

PhD in ARCHITETTURA, INGEGNERIA DELLE COSTRUZIONI E AMBIENTE COSTRUITO / ARCHITECTURE, BUILT ENVIRONMENT AND CONSTRUCTION ENGINEERING - 40th cycle

THEMATIC Research Field: MATERIAL EXPLORATION THROUGH INNOVATIVE DIGITAL SCREENING FOR INCLUSIVE ARCHITECTURE TOWARDS SOCIETAL WELL-BEING

Monthly net income of PhDscholarship (max 36 months)

€ 1350.0

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity	
Motivation and objectives of the research in this field	Nowadays, environmental issues have encouraged architecture to face new environmental challenges, gaining an increasingly relevant role in topics such as inclusiveness, sustainability, technological and digital innovation, health and social welfare. With this regard, the building sector has focused on the implementation of material research, as materials and their production have a significant role in the overall impact of greenhouse gas (GHG) emissions. Nevertheless, architecture still needs to provide this knowledge of more sustainable approaches to society without taking advantage of digital innovation tools, which have already been proved to be game- changing in other fields. Moreover, there is a need to cope with the fundamental elements for sustainable development, following the strategies of the UN (United Nations) and WHO (World Health Organization). To address this gap, it is necessary to implement a renewed material culture in which social communities play a pivotal role in undertaking the change towards more sustainable consciousness. Therefore, this research proposal draws on the current state of architectural sustainable practices, highlighting the need for a paradigm shift towards a more accurate awareness of environmental and social welfare aspects. The aim is to explore the potential role of



	innovative technological tools to enhance the material implementation in the building sector for societal well- being.
Methods and techniques that will be developed and used to carry out the research	The thesis is co-funded by "Fondazione Milano per Expo". According to them, the research will focus on existing literature and practices on screening tools; this study will identify a new methodology to support material choices in architectural design to meet specific Sustainable Development Goals (SDGs). Specifically, an initial material screening phase will be implemented, adopting technologies, such as Virtual Reality (VR) and Augmented Reality (AR), employed for digital exploration and visualization. SDGs related to this research are 3 (Good Health and Well-Being), 4 (Quality Education), 9 (Industry, Innovation and Infrastructure) and 11 (Sustainable Cities and Communities). The research work will be developed at MaBa.SAPERLab.
Educational objectives	This research aims to equip the future architect with the skills to address environmental sustainability and societal well-being through innovative material exploration. The student will learn to assess materials' environmental and social impact, utilizing digital tools like Virtual Reality (VR) and Augmented Reality (AR) for sustainable design. The curriculum will align architectural practices with Sustainable Development Goals (SDGs), foster inclusiveness, and enhance health, education, and urban infrastructure. By promoting interdisciplinary collaboration, the program will prepare the students to lead in creating sustainable, socially responsible architecture.
Job opportunities	The graduate will find opportunities in sustainable architectural design, specializing in environmentally friendly and inclusive building projects. The graduate may work as a materials innovation specialist, developing sustainable materials, or as a digital design expert using VR/AR for architectural visualization. Careers in urban planning focused on sustainable cities or as a sustainability consultant advising on green practices are also viable avenues. These roles align with the growing demand for green and inclusive architectural solutions.

POLITECNICO DI MILANO



Composition of the research group	1 Full Professors 1 Associated Professors 6 Assistant Professors 6 PhD Students
Name of the research directors	Prof.ssa Ingrid Maria Paoletti

Contacts Prof.ssa Ingrid Maria Paoletti ingrid.paoletti@polimi.it

Additional support - Financial aid per PhD student per year (gross amount)		
Housing - Foreign Students		
Housing - Out-of-town residents (more than 80Km out of Milano)		

Scholarship Increase for a period abroad		
Amount monthly	675.0 €	
By number of months	6	

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

Additional support:

Budget for the research activity (only for positions supported by scholarship):

total amount Euro 5503.35 per student In detail:

- 1st year Euro 1834.45

- 2nd year Euro 1834.45

- 3rd year Euro 1834.45

Additional information about the organization and regultions of ABC-PhD programme can be found in the Regulations for the 40th Cycle of ABC-PhD:

download is available at link:

https://www.dottorato.polimi.it/corsi-di-dottorato/architettura/architettura-ingegneria-delle-costruzioni-e-ambiente-costruito

Additional information about ABC department and ABC-PhD programme:

available at link: https://www.dabc.polimi.it/

Desk availability:



The ABC department provides non-permanent desks to be temporarily booked in common PhD rooms.