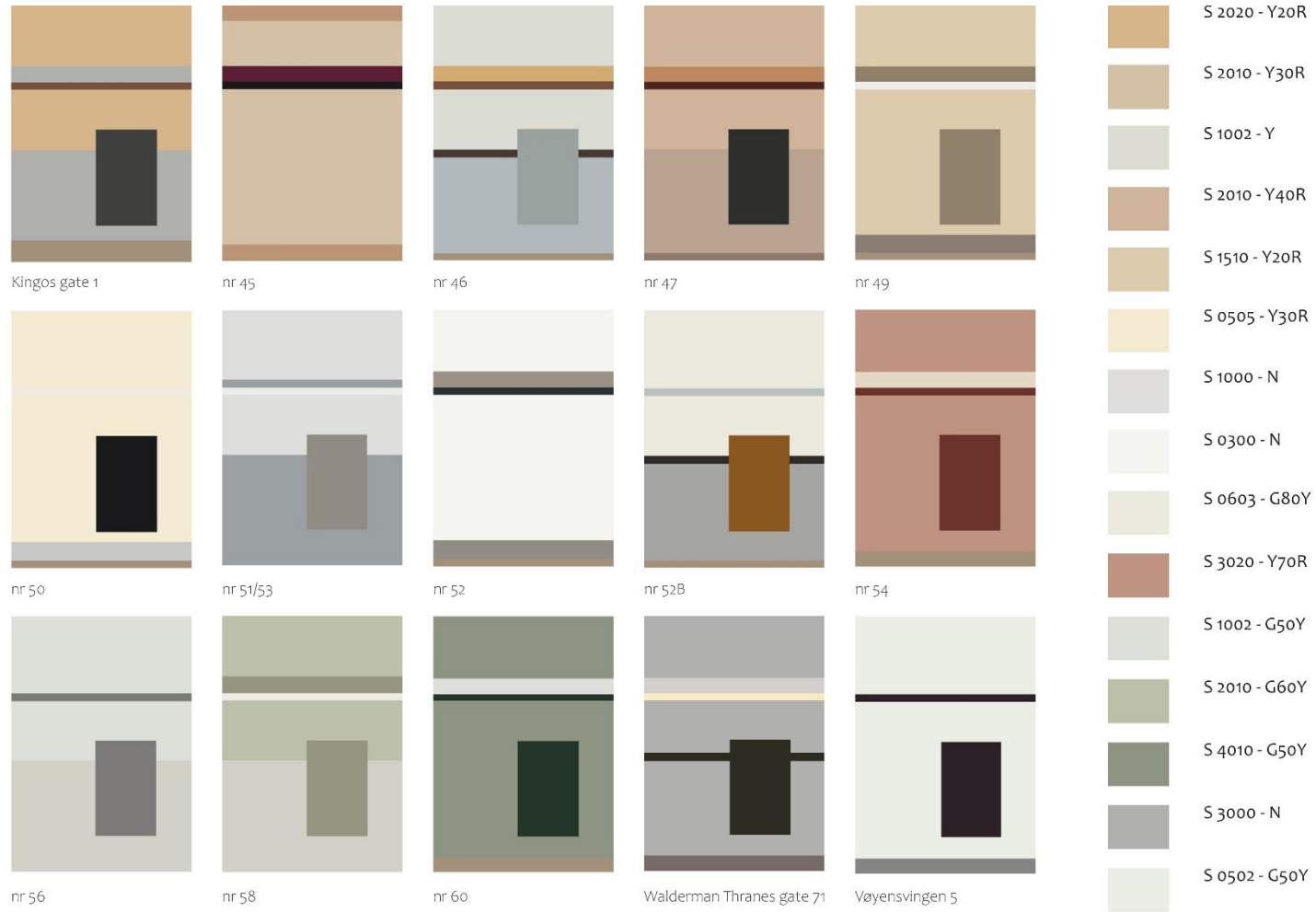


BLACKNESS (JPLK60)	CHROMA (JPLK60)	Green 80% Yellow 40% (PLK)	S 06 03 - G40Y
BLACKNESS (JPLK60)	CHROMA (JPLK60)	Yellow 65% Red 40% (PLK)	S 20 05 - Y40R
BLACKNESS (JPLK60)	CHROMA (JPLK60)	Yellow 65% Red 40% (PLK)	S 30 10 - Y40R
BLACKNESS (JPLK60)	CHROMA (JPLK60)	Red 100% Blue 0% (PLK)	S 20 20 - R
BLACKNESS (JPLK60)	CHROMA (JPLK60)	Red 100% Blue 0% (PLK)	S 30 30 - R

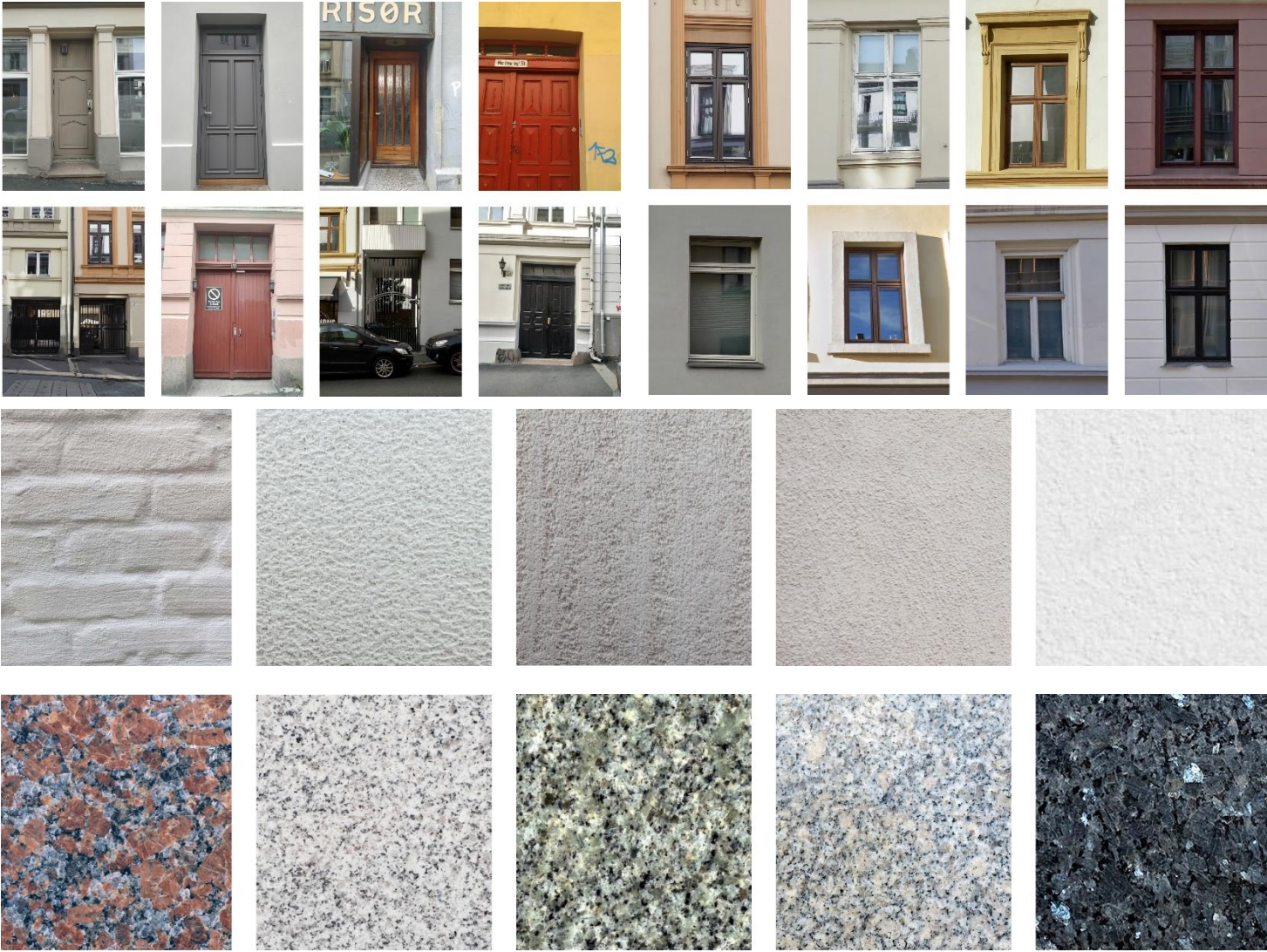


S 3005-Y20R	S 4020-Y30R	S 1020-Y20R	S 1505-Y30R	S 2502-R	S 1002-G
S 3040-Y70R	S 1015-Y	S 0510-G90Y	S 1015-G80Y	S 2002-G50Y	S 1100-G50Y
S 5010-G50Y	S 1005-Y60R	S 2050-Y70R	S 4040-Y80R	S 1515-Y20R	S 6005-G80Y
S 7005-R50R	S 5020-Y70R	S 0102-G90Y	S 1020-Y10R	S 2010-Y40R	S 1515-Y10R
S 0520-Y20R	S 4010-G50Y	S 2005-Y40R	S 5010-G90Y	S 2010-Y30R	S 1000-N
S 4005-Y80R	S 1015-Y40R	S 3502-R	S 1500-N	S 3030-Y70R	S 0510-Y
S 4030-Y70R	S 1510-Y10R	S 1010-Y40R	S 0505-Y	S 1020-Y20R	S 3010-Y80R
S 2002-Y	S 2020-Y20R	S 4020-Y80R	S 1010-Y30R	S 4005-Y20R	S 4005-Y50R
S 6010-R50B	S 4010-Y10R	S 3030-Y40R	S 0500-N	S 1015-Y20R	S 2010-Y50R
S 1515-Y30R	S 2020-Y70R	S 3040-Y60R	S 2010-Y	S 2020-G50Y	S 0502-Y80R

# Registrations and analysis of colours of context



# Studies of material and building elements



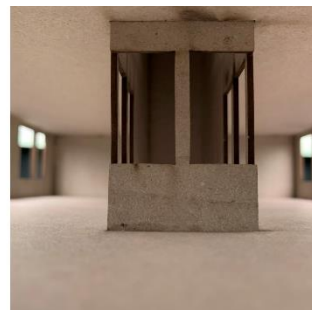
# Light in interiors



1. etasje uten overlys



2. etasje uten overlys



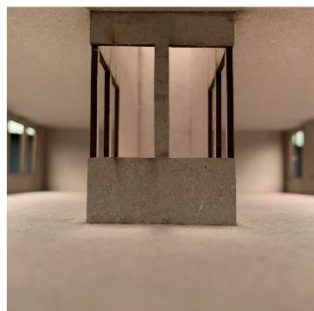
3. etasje uten overlys



4. etasje uten overlys



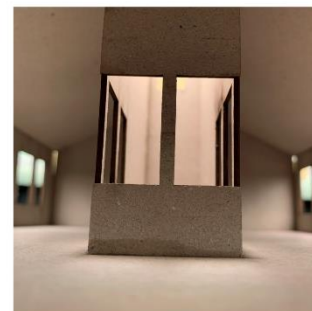
1. etasje med overlys



2. etasje med overlys



3. etasje med overlys



4. etasje med overlys



# Colour in interiors



# Colour and universal design





## Testing spatial dimensions and qualities in Roomlab





Experimenting with colour and material qualities



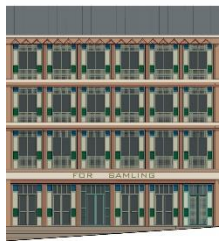
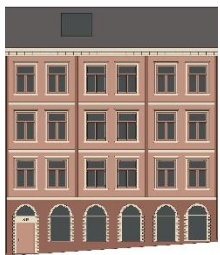
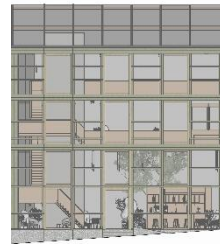
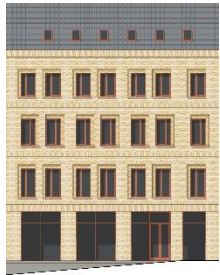
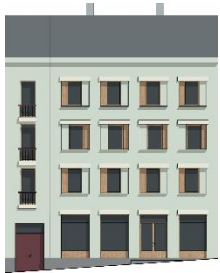
# Infill project – final proposal





One site – different proposals







Excursion to Oslo + Fredrikstad – *not mandatory*





# Example of plug-in workshops

The collage features a central book cover on the left and a grid of workshop photos on the right. The book cover includes the title 'MILJØMAL AS' in gold, the subtitle 'Fargehandel og Bygningsvernbutikk', a photograph of a pink house, and the logo for 'Wibo ÄKTA LINOLJEFÄRG' with the tagline 'Tradisjon for fremtiden'. Contact information is provided at the bottom of the cover. The workshop photos show participants engaged in various tasks: examining color swatches, mixing paint in a workshop, and working with materials.

**MILJØMAL AS**  
*Fargehandel og Bygningsvernbutikk*







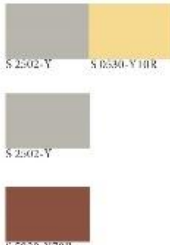

Kulturhistorisk Fargekart

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E-mail: post@miljomal.as • Tlf: +47 994 82 244  
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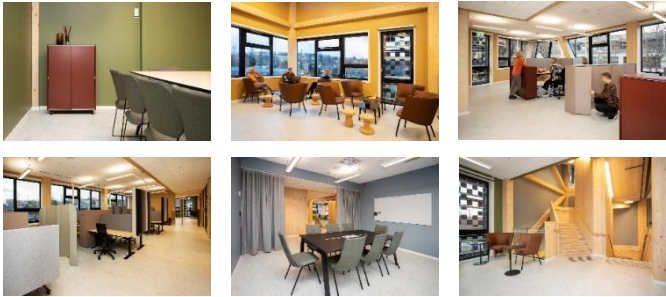
Paint collection for Miljømal (published 2022)

# Example of plug-in workshops

 <p>S5030-Y90R</p>	 <p>S 2030-Y10R S 2005-Y20R</p>	 <p>S 1005-Y30R S 1002-Y50R S 3010-Y</p>	
 <p>1500-N 0500-N S 9005-R30R S 4030-Y80R</p>	 <p>S 3050-Y20R S 0502-Y50R S 1502-G50Y S 4000-N S 6020-B10G S 3040-Y20R S 1010-Y20R S 0402-Y50R S 0900-N S 4502-Y S 4030-Y30R</p>	 <p>S 0503-Y S 5030-Y90R S 2502-Y S 4020-Y20R S 0502-Y S 6030-Y80R S 2050-Y30R S 0502-Y S 3005-Y20R S 2010-Y30R</p>	
 <p>S 1002-Y50R S 2030-Y90R</p>	 <p>S 4500-N S 0002-Y50R S 5500-N S 3000-N S 0300-N S 4030-Y30R S 0603-G80Y S 5502-Y</p>	 <p>S 0300-N S 2005-G30Y S 4040-Y80R S 3502-R S 2010-Y20R</p>	
 <p>S 0505-G80Y S 0500-N</p>	 <p>S 2502-Y S 0530-Y10R S 2502-Y S 5030-Y70R</p>	 <p>S 3005-R80R S 1002-Y50R S 5030-Y90R</p>	

Facade colours for client (realised 2019)

# Example of plug-in workshops



Interior colours for ZEB (realised 2020)

# Contact info

Kine Angelo: [kine.angelo@ntnu.no](mailto:kine.angelo@ntnu.no)

Barbara Matusiak: [barbara.matusiak@ntnu.no](mailto:barbara.matusiak@ntnu.no)



## KEY WORDS

Natural and artificial light, facade design, visual perception, daylight factor, materials, view, contrast, room sequence, spatial quality, colour reference systems, texture, registration and analysis methodology.

