

PhD Programme table 37th cycle – PON Call for application “Ricerca e Innovazione” 2014 – 2020



UNIONE EUROPEA
Fondo Sociale Europeo



PROGRAMME'S NAME	AEROSPACE SCIENCE AND TECHNOLOGY
DURATION	3 years
PROGRAMME START DATE	01/01/2022
LANGUAGE	Italian, English
COORDINATOR	Prof. Alessandro Talamelli (alessandro.talamelli@unibo.it)
CURRICULA	N/A
RESEARCH TOPICS	Detailed list at the bottom of the present document
PHD POSITIONS	2
ADMISSION PROCEDURE	Qualifications and research proposal evaluation

Available Positions and Scholarships

Actions	Pos. n.	Financial Support	Research topic
Action IV.5 “PhDs on green topics”	1	PhD Scholarship	Graphical methodologies for the early detection of wildfires and hydrogeological instability from autonomous air vehicles
	2	PhD Scholarship	Numerical characterization of plasma thrusters for microsattellites

Required and Supporting Documents to be attached to the application

(only documents in Italian, English, French, German and Spanish shall be considered as valid and be assessed by the Admission Board)

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 criteria listed in Art. 3 of the Ministerial Decree 1061/2021 (see also Art. 4 of the Call for applications).**

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 (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 cannot exceed 20,000 characters, including spaces and formulas, if present. This figure does not include: the title, the outline, references and images (such as graphs, diagrams, tables etc. - where present); - it must be written following the template provided for Action IV.5 “PhDs on Green topics”. The template is attached to the Call for Application and available for download on the University website.

SUPPORTING DOCUMENTS	
Publications	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.

Evaluation criteria

The **results of the admission exams** will be available **from 03/11/2021** on [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.**

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

Minimum score for eligibility: 60 points

Qualifications evaluation	University degree final mark. Graduands shall be evaluated according to the Weighted Average Mark (WAM)	10 points max
	Publications	10 points max
Research proposal evaluation		80 points max

Research Topics

n. 1 - GREEN

Thematic area SNSI 2014-20	Systems for the safety of the urban environment, the environmental monitoring and the prevention of critical events or risks
PNR 2021-2027*	5.4.7 Aerospace
Project title	Graphical methodologies for the early detection of wildfires and hydrogeological instability from autonomous air vehicles
Project description	Early detection of fires from autonomous aircraft (known as UAVs or drones) can help reduce CO2 emissions during fires and preserve the natural mechanism of conversion from CO2 to oxygen. Monitoring of hydrogeological phenomena can provide useful information to predict emergencies that are dangerous to people and the natural environment. To achieve these goals, efficient graphical methodologies for the recognition of significant entities from frames are needed, possibly exploiting Artificial Intelligence techniques and image processing.
Mandatory traineeship	6 months
Company type	Specialized in aeronautical design, homologation and manufacturing
Stay abroad	6 months

n. 2 - GREEN

Thematic area SNSI 2014-20	Launchers, electric propulsion, for a more efficient access to space and reentry vehicles
PNR 2021-2027*	5.4.7 Aerospace
Project title	Numerical characterization of plasma thrusters for microsattellites
Project description	The development of microsattellites opens new frontiers in climate control, smart agriculture and efficient resource management. In this context a key technology is related to plasma thrusters, which enable longer, more efficient and versatile missions. The characterization of thrusters will be done through the development of numerical codes that allow the optimization of flight performance and consequently the maximization of mission duration, albeit at reduced costs compared to traditional technologies.
Mandatory traineeship	6 months
Company type	Specialized in electric propulsion for microsattellites
Stay abroad	6 months

*the translation of PNR 2021-2027 has been carried out by the PhD Unit