



ALMA MATER STUDIORUM  
UNIVERSITÀ DI BOLOGNA

AREA  
FORMAZIONE E DOTTORATO







## PHD PROGRAMME TABLE

Call for applications for the admission to the PhD programmes (42<sup>nd</sup> cycle) - A.Y. 2026/2027  
Second round

PROGRAMME'S NAME	PHYSICS
ASSOCIATED PARTNERS <i>Pursuant to art. 3 para 2 lett. b) of the MD n. 226/2021</i>	Istituto Nazionale di Fisica Nucleare - INFN
DURATION	3 years
PROGRAMME START DATE	01/11/2026 (DD/MM/YYYY)
LANGUAGES	Italian, English
COORDINATOR	Prof. Alessandro Gabrielli ( <a href="mailto:alessandro.gabrielli@unibo.it">alessandro.gabrielli@unibo.it</a> )
PhD POSITIONS	21
ADMISSION PROCEDURE	Qualifications evaluation Oral examination

### Available Positions and Scholarships

Pos. n.	Financial Support	Description	Positions linked to research topics
1	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy "Augusto Righi"	Research and development of projects aimed at promoting and cataloging the collections held by the Institute of Sciences and the university museums, and, more broadly, the university's heritage, with a view to fostering scientific literacy and citizenship education
2	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy "Augusto Righi"	Synthetic data for real-world evidence in healthcare: methods, validation and governance
3	<b>PhD Scholarship</b>	Totally funded by the University of Bologna general budget	Nuclear, subnuclear, astroparticle and fundamental interaction physics: experimental study, research and technological development

4	<b>PhD Scholarship</b>	Totally funded by the University of Bologna general budget	Nuclear, subnuclear, astroparticle and fundamental interaction physics: experimental study, research and technological development
5	<b>PhD Scholarship</b>	Totally funded by the University of Bologna general budget	Theoretical physics of fundamental interactions
6	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy “Augusto Righi” with funds made available by the project H2020CRYST3FM H2020 CRYST^3 PROF. MINARDI n. 964531 CUP J35F21000210006 – PI Prof. Minardi	Ultracold atoms in photonics crystal fibers for quantum sensing
7	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy “Augusto Righi” with funds made available by the Call BRIC 2025, in the framework of the Research Activities Plan INAIL 2025–2027 - project SafeRAD - CUP J33C25001540005; project INNOVARE Fondazione S. Paolo-CARIPLO-CDP - Call vEIColo - CUP J33C25001870002 – PI Prof. Basiricò	Radiation–matter interaction in organic/hybrid low-dimensional semiconductors
8	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy “Augusto Righi”	Understanding defect states and interfaces in 2D and 3D metal halide perovskites
9	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy “Augusto Righi” with funds made available by the project MSCA Exploring quantum observables at the LHC - QUANTUMLHC n. 101107121 CUP J33C23001080006 (PI dott. F. Fabbri) HEU_2022_QUANTUMLHC_MALTON_F_01	Probing quantum information with the top quark at the LHC and testing the ATLAS inner tracker
10	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy “Augusto Righi”	Accelerating the computation of neutron transport models in composite materials for future fourth-generation nuclear power plants using FPGA hardware platforms
11	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy “Augusto Righi” with funds made available by FIS2_FRONTLINE_DISANTE Project FrontLine FIS2023- 00144 CUP J53C25001880001 Frontiers of kagome metals and line-graph lattices, PI Prof. Di Sante	Investigating electronic correlations in kagome metals by beyond mean-field methods
		  	
12	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy “Augusto Righi” with funds made available by FIS2_FRONTLINE_DISANTE Project FrontLine FIS2023- 00144 CUP J53C25001880001 Frontiers of kagome metals and line-graph lattices, PI Prof. Di Sante	Exploring kagome metals with electronic structure methods and analogy with gravity theories
		  	

13	<b>PhD Scholarship</b>	Funded by the Dept. of Physics and Astronomy “Augusto Righi” with funds made available by FIS2_FRONTLINE_DISANTE Project FrontLine FIS2023- 00144 CUP J53C25001880001 Frontiers of kagome metals and line-graph lattices, PI Prof. Di Sante	Studying many-body collective phases of kagome metals by AI-assisted quantum simulations
		  	
14	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy “Augusto Righi” with funds made available by the project LION-HEARTED H2020LIONHEARTEDTC n. 828984 CUP J36C19000360006, PI Prof. Cramer	Bioelectronic signal transduction with mixed ionic electronic conductors
15	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy “Augusto Righi” with funds made available by the project FIS2_HERMES_MAZZARO FIS2023- 01817 CUP J53C25001840001 High-Throughput Exploration of Rising Materials for photoElectrochemical Solar fuels production, PI dott. Mazzaro	Semiconductor photoanodes for solar energy conversion: development of combinatorial methods for the study of materials and interfaces
		  	
16	<b>PhD Scholarship</b>	Funded by Azienda USL di Reggio Emilia – IRCCS	Data-driven radiotherapy: employing machine learning and automated frameworks to streamline treatment planning enhancement and patientspecific data analysis
17	<b>PhD Scholarship</b>	Funded by Italian Institute for Nuclear Physics (INFN)	Nuclear, subnuclear, astroparticle and fundamental interaction physics: experimental study, research and technological development
18	<b>PhD Scholarship</b>	Funded by Italian Institute for Nuclear Physics (INFN)	Nuclear, subnuclear, astroparticle and fundamental interaction physics: experimental study, research and technological development
19	<b>PhD Scholarship</b>	Funded by Italian Institute for Nuclear Physics (INFN)	Theoretical physics of fundamental interactions
20	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy “Augusto Righi”	Development and characterisation of sensors and electronics for the ePIC dRICH photodetector system
21	<b>PhD Scholarship</b>	Funded by the University of Bologna general budget and by the Dept. of Physics and Astronomy “Augusto Righi”	Generative AI for 3D Reconstruction and Synthetic Populations in Health and Urban Systems

The yearly gross amount of the scholarships awarded for the PhD Programme in “Physics” is €18,341.04.

All winners of PhD positions must fulfil the study and research obligations decided by the Academic Board, as well as the obligations set out in the relevant regulations, in the call for applications, in the funding schemes and in any agreements relating to specific positions.

## Admission Exams

	DATE AND TIME	RESULTS
<b>Qualifications evaluation</b>	Applicants' participation is not required	Available from <b>29/06/2026</b>
<b>Oral examination</b>	<b>Date:</b> starting from <b>06/07/2026 – 2.00 p.m. CEST</b> <b>Place:</b> In presence, Dept. of Physics and Astronomy, Via Irnerio 46, Bologna. Remotely, using Microsoft Teams	Available from <b>15/07/2026</b>

The results of the qualifications evaluation, as well as the oral examination detailed schedule, shall be available on the webpage [Studenti Online](#) (select "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.

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

## Required and Supporting Documents to be attached to the application

Only documents in Italian or English will be considered valid and will be assessed by the Admission Board. Identity documents and diplomas/degree certificates issued in a language other than Italian or English must be accompanied by an official translation. The translation must be carried out by an authorized body or by the awarding university. Only qualifications obtained in the last 5 years will be taken into account, with the exception of university degrees. The Admission Board will assess the relevance of the supporting documents to the PhD programme.

REQUIRED DOCUMENTS	
<b>Identity document</b>	Valid identity document with photo (i.e. identity card, passport)
<b>Curriculum Vitae</b>	Applicants must draw up their Curriculum Vitae according to the <a href="#">Curriculum Vitae form</a> , downloadable in .docx from the <a href="#">University website</a> (select the PhD Programme → "More information", then check "Notices" at the bottom of the page). <b>Applicants not using the said form will be excluded.</b> Experience attesting to the candidate's training and skills will be assessed in the Curriculum Vitae. Below is an indicative and non-exhaustive list of assessable experience: <ul style="list-style-type: none"> <li>- Postgraduate vocational programmes and/or specialisation programmes relevant to the PhD Programme</li> <li>- Teaching activity carried out at academic level</li> <li>- 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</li> <li>- Work activity</li> <li>- Curricular or non-curricular professional internships</li> <li>- Documents attesting the applicants's foreign languages proficiency</li> <li>- Study periods completed by applicants outside their countries of origin (e.g. Erasmus programme or other similar mobility programmes)</li> <li>- Other qualifications attesting the suitability of the applicants (scholarships, prizes, etc.)</li> </ul> The template also includes the sections entitled "Field of interest in Physics" and "Motivation". These must be filled in. Here the applicants are invited to describe their research interests and the reasons prompting the applicant to attend the PhD Programme
<b>Degrees</b>	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)
SUPPORTING DOCUMENTS	
<b>Thesis description</b>	Description of the second cycle degree thesis, drawn up using the <a href="#">template Thesis Description</a> , downloadable in .docx from the <a href="#">University website</a> (select the PhD Programme

	<p>→ “<i>More information</i>”, then check “<i>Notices</i>” at the bottom of the page). The document cannot exceed a 2-pages length (A4, font size 11, single line spacing). It must be structured as follows:</p> <ul style="list-style-type: none"> <li>- State of the art and scientific background</li> <li>- Thesis abstract, detailing attained or foreseen results</li> <li>- Future development of the research activity begun with the thesis</li> </ul> <p>Graduands may submit a description of the thesis they are currently working on. Applicants awarded with a degree in a foreign institution, not including a research thesis as part of the programme, can submit a research proposal with the described structure.</p>
<b>Reference letter/s</b>	<b>No more than 3 reference letters</b> signed by Italian and international academics and professionals in the research field, which do not form part of the Admission Board, attesting the suitability of the applicant and his/her interest in the scientific research. Letters shall be uploaded following the procedure on <a href="#">Studenti Online</a> , detailed in the Call for Applications (Art. 3.2).
<b>Publications</b>	Lists of publications (i.e. monographs, articles on scientific journals), minor publications (conference papers, etc.), abstracts and posters presented during national and international conferences, etc., to be inserted in the relevant section of the <a href="#">Curriculum Vitae form</a> .

## Evaluation criteria\*

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

### 1. Qualifications evaluation

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

Second cycle degree (Master’s) final mark. Graduands shall be evaluated according to the Weighted Average Mark (WAM) - taking into account the exams not yet taken	10 points max
Publications	3 points max
Curriculum Vitae evaluation - applicants must use the <a href="#">Curriculum Vitae form</a>	7 points max
Thesis description	15 points max
Personal statement	15 points max

### 2. Oral examination

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

English language proficiency	3 points max
Thesis description and research interests presentation	25 points max
General knowledge of the PhD programme’s main research topics and of the research topics linked to the available PhD positions	22 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.

**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”.