



**UNIVERSITÀ
DEGLI STUDI
DI BRESCIA**

ACADEMIC YEAR 2018/19 – XXXIV Cycle

PhD PROGRAM IN CIVIL AND ENVIRONMENTAL ENGINEERING, INTERNATIONAL COOPERATION AND MATHEMATICS	
Scientific areas	08a – Civil Engineering; 08b – Architecture; 01 – Mathematical and Computing Sciences; 04 – Geological Sciences (Scienze della Terra); 06 – Medical Sciences; 07 – Agricultural and Veterinary Sciences; 11a – Historical, Philosophical and Pedagogical Sciences; 13 – Economical and Statistical Sciences.
Macro areas	01/A; 04/A; 06/D; 06/G; 07/D; 08/A; 08/B; 08/E; 08/F; 11/A; 11/B; 13/A; 13/D.
Duration	3 years
Starting date	November 1 st , 2018
Proponent Structure	Department of Civil, Environmental, Architectural Engineering and Mathematics (DICATAM)
Coordinator	Prof. Paolo Secchi
Curricula	The research activity concerns specific topics pertaining to the different curricula: - NATURAL RISKS ASSESSMENT AND MANAGEMENT; - URBAN PLANNING AND MOBILITY; - APPROPRIATE METHODOLOGIES AND TECHNIQUES FOR INTERNATIONAL DEVELOPMENT CO-OPERATION (Health track and Technology track); - MATHEMATICAL METHODS AND MODELS FOR ENGINEERING; - STRUCTURAL REHABILITATION OF HISTORICAL AND MODERN BUILDINGS. An interdisciplinary scientific approach is encouraged. For more information: http://www.unibs.it/dipartimenti/ingegneria-civile-architettura-territorio-ambiente-e-matematica/dottorato
Admission requirements	A 5-year 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 selection board. Any equivalent academic degree obtained from foreign Universities: a Master degree is required. Undergraduates can apply for admission but they must have passed the

	degree examination by 31/10/2018. These candidates are required to provide the average grade of examinations passed during the course.
Number of regular available positions	n. 7 (n. 5 positions with scholarship + n. 2 positions without a scholarship).
Number of scholarships	n. 5 financed by the University of Brescia.
Scholarships linked to research topic	n. 1 financed by the University of Brescia, reserved to candidates who obtained their University academic qualification from a non-Italian University, having a specific research topic about "Valorization of resources from residues in the circular economy context".
Reserved scholarships	n. 1 financed by the University of Brescia having a specific research topic about "Valorization of resources from residues in the circular economy context", reserved to candidates that obtained their University academic qualification from a non-Italian University.
Selection procedure for regular positions	
Evaluation of Curriculum Vitae	Academic Degree: up to 10 points; For candidates under graduation condition, at most 10 points will be assigned, according to the following criterion: average mark (100-102) /110 = 2 points; (103-104) / 110= 3-4 points; 105-106 = 5-6 points; 107-108 = 7-8 points; 109-110 = 9-10 points. Further qualifications: up to 10 points.
Written examination	Candidates will have to submit a research project pertinent to one of the following topics: APPROPRIATE METHODOLOGIES AND TECHNIQUES FOR INTERNATIONAL DEVELOPMENT CO-OPERATION - <u>Technology track</u> : With reference to the Sustainable Development Goals (SDGs), the candidate should describe the main problems related to the solid wastes management in resource limited countries. The candidate should therefore hypothesize a specific problem in a low-income context, chosen by the candidate, and develop a research project aimed at identifying appropriate solutions for solid waste management according to SDGs. The proposed research project must include the objectives, the methodology and expected results. - <u>Health track</u> : 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 3.2. (By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases), the candidate is required to describe the control measures of major epidemics (with particular regard to HIV, tuberculosis and malaria) 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 3.3. Target of SDG n. 3 in the proposed low-income scenario. The proposed research project must include the objectives, the methodology and expected results. NATURAL RISKS ASSESSMENT AND MANAGEMENT

	<ul style="list-style-type: none"> - Sustainable water resources management, control and consumption in the context of the climate variability. - Free surface flows and hydraulic hazard. <p>URBAN PLANNING AND MOBILITY</p> <ul style="list-style-type: none"> - Historical heritage protection in spatial planning - Analytical methods for road accidents in urban area. <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 required to describe some analytical methods for the qualitative study of solutions, and techniques for their numerical simulation. - Methods for the mechanics of solids and fluids. The candidate shall describe modern applications and/or analytical and computational methods that he/she aims at developing in the PhD program. <p>STRUCTURAL REHABILITATION OF HISTORICAL AND MODERN BUILDINGS</p> <ul style="list-style-type: none"> - The candidate should discuss a research proposal concerning a novel technique for the strengthening of existing buildings. - 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 be clearly related to one of the above-mentioned curricula. The project presented for the admission procedure, however, 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 long, 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 upon submission of the application.</p>
Oral examination	<p>The oral exam will focus on the main curriculum topics and on the research project, with a maximum of 40 points.</p> <p>Minimum score to access the oral exam: 24 points.</p> <p>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 (or similar platforms) is reserved to candidates who do not have a permanent address, or do not have their domicile in</p>

	<p>Italy, according to the rules provided in the Call for applications (ref. Art. 6, paragraph 2); as well as to those candidates having serious, and well-documented reasons. In any case, the possibility of an oral exam via teleconference is granted exclusively by the selection board. The candidates wishing to have their oral exam via teleconference must enclose in their online application the form "ON-LINE ORAL ENTRANCE EXAMINATION FORM", downloadable from the website, duly filled in and signed, providing also their Skype (or similar platforms) contact.</p> <p>Moreover, candidates who cannot attend the oral exam in person and are under the conditions specified above need to provide documents proving their impossibility to be present at the oral exam (e.g., non-EU citizens; being hospitalized, etc.).</p>
Selection procedure for reserved positions	
Evaluation of Curriculum Vitae	<p>Academic Degree: up to 10 points; For candidates under graduation condition, at most 10 points will be assigned, according to the following criterion: average mark (100-102) / 110= 2 points; (103-110) / 110= 3-10 points. Further qualifications: up to 10 points.</p>
Written examination	<p>The candidate should illustrate, in relation to the current regulatory framework, the main problems related to the management of special wastes by analysing the solutions for the recovery of material and energy resources. The candidate should describe some significant case studies related to the international experience, highlighting the advantages and disadvantages. After identifying a specific type of waste, the candidate should develop a research proposal aimed at verifying the feasibility of material and/or energy recovery solutions. The proposed research project must include the objectives, the methodology and expected results.</p> <p>*****</p> <p>The project should be no more than 25000 characters long, 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 upon submission of the application.</p>
Oral examination	<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 the oral exam: 24 points. Candidates who apply for the reserved positions will have the option to take the oral exam at the Department of Civil, Environmental, Architectural Engineering and Mathematics</p>

	<p>(DICATAM), located in via Branze n. 38, Brescia (Italy); or to take the oral exam by a telematics platform (Skype, for instance). The oral exam via teleconference 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); it is also reserved to those candidates with permanent address and domicile in Italy having serious, and well-documented reasons. In any case, the possibility of an oral exam via teleconference is granted exclusively by the selection board.</p> <p>These candidates must enclose in their online application the form "ON-LINE ORAL ENTRANCE EXAMINATION FORM", downloadable from the website, duly filled in and signed, providing also their Skype (or similar platform) contact.</p> <p>Moreover, candidates with permanent address and domicile in Italy, who cannot attend the oral exam in person and are under the conditions specified above, need to provide documents proving their impossibility to be present at the oral exam (e.g., being hospitalized, residence located very far from Brescia etc.).</p>
Place and date of exam	<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.</p> <p>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 right holders, a remote interview will take place in the same day and at the same time.</p>
Contact for information	<p>Curriculum on "NATURAL RISKS ASSESSMENT AND MANAGEMENT": giovanna.grossi@unibs.it;</p> <p>Curriculum on "URBAN PLANNING AND MOBILITY": michele.pezzagno@unibs.it;</p> <p>Curriculum on "MATHEMATICAL METHODS AND MODELS FOR ENGINEERING": riccarda.rossi@unibs.it;</p> <p>Curriculum on "APPROPRIATE METHODOLOGIES AND TECHNIQUES FOR INTERNATIONAL DEVELOPMENT COOPERATION": sabrina.sorlini@unibs.it;</p> <p>Curriculum on "STRUCTURAL REHABILITATION OF HISTORICAL AND MODERN BUILDINGS": fausto.minelli@unibs.it.</p>
Teaching and research activity	<p>http://www.unibs.it/dipartimenti/ingegneria-civile-architettura-territorio-ambiente-e-matematica/dottorato</p>