

PHD PROGRAMME TABLE 37TH CYCLE

Section "Available Positions and Scholarship" integrated on 29/04/2021

Section "Available Positions and Scholarship" integrated on 06/05/2021

Section "Available Positions and Scholarship" integrated on 11/06/2021

PROGRAMME'S NAME	FUTURE EARTH, CLIMATE CHANGE AND SOCIETAL CHALLENGES
DURATION	3 years
PROGRAMME START DATE	01/11/2021
LANGUAGE	Italian, English
MANDATORY STAY ABROAD	3 months
COORDINATOR	Prof. Nadia Pinardi (nadia.pinardi@unibo.it)
CURRICULA	<ol style="list-style-type: none"> 1. One Health 2. The earth system 3. Impacts, adaptation and vulnerability 4. Technological innovations for a decarbonized society 5. Socio-economic and legal studies for mitigation of climate change
RESEARCH TOPICS	Detailed list at the bottom of the present document
PhD POSITIONS	20
ADMISSION PROCEDURE	Qualifications and research proposal 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	Meteorology and atmospheric physics: exchange processes between surface and atmosphere over complex terrain
2	PhD Scholarship	Totally funded by the University of Bologna general budget	Physics of the Solid Earth: all aspects of solid earth geophysics, such as seismology, physics of volcanism, geodesy, quantitative geodynamics, tsunami
3	PhD Scholarship	Totally funded by the University of Bologna general budget	Models and engineering for climate change adaptation
4	PhD Scholarship	Totally funded by the University of Bologna general budget	Between nature and politics. A genealogy, history and critical analysis of the climate change discourse
5	PhD Scholarship	Co-funded by the University of Bologna general budget and the Department of Physics and Astronomy	Machine learning approaches for climate variability and predictions
6	PhD Scholarship	Co-funded by the University of Bologna general budget and the Department of Agricultural and Food Sciences partly with funds made available by the project H2020 FoodLand (GA 862802; CUP J34I20001170006)	Aeroponics and Hydroponics for vertical farming
7	PhD Scholarship	Co-funded by the University of Bologna general budget, the Department of Chemistry "Giacomo Ciamician" and the Department of Industrial Chemistry "Toso Montanari"	Carbon negative strategies for CO2 removal and chemical productions

8	PhD Scholarship	Co-funded by the University of Bologna general budget, the Department of Experimental, Diagnostic and Specialty Medicine	One Health solutions for sustainability
9	PhD Scholarship	Funded by the Department of Physics and Astronomy	Numerical modelling of slope stability and of landslide triggering in subaerial and submarine environments
10	PhD Scholarship	Funded by Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC)	Climate variability and predictability of European temperature extremes
11	PhD Scholarship	Funded by Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC)	Advance ocean forecasting in the Southern European Seas: river/ocean interactions and inter-basins exchanges
12	PhD Scholarship	Funded by Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC)	Data assimilation in the regional ocean forecasting systems of the Southern European Seas
13	PhD Scholarship	Funded by Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC)	Three-dimensional ocean modelling on unstructured meshes
14	PhD Scholarship	Funded by INGV - Istituto Nazionale di Geofisica e Vulcanologia	Historical reconstruction of extreme natural events of the past (earthquakes, volcanic eruptions, tsunamis, meteorological events, etc.)
15	PhD Scholarship	Funded by INGV - Istituto Nazionale di Geofisica e Vulcanologia	Temporal and Spatial analysis of ground deformation data in areas exposed to natural and anthropic origin deforming phenomena
16	Industrial PhD	Position reserved for employees of Curti Costruzioni Meccaniche S.p.a.	
17	Industrial PhD	Position reserved for employees of Curti Costruzioni Meccaniche S.p.a.	
18	PhD Scholarship	Funded by E4 Computer Engineering S.p.A.	Artificial Intelligence/Machine Learning applied to numerical model simulations
19	Industrial PhD	Position reserved for employees of International Research Institute for Climate and Society (IRI) Columbia University	
20	PhD Scholarship	Totally funded by the University of Bologna general budget within the project UNA Europa - One Health	One Health relationship between human and companion animal ocular microbiomes in diverse environment

Admission Exams

	DATE AND TIME	RESULTS
Qualifications and research proposal evaluation	Applicants' participation is not required	Available from 14/06/2021**
Oral examination	Date: starting from 28/06/2021 – 9 am CEST* Place: Remotely, using Microsoft Teams	Available from 19/07/2021**

* 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 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

(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 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	
Research proposal	<p>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:</p> <ul style="list-style-type: none"> - it must mention on the first page the Curriculum and the research topic of the PhD Programme associated to the research proposal; - 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 include: state of the art; project's description; expected results; timeline of the proposed research activities; outline of the proposed findings assessment criteria; references. <p>The research proposal that successful applicants shall carry out during their PhD career may possibly differ from the proposal submitted at the application stage. This shall be defined together with the supervisor and approved by the Academic Board.</p>
Thesis abstract	Abstract of the second cycle degree thesis . Graduands may submit the draft of their thesis (abstracts cannot exceed 5.000 characters, including spaces and formulas, if present. The above figure does not include: title, outline, images such as graphs, diagrams, tables etc. if present)
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).
Reference Letter/s	No more than 2 reference letters signed by Italian and/or 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 for the scientific research. Letters shall be uploaded following the procedure on Studenti Online , detailed in the Call for Applications (Art. 3.2).
Publications	List of publications (i.e. monographs, articles on scientific journals, volume chapters), minor publications (conference papers, etc.) and abstracts and posters presented during academic conferences
Other documents	<ul style="list-style-type: none"> - University Master Courses (Master Universitari di I e II livello), Postgraduate vocational training programmes and/or specialisation programmes relevant to the PhD Programme - Specialisation thesis - Teaching activity carried out at university level - 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 - Working activity - Language proficiency certificates - Periods of study abroad, outside the country 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 and research proposal evaluation

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

Second cycle degree final mark. Graduands shall be evaluated according to the Weighted Average Mark (WAM)	7 points max
Second cycle thesis abstract	8 points max
Research proposal	8 points max
Reference letter/s (2 letters are recommended)	8 points max
Publications	4 points max
Personal statement	5 points max
Post-graduate specialization programmes, teaching and working activity	4 points max
Language proficiency certificates and periods of study abroad (e.g. Erasmus programme or other similar mobility programmes)	4 points max
Other documents attesting the applicant's training and skills	2 points max

2. Oral examination

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

English 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](#)). During the oral examination, 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", at the bottom of the page in the section "Notices".

Final Ranking List and Enrollment

The PhD Programme Future Earth, Climate Change and Societal Challenges offers **topic-specific positions only** (Art. 9 of the Call for Applications): all the available PhD positions are linked to a specific Curriculum and research topic. Both in the Personal Statement submitted and during the oral examination, applicants may express their interest in one or more positions linked to specific research topic. Considering the expressions of interest, the Admission Board will establish if the applicants can be considered eligible for the allocation of the positions linked to specific research topics, taking into account their skills, experience and aptitude. **In case of vacancies, for the replacement only applicants in the sub-ranking list linked to the specific topic shall be taken into consideration.**

After the publication of the results of the oral examination, the **final ranking list** will be available on the [University website](#), selecting the relevant PhD Programme > "More information", section "Notices" at the bottom of the page.

Following the publication of the final ranking list, successful applicants shall **enroll** on [Studenti Online](#) by the deadline indicated on the [University website](#), selecting the relevant PhD Programme > "More information".

If a successful applicant withdraws from a position, the following applicant in the ranking list, who is also eligible for the specific position, will be contacted. During the replacement procedure, the new terms of enrollment shall be communicated via e-mail to the chosen applicant.

Research Topics

Curriculum 1. One Health

- Biodiversity loss and environmental impacts on health
- Environmental health risk factors
- Nutrition and health/disease determinants
- Antimicrobial resistance at human/animal/environmental interfaces
- Environmental health risks and law
- Climate change and emerging infectious diseases
- Microbiome at human/animal/environmental interfaces

- Food and water safety, sustainable food production, waste management
- Urban environment and human-animal relationships
- Diseases impact and management strategies at socio-economic and environmental levels
- Artificial intelligence applied to epidemiological and environmental data

Curriculum 2. The earth system

- Solid earth physics
- Observations of the atmosphere, oceans and ecosystems
- Climate variations and modeling
- Atmospheric and ocean predictions
- Water and hydrology
- Carbon cycle and biogeochemical cycles
- Paleoclimate
- Hazard mapping and extreme events
- Machine Learning applied to earth system data

Curriculum 3. Impacts, adaptation and vulnerability

- Food production and security
- Water resources and security
- Biodiversity, environment and nature conservation
- Economics of adaptation
- Resilient agriculture
- Cultural heritage conservation
- Recovery and reuse of materials

Curriculum 4. Technological innovations for a decarbonized society

- Energy and environmental efficient systems
- Renewable energy systems and products
- Green/blue/hybrid architecture
- Smart grids and positive energy districts
- Transport innovation
- Low carbon technologies
- Sustainable chemistry and engineering
- Industrial and Urban Symbiosis

Curriculum 5. Socio-economic and legal studies for mitigation of climate change

- Social, Economic, and Ethical Concepts and Methods
- Sustainable Development and Equity
- International Cooperation
- Regional Development and Cooperation
- Cross-cutting Investment and Finance issues
- Environmental law
- Circular economy
- Communicating Climate Change