



PhD in ARCHITETTURA, INGEGNERIA DELLE COSTRUZIONI E AMBIENTE COSTRUITO / ARCHITECTURE, BUILT ENVIRONMENT AND CONSTRUCTION ENGINEERING - 38th cycle

Number of scholarship offered	14
Department	DIPARTIMENTO DI ARCHITETTURA, INGEGNERIA DELLE COSTRUZIONI E AMBIENTE COSTRUITO

Description of the PhD Programme

The Doctoral Program on Architecture, Built Environment and Construction Engineering (ABC-PhD) was established in 2012, heritage of five other programs active since the first institution of Dottorato di Ricerca in Italy that progressively merged in one with the aim to realize a national Point of Reference for training researchers and experts in our fields (progressively reaching this target).

Our vision wishes our PhD holders to become self-sufficient, independent "actors", able to gain as scientist, as intellectuals, as professionals, as entrepreneurs an outstanding position at an international level. ABC-PhD is one of the most multidisciplinary PhD program in Italy (it refers to 20 different scientific sectors) and trains about one hundred PhD Candidates (1/3 new ones each year).

Our Candidates are trained to face complex questions, to develop in depth analysis and reliable models (theories) of complex (physical, economic, environmental or social) systems and to innovate.

Their natural passion and their attitude toward innovation works as an active transmission system and activate a two-way knowledge transfer between the Academy and its stakeholders.

After their training, ABC-PhD Doctors are expected to be endowed not only with a high-level scientific knowledge and a significant experience in Research and Development (R&D) activities, but also with proven communication and management skills, and to become self-sufficient, independent "actors".

For the sake of simplicity, we have organized their topics in six - interacting and reciprocally empowering Strategic Research Lines:

- Innovative design for architecture, spaces and services: health, education, inclusion, safety and emergency
- Technological and Digital transformation for built environment and construction industry
- Advanced materials and components, clean tech, innovative manufacturing technology for



buildings and built environment

- Risks mitigation strategies for built environment
- History, technology and management of cultural heritage and landscape
- Cooperation, R&D and Technology Transfer for emerging countries (Africa)

More details about the specific research projects to be developed can be found at
<http://www.abc.polimi.it/it/didattica/dottorato/> and <https://beep.metid.polimi.it/it/web/abcphd/home>



PhD in ARCHITETTURA, INGEGNERIA DELLE COSTRUZIONI E AMBIENTE COSTRUITO / ARCHITECTURE, BUILT ENVIRONMENT AND CONSTRUCTION ENGINEERING - 38th cycle

**INTERDISCIPLINARY Research Field: 'SMART DAMPER', VISCOUS DAMPER WITH
ADAPTIVE BEHAVIOR FOR THE SEISMIC PROTECTION OF CONSTRUCTIONS**

Monthly net income of PhDscholarship (max 36 months)

€ 1275.0

In case of a change of the welfare rates or of changes of the scholarship minimum amount from the Ministry of University and Research, during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

Interdisciplinary PhD Grant

The PhD research will be carried out in collaboration with research groups of the PhD programme in "**MATERIALS ENGINEERING**".

See <https://www.dottorato.polimi.it/?id=422&L=1> for further information.

Supplementary energy dissipation is a modern seismic mitigation technique for the protection of constructions from the effects of earthquakes. The technique is based on the introduction, within the structural assembly, of suitable devices (called 'dampers'), wherein the dissipation of most of the earthquake energy is concentrated, thus safeguarding the structural elements committed to supporting gravitational loads. Among the most common devices today in use, both for buildings and for road infrastructures such as bridges and viaducts, there are the fluid dynamic dampers, which dissipate energy through the lamination of a viscous fluid that is forced to pass through channels of small section. The mechanical response of the dampers depends on the intensity of the seismic action, which determines the speed with which the viscous fluid is pushed in the channels. The dampers are typically designed with



	<p>reference to a design earthquake (or set of earthquakes), and provide the best performance in response to the seismic input, while their effectiveness is reduced in the presence of earthquakes with different characteristics. The proposed research aims to develop fluid dynamic dampers with adaptive behavior, whose mechanical response can be modified, even in real time, in order to adapt to the features of the particular seismic input and to provide optimal performance in response to different excitations in terms of intensity, frequency content, duration. The goal is pursued through the development of a fluid-dynamic damper that uses a fluid whose viscosity can change by several orders of magnitude as a function of an external electric or magnetic field, controlled automatically by a sensing system installed in the host structure.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The research topic is highly multidisciplinary and requires the integration of skills in structural and seismic engineering, in material science and engineering, and in fluid dynamics.</p> <p>Methods that will be developed and used to carry out the research include structural monitoring, multiphysics modeling, experimental characterization of fluids, testing of damper prototypes, and seismic analysis and design of structures equipped with dampers.</p> <p>The research will make use of collaborations with the Department of Chemistry, Materials and Chemical Engineering (DCMIC) of Politecnico for the experimental characterization of the rheological behavior of Newtonian and non-Newtonian fluids also with electrorheological and magnetorheological characteristics, and for the study and optimization of the performance of dampers through their multiphysics simulation, and with the Materials Testing Laboratory of Politecnico for testing of prototypes of adaptive behavior dampers.</p>
<p>Educational objectives</p>	<p>The PhD programme aims at preparing researchers with the skills and aptitude to pursue multidisciplinary research in industries, research centers, or academic institutions, in the field of seismic protection of constructions. The PhD programme will also develop team working attitude and</p>



	will create opportunities for international collaborations.
Job opportunities	<ul style="list-style-type: none"> • R&D in industries manufacturing seismic protection systems • Structural designer in engineering firms • Researcher in research centers or universities
Composition of the research group	1 Full Professors 2 Associated Professors 1 Assistant Professors 1 PhD Students
Name of the research directors	Profs. V. Quaglini, F. Briatico Vangosa

Contacts
virginio.quaglini@polimi.it +39.02.2399.4248

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	637.5 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>Additional support:</p> <p>Budget for the research activity: total amount Euro 5,197.62 per student In detail: - 1st year Euro 1,732.54 - 2nd year Euro 1,732.54 - 3rd year Euro 1,732.54</p> <p>Interdisciplinary cooperation: the PhD Candidate will benefit from initiatives organized by both PhD Programmes involved.</p> <p>Additional information can be found in the Regulations for the 38th Cycle of ABC-PhD:</p>



download is available at link:

<https://beep.metid.polimi.it/web/abcphd/documenti-e-media>

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.



PhD in ARCHITETTURA, INGEGNERIA DELLE COSTRUZIONI E AMBIENTE COSTRUITO / ARCHITECTURE, BUILT ENVIRONMENT AND CONSTRUCTION ENGINEERING - 38th cycle

INTERDISCIPLINARY Research Field: FORESIGHT FOR SUSTAINABLE SMARTER BUILT ENVIRONMENTS

Monthly net income of PhDscholarship (max 36 months)

€ 1275.0

In case of a change of the welfare rates or of changes of the scholarship minimum amount from the Ministry of University and Research, during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

Interdisciplinary PhD Grant

The PhD research will be carried out in collaboration with research groups of the PhD programme in **"INFORMATION TECHNOLOGY"**.

See <https://www.dottorato.polimi.it/?id=422&L=1> for further information.

In recent decades we are experiencing an implicit transition towards more digitally-enabled buildings, cities and communities, with a view to smarter and more sustainable eco-systems in which to live. When we look at what is identified in the literature as a 'smart city framework', we find a dominant concept of integrating ICT solutions, sensors and other physical devices, data and human insights to improve building and city services and connect them to citizens. The current pandemic has contributed to the rapid acceleration of this process but, at the same time, has led to the rise of new needs and priorities that may lead to a significant rethinking of the ways and spaces where people will live, work and move in their daily lives, with a consequent reconsideration of the role of technology. Established trends in technological development may in fact be suspended by the emergence and convergence of alternative scenarios, or even



	<p>diverted towards new horizons for newly emerging needs. In the research community, especially when dealing with issues having a long-term impact, there is a growing consensus and attention towards the need of recognizing possible future challenges well in advance, to be able to have the most appropriate responses. In this context, the proposed research aims at exploring the different plausible futures for a human-centered smart built environment, scanning the horizon to envision possible scenarios in the broader perspective of future of smart cities and communities. Such a foresight process will allow to identify future opportunities, challenges and criticalities that may emerge, as the ICT technologies meet the built environment.</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>The fundamental method underlying the proposed research is foresight, a systematic process of analysis and construction of visions of the future, a multidisciplinary activity in its premises in order to be effective. In particular, the foresight methods and tools applied will be participatory and open, involving participants and collaborators from different disciplines and areas of expertise. ABC and DEIB departments are two leading actors (given the specific context) but extended to a wider community. This will allow the inclusion of the different definitions and narratives of the smart buildings and smart cities concepts that are often organized by industry sectors: ICT, electronics, mobility, governance and construction.</p>
<p>Educational objectives</p>	<p>The PhD Candidate will be trained in the adoption of <i>Systems Thinking</i> and <i>Futures Thinking</i> approaches for identifying the long-term issues and challenges shaping the future development of a human-centered <i>smart</i> built environment and to exploring their implications for research supporting sustainability targets in the horizon 2050.</p>
<p>Job opportunities</p>	<p>In line with the increasing market demand for professionals with long-term vision skills, the PhD graduate in this field will be able to find jobs:</p>



	<ul style="list-style-type: none"> • at engineering consultancies or research centres offering foresight services; • at governments, developers and other organization who want to set long-term strategy for their business in the construction sector.
Composition of the research group	2 Full Professors 3 Associated Professors 2 Assistant Professors 2 PhD Students
Name of the research directors	Profs. G. Iannaccone, C. Bolchini

Contacts
<i>giuliana.iannaccone@polimi.it</i> <i>cristiana.bolchini@polimi.it</i>

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	637.5 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>Budget for the research activity: total amount Euro 5,197.62 per student In detail: - 1st year Euro 1,732.54 - 2nd year Euro 1,732.54 - 3rd year Euro 1,732.54</p> <p>Interdisciplinary cooperation: the PhD Candidate will benefit from initiatives organized by both PhD Programmes involved.</p> <p>Additional information can be found in the Regulations for the 38th Cycle of ABC-PhD: download is available at link: https://beep.metid.polimi.it/web/abcphd/documenti-e-media</p>



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PhD in ARCHITETTURA, INGEGNERIA DELLE COSTRUZIONI E AMBIENTE COSTRUITO / ARCHITECTURE, BUILT ENVIRONMENT AND CONSTRUCTION ENGINEERING - 38th cycle

THEMATIC Research Field: INNOVATIVE TOOLS FOR HERITAGE CONSERVATION WITH HBIM APPROACHES

Monthly net income of PhDscholarship (max 36 months)	
€ 1275.0	
In case of a change of the welfare rates or of changes of the scholarship minimum amount from the Ministry of University and Research, 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 project aims to prepare the Phd candidate in a complete mode, with the ability to compete for high-level positions in the international field, both as scientific research and as a business world. The candidate, prepared in scientific communication skills, cooperation in research groups also in a competitive environment, will have to demonstrate the ability of critical relationship, sustainable management of problems and attitude to research innovative results in HBIM field.</p> <p>The aim of the research project will be to bridge the gap between BIM for the design of new buildings and HBIM for historical buildings, through:</p> <ul style="list-style-type: none"> • The development of the different methodologies of Geomatics for the definition of the geometric component of Cultural Heritage; • The best possible integration between analysis of the built form, deformation processes and modifications of objects over time; • The optimization of recognition processes also through automatic machine learning and deep learning processes; and • The integration of the information necessary for the



	<p>conservation, valorization and requalification of the Cultural Heritage</p> <p>For further information see the website www.mantovalab.polimi.it</p>
Methods and techniques that will be developed and used to carry out the research	<p>Step 1: The research provides in the first phase the study and evaluation of the state of the art in HBIM methodologies for cultural heritage, preparing the candidate to the research activity through the beginning of the planned courses, and to the activities of the MantovaLAB Laboratory.</p> <p>Step 2: In the second phase the definition of innovative tools is expected as an approach to Cultural Heritage in the architectural and archaeological fields, moving from the traditional project to the project on a BIM system platform; in a parallel way the research in national and international field at research centres outside the Politecnico will be investigated in order to complete the training of the scientific method.</p> <p>Step 3: In the third phase, will be developed the final thesis summarising the results of the research.</p>
Educational objectives	<p>The objectives set by the research are related to a strategic choice with respect to the direction that the construction sector is currently taking.</p> <p>The use of HBIM will increasingly allow a lot of data and information to be managed in a coordinated way on the 3D model of the existing building, among the different fields of specialist application, in order to optimise resources and time. While the experimentation of HBIM has started, also accomplice to the introduction of the restoration standards UNI, the increasing attention and use of HBIM methodologies by public and private contracting stations is starting to diffuse. For this reason, the proposed PhD research project aims to develop skills in HBIM for the disciplinary field of Geomatics: it is about anticipating the transformations that will occur in the field of technical skills to change the vision of surveying disciplines from "tools" to "integrated systems" in Building</p>



	Information Modeling applied to Cultural Heritage, for the complete digital management of the building process.
Job opportunities	The activities developed by the PhD student will allow him to propose him both in the field of research development for innovative applications in the construction sector and in particular the field of cultural heritage, and in the world of work thanks to high-profile training on specific topics related to the themes of the ABC-PhD programme. These topics will strongly influence the built heritage sector: while on the one hand the practical demands for technology transfer from research are increasing, on the other hand the university will ensure that innovation in the field of HBIM has a solid scientific basis.
Composition of the research group	0 Full Professors 2 Associated Professors 0 Assistant Professors 2 PhD Students
Name of the research directors	Prof. Luigi Fregonese

Contacts
Prof. Luigi Fregonese Email: luigi.fregonese@polimi.it Phone: +39 0376.317056

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	637.5 €
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: total amount Euro 5,197.62 per student In detail:



- 1st year Euro 1,732.54
- 2nd year Euro 1,732.54
- 3rd year Euro 1,732.54

Additional information on the organization and rules of ABC-PhD programme can be found in the Regulations for the 38th Cycle of ABC-PhD:

download is available at link:

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Additional information about ABC department:

available at link:

<https://www.dabc.polimi.it/>

Additional information on the MantovaLAB - Hesutech Group:

available at link:

WEBSITE: www.mantovalab.polimi.it

Desk availability:

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



PhD in ARCHITETTURA, INGEGNERIA DELLE COSTRUZIONI E AMBIENTE COSTRUITO / ARCHITECTURE, BUILT ENVIRONMENT AND CONSTRUCTION ENGINEERING - 38th cycle

INTERDISCIPLINARY Research Field: NATURAL LANGUAGE PROCESSING ENABLED CONFORMITY ASSESSMENT OF CONSTRUCTION PROJECT (DIGITAL) DOCUMENTATION, TO SUPPORT DESIGN REVIEW AND TENDER PROCEDURES

Monthly net income of PhDscholarship (max 36 months)

€ 1275.0

In case of a change of the welfare rates or of changes of the scholarship minimum amount from the Ministry of University and Research, during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

Interdisciplinary PhD Grant

The PhD research will be carried out in collaboration with research groups of the PhD programme in **"INFORMATION TECHNOLOGY"**.

See <https://www.dottorato.polimi.it/?id=422&L=1> for further information.

The research questions arise from the field of the Construction Project Management in Italian Public Works. Here the project manager is required to minimize the risks in delays, cost increases and reduced serviceability of a project, through a series of design checks, before tender and on the expected performances and serviceability of the realized works. In other terms, to assure the quality of the design. Such an activity has counterparts in many other legislative and practice contexts, may be classified as 'conformity assessment activity' and finds its best framework in the ISO/IEC 17000 standards. Italian Public Works regulation requires that this activity is performed by accredited Inspection Bodies, which shall operate objectively, transparently and thoroughly: the assessment process must be 'designed', 'validated', planned and declared to the parties involved in the inspection process



	<p>and eventually, continuously improved. Before the start of the 'digital transformation' of the AECO Industry, intermediate and final conformity assessment were mainly based on the judgements of experts: the start of the practice of Validazione del Progetto, at the end of the nineties, was for sure able to improve the quality of every single Project, but without any measure of its overall effect on Italian Public Works system and without any metrics of its effectiveness on each single case. This research stands on this belief: digitalization will not only make data available for this measure but also force every playing party toward a reasonable degree of automation and, so, to make their procedures well documented and controllable. This is of course a great challenge: not only for the high value of construction works, but for the complexity of the service they give to public/private parties. The research questions to be faced are the following: (1) Is it possible to make design review processes, automated and scalable? Is it possible to organize it as a set of automatable elementary checks, to be performed on digital design documents, scaled to the complexity of the case and extended to the design breadth? (2) Is it possible to start a collaborative culture of design conformity assessment and a Knowledge Management System able to collect all the design culture items produced in real projects, eliciting them from the sharable knowledge of product manufacturers, of contractors and designers, their mistakes and successes and of inspection bodies? (3) Is it possible to measure the improvement in the effectiveness and the efficiency of decision-making processes in Public Works?</p>
<p>Methods and techniques that will be developed and used to carry out the research</p>	<p>This research has two main references. One is the application field from where the research questions arise, that we have presented above: the conformity assessment practice in the AECO Industry. The other is the application of Natural Language Processing (NLP) technologies that we want to use (and to fine-tune for such a use) to give a practical answer to those questions. From the point of view of NLP, the main idea is to explore the feasibility of the translation of general issues in elementary executable commands, able to</p>



	<p>extract information and data from digital models, to assess their completeness and coherence (or, on the contrary, to identify incoherences or clashes) and to control every possible risk connected with a design choice: in terms of impacts on its constructability, its serviceability, its durability and its Life Cycle impact.</p>
Educational objectives	<p>We look for Master graduates in the wide field of Architecture, Building, Civil and Environmental Engineering, keen to be trained in the wide field of information technologies and their application in Building Information Model data analysis. We look also for Master graduates in the disciplines of Management Engineering or Information Technologies and Engineering, interested in the AECO industries and keen to be trained in this field's problems and practices.</p> <p>The selected student will gain his/her complementary knowledge on the needed subject in the first period of her/his career, while (s)he will be trained in Natural Language Processing applications. The training work will proceed, on real cases, developed in a strong synergy with Architectural and Engineering Design bodies, Inspection bodies and the responsible of their accreditation system.</p> <p>The results of the student research will be presented and reviewed at an international level, in research conferences and working groups.</p>
Job opportunities	<p>At the end of the doctoral path, the PhD Candidate will hold a deep knowledge about AECO digitalization issues and Natural Language Processing applications. Both are trend topics for academic research as well as for applied research and both are skills highly requested and whose request is growing and will grow in a close future.</p> <p>The systematic collaboration with other Research Centres, with Architectural and Engineering Design bodies and with Inspection Bodies will provide to the Candidate the relationships useful to give the right value to the research products as well as to the professional and academic figure of the candidate.</p>
Composition of the research group	<p>2 Full Professors 1 Associated Professors</p>



	0 Assistant Professors 1 PhD Students
Name of the research directors	Profs. E. De Angelis (DABC), L. Baresi (DEIB)

Contacts
<p><i>enrico.deangelis@polimi.it</i> <i>luciano.baresi@polimi.it</i></p>

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	637.5 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>Additional support:</p> <p>Budget for the research activity: total amount Euro 5,197.62 per student In detail: - 1st year Euro 1,732.54 - 2nd year Euro 1,732.54 - 3rd year Euro 1,732.54</p> <p>Interdisciplinary cooperation: the PhD Candidate will benefit from initiatives organized by both PhD Programmes involved.</p> <p>Additional information can be found in the Regulations for the 38th Cycle of ABC-PhD: download is available at link: https://beep.metid.polimi.it/web/abcphd/documenti-e-media</p> <p>Additional information about ABC department and ABC-PhD programme: available at link: https://www.dabc.polimi.it/</p> <p>Desk availability:</p>



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PhD in ARCHITETTURA, INGEGNERIA DELLE COSTRUZIONI E AMBIENTE COSTRUITO / ARCHITECTURE, BUILT ENVIRONMENT AND CONSTRUCTION ENGINEERING - 38th cycle

OPEN SUBJECT Research Field: PHD IN ARCHITECTURE, BUILT ENVIRONMENT AND CONSTRUCTION ENGINEERING (ABC-PHD)

Monthly net income of PhDscholarship (max 36 months)	
€ 1275.0	
In case of a change of the welfare rates or of changes of the scholarship minimum amount from the Ministry of University and Research, 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>Our mission is to train PhD Holders able to reach outstanding positions at an international level not only as scientist or intellectuals but also as professionals or entrepreneurs in one of the quoted research fields. PhD Candidates are expected to refine their skills and to reach a cutting-edge level of knowledge about their research topics and to acquire a multidisciplinary character, to enhance their proficiency in scientific communication, research management and other transferable skills and to become active part of a scientific community. Moreover, they are expected to produce a significant, original contribution to their field, to organize this contribution in a dissertation (the PhD Thesis) and to defend it 'viva voce' (publicly) in front of a committee of experts.</p>
Methods and techniques that will be developed and used to carry out the research	<p>Candidates without a pre-defined research topic shall plan their research and training activities and define the specific methodologies to be used to find the answer to their research question, immediately after the official start of their PhD Programme, in accordance with their Supervisors.</p> <p>The plan and the methodologies will be detailed in the PhD Agreement, giving evidence of their aims and of the</p>



	<p>global amount of time to be spent in research, training and possible other activities.</p> <p>The PhD Agreement will be endorsed by Candidate's Supervisor, and reviewed and approved by the Board of Professors of the ABC-PhD Programme.</p>
Educational objectives	<p>ABC-PhD Candidates are expected to produce knowledge advancements in their scientific field. Moreover, they are raised to be resilient, not frightened by the uncertainty and failure risks of innovations, trained in communication, management, networking and other transferrable skills, that are fundamental for doing research in this complex world. They are taught to cooperate in a competitive environment and to exploit their creativity to reach their goal, going beyond the limits of one scientific discipline, interacting and learning from other researchers and colleagues. Eventually, they are pushed to find out (and to network with) the possible stakeholders of their work. We purport that the best value for the Candidate and for the Program itself is the reward given by the chance of a practical application of the knowledge advancements realized. With this experience, ABC-PhD Doctors are expected to acquire the capacity to shoulder the responsibilities of the activities listed in the PhD Agreement, to plan and to manage control tasks, to help the development and the critical optimization of policies and projects, to innovate: in particular about the PhD thesis topic, in general about the many sectors of Architecture, Built Environment and Construction Engineering and in all the most critical subjects related to the sustainable transformation and management of the Built Environment (environmental, economic, social and cultural sustainability).</p>
Job opportunities	<p>The holder of an ABC-PhD will gain high-level scientific knowledge, significant experience and proven R&D management skills, transferrable to other activities. This, together with the habit of communicating and working in English, acquired interacting with colleague at a global scale, during visits and stays abroad, and a deep</p>



	<p>knowledge of the academic world qualifies the Doctorate for positions offered by the best international universities and research centres.</p> <p>ABC-PhD experience, nevertheless, will offer the best occupational opportunities also for employments in architectural and engineering design enterprises, in public bodies and wherever highly qualified personnel (at an international level), specific competencies at the highest level, the attitudes and the network of a researcher is acknowledged. The more the Candidate, during the three PhD years, has taken the opportunities to stay in touch with the stakeholders of actual (or future!) societal needs and to operate real knowledge transfer, the more this comes true.</p> <p>ABC-PhD holders, in fact, are problem-setters, trained to model complex environments, to understand complex questions and to apply critical thinking, and problem solvers, trained to turn uncertainty in methodology and doubts in reliable solutions.</p>
Composition of the research group	43 Full Professors 84 Associated Professors 38 Assistant Professors 164 PhD Students
Name of the research directors	Prof. M. Scaioni (Head of ABC-PhD programme)

Contacts	
ABC-PhD Office email: dottorato-dabc@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	637.5 €
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:

total amount Euro 5,197.62 per student

In detail:

- 1st year Euro 1,732.54
- 2nd year Euro 1,732.54
- 3rd year Euro 1,732.54

More details about expected research proposals and topics will be published at link:

<https://beep.metid.polimi.it/it/web/abcphd/home>

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