

PHD PROGRAMME TABLE 38TH CYCLE

Section “Available Positions and Scholarships” integrated on 12/05/2022

Section “Available Positions and Scholarships” integrated on 26/05/2022

Section “Available Positions and Scholarships” integrated on 08/06/2022

PROGRAMME’S NAME	ENGINEERING AND INFORMATION TECHNOLOGY FOR STRUCTURAL AND ENVIRONMENTAL MONITORING AND RISK MANAGEMENT – EIT4SEMM
DURATION	3 years
PROGRAMME START DATE	01/11/2022 (DD/MM/YYYY)
LANGUAGES	English
MANDATORY STAY ABROAD	6 months
COORDINATOR	Prof. Alessandro Marzani (alessandro.marzani@unibo.it)
CURRICULA	N/A
RESEARCH TOPICS	Detailed list at the bottom of the present document
PhD POSITIONS	14
ADMISSION PROCEDURE	Qualifications and research proposal evaluation Oral examination

Available Positions and Scholarships

Pos. n.	Financial Support	Description	Positions linked to research topics
1	PhD Scholarship	Totally funded by the University of Bologna general budget	Structural and Geotechnical Engineering
2	PhD Scholarship	Co-funded by the University of Bologna general budget and the Department of Civil, Chemical, Environmental, and Materials Engineering with funds made available by ARCES	
3	PhD Scholarship	Co-funded by the University of Bologna general budget, the Department of Computer Science and Engineering and the Department of Civil, Chemical, Environmental, and Materials Engineering with funds made available by ARCES	
4	PhD Scholarship	Co-funded by the University of Bologna general budget and the Department of Electrical, Electronic, and Information Engineering "Guglielmo Marconi"	
5	PhD Scholarship	Funded by MUR under the “Dipartimenti di Eccellenza” initiative	Chemical and process engineering
6	Research Grant	Provided by the Department of Civil, Chemical, Environmental, and Materials Engineering with funds made available by the research project PRIN2020 - ZIMuX - Prof. Nicholas Fantuzzi - CUP J35F22000640001. The research grant will have a duration of 12 months, renewable up to 36 months and gross percipient amount of € 19367	Zero Impact MULTifunctional 3D printed composite materials for biomedical and industrial applications in the neXt generation society (ZIMuX)
7	Research Grant	Provided by the Department of Electrical, Electronic, and Information Engineering “Guglielmo Marconi” with funds	Extending RISC-V Processors For Secure

		made available by the projects H2020 EPI-SGA1 (GA 826647) and EPI SGA2 (GA 101036168) - ref. prof. Luca Benini. The research grant will have a duration of 12 months, renewable up to 36 months and gross percipient amount of €19,367	High-Performance Systems
8	Research Grant	Provided by the Department of Electrical, Electronic, and Information Engineering "Guglielmo Marconi" with funds made available by the projects H2020 EPI-SGA1 (GA 826647) and EPI SGA2 (GA 101036168) - ref. prof. Luca Benini. The research grant will have a duration of 12 months, renewable up to 36 months and gross percipient amount of €19,367	FPGA emulation and runtime support for ultra-low-power multi-core architectures
9	Research Grant	Provided by the Department of Electrical, Electronic, and Information Engineering "Guglielmo Marconi" with funds made available by the projects H2020 EPI-SGA1 (GA 826647) and EPI SGA2 (GA 101036168) - ref. prof. Luca Benini. The research grant will have a duration of 12 months, renewable up to 36 months and gross percipient amount of €19,367	Secure Heterogeneous architectures for predictive model based control systems
10	Research Grant	Provided by the Advanced Research Center on Electronic System "Ercolo De Castro" – ARCES in collaboration with TÜV Austria Holding AG. The research grant will have a duration of 12 months, renewable up to 36 months and gross percipient amount of €27,258.00	Structural health monitoring via operational modal analysis
11	Research Grant	Provided by the Advanced Research Center on Electronic System "Ercolo De Castro" – ARCES in collaboration with TÜV Austria Holding AG. The research grant will have a duration of 12 months, renewable up to 36 months and gross percipient amount of €27,258.00	Diagnostic, monitoring and residual life estimation of composite pressure vessels
12	Research Grant	Provided by the Advanced Research Center on Electronic System "Ercolo De Castro" – ARCES in collaboration with TÜV Austria Holding AG. The research grant will have a duration of 12 months, renewable up to 36 months and gross percipient amount of €27,258.00	Structural health monitoring of metallic pressure vessels (e.g. LPG tanks)
13	Executive PhD	Position reserved for employees of HPE COXA	Intelligent sensor systems for automotive applications
14	Research Grant	Provided by the Department of Civil, Chemical, Environmental, and Materials Engineering with funds made available by the project Alma Idea 2022. The research grant will have a duration of 12 months, renewable up to 36 months and gross percipient amount of € 19,367	Measures and solutions for large scale assessment and monitoring of human impacts on biochemical water quality

Admission Exams

	DATE AND TIME	RESULTS
Qualifications and research proposal evaluation	Applicants' participation is not required	Available from 30/06/2022**
Oral examination	Date: starting from 14/07/2022 – 9.00 a.m. CEST* Place: Remotely, using Microsoft Teams	Available from 30/07/2022**

* In case that the oral examination cannot be completed in one day due to the large number of applicants, the oral examination detailed schedule shall be made available on the webpage [Studenti Online](#) together with the results of the qualifications and research proposal evaluation. **During the oral examination, applicants may express their interest in one or more positions linked to specific research topics.**

** The **results of the admission exams** will be available on the webpage [Studenti Online](#) (select “summary of the requests in progress” > “see detail” and open the .pdf file at the bottom of the page). **No personal written communication will be sent to applicants concerning the examinations results.**

Required and Supporting Documents to be attached to the application

All the documents listed below **shall be drawn up in English or in Italian**. In case of documents originally issued in any other language (e.g. identity document, qualifications), an official translation is required.

Only qualifications obtained **during the last 5 calendar years** shall be taken into consideration, except for the University Degree. The Admission Board will assess the relevance of the supporting documents to the PhD Programme.

REQUIRED DOCUMENTS	
Identity document	Valid identity document with photo (i.e. identity card, passport)
Curriculum Vitae	No specific CV format is required
Degrees	Documents attesting the awarding of the first and second cycle degrees, the exams taken and the marks obtained (see Art. 3 of the Call for Applications)
Research proposal	Multi-annual research proposal, with special emphasis on the activities to be completed during the first-year course . The proposal must meet the following requirements: <ul style="list-style-type: none"> - it must mention on the cover page up to a maximum of three research topics the proposal is about (see detail of the research topics at the bottom of the present document); - it cannot exceed 10,000 characters, including spaces and formula possibly used. This figure does not include: the title of proposal, the outline, references and images (such as graphs, diagrams, tables, etc. - if present).
SUPPORTING DOCUMENTS	
Personal Statement	The statement shall include the reasons prompting the applicant to attend the PhD Programme and those relevant experiences and research interests , that make the applicant suitable for the specific PhD Programme (3000 characters maximum, including spaces)
Publications	<ul style="list-style-type: none"> - Full text publications (i.e. monographs, articles on scientific journals) - Full text minor publications (conference papers, etc.) - Full text abstracts and posters presented during national and international conferences, etc. - Max n. 3
Other documents	<ul style="list-style-type: none"> - Postgraduate vocational training programmes relevant to the PhD Programme main research topics - Research activity of any kind - whether basic, applied, translational, etc. - carried out in any capacity, including when covered by research grants, and as a staff member of research projects - Work activity - Curricular or non-curricular professional internships - Documents attesting the applicant’s foreign languages proficiency - Periods of study abroad, completed by applicants outside their countries of origin (e.g. Erasmus programme or other similar mobility programmes) - Other qualifications attesting the suitability of the applicants (scholarships, prizes, etc.)

Evaluation criteria*

Scores will be expressed in points out of 100, as follows.

1. Qualifications and research proposal evaluation

Minimum score for admission to the oral examination: 30 points, Maximum score: 50 points

Qualifications evaluation	First (Bachelor’s) and second cycle (Master’s) degree final marks. Graduands shall be evaluated according to the Weighted Average Mark (WAM)	20 points max
	Publications	3 points max
	Other evaluable documents	2 points max

Research proposal evaluation	Scientific value and ground-breaking nature of the proposal	12 points max
	Structure of the proposal	8 points max
	Proposal feasibility	5 points max

2. Oral examination

Minimum score for eligibility: 30 points, Maximum score 50 points

English language proficiency	5 points max
Research proposal presentation	25 points max
General knowledge of issues encompassed by the PhD Programme	20 points max

Oral examination aims to assess the suitability of the applicant for scientific research as well as the general knowledge of issues encompassed by the PhD Programme (see the list of [research topics](#) at the bottom of the present document).

During the oral examination, the applicant's English proficiency shall be assessed.

The oral examination is carried out in English.

* Possible further evaluation criteria will be available on the [University website](#), selecting the relevant PhD Programme > "More information", at the bottom of the page in the section "Notices".

Research Topics

The following learning, teaching and research areas have been identified:

- Physical models (analytical and numerical), system identification
- Structural mechanics
- Fluid mechanics, hydrology and soil mechanics
- Geomatics and autoID
- Process safety and loss prevention
- Remote sensing and earth observation systems
- Climate change monitoring and control
- Positioning systems
- Sensors and actuators, interoperability and dependability
- Communication and sensor networks, Internet of Things, Web of Things
- Energy harvesting and power management
- ICT techniques for energy efficiency in buildings and cities
- Nondestructive tests, methods and technologies
- Signal and image processing, computer vision
- HW/SW design of embedded systems
- Machine learning applied to structural and environmental monitoring
- Advanced information processing methodologies, wearable computing, high performance computing
- Information management, big data, crowd sensing, data availability, data privacy and security
- Data modeling, data analysis/uncertainty, learning and cognitive analytics, prediction, decision support
- Domain specific platforms and services
- Modeling and simulation methodologies and tools for complex systems
- Safety, risk analysis and management
- Resilience and resilience engineering
- Logistics (in ordinary and extraordinary conditions)
- Optimization schemes/strategies
- Reliable systems design and project based learning
- Environmental multi-source pollution and control
- Sea pollution control and coastal management
- Emergency management and communication
- Circular economy and circular resource management