**PhD in PROGETTAZIONE ARCHITETTONICA, URBANA E DEGLI INTERNI / ARCHITECTURAL, URBAN AND INTERIOR DESIGN - 36th cycle**

<table>
<thead>
<tr>
<th>Number of scholarship offered</th>
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<td>Department</td>
<td>DIPARTIMENTO DI ARCHITETTURA E STUDI URBANI</td>
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**Description of the PhD Programme**

The PhD Program in Architectural Urban Interior Design (AUID) promotes research, studies and projects focused on design processes and techniques belonging to contemporary architecture. The Program is part of the Polimi PhD School, which gives a number of cross disciplinary courses, and it is comprised inside the Department of Architecture and Urban Studies (DAStU), which is one of the most important research structures in Italy, and it is inserted into a well-established international network of centers of excellence.

Our Program is a founding member of the European Network CA2RE, which schedules recurrent milestones and research activities together with the following partners: Arkitektskolen i Aarhus, Katholieke Universiteit Leuven, Technische Universität Berlin, Universidade Lusófona Do Porto & Cofac, Hafencity Universität Hamburg, Norges Teknisk naturvitenskapelige Universitet Ntnu, Technische Universität Delft, Eaae - Aeea (European Association For Architectural Education), European League Of Institutes Of The Arts Vereniging.

The Program is run by a Head, who coordinate the all Program; Deputy Heads with specific assignments; a Faculty Board, who has the scientific responsibility of the program; a Group of Experts, composed by professors with a bold experience in academic research; a Group of Researchers, who actively participates in lecturing and tutoring the candidates; an international Advisory Board, mostly representing the Program European network.

The Program welcomes both foreign and Italian students. English is the official languages; the specific research subjects will be assigned to each candidate, after an agreement with the Faculty Board, within the first year of the PhD activity.

### Research topics

The Program studies architectural culture in all aspects, essentially through two main methodological frames:

- Theoretical design research, addressed to the elaboration of original theoretical and critical texts;
- Applied design research, where design is considered as the field where to test and to produce...
Every year, the Program, in the respect of its general directions, focuses on some specific topics, to be explored through the theoretically and/or designerly. Within the 36th Cycle, starting in 2020 - 21, the preferential research lines are:

- Architecture of crisis, emergency and prevention; questions related with processes of obsolescence and decay; catastrophic effects of technical, social and natural cause.
- Forests and rivers: regeneration and reuse of rural architecture and landscapes; recovery of abandoned lands, relationships between infrastructure, landscape, architecture; architectural and landscape design tools and methods for a sustainable approach to vulnerable environment.
- Built environment and innovation in urban transformation. Advanced technologies, sustainability and participative processes.
PhD in PROGETTAZIONE ARCHITETTONICA, URBANA E DEGLI INTERNI / ARCHITECTURAL, URBAN AND INTERIOR DESIGN - 36th cycle

Research Field: ARCHITECTURAL URBAN INTERIOR DESIGN

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

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Context of the research activity

The Program studies architectural culture in all aspects, essentially through two main methodological frames:

- Theoretical design research, addressed to the elaboration of original theoretical and critical texts;
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- Built environment and innovation in urban transformation. Advanced technologies, sustainability and participative processes.
| Methods and techniques that will be developed and used to carry out the research | The Program studies architectural culture in all aspects, essentially through two main methodological frames: Theoretical design research, addressed to the elaboration of original theoretical and critical texts. Applied design research, where design is considered as the field where to test and to produce theoretical and technical knowledge. |
| Educational objectives | Educational objectives are focused on the deep scientific understanding of a well selected and defined topic, and the elaboration of a specific research containing a complete overview of the scientific question, a consistent analysis of case studies, a clear proposal for an original approach to the question, with the possibility of using, in various ways and balance, theoretical and practical design tools. |
| Job opportunities | The Program is aimed 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:  
- University researchers and lecturers in the scientific fields of the PhD Program;  
- Researchers with an excellent scientific profile in the field of complex architectural developments and interventions of recovering and transformation;  
- Independent professionals qualified in the management of highly complex design processes;  
- Designers with tasks of high responsibility in institutions and professional structures and leading manufacturers, 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 | 11 Full Professors  
14 Associated Professors  
10 Assistant Professors  
38 PhD Students |
| Name of the research directors | Alessandro Rocca |
Contacts

**PhD Head**
prof. Alessandro Rocca
Alessandro.Rocca@polimi.it

**PhD Tutor**
prof. Jacopo Leveratto
Jacopo.Leveratto@polimi.it

**Contact with the PhD Office at DASTU**
Marina Bonaventura
marina.bonaventura@polimi.it; phone +39/02/2399.5165

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

**Universities that are cooperating in the research:**
1. Technische Universität Berlin, Institute for Architecture
2. Tu Delft, School of Architecture
3. KU Leuven, Faculty of Architecture, Campus Sint-Lucas, Ghent
4. ETSAM Madrid
5. University of Ljubljana, Faculty of Architecture

**Educational activities (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences)**
Financial aid per PhD student: max 3068,66 euros

**Workspace**
In the AUID room are available workstations for shared use, connected with the printer. All the PhD students can use their own laptop with the wireless connection.
Workstations and other equipment are available in the various laboratories linked with the doctoral program.
PhD in PROGETTAZIONE ARCHITETTONICA, URBANA E DEGLI INTERNI / ARCHITECTURAL, URBAN AND INTERIOR DESIGN - 36th cycle

Research Field: SMART CITY: NEW TOOLS FOR THE SUSTAINABLE DEVELOPMENT OF THE FUTURE CITY. ADVANCED TECHNOLOGIES, ENVIRONMENTAL SUSTAINABILITY AND PARTICIPATORY PROCESSES

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<td>Interdisciplinary PhD Grant</td>
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<td>The PhD research will be carried out in collaboration with research groups of the PhD program in &quot;Electrical Engineering&quot;</td>
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<td>See <a href="http://www.dottorato.polimi.it/index.php?id=242&amp;L=1">http://www.dottorato.polimi.it/index.php?id=242&amp;L=1</a></td>
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The city of the future faces the challenge of innovation in a process of evolution that involves society, economy, infrastructures and environment. This need arises from a background that, in the last decade, has known significant factors of transformation. The spread of immaterial computer networks has emphasized the importance of connectivity, and consequently of sharing, as an important development factor. Environmental crises have instead focused the attention on the topic of sustainability, according to new paradigms and cultural models.

The current phase is then characterized by a strong tendency to the change of models and cultural paradigms that can and must push to the definition of new ecosystem, which involves the consolidated physical/spatial structures. In this scenario, the research proposes a synergy between complementary disciplines able to construct a new innovative scientific-design approach, organized in a systemic way for an intelligent management of environmental and urban resources. It
would be utopian to consider these components individually without an adequate push for inclusion, through participation paths. Citizenship can express its "right to the city" with a civic conscience on the part of the inhabitants who are increasingly aware and which manifests itself in the new IT channels, in a bottom-up process.

The research areas proposed converge in achieving common objectives, on the part of the two scientific sectors, for the experimentation of innovative Smart solutions able to launch conscious and inclusive urban regeneration and redevelopment processes. The research topic is oriented to the realization of a study that allows integrating the recovery and the environmental transformation of the architectural heritage widespread in the contemporary landscape.

The proposal is oriented to the definition of new methodologies of design, construction, and operation, through interactive software technologies and the adoption of innovative forms to produce efficient and renewable energies, fulfilling the increasing need for environmental sustainability.

The interdisciplinary methods and techniques include:

- Regeneration of built environments through actions and processes aimed at the transformation of contexts over time and at the technological adaptation of infrastructural services.
- Networking of disseminated assets through the study of physical and virtual networks (hard and soft) with the structuring of networks and nodes where they form "urban hubs", intended as places of social start up for the development and creation of new businesses with the contribution of universities and research institutions.
- Prefiguration of new 'ecosystems' self-sufficient from an energetic, dynamic and interrelated point of view capable of producing and using clean and RES.
- Use of innovative technologies for infrastructures dedicated to slow and fast mobility.
- Study of the forms of participation in transformation.
processes through the use of digital technologies.

- Definition of a regulatory framework for environmental transformation capable of accommodating and systematizing all the previous points, and of changing over time to cope with the changed conditions that may occur.

### Educational objectives

The expected result of this interdisciplinary PhD fellowship program is a new researcher's profile, able to bridge different aspects of the architecture and electrical engineering, in particular, energy efficiency, environmental sustainability of infrastructure systems, and use of intelligent technologies for energy and autonomous regeneration of vital processes.

### Job opportunities

According to its international orientation, the PhD course intends to train highly qualified researchers and professionals in the architecture and electrical engineering. PhDs with such profile could be employed by Italian and International academic institutions, public bodies and research centers, public and private development agencies.

In the particular case of the topic offered under this call, doctors with such a degree could be also employed by national and international organizations in research, consultancy and design on smart cities and sharing society challenges.

### Composition of the research group

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### Name of the research directors

Alessandro Rocca, Dario Zaninelli

### Contacts

**PhD Head**

prof. Alessandro Rocca  
Alessandro.Rocca@polimi.it

**PhD Tutor**

prof. Jacopo Leveratto
Contact with the PhD Office at DASfU
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Educational activities (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences)
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Workspace
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Research Field: URBAN REGENERATION THROUGH NATURE BASED SOLUTIONS. FOR AN ENVIRONMENTAL RESILIENCY TO THE CLIMATE CHANGE

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Context of the research activity

Interdisciplinary PhD Grant
The PhD research will be carried out in collaboration with research groups of the PhD programme in "Architecture, Built Environment and Construction Engineering". See http://www.dottorato.polimi.it/en/ for further information.

The proposed research aims to identify tools, methodologies and techniques, in architectural design, for the use of Nature Based Solutions, to be applied in degraded, marginal, abandoned urban areas. One of the main problems, in addressing the changes brought about by climate change, is the measure the effectiveness of the proposed solutions in terms of mitigation and adaptation. In the field of architectural and urban design, the role of evaluation of measurable factors (costs of construction and management, environmental impacts caused and avoided) is very important to guide the choices, but the framework of indicators and evaluation methodologies is still variable and uncertain.

The management of NBS strategies, in particular in the field of architectural and urban design, requires an interdisciplinary approach to verify the effectiveness of the implemented strategies. In particular, tools and methods are needed to verify and monitor the reduction over time of pollutants captured and environmental impact in the life
cycle (Assessment and carbon sequestration), the attenuation of the urban heat island and the conditions of environmental comfort, improvement of the air quality and health of the inhabitants, the water cycle (absorption and reduction of the peaks), the biodiversity, etc...

These aspects must be related to the characteristics of the context, being influenced by factors such as urban morphology and density, traffic and distinction between routes pedestrians and roads, the use of the different parts of the city. Attention to reducing polluting gaseous emissions must be placed not only in the use phase, but also in the transformation phases and in the recycling, demolition operations, disposal of buildings and infrastructures, becoming themselves an additional load element polluting.

<table>
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<th>Methods and techniques that will be developed and used to carry out the research</th>
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<td>The research methodology is set in three phases.</td>
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<tr>
<td>• bibliographic research and case studies;</td>
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<td>• cataloging and analysis of case studies, according to multidisciplinary criteria;</td>
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<tr>
<td>• elaboration of methodological projects, on both Italian and European territorial samples, where to combine the urban design approach with tools and methods of qualitative analysis and quantity of the improvements obtainable in the field of reduction of harmful and polluting gaseous emissions and in the attenuation of heat waves. The third phase involves the theoretical construction of schemes and action models of the project, whose replicability can take place through the identification of minimum common criteria in the different contexts of intervention</td>
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<td>The expected result of this interdisciplinary PhD program is a new researcher profile, capable of incubating different aspects of architecture. In particular, as regards the problems related to climate change, we want to train a specific competence on the architecture project on a different scale, such as a complex process of urban</td>
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regeneration according to quality standards, quantity of sustainability suitable to characterize urban and infrastructural transformations, in relation to EU objectives for the dissemination of urban and architectural design practices for adaptations to climate change.

**Job opportunities**

Phd candidates trained with this profile have suitable skills to be employed by Italian and international academic institutions, public bodies and research centers, public development agencies in research, consultancy and design in relation to architectural and urban transformations.

**Composition of the research group**

| Full Professors | 11 |
| Associated Professors | 14 |
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| PhD Students | 38 |

**Name of the research directors**

Ilaria Valente, Monica Lavagna

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### Contacts

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