

# DATA SCIENCE AND COMPUTATION

Section "Positions and scholarships" integrated on 29/04/2020

Section "Positions and scholarships" integrated on 07/05/2020

<b>Coordinator</b>	Prof. Andrea Cavalli Department of Pharmacy and Biotechnology Via Belmeloro 6 - Bologna <a href="mailto:andrea.cavalli@unibo.it">andrea.cavalli@unibo.it</a>		
<b>Starting date of the PhD Programme</b>	01/11/2020		
<b>Duration</b>	4 calendar years		
<b>Language of the PhD Programme</b>	Italian and English		
<b>Mandatory stay abroad</b>	Yes (3 months)		
<b>Associated partners</b> pursuant to art. 2, para 2, lett. d) of the M.D. n. 45/2013	Fondazione Istituto Italiano di Tecnologia IIT		
<b>Research topics</b>			
<ul style="list-style-type: none"> <li>- Quantitative Finance and Economics</li> <li>- Materials and Industry 4.0</li> <li>- Genomics and bioinformatics</li> <li>- Personalised medicine</li> <li>- Hardware and Infrastructure</li> <li>- Machine learning and deep learning</li> <li>- Computational physics</li> <li>- Big Data, Smart Cities &amp; Society</li> </ul>			
<b>PhD positions and scholarships</b>			
<b>Position n.</b>	<b>Financial support</b>	<b>Description</b>	<b>Positions linked to specific research subjects</b>
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	Funded by Istituto Italiano di Tecnologia (IIT)	
5	PhD Scholarship	Funded by Istituto Italiano di Tecnologia (IIT)	
6	PhD Scholarship	Funded by Istituto Italiano di Tecnologia (IIT)	
7	PhD Scholarship	Funded by Istituto Nazionale di Fisica Nucleare (INFN)	
8	PhD Scholarship	Funded by Istituto Nazionale di Fisica Nucleare (INFN)	
9	PhD Scholarship	Funded by MIUR under the "Departments of Excellence" initiative" and co-funded by the Department of Chemistry "G. Ciamician"	
10	Industrial doctorate	Position reserved for employees of CINECA Consorzio Interuniversitario	
11	PhD position without scholarship	Position reserved for PhD candidates enrolled at the Politecnico di Milano - POLIMI, 33 <sup>rd</sup> cycle, to one of the following PhD programmes: "Ingegneria dell'Informazione", "Modelli e Metodi Matematici per l'ingegneria" and "Ingegneria Gestionale". Under the condition that each candidate has been authorized (nulla osta) by the Academic Board POLIMI to the programme of double degree, referred to in art.1 of the agreement between the University of Bologna and the Politecnico di Milano of 2017.	
12	PhD Scholarship	Funded by the Department of Electrical, Electronic and Information Engineering "G. Marconi" with funds made available by the project UE - EPI GA 826647 (Prof. Luca Benini).	Co-design and AI Methods for Energy-Efficient High-Performance Computing Applications and Architectures

13	PhD Scholarship	Funded by the Department of Computer Science and Engineering and co-funded by the Department of Pharmacy and Biotechnology, partly with funds made available by the project MIUR PRIN 201744NR8S_002 (CUP J34I19001600005) named "Integrative tools for defining the molecular basis of the diseases: computational and experimental methods for protein variant interpretation" (ref: Prof. Capriotti)	Development of computational methods for the analysis and annotation of the human genetic variants
14	PhD Scholarship	Funded by CINECA Consorzio Interuniversitario	

**Positions linked to specific research subjects:** during the oral examination, applicants may express their interest in the position linked to a specific research subject. Considering the expressions of interest above, the Admission Board shall express its view on the suitability of the interested applicants, taking into account their specific skills, experience and aptitude.

#### Admission requirements

Please, see art. 2 of the Call for applications

#### Mandatory documents to be attached to the application

Please, see art. 3 of the Call for applications

**Further qualifications that may be attached to the application, if in possession of the applicant** (only qualifications attested by documents drawn up in Italian, English, French, German and Spanish shall be considered as valid and assessed by the Admission Board)

- Abstract of the second cycle master's degree thesis. Undergraduate applicants may submit the draft of the thesis approved by their supervisor (please, note that abstracts cannot exceed 5.000 characters, including spaces and formula possibly used. The above figure does not include: the title of thesis, the outline, and images such as graphs, diagrams, tables etc. - where present);
- Multi-annual research project, with special emphasis on the activities to be completed during the first-year course. The proposal must meet the following requirements:
  - o It cannot exceed 20.000 characters, including spaces and formula possibly used. This figure does not include: the title of project, the outline, references and images (such as graphs, diagrams, tables etc - where present);
  - o It must include: the state of the art; description of the project; expected results; lead-time for implementation; (proposed) criteria to be used to assess the findings obtained; references.

The research projects that successful applicants shall carry out during their doctoral 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.

- List of the publications (monographs, articles published on scientific journals).
- List of the minor publications (conference papers, volume's chapters, etc.).
- List of the abstracts and posters (presented during national and international conferences, etc.).
- Professional Master courses completed in Italy (1st or 2nd level) relevant to the PhD Programme.
- Postgraduate vocational training programmes/specialisation programmes relevant to the PhD Programme.
- Summary of the thesis defended within the framework of Specialization Schools. The summary cannot exceed 3000 characters;
- Teaching activity carried out at university level;
- 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.
- Work activity;
- Vocational internships;
- Curricular and non-curricular training and guidance internships;
- Other qualifications attesting the suitability of the applicants (scholarships, prizes, etc).

#### Admission exams (art. 4 of the call for applications)

<b>Examination type</b>	<b>Schedule</b> (please, note that applicants shall not receive any communication concerning the exams schedule)	<b>Examination results publication</b> (please, note that applicants shall not receive any communication concerning the publication of results)
<b>Qualifications and research project evaluation</b>	Non-presential.	The results of the qualifications and research project evaluation shall be available online starting from the <b>17/06/2020</b> at the page <a href="http://studenti.unibo.it">http://studenti.unibo.it</a> (please, select "summary of the requests in progress" - "see detail" and open the pdf file "risultati valutazione titoli e progetto")

<b>Oral examination</b>	<b>Date</b>	<b>29/06/2020</b> In case that the oral examination cannot be completed in one day due to the large number of applicants, the oral exam schedule shall be made available at the webpage <a href="http://studenti.unibo.it">http://studenti.unibo.it</a> together with the results of the qualifications and research project evaluation	The results of the oral examination shall be available on the webpage <a href="http://studenti.unibo.it">http://studenti.unibo.it</a> starting from <b>03/07/2020</b> (please, select "summary of the requests in progress" - "see detail" and open the pdf file "risultati prova orale")
	<b>Time</b>	09:00 a.m. (local time)	
Applicants shall take the exam remotely. For further details please refer to the relevant provision laid down in art. 4 of the Call for applications.			

### Evaluation criteria

Points will be allocated to applications out of a total of 100 on the basis of the following weighting:

#### 1. Qualifications and research project

- Minimum for admission to the oral exam: 30 points
- Maximum: 50 points

Only qualifications relating to the last 5 calendar years prior to the calendar year of publication of the Call for applications shall be taken into consideration, with the exception of the University Degree (Diploma di laurea). Please, note that qualifications must be consistent with the PhD Programme.

Points relating to qualifications shall be allocated on the basis of the following criteria:

- Graduation final mark. Undergraduates shall be evaluated on the basis of the Weighted Average Mark (WAM): max 25 points
- Publications: max 3 points
- Other (work and internship experiences, titles, prizes and awards, etc.): max 2 points

Points relating to the research project shall be allocated on the basis of the following criteria:

- Scientific value and ground-breaking nature of the proposal: max 8 points
- Description and structure of the proposal: max 7 points
- Proposal feasibility: max 5 points

#### 2. Oral examination

- Minimum for inclusion in the final ranking list: 30 points
- Maximum: 50 points

Oral examination includes the presentation of the research project and is intended to assess the suitability of the applicant to pursue scientific research as well as the general knowledge of issues connected to the PhD Programme. During the oral examination, knowledge of English language shall be assessed. The oral examination is carried out in Italian or in English (for foreign candidates).

Points relating to the oral examination shall be allocated on the basis of the following criteria:

- Knowledge of the English language: max 7 points
- Research project presentation: max 20 points
- General knowledge of issues connected to the PhD Programme: max 23 points

Possible evaluation sub-criteria will be available on the [Unibo website](#), selecting the relevant PhD Programme → "PhD programme information" at the bottom of the page in the section "Notices".

### Final ranking list and enrolment (arts.6 and 7 of the Call for applications)

After the publication of the results of the oral exam, the final ranking list will be available on the [Unibo website](#), selecting the relevant PhD Programme → "PhD programme information" at the bottom of the page in the section "Notices".

Following the publication of the final ranking list, successful applicants must enroll on <http://studenti.unibo.it> by the deadline indicated on the [Unibo website](#), selecting the relevant PhD Programme → "PhD programme information".