

PHD PROGRAMM IN CIVIL AND ENVIRONMENTAL ENGINEERING, INTERNATIONAL COOPERATION AND MATHEMATICS	
Scientific sub-areas	08a – Civil Engineering; 08b – Architecture; 01 – Mathematical and Computing Sciences; 02 – Physical Sciences 04 – Geological Sciences (Scienze della Terra); 06 – Medical Sciences; 07 – Agricultural and Veterinary Sciences; 09 – Industrial and Information Engineering; 11a – Historical, Phylosophical and Paedagogical Sciences; 13 – Economical and Statistical Sciences.
Scientific Areas	01/A; 02/A; 04/A; 06/D; 07/D; 08/A; 08/B; 08/E; 08/F; 11/A; 11/B; 13/A; 13/D.
Duration	3 years
Starting date	01/11/2017 -a.y. 2017/2018 -XXXIII cycle
Promoting Department	University of Brescia, DICATAM - Department of Civil, Environmental, Architectural Engineering and Mathematics
Referee	Prof. ing. Baldassare Bacchi
Curricula	The research activity concerns specific topics belonging to the different curricula, based on an interdisciplinary scientific approach as follows: - NATURAL RISKS ASSESSMENT AND MANAGEMENT; - URBAN PLANNING AND MOBILITY; - APPROPRIATE METHODOLOGIES AND TECHNIQUES FOR INTERNATIONAL DEVELOPMENT CO-OPERATION (<i>Health track and Technology track</i>); - MATHEMATICAL METHODS AND MODELS FOR ENGINEERING; -STRUCTURAL REHABILITATION OF HISTORICAL AND MODERN BUILDINGS. For more information: http://www.unibs.it/dipartimenti/ingegneria-civile-architettura-territorio-ambiente-e-matematica/dottorato
Admission requirements	Five years University degree, such as Laurea Specialistica, Laurea Magistrale achieved in Italy; for PhD admission only, the equivalence of degrees awarded abroad will be assessed by the competition selection board. Any equivalent academic degree attained from foreign Universities; i.e. Master degree is normally sufficient. Candidates who will obtain their degree within 31/10/2017 are allowed to apply.
Available positions	n. 8 (n. 5 positions with scholarships + n. 2 positions no benefitting of a scholarship + n. 1 position reserved to candidates having obtained their University academic qualification outside Italy)
Ordinary positions	n. 7 (n. 5 positions with scholarships + n. 2 positions no benefitting of a scholarship)
Reserved positions	n. 1 position reserved to candidates having obtained their University academic qualification outside Italy
Admission criteria	
Evaluation of academic qualifications	Academic Degree: up to 10 points; For candidates under graduation condition, maximum 10 points will be

	<p>assigned, according to the following criterium: average mark (100-102)/110= 2 points; (103-110)/110= 3-10 Further qualification: up to 10 points.</p>
<p>Research project proposal</p>	<p>The research project should be pertinent to one of the following themes:</p> <p>APPROPRIATE METHODOLOGIES AND TECHNIQUES FOR INTERNATIONAL DEVELOPMENT CO-OPERATION</p> <p><i>Health track</i></p> <ul style="list-style-type: none"> - With reference to the Sustainable Development Goal (SDG) n. 3 (Ensure healthy lives and promote wellbeing for all at all ages), and in particular target 3.1. (By 2030, reduce the global maternity mortality ratio to less than 70 per 100.000 live births), the candidate is required to describe the specific problems of mother mortality in low-income Countries. After proposing a specific case-scenario – at the candidate’s choice – the candidate is required to prepare a research project targeted at identifying specific solutions aimed at achieving the 3.1. target of SDG n. 3 in the proposed low-income scenario. The proposed research project must include the objectives, the methodology and expected results. <p><i>Technology track</i></p> <p>With reference to the Sustainable Development Goal (SDG) n. 6 "Ensure access to water and sanitation for all" the candidate should describe the main problems related to the drinking water supply and sanitation management in resource limited countries. The candidate should therefore hypothesize a specific problem in a low-income context, chosen by the candidate, and to develop a research project aimed at identifying appropriate solutions addressing SDGs. The proposed research project has to clearly highlight the objectives, the methodology and expected results.</p> <p>MATHEMATICAL METHODS AND MODELS FOR ENGINEERING</p> <ul style="list-style-type: none"> - Partial differential equations for the description of physical phenomena. The candidate is asked to describe some analytical methods for the qualitative study of solutions, and techniques for their numerical simulation. - The candidate is asked to provide the description of some analytical and numerical methods for the study of problems in solid mechanics or fluid mechanics. <p>NATURAL RISKS ASSESSMENT AND MANAGEMENT</p> <ul style="list-style-type: none"> - Droughts and floods are two faces of a complex management issue: the candidate is expected to present a research project aiming at the mitigation of one or both phenomena. - Hydrological processes concerning anthropogenic and climatic variability. <p>URBAN PLANNING AND MOBILITY</p> <ul style="list-style-type: none"> - The candidate will illustrate the problem of soil consumption and will propose a research project on methods and tools for analyzing the phenomenon and their inclusion in urban planning tools and strategic environmental assessment in order to contain the effects of the phenomenon itself. - The candidate will describe the issue of road safety in urban environment and proposes a research project on the types of road safety analysis, applicable in the urban area, and their possible uses.

	<p>STRUCTURAL REHABILITATION OF HISTORICAL AND MODERN BUILDINGS</p> <ul style="list-style-type: none"> - The candidate should discuss a research proposal concerning the seismic vulnerability of existing building focusing on a novel strengthening technique. - The candidate should discuss a research proposal concerning the utilization of high performance cementitious or non cementitious materials for structural rehabilitation of existing buildings. <p>*****</p> <p>The project should clearly be related to one of the above-mentioned curriculum. For the admission it does not bind the choice of the candidate's future PhD project, once admitted to the Ph.D. program. The project should be no more than 25000 characters and structured as follows:</p> <ul style="list-style-type: none"> - 1. Author - 2. Title - 3. A brief literature review - 4. Motivations behind the research - 5. Hypotheses and research design - 6. Methods and tools - 7. References. <p>*****</p> <p>Maximum score: 40 points Minimum score to access to the oral exam: 24 points.</p> <p>*****</p> <p>The paper must be uploaded on-line with the submission of the application.</p>
<p>Oral examination for ordinary positions</p>	<p>The oral exam will focus on the main curriculum topics and on the research project, with a maximum of 40 points. Minimum score to access to the list: 24 points.</p> <p>The candidates must take the oral exam at the Department of Civil, Environmental, Architectural Engineering and Mathematics – DICATAM, located in via Branze n. 43, Brescia (Italy). The oral exam via Skype is reserved to candidates who do not have a permanent address, or do not have their domicile in Italy, according to the rules provided in the Call for applications (ref. art. 6, paragraph 2); as well as to those candidates <u>having serious, and well-documented reasons, in any case as determined exclusively by the selection board</u>. These candidates must enclose in their online application the form "ON-LINE ORAL ENTRANCE EXAMINATION FORM", downloadable from the website, duly completed and signed, providing also their Skype contact. Moreover, these candidates who cannot attend in person and are under the conditions set above, need to provide documents proving their impossibility to be present in persona at the oral exam (e.g., non-EU citizens; being hospitalized, etc.).</p>
<p>Oral examination for reserved positions</p>	<p>The oral exam will focus on the main curriculum topics and on the research project, with a maximum of 40 points. Minimum score to access to the list: 24 points.</p> <p>Candidates who apply for the reserved positions will have the</p>

	<p>option to take the oral exam at the Department of Civil, Environmental, Architectural Engineering and Mathematics – DICATAM, located in via Branze n. 38, Brescia (Italy); <u>or to take the oral exam by a telematic platform (Skype, for instance).</u></p> <p>The oral exam via Skype is reserved to candidates who do not have a permanent address, or do not have their domicile in Italy, according to the rules provided in the Call for applications (ref. art. 6, paragraph 2). These candidates must enclose in their online application the form "ON-LINE ORAL ENTRANCE EXAMINATION FORM", downloadable from the website, duly completed and signed, providing also their Skype contact.</p>
Calendar of Oral Examination for both Ordinary and Reserved positions	<p>The date/time of the oral examination will be published on the official website of the University at least 20 days before it takes place. The oral examination will take place at the Department of Civil, Environmental, Architectural Engineering and Mathematics, located in via Branze n. 38, Brescia (Italy) or, if granted by the selection board when requested by the rightholders, a remote interview will take place in the same day and at the same time.</p>
Infos on the curricula	<p>Curriculum on “NATURAL RISKS ASSESSMENT AND MANAGEMENT”: giovanna.grossi@unibs.it; Curriculum on “URBAN PLANNING AND MOBILITY”: michele.pezzagno@unibs.it; Curriculum on “MATHEMATICAL METHODS AND MODELS FOR ENGINEERING”: alessandro.giacomini@unibs.it; Curriculum on “APPROPRIATE METHODOLOGIES AND TECHNIQUES FOR INTERNATIONAL DEVELOPMENT CO-OPERATION”: sabrina.sorlini@unibs.it; Curriculum on “STRUCTURAL REHABILITATION OF HISTORICAL AND MODERN BUILDINGS”: fausto.minelli@unibs.it;</p>
Training offer	<p>http://www.unibs.it/dipartimenti/ingegneria-civile-architettura-territorio-ambiente-e-matematica/dottorato</p>