

PHD PROGRAMME TABLE 37TH CYCLE

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

Section "Available Positions and Scholarship" integrated on 20/05/2021

Section "Available Positions and Scholarship" integrated on 07/06/2021

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

Section "Available Positions and Scholarship" integrated on 14/06/2021

PROGRAMME'S NAME	COMPUTER SCIENCE AND ENGINEERING
DURATION	3 years
PROGRAMME START DATE	01/11/2021
LANGUAGE	English
MANDATORY STAY ABROAD	3 months
COORDINATOR	Prof. Davide Sangiorgi (davide.sangiorgi@unibo.it)
CURRICULA	N/A
RESEARCH TOPICS	Detailed list at the bottom of the present document
PHD POSITIONS	15
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	
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	
5	PhD Scholarship	Totally funded by the University of Bologna general budget	
6	PhD Scholarship	Totally funded by the University of Bologna general budget	
7	PhD Scholarship	Funded by the Department of Modern Languages, Literatures, and Cultures with funds made available by the project RIA HORIZON 2020 with title "Polifonia: a digital harmoniser for musical heritage knowledge" POLIFONIA (Grant Agreement 101004746; P.I. Doc. Valentina Presutti)	Mining musical patterns
8	Research Grant	Provided by the Department of Computer Science and Engineering. The research grant will have a duration of 12 months, renewable up to 36 months, and gross percipient amount of € 19.540	Machine learning techniques for Software Engineering
9	Research Grant	Provided by the Department of Computer Science and Engineering. The research grant will have a duration of 12 months, renewable up to 36 months, and gross percipient amount of € 20.350	Blockchain-based machine learning for IoT environments
10	Research Grant	Provided by the Department of Computer Science and Engineering with funds made available by the project H2020StairwAI (P.I. Prof. Milano). The research grant will have a duration of 12 months, renewable up to 36 months, and gross percipient amount of € 19.367	Neuro-Symbolic AI Methodologies for Matchmaking Problems
11	Research Grant	Provided by the Department of Computer Science and Engineering with funds made available by the project H2020TAILOR (P.I. Prof. Milano). The research grant will have a duration of 12 months, renewable up to 36 months, and gross percipient amount of € 19.367	Integrated Methodologies for Optimization, Constraint Reasoning, and Machine Learning

12	PhD Scholarship	Funded by Sony Depthensing Solutions SA/NV	Algorithms and networks operating on SDS datasets (real/synthetic) to provide neural network-based RGB-D fusion capabilities and yield depth maps on par with the competition and tuned to operate on SDS/SSS camera kit data
13	PhD Scholarship	Funded within the Research training projects “Big Data per una regione europea più ecologica, digitale e resiliente” (Fondo POR FSE – Resolution n. 752 of 24/05/2021)	Analyzing human mobility through multiscale simulation models
14	Industrial PhD	Position reserved for employees of HrCoffee in collaboration with Consiglio Nazionale Ricerche (CNR)	
15	PhD Scholarship	Funded by Centro Alma Human AI	Federated Learning theoretical tools and platform developments

Admission Exams

	DATE AND TIME	RESULTS
Qualifications and research proposal evaluation	Applicants’ participation is not required	Available from 15/06/2021**
Oral examination	Date: starting from 21/06/2021 - 8.30 am CEST* Place: Remotely, using Microsoft Teams	Available from 05/07/2021**

* 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 the position linked to a specific research topic.**

** 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	Multi-annual research proposal, in English or in Italian , 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 include: state of the art; project's description; expected results; timeline of the proposed research activities; references. The research projects that successful applicants shall carry out during their PhD career may possibly differ from the project proposed at the application stage. This shall be defined together with the supervisor and approved by the Academic Board.
Thesis abstract	Abstract of the second cycle degree thesis, in English or in Italian . 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)
Reference Letter/s	No more than 3 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) and minor publications (conference papers, etc.), in English or in Italian .
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 - 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 - 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

University degree final mark. Graduands shall be evaluated according to the Weighted Average Mark (WAM)	10 points max
Second cycle thesis abstract, if relevant to the PhD Programme main topics	10 points max
Publications	5 points max
CV, Reference letter/s, other documents	10 points max
Research proposal (scientific value, description and structure, proposal feasibility)	15 points max

2. Oral examination

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

English proficiency	10 points max
General knowledge of issues encompassed by the PhD Programme	40 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

Considering the expressions of interest for the **topic-specific position** (Art. 9 of the Call for Applications), the Admission Board will establish if the applicants can be considered eligible for the allocation of the said positions, taking into account their skills, experience and aptitude. Topic-specific positions will be awarded according to a sub-ranking list of eligible applicants.

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

- Distributed systems and algorithms
- Programming languages and systems
- Computer networks and applications
- Software engineering
- Formal methods and semantics of programming languages
- Artificial intelligence
- Real-time and fault-tolerant systems
- Parallel algorithms and probabilistic algorithms
- Image Processing
- Bioinformatics and biometric systems
- Information systems and databases
- Concurrency theory
- Security
- Logical foundations of computer science
- Multimedia systems