

# Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



## Graduation Plan: All tracks

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Maria Natalia Aloupi
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Studio	
Name / Theme	Climate design
Teachers / tutors	Marcel Bilow, Truus Hordijk
Argumentation of choice of the studio	Climate design should be incorporated in every structure. Indoor environment is one of the most important aspects that should be taken into account when designing a structure. Sunlight in particular is a very interesting factor which should be controlled in order to provide healthy and pleasant indoor climate conditions.

Graduation project	
Title of the graduation project	Development of an adaptive shading system based on analysis of previous study cases.
Goal	
Location:	Athens
The posed problem,	Solar light and heat caused by incoming daylight are highly effective parameters of indoor climate and they affect both the energy needs and the comfort of the user. Thus, controlling these aspects seems essential. In order to obtain a "nearly zero-energy" buildings and achieve the optimum indoor comfort, the most suitable solar control system must be selected. There are many different designs, with various performances and efficiencies. In addition, the factors that should be taken into account are a lot, with the most important being the location and the orientation of the building, the outdoor climate and the user's profile.
research questions and	Which adaptation mechanism contributes more to the lighting performance of a sun shading system in office buildings?

design assignment in which these result.	Solar Shading System
<b>Process</b>	
<b>Method description</b>	
<p>The theoretical part of this graduation project focuses on sunlight and its interaction with humans. Books and scientific papers were studied in order to comprehend the characteristics of sunlight and how it affects indoor environments. By focusing on indoor light requirements and individual's visual comfort, the basic design requirements could be formulated. The requirements of daylight in office buildings were studied in detail, making the requested characteristics of a solar control system even more specific. Last but not least, the analysis of Bucky lab projects and existing solar control systems enabled the evaluation of basic solar control principles and consisted inspiration for the graduation design.</p> <p>After completing literature analysis, the first designs will be developed. Using computer simulation programs and models for real-time measurements, the designs will be evaluated and the most efficient one will be chosen. Further drawings and details will be made along its optimization with the aim being the final graduation product.</p>	
<b>Literature and general practical preference</b>	
<p>Books and papers focusing on theory about sunlight, daylight and solar shading systems. Previous Bucky lab student projects and existing shading systems in buildings as study cases.</p> <p>Real-time measurements with physical models (scaled photometric model and/or Lightvan)</p>	
<b>Reflection</b>	
<b>Relevance</b>	
<p>Daylight has a huge influence in indoor environments, affecting both thermal and visual comfort, as well as energy consumption. An efficient solar shading system contributes in energy saving, enabling design of zero energy buildings while it results in achieving the optimum indoor spaces for individuals.</p>	
<b>Time planning</b>	

