

DATA SCIENCE AND COMPUTATION

Sections "Entrance exams" and "Positions and scholarships" revised on 03/07/2017

Section "Positions and scholarships" integrated on 10/07/2017

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| Coordinator | Prof. Marco Roccetti Dept. of Computer Science and Engineering Mura Anteo Zamboni, 7 - Bologna marco.roccetti@unibo.it |
| Programme start date | 01/11/2017 |
| Duration | 4 years |
| Programme language | Italian and English |
| Mandatory stay abroad | Yes (3 months) |
| Partner Institutions pursuant to art. 2, clause 2, let. d) of M.D. n. 45/2013 | Fondazione Golinelli |
| Research topics | |
| <ul style="list-style-type: none">- Quantitative Finance and Economics;- Materials and Industry 4.0;- Genomics and bioinformatics;- Personalised medicine;- Hardware and Infrastructure;- Machine learning and deep learning;- Computational physics;- Big Data, Smart Cities & Society | |
| Admission requirements | |
| Applicants who have one of the following degrees may participate in the selection: <ul style="list-style-type: none">- Laurea specialistica or Laurea magistrale (second cycle degree)- Laurea Vecchio Ordinamento (degree obtained under the Italian previous regulations);- Degree granted by AFAM (Alta Formazione Artistica e Musicale) member institutions;- an academic Master's degree obtained abroad, comparable to the above mentioned Italian degrees and recognized as suitable for the admission to doctoral programmes. Undergraduated applicants may also submit applications with the obligation of getting their degree by October 31 st 2017. | |
| Documents to be attached to the application under penalty of exclusion (only documents in Italian, English, French, German and Spanish will be considered valid and assessed by the Admission Board) | |
| <ul style="list-style-type: none">- Scanned Copy of a valid identification document with photo (either National Identity document or Passport)- Curriculum vitae- Certificates and academic transcripts of records of <u>both Bachelor's and Master's degrees</u> containing the following details for each degree held:<ul style="list-style-type: none">o university that granted the degreeo type of degree (first cycle / second cycle / single cycle)o name of the degree programmeo date of graduationo final marko list of exams taken with their scores (academic transcript of records)o translation into Italian or English (<u>only for degrees issued in languages other than Italian, English, French, German and Spanish</u>). Applicants who have degrees obtained in: <ul style="list-style-type: none">o an Italian public university have to submit a <u>self-declaration</u> with date and signature (of <u>both first and second cycle degrees</u>: Laurea triennale and laurea specialistica/ magistrale/ laurea vecchio ordinamento)o EU Countries, except Italy, can submit a <u>self-declaration</u> or degree certificate or Diploma Supplement (of <u>both Bachelor's and Master's degrees</u>)o non-EU Countries have to submit the degree <u>certificate</u> and <u>academic transcript of records</u> (of <u>both Bachelor's and Master's degrees</u>) Undergraduated applicants have to submit: <ul style="list-style-type: none">o the documents as above, except for the following details: Master's degree date of graduation and final marko a self-declaration of the scores' weighted average (if not indicated in the academic transcript of records). | |
| Other documents to be attached to the application, if in the applicant's possession (only documents in Italian, English, French, German and Spanish will be considered valid and assessed by the Admission Board) | |
| <ul style="list-style-type: none">- Abstract of the dissertation of the second cycle degree or, for undergraduated applicants, of the draft dissertation approved by the supervisor (max. 5000 characters, spaces included, and any formulas, and not including title, contents, bibliography or illustrations, if any).- No more than 3 letters of presentation from university professors and/or Italian and international professionals who are not members of the Admission Board attesting the applicant's aptitude and interest in the scientific research. | |

Note: The applicant should not personally attach the letters of presentation to the application. The applicant should enter the email address of the professor/professional of whom the letter of presentation is requested when filling in the application on the website <http://studenti.unibo.it>. The professor/professional will receive an email containing instructions for uploading the letter of presentation. The letter of presentation should be uploaded by the professor/professional in pdf format only and before the deadline of this Call for Applications.

- Long-term Research project with particular emphasis on the 1st year activities, which the applicant plans to carry out as part of the PhD programme and must:
 - o state on the title page the curriculum of the PhD programme that the applicant is interested in and that the project concerns (research projects without this information will not be considered);
 - o have a maximum length of 20.000 characters, spaces and formulas included, and not including title, contents, bibliography or illustrations, if any (anything in excess will not be considered);
 - o be broken down into: state of the art; project description; learning outcomes; bibliography.
- The research project submitted with the application, however, may not be the one the successful applicant will carry out during the doctoral studies. Supervisors and Academic Board can propose a different one.
- List of the scientific publications (essays, articles in scientific journals)
 - List of minor publications (conference proceedings distributed at national and international level, contributions in monographs, etc.).
 - Other Master's and/or specialization degree in subjects consistent with the research topics of this PhD programme.
 - Postgraduate and/or specialization programmes in subjects pertinent to the PhD programme research topics
 - Scientific research of any type (basic, oriented, targeted, translational, applied, etc.) and carried out in any capacity, including research grants and taking part in research projects.
 - Working experience.
 - Knowledge of foreign languages.
 - Mobility experience abroad (e.g.: Erasmus or similar).
 - Any other document certifying the applicant's training and abilities (grants, awards, etc.)

Entrance exams (art. 4 of the Call for Applications)

| Type of exams | Exam book | Publication of exam results |
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| Assessment of qualifications and research project | (applicants will not receive any summoning) The applicant's presence is not required. | (applicants will not receive any exam result notification) The results of the assessment of qualifications and the research project can be consulted starting from 05/07/2017 10/07/2017 on the website http://studenti.unibo.it (select: 'summary of the requests in progress' → 'see detail' and open the pdf file named 'risultati valutazione titoli e progetto'). |
| Oral exam | Date | The oral exam results can be consulted on the website http://studenti.unibo.it starting from 25/07/2017 (select: 'summary of the requests in progress' → 'see detail' and open the pdf file named 'risultati prova orale'). |
| | Place | |
| | Time | |
| | Applicants residing abroad can take the oral exam remotely by audio/video teleconference via web (e.g. Skype). Applicants must request this method and specify a valid contact when applying. The Admission Board has to authorise this request. The Admission Board will assess any requests to take the oral exam remotely that arrive after the Call for Applications expires at its discretion. The remote oral exam calendar (with date, time and place where the Admission Board will meet specified) can be consult on the website http://studenti.unibo.it together with the results of the exam whose passing gives admission to the oral exam. Applicants admitted to the oral exam must make they are available at the contact provided on the application for three hours starting from the time given on the remote exam calendar. Applicants who are not found three times will be considered absent. Oral exams, including the remote exams, are public. | |
| | 17/07/2017 If there are too many applicants for the oral exam to be carried out in a single day, the oral exam calendar will be published on the website http://studenti.unibo.it together with the results of the assessment of qualifications and of the research project | |
| | Bologna – Mura Anteo Zamboni, 7 Dept. of Computer Science and Engineering "Nadia Busi" Meeting Room | |
| | 12 a.m. (local time) | |

Exam assessment criteria

Judgement is expressed by assigning a total grade in a 100-point scale that is divided up as follows:

1. Assessment of qualifications and research project

- minimum for being admitted to the oral exam: 30 points
- maximum: 50 points

Only qualifications and documents no older than 5 years (up to the deadline of this call for applications) - Bachelor's and

Master's degrees excluded - and deemed congruent with the research topics of the PhD programme will be assessed.

The assessment of qualifications grade will be given based on the following criteria:

- degree mark, and for those who are undergraduated students on the date this Call for Applications expires, the weighted average of marks of the exams: up to 20 points
- scientific publications: up to 3 points
- other qualifications: up to 2 points

The assessment of the Research project grade will be given based on the following criteria:

- scientific value and originality of the proposal: up to 10 points
- structure of the proposal: up to 10 points
- feasibility of the proposal: up to 5 points

2. Oral exam

- minimum to be placed on the list of qualified applicants: 30 points
- maximum: 50 points

The oral examination will focus on the explanation and discussion of the applicant's research project and will assess his/her aptitude for scientific research and his/her overall preparation on subjects regarding the research topics of the PhD programme.

Knowledge of the English language will be ascertained during the oral exam.

The oral exam is taken in Italian.

Scores will be assigned according to the following criteria:

- knowledge of foreign language: up to 10 points
- good argument regarding the project: up to 20 points
- grounding on the PhD programme topics: up to 20 points

If the Admission Board should establish any sub-criteria for assessing the exams before the exams are held, and in any case before having the applications submitted by the applicants at their disposal, they can be consulted on <http://studenti.unibo.it> (select: 'summary of the requests in progress' → 'see detail' and open the pdf file named 'sub-criteri di valutazione').

Final ranking list and enrolment (art. 6 and 7 of the Call for Applications)

The final ranking list will be published on <http://studenti.unibo.it> (select: 'summary of the requests in progress' → 'see detail' and open the pdf file named 'graduatoria').

No personal written communication shall be provided to applicants concerning the final results and the deadlines for enrolment.

Selected applicants will have to enroll by the date indicated in the final ranking list published on <http://studenti.unibo.it>.

Positions and scholarships

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| Total positions available | 15 |
| Positions with scholarship | 7 of which: <ul style="list-style-type: none">- 3- financed by the University's central budget- 3 - financed by Fondazione Golinelli- 1 - financed by CINECA Consortium |
| Positions with scholarship dedicated to specific research topics (art. 9 of the Call for Applications) Applicants may express their interest in being assigned a scholarship dedicated to a specific research topic to the Admission Board during the oral exam. The Board will express its judgement on eligibility to be assigned the scholarship in consideration of the specific competences, experience and specific aptitudes of the applicants | <ul style="list-style-type: none">- 2 financed by INAF (Italian National Institute for Astrophysics) and dedicated to the research topic "Computational physics"- 4 financed by IIT Foundation (Istituto Italiano di Tecnologia) and dedicated to the following research topics:<ul style="list-style-type: none">o Genomics and Bioinformaticso Patient-centered Medicineo Computational Physicso Genomics and Bioinformatics; Computational Physics- 1 financed by Centro di Riferimento Oncologico di Aviano (CRO) and dedicated to the research topic "Bioinformatics for cancer research"- 1 financed by ALFASIGMA S.p.A. and dedicated to the research topic "Genomics and Bioinformatics, Patient-centered Medicine" |