ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA | AREA
FORMAZIONE E DOTTORATO

PHD PROGRAMME TABLE 40TH CYCLE

Section "Available Positions and Scholarships" integrated on 10/06/2024

Section "Available Positions and Scholarships" integrated on 11/06/2024

Section "Available Positions and Scholarships" integrated on 13/06/2024

PROGRAMME'S NAME	DATA SCIENCE AND COMPUTATION
ASSOCIATED PARTNERS *Pursuant to art. 3 para 2 lett. b) of the MD n. 226/2021*	Istituto Italiano di Tecnologia – IIT INFN
DURATION	3 years
PROGRAMME START DATE	01/11/2024 (DD/MM/YYYY)
LANGUAGES	Italian, English
COORDINATOR	Prof. Daniele Bonacorsi (daniele.bonacorsi@unibo.it)
PhD POSITIONS	11
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*	Funded by the University of Bologna general budget, by the Department of Computer Science and Engineering and by the Department of Electrical, Electronic, and Information Engineering "Guglielmo Marconi"	
2	*PhD scholarship*	Funded by Fondazione Istituto Italiano di Tecnologia (IIT)	Genomics and Bioinformatics, Personalized Medicine, Computational Chemistry & Physics
3	*PhD scholarship*	Funded by Fondazione Istituto Italiano di Tecnologia (IIT)	Genomics and Bioinformatics, Personalized Medicine, Computational Chemistry & Physics
4	*PhD scholarship*	Funded by Istituto Nazionale di Fisica Nucleare - INFN	Computational Physics
5	*PhD scholarship*	Funded by Istituto Nazionale di Fisica Nucleare - INFN	Computational Physics
6	*Research Grant*	Provided by the Department of Computer Science and Engineering with funds made available by the project HORIZON-RIA DECICE "Device-Edge-Cloud Intelligent Collaboration framEwork" (ref. Prof. Andrea Bartolini) GA 101092582. The research grant will have a duration of 12	AI-based Predictive Modelling and Optimization for Sustainable High-

		months, renewable up to 36 months, and gross percipient amount of €21,888.34 per year.	Performance Computing
7	*Research Grant*	Provided by the Department of Computer Science and Engineering with funds made available by the project HORIZON-RIA Graph-Massivizer "Extreme and Sustainable Graph Processing for Urgent Societal Challenges in Europe" (ref. Prof. Andrea Bartolini) GA 101093202. The research grant will have a duration of 12 months, renewable up to 36 months, and gross percipient amount of €21,888.34 per year.	Transfer and federated learning methods for data-driven models of data centers' operational data
8	*Research Grant*	Provided by the Department of Electrical, Electronic, and Information Engineering "G. Marconi" with funds made available by the project HORIZON-KDT-JU-2021-2-RIA EdgeAI "Edge AI Technologies for Optimised Performance Embedded Processing" (ref. Prof. Andrea Acquaviva) GA 101097300 CUP J33C22004280003. The research grant will have a duration of 12 months, renewable up to 36 months, and gross percipient amount of €21,628.93 per year.	AI foundation models for automatic source code generation and optimization
9	*Research Grant*	Provided by the Department of Electrical, Electronic, and Information Engineering "G. Marconi" with funds made available by the project HORIZON-RIA DECICE "Device-Edge-Cloud Intelligent Collaboration framEwork" (ref. Prof. Andrea Bartolini) GA 101092582. The research grant will have a duration of 12 months, renewable up to 36 months, and gross percipient amount of €21.888,34 per year.	AI-Powered Digital Twin's for Sustainable Compute Continuum Operation
10	*PhD scholarship*	Funded by CINECA - Consorzio Interuniversitario with funds made available by PNRR CN HPC - CUP Cineca (Spoke 1 - Future HPC– in the framework of the research programme CN00000013 Centro Nazionale "National Centre for HPC, Big Data and Quantum Computing" – scholarships funded by NextGeneratioEU – National Resilience and Recovery Plan, Mission 4 - Component 2 - Investment 1.4 - CUP D56G22000380006)	Sustainable AI production: Methods for efficient computation of Large Language Model in largescale computing infrastructure
11	*PhD scholarship*	Funded by INGV - Istituto Nazionale di Geofisica e Vulcanologia	Application of Data Science and Artificial Intelligence Techniques for the Multiparametric Analysis of Seismological, Geodetic, and Geophysical Time Series

The number of positions and scholarships may be incremented in case additional funding becomes available, notwithstanding the terms of the application process in the Call. Any amendment, update or integration of the Programme Table will be published on the University website, even after the Call for applications has expired. Any further PhD positions shall be integrated in the PhD Programme Table within ten days before the oral examination.

All PhD positions winners shall fulfill the learning and research obligations decided by the Academic Board and the obligations foreseen in the relevant regulations, funding schemes and eventual agreements, and in the Call for Applications.

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Admission Exams

	DATE AND TIME	RESULTS
Qualifications and research proposal evaluation	Applicants' participation is not required	Available from **28/06/2024**
Oral examination	**Date**: starting from **08/07/2024 – 9.30 a.m. CEST** **Place**: In presence, Sala IR-0A/0B, Dipartimento di Fisica e Astronomia, Via Irnerio 46, Bologna. Remotely, using Microsoft Teams	Available from **22/07/2024**

The results of the qualifications and research proposal evaluation shall 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) together with the oral examination detailed schedule. **No personal written communication will be sent to applicants concerning the examinations results**.

During the oral examination, applicants may express their interest in one or more positions linked to specific research topics.

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	The Curriculum Vitae must be drawn up using the **CV form**, downloadable in .docx from the University website (select the PhD Programme → "*More information*", then check "*Notices*" at the bottom of the page). **A 5 points penalty on the total qualification evaluation score shall be applied to applicants not using the above-mentioned CV form.**
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). Applicants are required to indicate the Weighted Average Mark (WAM) for each degree submitted.
Research proposal	Brief research statement (3 pages maximum in Times New Roman 11, with references including maximum 20 articles). **A 5 points penalty on the total Research Statement evaluation score shall be applied to applicants exceeding the indicated maximum lengths.**
SUPPORTING DOCUMENTS	
Publications	Lists of publications (i.e. monographs, articles on scientific journals), minor publications (conference papers, book's chapters etc.), abstracts and posters presented during national and international conferences, etc.
Other documents	- Postgraduate vocational training programmes relevant to the PhD Programme main research topics - Teaching activity carried out at university level - 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 - 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 cycle degree Weighted Average Mark (WAM) - 50% Second cycle degree Weighted Average Mark (WAM) - 50% Or Single cycle degree Weighted Average Mark (WAM) - 100% Or "Vecchio ordinamento" Italian degree (pre-1999 reform) average mark - 100% For degrees awarded abroad – CGPA - 100%	25 points max
	Publications	4 points max
	Postgraduate scholarships, research grants, research activity carried out in Universities, public or private bodies, in the last 5 years and after being awarded a second cycle degree	2 points max
	Other qualifications attesting the applicant's training and skills	3 points max
	Participation in conferences as a speaker or author/co-author of original contributions	1 points max
Research proposal evaluation	Scientific value and ground-breaking nature, structure and feasibility of the proposal (note that a 5 points penalty on the total evaluation score of this item shall be applied to applicants exceeding the maximum lengths of three pages)	15 points max

2. Oral examination

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

English language proficiency	10 points max
Research proposal presentation	15 points max
General knowledge of the PhD programme's main research topics and of the research topics linked to the available PhD positions	25 points max

Oral examination aims to assess the suitability of the applicant for scientific research as well as the general knowledge of the PhD programme's main research topics and of the research topics linked to the available PhD positions.

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

The oral examination is carried out in Italian or in English.

* Possible further evaluation criteria will be available on the [University website](#), selecting the relevant PhD Programme > "More information".