

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

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

Personal information		
Name	Aleksandra Michalik	
Student number	6078087	
Studio		
Name / Theme	Complex Projects – Bodies & Building Milan	
Main mentor	Hrvoje Šmidihen Martin Grech	Architecture Architecture
Second mentor	Joost Woertman	Architectural Engineering
Argumentation of choice of the studio	<p>The Complex Projects graduation studio offers a rigorous and process-driven approach to tackling complex architectural challenges. The opportunity to design a functionally specific, large-scale building in Milan – such as a hospital, a courthouse or an airport, aligns perfectly with my interests in working on intricate and demanding typologies. I am eager to explore how evidence-based and human-centered design can shape environments that effectively respond to evolving user needs, technological advancements, and urban contexts.</p> <p>This studio provides an excellent platform for me to enhance my ability to process and organize large volumes of data meaningfully. As buildings grow more complex and multifaceted, I am excited to develop solutions that balance functionality, efficiency, and user experience through a research-driven approach.</p> <p>Additionally, the studio's emphasis on understanding a building at various scales—from its global relevance to its material details—will allow me to deepen my analytical and design skills. I am particularly drawn to the user-focused approach, which considers comfort, safety, and movement within the built environment. This aligns with my design philosophy, which prioritises creating efficient and responsive spaces for the people who use them.</p> <p>Ultimately, I see this studio as an opportunity to challenge myself with a complex typology that fascinates me, while also gaining valuable experience in translating research into a clear and actionable design strategy.</p>	

Graduation project

Title of the graduation project	Staff-Centric: Navigating Care	
Goal		
Location:	Milan	
The posed problem	<p>The design of healthcare facilities has advanced with the primary focus being enhancing patient care and their recovery. With that priority being relevant and equally as important, it led to overshadowing the needs of healthcare staff. The system aims to reduce the amount of time patients spend in treatment facilities as much as possible and, as a result, the disproportion of hours spent in hospitals by medical staff compared to patients becomes even greater. In addition to that, this approach often fails to address the physical, mental, and social needs of healthcare staff who experience heightened stress, physical strain, and burnout within these same environments. The fast-paced and demanding nature of healthcare requires employees to remain attentive and resilient, yet they are often provided limited support spaces for recuperation during shifts. There is a large number of articles and studies that can be found, regarding nurses in Italy struggling with anxiety, depression and other mental and physical illnesses, due to the work overload and the great restraint it has on them. While it needs to be said that there are plenty of systemic issues that should be fixed, there are architectural ways in which their working condition can be fixed. Nurses must walk huge distances in the facilities while caring for patients. All these aspects negatively affect the medical team’s well-being and contribute to healthcare quality. We must ask ourselves - who should we design the medical facilities for?</p>	
research questions and	How can hospital design positively influence staff well-being?	

design assignment in which these results.

A clinic located in Via Quadronno 29 in Milan, in place of the existing building: Clinica La Madonnina, that belongs to the private healthcare company - Gruppo San Donato. By designing a medical facility with approximately 130 beds, the research question is aimed to be answered in an architectural design. The design is supposed to flip the narrative of a regular hospital design, prioritizing staff spaces first. The design will be testing how the issues also caused in a significant way by the system can be fixed by changing the spacial narrative.

The program benchmarking was based on the analysis of the existing building, Clinica La Madonnina, as well as 3 different examples of medical facilities of similar and greater scale that promote modern technologies, education and staff well-being as some of their main principles.

The total building size is 14994,5 sqm (GFA) and consists of the following spaces:

Green spaces – 17% (2 549,065 sqm)

Technical/service spaces – 7%
(10 49,615 sqm)

Operational spaces – 14% (20 99,23 sqm)

Patient-focused spaces – 11%
(1 649,395 sqm)

Public spaces – 8% (1 199,56 sqm)

Patient rooms – 6% (899,67 sqm)

Patient rooms (inpatient only) – 18%
(2 699,01 sqm)

Circulation – 4% (599,78 sqm)

The existing hospital belongs to the largest healthcare provider in Italy, Gruppo San Donato. Their priorities do not align with the main research narrative, therefore the new, chosen client is Regione Lombardia (Lombardy

	Region) with Agenzia di Tutela della Salute (ATS Lombardia)
Process	
Method description	
<p>The primary approach involves creating a design brief for a hospital in Milan which will serve as the foundation for the design process in MSc4. This document is structured into three main areas: program, client, and site. Each of these areas is explored using specific research methods, which are outlined in the following sections.</p> <p><i>Program</i></p> <p>To define the building's program, the main method used is analyzing the program of the existing building of Casa di Cura La Madonnina and other chosen examples that represent the most important values supporting the research. The scale of the buildings chosen varies, with all of them being larger than the main, given building. The main example will be analyzed and based on that, a benchmarking will be created, dividing the spaces into 9 categories. Then, an analysis of the remaining examples will be made. Based on them and the design principles supported by the research, a new benchmarking program will be established.</p> <p><i>Spatial relationship</i></p> <p>The spatial relationship of the main example will be divided, taking the main spaces into consideration. Then, the remaining examples will be analyzed in the same manner. Based on that, a comparative analysis will be made. Then, Taking main principles from the analysis, as well as the information regarding the traffic management in hospitals a new spatial relationship will be established.</p> <p><i>Client</i></p> <p>To better understand the client's identity, a short explanation of the Italian healthcare system is needed. Italy's National Health Service covers all citizens and legal foreigners. Its funding comes from an additive to the overall tax value revenue and is collected by the central government to be then distributed to local governments. All residents have the right to mostly free primary care, health screenings, and inpatient care. Other fixed benefits consist of maternity, home, specialty, and hospice care, as well as preventive medicine, and pharmaceuticals. The citizens also have an option of using private health care for an additional payment.</p> <p>The analyzed hospital, Clinica La Madonnina belongs to a private healthcare company, called Gruppo San Donato. Their net of hospital facilities has over 40 medical points, across the north of Italy, of various sizes and extent of offered health services.</p> <p>The current client claims are not aligned with the goal of the research, therefore the client will be changed to Regione Lombardia (Lombardy Region) with Agenzia di Tutela della Salute (ATS Lombardia), transforming the facility from a private to a public one.</p>	

Literature and general practical references

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- Forstag, E. H., & Cuff, P. A. (2018). A Design Thinking, Systems Approach to Well-Being Within Education and Practice: Proceedings of a Workshop. National Academies Press (US).
- Gruppo San Donato. (n.d.). Retrieved 28 October 2024, from <https://www.grupposandonato.it/>
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- World Health Organization. (2023). Hospitals of the future: A technical brief on re-thinking the architecture of hospitals. WHO Regional Office for Europe.
- Shaikh, S. (n.d.). Vertical and horizontal traffic management in hospitals: Ensuring efficiency and safety. LinkedIn. Retrieved January 19, 2025, from <https://www.linkedin.com/pulse/vertical-horizontal-traffic-management-hospitals-ensuring-shaikh-v2ldf/>
- Ahsani-Estahbanati, E., Sergeevich Gordeev, V., & Doshmangir, L. (2022). Interventions to reduce the incidence of medical error and its financial burden in health care systems: A systematic review of systematic reviews. *Frontiers in Medicine*, 9, 875426.

Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

My graduation project on staff-centric hospital design aligns with the *Complex Projects – Bodies & Building Milan* studio, which focuses on designing large, functionally complex buildings. This project fits within the *Architecture (A)* track of the MSc AUBS program by addressing the spatial and ergonomic needs of healthcare staff through evidence-based design. The studio's structured approach to user experience, operational efficiency, and architectural complexity provides an ideal framework to explore how hospitals can better support staff well-being while maintaining functionality. The studio also allows to change the narrative of existing typologies to experiment with their functionality.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

The graduation work is relevant across multiple dimensions.

Socially, it addresses the well-being of healthcare workers, who face long hours, high stress, and physical strain, by proposing architectural solutions that improve their working conditions and, in turn, the quality of patient care.

Professionally, it contributes to the evolving field of healthcare architecture by offering strategies to optimize space planning, staff movement, and support areas, ensuring a more efficient and comfortable work environment.

Scientifically, the project integrates architectural design with healthcare research, using evidence-based methods to develop spatial solutions that prioritize staff needs, contributing to a broader discourse on human-centered design in healthcare environments. These insights can inform future hospital projects and policies aimed at improving the overall healthcare system.