PHD PROGRAMME TABLE 38TH CYCLE

Section "Available Positions and Scholarships" integrated on 18/05/2022

PROGRAMME'S NAME	NANOSCIENCE FOR MEDICINE AND THE ENVIRONMENT
DURATION	3 years
PROGRAMME START DATE	01/11/2022 (DD/MM/YYYY)
LANGUAGES	English
MANDATORY STAY ABROAD	3 months
COORDINATOR	Prof. Dario Braga (dario.braga@unibo.it)
CURRICULA	N/A
RESEARCH TOPICS	Detailed list at the bottom of the present document
PhD POSITIONS	8
ADMISSION PROCEDURE	Qualifications 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	
2	PhD Scholarship	Totally funded by the University of Bologna general budget	
3	PhD Scholarship	Totally funded by the University of Bologna general budget	
4	PhD Scholarship	Totally funded by the University of Bologna general budget	Computational studies of structure, dynamics and photophysical properties of organic nano-structured materials for bioimaging
5	PhD Scholarship	Co-funded by the University of Bologna general budget and the Department of Chemistry "G. Ciamician"	
6	PhD Scholarship	Co-funded by the Department of Chemistry "G. Ciamician" and the Department of Physics and Astronomy with funds made available by the project SLIDE - (Grant Agreement n. 865633) – Ref. Prof. Righi	
7	PhD Scholarship	Funded by the Department of Chemistry "G. Ciamician" partly with funds made available by the project H2020 HYFLOW H2020 HyFlow – Ref. Prof. Soavi CUP J55F20000120006	Development of a sustainable hybrid storage system based on high power vanadium redox flow battery and supercapacitor – technology
8	PhD Scholarship	Funded by the Department of Chemistry "G. Ciamician" partly with funds made available by the project PRIN2020CBEYHC_002 Prof. Luca Prodi "Amplification Strategies for the Labeling and Detection of Infectious Agents (AStraLI) (Cup J43C21000080001)	Synthesis and Characterization of Bacteriophage-Based Bioconjugates

Admission Exams

	DATE AND TIME	RESULTS
Qualifications evaluation	Applicants' participation is not required	Available from **10/06/2022****
Oral examination	**Date**: starting from **27/06/2022 – 9.30 a.m. CEST*** **Place**: In presence, Sala Riunioni, Department of Chemistry "G. Ciamician", Via Selmi 2, Bologna. Remotely, using Microsoft Teams	Available from **29/06/2022****

* 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 English 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)
SUPPORTING DOCUMENTS	
Thesis abstract	Abstract of the **second cycle degree thesis.** Graduands applicants may submit the draft of the thesis. Abstracts cannot exceed 5,000 characters, including spaces and formula possibly used. The above figure does not include: the title of the thesis, the outline, references, and images such as graphs, diagrams, tables etc.
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	- Full text publications (i.e. monographs, articles on scientific journals) - **max n. 2** - Full text abstracts and posters presented during national and international conferences, etc. - **max n. 2**
Other documents	- Study periods 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 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)	10 points max
Consistency of the thesis abstract with the PhD programme main topics	12 points max
Personal statement	20 points max

Publications	2 points max
Other evaluable documents	6 points max

2. Oral examination

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

English language proficiency	5 points max
General knowledge of issues encompassed by the PhD Programme	45 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). **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 PhD programme in **Nanoscience for Medicine and the Environment** supports research projects dealing with the relation between Nanoscience and Health, considering both "human health and environmental health". Two different thematic areas are planned:

1. Nanoscience for Medicine

- Interactions between nanostructures and biomolecules/cellular structures
- Drug delivery systems
- Nanostructures, solid pharmaceutical hybrids formulations, crystalline polymorphism of active pharmaceutical ingredients
- Nanostructures and nanoformulations for high bioavailability administration of nutrients and bioactive molecules
- Use of artificial molecular machines in biomimetic systems
- Development of theranostic nanoplatforms
- Design of nanostructurated materials for the development of (multimodal) imaging contrast agent
- Nanostructured organic semiconductors for sensor applications
- Nanobiosensing for "point-of-care" and personalized medicine
- Nanostructures for regenerative medicine
- Cellular nanoengineering
- Nanotoxycology and technologies for "safety by design"

2. Nanoscience for the Environment

- Photo and/or electrocatalysts for water and air remediation or for the production of energy using "solar fuels"
- Nanobiosensing for enviromental monitoring
- Nanostructured photo and/or electrocatalysts for the reduction of CO2 in high energy density products
- Development of innovative synthesis for the production of nanocatalysts active in the sustainable transformation of biomass into chemicals
- Nanostructured platforms for the development of membranes for "water remediation"
- New materials for the conversion and storage of solar energy using molecuar machines
- Nanoecotoxycology
- Life cycle analysis (LCA) of the production and use of nanomaterials