



PhD in ARCHITECTURAL URBAN INTERIOR DESIGN - 38th cycle

PNRR_352 Research Field: INTEGRATED BUILDING TECHNOLOGIES AS A DESIGN TOOL FOR INCLUSIVE AND SUSTAINABLE ARCHITECTURE

Monthly net income of PhDscholarship (max 36 months)
€ 1400.0
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	<p>The research program studies architectural, urban, and interior environments through the methodological frame of design-driven research, using the term design to test and produce theoretical and technical knowledge. The study of new integrations between technological systems and architecture aims at making buildings and public spaces more sustainable, inclusive, and accessible.</p> <p>The PNRR (Piano Nazionale di Ripresa e Resilienza) asks for more attention for people with disabilities: Mission 1 (p.45) requires an adaptation for cultural buildings (museums, libraries, etc..) to be accessible to every user. An intervention is also planned to improve the energy efficiency of buildings linked to the cultural/creative sector. These are often found in obsolete structures, inefficient from a point of view, which generate high maintenance costs related to air conditioning, lighting, communication, and safety (p.111). Also, according to the PNR 2021-27, in the area of "HUMANISTIC CULTURE, CREATIVITY, SOCIAL TRANSFORMATION, INCLUSION SOCIETY" the research program refers to "Cultural Heritage" (Development of technologies to support widespread and lesser-known heritage, p.56), and to "Social transformation and the society of inclusion" (Demographics: aging and denatality, inequality and inclusion, psychosocial wellbeing and quality of life, urban welfare, public city, and rights, strategies and tools for urban regeneration and land governance, p. 72). In the area of "DIGITAL, INDUSTRIAL, AEROSPACE", the</p>



	<p>research program refers to the "Artificial Intelligence" chapter (p. 94), within the goals of "Human-Centered services" and "Artificial Intelligence for society". The research program also has a direct reference to "The National Smart Specialization Strategy" within the thematic field "Technologies for smart building, energy efficiency, and environmental sustainability area. The emergence of new ways of living and working requires the completion of technological implementation processes that can no longer be postponed, as demonstrated by the need to overcome the constraints that have slowed the spread of smart working.</p> <p>The objectives of the research program are: - to identify technological and design strategies aimed at promoting sustainable and accessible architecture;- to use innovative and experimental building solutions to test the spatial effects on different users (with physical or sensory disabilities);- to integrate building technologies connecting different scales, from interiors (ex. Residential and Working spaces) to infrastructural (ex. Highways); - to improve flexibility, sustainability, and wellbeing through the use and design of building solutions and technologies. The candidate will develop a research methodology starting from the lectures and assignments of the AUID courses and the courses of the Polimi Ph.D. School.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The candidate will develop a research methodology starting from the lectures and assignments of the AUID courses and the courses of the Polimi Ph.D. School. The internship supported by the partner ABB will allow the candidate to spend from six to eighteen months working on a project finalized to develop design strategies, analysis, and monitoring of results for building technologies in architecture, focusing on energy efficiency and building life-cycle. ABB is a leading global technology company in the fields of electrification, robotics, automation, and motion. One of the goals of the company is the development of technologies for buildings to increase sustainability and inclusivity.</p> <p>The candidate will spend from six to eighteen months at the Department of Architecture of ETH in Zürich, in a technologically experimental research environment.</p>



	<p>During this period abroad, the candidate will investigate the relations between technological solutions and architecture, test their impact on sustainability and inclusivity, and develop design platforms for their integration. Studying the different formats, methods, and expressions that can shape research in architectural design, the candidate will profile her/his methodology by considering the specificity of the selected object, the target, and the attended results.</p> <p>The research program considers designing a necessary component of any research in the field of architectural design.</p>
<p>Educational objectives</p>	<p>Educational objectives focus on the deep understanding of a well-selected and defined topic, oriented to sustainable and inclusive development. The candidate will define specific research containing a comprehensive overview of the scientific question and an original track and output.</p> <p>The candidate will acquire the skill to organize a consistent analysis of case studies, formulate a clear proposal for an original approach to the question, and elaborate innovative strategies and research methods.</p>
<p>Job opportunities</p>	<p>The Program aims to train highly qualified researchers and professionals who will work in academic institutions, research centers, public administration, as well as in the private sector in the fields of architectural, urban, and interior design:</p> <ul style="list-style-type: none"> • University researchers and lecturers in the scientific fields of the Ph.D. Program; • Researchers with an excellent scientific profile in the field of complex architectural developments and interventions of recovery and transformation; • Researcher with an excellent scientific profile in the field of International Cooperation Agency, UN Agency, and private international company; • Independent professionals qualified in the management of highly complex design processes; <p>Designers with tasks of high responsibility in institutions and professional structures and leading manufacturers,</p>



	engaged in traditional residential and special utilities, cultural institutions (museums, libraries, universities, schools, cultural centers), public and private services, commercial networks, accommodation, and leisure.
Composition of the research group	15 Full Professors 21 Associated Professors 6 Assistant Professors 67 PhD Students
Name of the research directors	prof. Andrea Gritti

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Further information is available at: http://www.auid.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	977.08 €
By number of months	6

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	ABB S.p.A. Electrification Business
By number of months at the company	6
Institution or company where the candidate will spend the period abroad (name and brief description)	Department of Architecture of ETH in Zürich



By number of months abroad

6

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

Universities that cooperate in the research

- TU Delft, School of Architecture
- TU Berlin, Institute for Architecture
- Columbia University, New York
- Seoul National University, Seoul
- ETH Zürich, CH

Educational activities (purchase of study books and material, funding for participation in courses, summer schools, workshops, and conferences)

financial aid (budget) per Ph.D. student (DOTE) per three years: 5707,13 Euro
per year: 1902,37 Euro

Workspace

In the AUID hall, on the 4th floor of Bldg 12 in Leonardo Campus, are available workstations for shared use.

All the Ph.D. students can use their laptops with a wireless connection.

Workstations and other equipment are available in the various departmental laboratories (Dastu) linked with the doctoral Program.