



# PhD in CONSERVAZIONE DEI BENI ARCHITETTONICI / PRESERVATION OF THE ARCHITECTURAL HERITAGE - 38th cycle

PNRR\_351\_PATRIM\_CULT Research Field: VULNERABILITY OF HISTORICAL CENTERS TO  
NATURAL HAZARDS

**Monthly net income of PhDscholarship (max 36 months)**

**€ 1195.5**

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**

In view of preserving the architectural value of historical centers, seismic vulnerability analyses have been performed extensively in the past and relevant procedures for fast and meaningful evaluations have been developed. Such procedures need now to be updated, taking advantage of the large amount of information which, at present, is easily available from digital resources. At the same time, in addition to the preservation issue, special needs from the Civil Protection have to be considered, in view of an effective management of the post-event emergency phase.

Moreover, attention has nowadays to be extended to other kinds of natural hazards, typically related to the hydro-geological and hydraulic emergencies. All such reasons call for the need of promoting studies for both updating and extending current tools for vulnerability assessment of historical city centers.

The research proposal is framed within the training course of the Doctorate in Conservation of Architectural Heritage in which the doctoral student will carry out training, research and evaluation moments, subject to periods of 6 months at Regione Lombardia - Protezione Civile and 6 months at Technical University of Athens (NTUA).

The doctoral student will be able to rely on qualified and specific operational facilities for his or her research activities.



	<p>The research ensures compliance with the horizontal principles of the PNRR and is framed within Mission 1 Digitization, Innovation, Competitiveness, Culture and Tourism, particularly with the theme of Open Data and innovative mapping tools for cultural heritage, and Mission 2 Green Revolution and Ecological Transition for the themes of land security and cultural heritage.</p>
<p><b>Methods and techniques that will be developed and used to carry out the research</b></p>	<p>The research will require a careful literature review, aiming at the selection of meaningful experiences in seismic vulnerability evaluation; in parallel, the acquisition of basic information about the hydro-geological and hydraulic hazards will be performed.</p> <p>On this basis, the formulation of updated vulnerability procedures will become possible.</p> <p>A suitable selection of case studies will be collected, constituting a reference for both formulating and testing new procedures.</p> <p>The Master Course on “Civil Engineering for Risk Mitigation”, which has been offered at Politecnico di Milano for several years, will provide meaningful support to the definition of analysis tools.</p>
<p><b>Educational objectives</b></p>	<p>The PhD candidate will acquire experience on the effects of natural hazards onto the architectural heritage; at the same time, he/she will learn how to develop qualitative, fast and meaningful procedures for the estimation of vulnerability levels.</p> <p>Regarding the period in Civil Protection Agency “Lombardy Region the Ph.D student will can do:</p> <ul style="list-style-type: none"> <li>• Identification of needs of the Civil Protection in the post-event emergency phase;</li> <li>• Acquisition of natural hazard maps at the regional level;</li> <li>• Selection of suitable towns for the development and testing of vulnerability evaluation procedures.</li> </ul> <p>The research activity will be developed in connection with the National Technical University of Athens (NTUA) and, specifically, with Prof. Elizabeth Vintzileou, who has provided in the past important support to PhD candidates in Preservation of the Architectural Heritage.</p> <p>The Greek experience on seismic vulnerability analysis</p>



	will greatly contribute to the research.
<b>Job opportunities</b>	<p>Graduates of the PhD programme have often found employment in public sector and conservation institutions, as well as in professional practices and in the business world, in specific specialized fields. PhD candidates from abroad find job in their native countries at University or in Cultural Heritage Institutions.</p> <p>As regards Italy, the relationship with Italian Ministry of Cultural Heritage (Mibact), has been definitely fruitful, especially when we consider that many among the best PhDs in Preservation of Architectural Heritage have been hired as officers and executives to the above ministry: recently many PhD from this Programme won the competitive exam to become public officers in the Ministry of Cultural Heritage and most of them are now responsible in prestigious seats.</p>
<b>Composition of the research group</b>	<p>10 Full Professors  13 Associated Professors  0 Assistant Professors  41 PhD Students</p>
<b>Name of the research directors</b>	Claudio Chesi

#### Contacts

prof. Claudio Chesi: [claudio.chesi@polimi.it](mailto:claudio.chesi@polimi.it)

prof.ssa Maria Crsitina Giamb Bruno: [mariacristina.giamb Bruno@polimi.it](mailto:mariacristina.giamb Bruno@polimi.it)

dott.ssa Marina Bonaventura: [marina.bonaventura@polimi.it](mailto:marina.bonaventura@polimi.it)

#### Additional support - Financial aid per PhD student per year (gross amount)

<b>Housing - Foreign Students</b>	--
<b>Housing - Out-of-town residents (more than 80Km out of Milano)</b>	--

#### Scholarship Increase for a period abroad

<b>Amount monthly</b>	834.84 €
<b>By number of months</b>	6

#### National Operational Program for Research and Innovation



<b>Company where the candidate will attend the stage (name and brief description)</b>	Civil Protection Agency Lombardy Region
<b>By number of months at the company</b>	6
<b>Institution or company where the candidate will spend the period abroad (name and brief description)</b>	Technical University of Athens (NTUA)
<b>By number of months abroad</b>	6

<b>Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information</b>
<p><b>Educational activities</b> (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences):</p> <p>financial aid per PhD student <b>4.872,90 euros</b> per student (total amount for 3 years)</p> <p><b>Teaching assistantship:availability of funding in recognition of supporting teaching activities by the PhD student:</b></p> <p>There are various forms of financial aid both for research and teaching activities. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.</p> <p><b>Computer/Desk availability:</b>In the PhD candidates 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 programme.</p>