

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



UNIONE EUROPEA
Fondo Sociale Europeo



PROGRAMME'S NAME	AGRICULTURAL, ENVIRONMENTAL AND FOOD SCIENCE AND TECHNOLOGY
DURATION	3 years
PROGRAMME START DATE	01/01/2022
LANGUAGE	Italian, English
COORDINATOR	Prof. Massimiliano Petracci (m.petracci@unibo.it)
CURRICULA	N/A
RESEARCH TOPICS	Detailed list at the bottom of the present document
PhD POSITIONS	9
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	The fight against labour exploitation within the biological agri-food sector as a driver of social innovation within EU sustainable framework
	2	PhD Scholarship	Economic evaluation of policy measures for animal welfare and biosecurity in animal breeding, and their effect on the reduction of antimicrobial resistance in the environment and along the food supply chain
	3	PhD Scholarship	Innovative agro-technical solutions in compliance with the European Green
	4	PhD Scholarship	Green agricultural innovations to face food and climate crises
	5	PhD Scholarship	Evaluation of environmental sustainability of mechanized agricultural operations using CANBUS data coming from fleets of agricultural machines
	6	PhD Scholarship	Myco-conversion of agricultural wastes into new bioproducts to improve the biodiversity of agricultural ecosystem
	7	PhD Scholarship	Applications of cold atmospheric plasma, as green technology, for food shelf life extension and waste reduction
	8	PhD Scholarship	Technological, sensory and nutritional assessment of eco-friendly food lipids
	9	PhD Scholarship	Metabolic profiles of microorganisms of agro-industrial interest for a sustainable farm-to-fork approach and exploitation of biodiversity

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 25.000 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. The proposals written not using the template will not be evaluated.
SUPPORTING DOCUMENTS	
Publications and other documents	<ul style="list-style-type: none"> - Lists of publications (i.e. monographs, articles on scientific journals), minor publications (conference papers, volume’s chapters etc.), abstracts and posters presented during national and international conferences, etc. - Research activity - whether basic, applied, translational, etc. - carried out in any capacity, including when covered by research grants, and as a staff member of research units - Research periods abroad, outside the country of origin.

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)	12 points max. <ul style="list-style-type: none"> - 12 points for 110 and Lode - 10 points for 109 to 110 included - 8 points for 105 to 108 included - 6 points for 101 to 104 included - 4 points for 97 to 100 included - 2 points for 93 to 96 included - 1 point for marks less than 93
	Publications and other documents	8 points max. Only titles within the PhD Programme’s research topics will be evaluated: <ul style="list-style-type: none"> - 1 point for any major publication on scientific journals, for a maximum of 3 points; - Up to 0.5 point for any minor publication, for a maximum of 1,5 points;

		<ul style="list-style-type: none"> - 0,1 points for any conference abstract or other publications, for a maximum of 0.5 points; - Up to 2 points for certificates of research activity; - Up to 1 point for research periods abroad
Research proposal evaluation	Scientific value and innovative nature of the proposal	25 points max
	Ability of the project to foster the synergy between research and the productive world	10 points max
	Description and structure of the proposal	15 points max
	Identification of parameters allowing the measurability of expected results	10 points max
	Adherence of the Project to the objectives of the Action PON R&I 2014-21	20 points max

Research Topics

n. 1 - GREEN

Thematic area SNSI 2014-20	Thematic Area: <i>Health, nutrition, quality of life</i> Development trajectory: Development of precision agriculture and agriculture of the future
PNR 2021-2027*	Research Field: <i>Food, bioeconomy, natural resources, agriculture, environment</i> Area of Application: <i>Knowledge and sustainable management of agricultural and forestry systems</i> Section: 1. Sustainable improvement of primary production.
Project title	The fight against labour exploitation within the biological agri-food sector as a driver of social innovation within EU sustainable framework
Project description	The research aims at exploring the characteristics of the labor market within the Agri-food sector in order to define a model for social innovation that can tackle the problem of work exploitation and that could be escalated to different biological companies at both a national and European level. The project will go beyond the definition of an ethical business model and it will analyze the intersectional roots of the phenomenon of work exploitation
Mandatory traineeship	6 months
Company type	Retail
Stay abroad	NO

n. 2 - GREEN

Thematic area SNSI 2014-20	Thematic Area: Health, nutrition, quality of life Development trajectories: <ul style="list-style-type: none"> - Systems and technologies for packaging, preservation and traceability and safety of food production - Development of precision agriculture and agriculture of the future - Systems for urban environment safety, environmental monitoring and prevention of critical events or risks
PNR 2021-2027*	Research Field: <i>Health</i> Area of Application: <i>Health Technologies</i> Section: 1. Technology and Business Models' Impact Assessments
Project title	Economic evaluation of policy measures for animal welfare and biosecurity in animal breeding, and their effect on the reduction of antimicrobial resistance in the environment and along the food supply chain

Project description	The research will take advantage of the ClassyFarm System, developed by the Ministry of Health through the Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna (IZSLER). ClassyFarm involves thousands animal farms for the evaluation of animal welfare and bio-security, monitoring on the use of antimicrobials, and electronic prescription. The interest of the economic evaluation involves several fields and functional levels: (i) economic sustainability of breeding practices oriented to the reduction of antimicrobial use and the improvement of animal welfare; (ii) the effect of such practices on the food supply chain performance; (c) the environmental impact; (d) the cost for the Public Animal Health Services
Mandatory traineeship	6 months
Company type	Public Agency
Stay abroad	NO

n. 3 - GREEN

Thematic area SNSI 2014-20	Thematic Area: Health, nutrition, quality of life Development trajectory: Development of precision agriculture and agriculture of the future
PNR 2021-2027*	Research Field: Food, bioeconomy, natural resources, agriculture, environment Area of Application: <i>Knowledge and sustainable management of agricultural and forestry systems</i> Section: 1. Sustainable improvement of primary production.
Project title	Innovative agro-technical solutions in compliance with the European Green
Project description	The European GREEN DEAL policy foresees by 2030 that the entire agricultural sector will move towards greater sustainability. To obtain such a result it will be necessary to develop some key points, such as: 1) to develop bio-herbicides not of chemical synthesis, to be integrated in the context of appropriate rotations and suitable cover crops to counter the development of weeds. 2) to identify and develop relay crop systems for food, energy and chemical use, for the bio-based industry; 3) to develop green alternatives for the chemical treatment technique of herbaceous crop seeds.
Mandatory traineeship	6 months
Company type	Bioeconomy, agriculture, seeds
Stay abroad	NO

n. 4 - GREEN

Thematic area SNSI 2014-20	Thematic Area: Health, nutrition, quality of life Development trajectory: Development of precision agriculture and agriculture of the future
PNR 2021-2027*	Research Field: Food, bioeconomy, natural resources, agriculture, environment Area of Application: <i>Knowledge and sustainable management of agricultural and forestry systems</i> Section: 1. Sustainable improvement of primary production.
Project title	Green agricultural innovations to face food and climate crises
Project description	The current environmental and climatic situation requires that green innovations be urgently brought to the agricultural sector, which currently contributes more than 25% to greenhouse gas emissions. To obtain such a result, it will be necessary to develop some key points, such as: 1) the development of new green technologies for the treatment and marketing of seeds; 2) define new protocols for the management of crop stresses (biotic and abiotic) of crops, inspired by the principles of organic farming; 3) identify and develop specific crop systems for food, energy and chemical purposes, suitable for the concepts of the bio-based economy.
Mandatory traineeship	6 months
Company type	Bioeconomy, agriculture, seeds
Stay abroad	NO

n. 5 - GREEN

Thematic area SNSI 2014-20	Thematic Area: <i>Health, nutrition, quality of life</i> Development trajectory: Development of precision agriculture and agriculture of the future
PNR 2021-2027*	Research Field: Food, bioeconomy, natural resources, agriculture, environment Area of Application: <i>Knowledge and sustainable management of agricultural and forestry systems</i> Section: 1. Sustainable improvement of primary production.
Project title	Evaluation of environmental sustainability of mechanized agricultural operations using CANBUS data coming from fleets of agricultural machines
Project description	Using of CANBUS data coming from fleets of agricultural machines in order to estimate the resources employed for crop production and the environmental sustainability of mechanized agricultural operations. The collected data should be analyzed with proper data mining algorithms in order to identify the machine operating conditions and classify them on the basis of their efficiency.
Mandatory traineeship	6 months
Company type	Agricultural machinery
Stay abroad	NO

n. 6 - GREEN

Thematic area SNSI 2014-20	Thematic Area: <i>Smart and sustainable industry, energy and environment.</i> Development trajectory: Technologies for biomaterials, biobased products and biorefineries
PNR 2021-2027*	Research Field: Food, bioeconomy, natural resources, agriculture, environment Area of Application: <i>Bioindustry for the Bioeconomy</i> Section: 3. Recovery and enhancement of waste and organic products at the end of life, for soil regeneration and environmental protection
Project title	Myco-conversion of agricultural wastes into new bioproducts to improve the biodiversity of agricultural ecosystem
Project description	Agriculture is one of the productive activities producing a large volume of agro-waste, which, if mishandled, poses a health, food safety and environmental risk. In this context, mushrooms are an attractive resource for the bioprocessing of agricultural waste into value-added by-products. The goal is to maximize the potential of agro-wastes to create a new product chain that ensure benefits to the biodiversity of agricultural ecosystems based on technological innovation.
Mandatory traineeship	6 months
Company type	Green, bioenergy, agriculture
Stay abroad	6 months

n. 7 - GREEN

Thematic area SNSI 2014-20	Thematic Area: <i>Smart and sustainable industry, energy and environment.</i> Development trajectory: Innovative, highly efficient production processes for industrial sustainability; Thematic Area: Health, nutrition, quality of life Development trajectory: Systems and technologies for packaging, preservation and traceability and safety of food production
PNR 2021-2027*	Research Field: Food, bioeconomy, natural resources, agriculture, environment Area of Application: <i>Food Science and Technology</i>
Project title	Applications of cold atmospheric plasma, as green technology, for food shelf life extension and waste reduction
Project description	Cold atmospheric pressure plasma technology (CAP) has a great potential as an efficient, economic, and environmentally friendly method for the stabilization and shelf-life extension of food products. The aim of the project is to study and optimize the applications of CAP, and to increase the knowledge of its effects on different food matrices during the production, processing, and packaging steps. This in order to contribute to the diffusion of this "green" technology at industrial level, since it does

	not require the use of chemical compounds, with the consequent increase of food processing sustainability.
Mandatory traineeship	6 months
Company type	Research, development and production of innovative technologies for cold plasma gas treatment of food and packaging
Mandatory stay abroad	NO

n. 8 - GREEN

Thematic area SNSI 2014-20	Thematic Area: Health, nutrition, quality of life
PNR 2021-2027*	Research Field: Food, bioeconomy, natural resources, agriculture, environment Area of Application: <i>Food Science and Technology</i> Section: 6. Emerging trends in food technologies and process efficiency.
Project title	Technological, sensory and nutritional assessment of eco-friendly food lipids
Project description	Agriculture is one of the productive activities producing a large volume of agro-waste, which, if mishandled, poses a health, food safety and environmental risk. In this context, mushrooms are an attractive resource for the bioprocessing of agricultural waste into value-added by-products. The goal is to maximize the potential of agro-wastes to create a new product chain that ensure benefits to the biodiversity of agricultural ecosystems based on technological innovation.
Mandatory traineeship	6 months
Company type	Agribusiness and food production
Stay abroad	NO

n. 9 - GREEN

Thematic area SNSI 2014-20	Thematic Area: Health, nutrition, quality of life
PNR 2021-2027*	Research Field: Food, bioeconomy, natural resources, agriculture, environment Area of Application: <i>Bioindustry for the Bioeconomy</i>
Project title	Metabolic profiles of microorganisms of agro-industrial interest for a sustainable farm-to-fork approach and exploitation of biodiversity
Project description	The PhD activity is based on the development of protocols for screening the metabolic potential of microorganisms for the proper management of activities in the agri-food sector from primary production to the processing industry. The exploitation of microbial biodiversity requires suitable analytical conditions according to the use of microorganisms and the use of phenotype microarrays is crucial; however, this requires the identification of suitable and specific protocols
Mandatory traineeship	6 months
Company type	Agribusiness
Stay abroad	NO

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