PHD PROGRAMME TABLE
Call for Applications for further PhD positions
funded by Next Generation EU – NRRP ex M.D. 629/2024 and 630/2024
and from other sources - PhD programmes (40th cycle)
A.Y. 2024/2025

PROGRAMME'S NAME	MECHANICS AND ADVANCED ENGINEERING SCIENCES (DIMSAI)
DURATION	3 years
PROGRAMME START DATE	01/11/2024 (DD/MM/YYYY)
LANGUAGES	Italian, English
COORDINATOR	Prof. Lorenzo Donati (l.donati@unibo.it)
CURRICULA	1. Engineering and Industrial Design, Machine Construction, Metallurgy, and Manufacturing Technologies 2. Fluid Machinery, Energy Systems, Mechanics of Machines, and Industrial Mechanical Plants 3. Thermal Physics, HVAC Systems, Acoustics, Nuclear Technologies and Industrial Applications of Plasmas
PhD POSITIONS	10
ADMISSION PROCEDURE	Qualifications and research proposal evaluation Oral examination

Available Positions and Scholarships

Pos. n.	Financial Support	Description	Curriculum	Positions linked to a specific research topic
1	***PhD Scholarship PNRR ex M.D. 630/2024***	Funded by the EU - NextGenerationEU with funds made available by the National Recovery and Resilience Plan (NRRP) Mission 4, Component 2, Investment 3.3 (M.D. 630/2024) and by I.M.A. S.p.A.	2	Optimal robotic co-manipulation strategies in complex industrial scenarios
2	***PhD Scholarship PNRR ex M.D. 630/2024***	Funded by the EU - NextGenerationEU with funds made available by the National Recovery and Resilience Plan (NRRP) Mission 4, Component 2, Investment 3.3 (M.D. 630/2024) and by Newcleo	3	Design of the core of a lead-cooled fast reactor, optimized for closing the fuel cycle in energy systems with different initial fuel availability, and consequently different objectives for the stabilization of the associated inventories
3	***PhD Scholarship PNRR ex M.D. 630/2024***	Funded by the EU - NextGenerationEU with funds made available by the National Recovery and Resilience Plan (NRRP) Mission 4, Component 2, Investment 3.3 (M.D. 630/2024) and by Automobili Lamborghini S.p.A.	1	Design and development of UX testing methods for automotive HMI validation

4	***PhD Scholarship PNRR ex M.D. 630/2024***	Funded by the EU - NextGenerationEU with funds made available by the National Recovery and Resilience Plan (NRRP) Mission 4, Component 2, Investment 3.3 (M.D. 630/2024) and by BI-REX	1	Design, development and characterization of nanostructured smart composite materials
5	***PhD Scholarship PNRR ex M.D. 630/2024***	Funded by the EU - NextGenerationEU with funds made available by the National Recovery and Resilience Plan (NRRP) Mission 4, Component 2, Investment 3.3 (M.D. 630/2024) and by E80 Group S.p.A.	2	Models, methods and technologies for the design, management and control of robotic handling and storage systems
6	***PhD Scholarship PNRR ex M.D. 630/2024***	Funded by the EU - NextGenerationEU with funds made available by the National Recovery and Resilience Plan (NRRP) Mission 4, Component 2, Investment 3.3 (M.D. 630/2024) and by Ferrari S.p.A.	2	Development of innovative control techniques for high specific power hybrid powertrains
7	***PhD Scholarship PNRR ex M.D. 630/2024***	Funded by the EU - NextGenerationEU with funds made available by the National Recovery and Resilience Plan (NRRP) Mission 4, Component 2, Investment 3.3 (M.D. 630/2024) and by BI-REX	3	Study of heat transfer in single- and two-phase innovative heat-exchangers and steam cycles
8	***PhD Scholarship PNRR ex M.D. 630/2024***	Funded by the EU - NextGenerationEU with funds made available by the National Recovery and Resilience Plan (NRRP) Mission 4, Component 2, Investment 3.3 (M.D. 630/2024) and by Ferrari S.p.A.	1	Research and Development in Computer Aided Design (CAD) for 'Image to 3D' applications and advanced CAR DESIGN methods
9	***PhD Scholarship PNRR ex M.D. 630/2024***	Funded by the EU - NextGenerationEU with funds made available by the National Recovery and Resilience Plan (NRRP) Mission 4, Component 2, Investment 3.3 (M.D. 630/2024) and by Cheros S.r.L.	2	Artificial intelligence algorithms for monitoring and control of ocean wave energy converter power-take-off systems
10	***PhD Scholarship***	Funded by the Department of Industriale Engineering	2	Development of an "activity-based" approach to determine the real impact of sustainable road freight transport in the logistics sector

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, in the Call for Applications, and in the MM.DD. 629/2024 and 630/2024.

Admission Exams

	DATE AND TIME	**RESULTS**
Qualifications and research proposal evaluation	Applicants' participation is not required	Available from **26/08/2024**
Oral examination	**Date**: starting from **30/08/2024 – 9.00 a.m. CEST** **Place**: In presence, Sala Giunta – First Floor, Department of Industrial Engineering, Viale Risorgimento 2, Bologna. Remotely, using Microsoft Teams	Available from **02/09/2024**

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 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: - **it cannot exceed 20,000 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); - **it must include**: the state of the art; description of the proposal; expected results; references.
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.
Publications	Lists of publications (i.e. monographs, articles on scientific journals) and minor publications (conference papers, etc.)
Other documents	- 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 - 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, vocational programmes, 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) degrees final marks. Graduands shall be evaluated according to the Weighted Average Mark (WAM)	20 points max
	Publications and other qualifications attesting the applicant's training and skills	5 points max
Research proposal evaluation	Scientific value and ground-breaking nature of the proposal	15 points max
	Structure of the proposal	5 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
Applicant's suitability for academic research and knowledge of the topics connected to the research proposal	20 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. The applicant is preliminarily asked to declare any intention to compete for one or more topic-specific positions, if present in the list 'Available Positions and Scholarships' updated to the date of the interview. The oral examination includes a discussion of the research topics for which the candidate is applying and any in-depth questions concerning the candidate's knowledge and mastery of the main research areas of the PhD programme. **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".