



Dibris



Ph.D. Program in Bioengineering and Robotics

*Department of Informatics, Bioengineering, Robotics, Systems Engineering (DIBRIS)
University of Genova*

Students' Handbook, Edition 2024

Revision 2.1 - March 2024

Introduction

The Ph.D. program in Bioengineering and Robotics is a doctoral program of the University of Genova (UNIGE). In this document you find the relevant information about the *educational*, *training*, and *research* activities offered.

Organization

The Doctorate in Bioengineering and Robotics (Doctorate in the following) is a 3 years Ph.D. program where students get in-depth training in **modern engineering methodologies and technologies** and, depending on the specific curriculum, in *robotics*, *biomedical technologies*, as well as in applied *life* and *cognitive sciences*, Education activities are offered through specific courses, national and international (summer) schools, seminars and/or additional activities proposed by the tutors.

At the beginning of the Ph.D. program, each student selects a specific research area and is expected: to develop a personal research agenda, under the supervision of a tutor, and under her/his supervision to acquire the analytical and/or experimental abilities required to complete the Ph.D. research project.

Curricula

The Doctorate is organized into 5 curricula and for each curriculum, there are designated *Reference Faculties* that coordinate the training and research activities in agreement and collaboration with the *Coordinator of the Ph.D. program* and the *Ph.D. Board (Collegio dei Docenti)*. The curricula are listed in the following along with the *Reference Faculties*:

| Curriculum | Reference Faculties | E-mail |
|---|---|--|
| Bioengineering | Prof. Paolo Massobrio | paolo.massobrio@unige.it |
| Robotics and Autonomous Systems | Prof. Giorgio Cannata | giorgio.cannata@unige.it |
| Advanced and Humanoid Robotics | Dr. Ferdinando Cannella Dr. Lorenzo Natale | ferdinando.cannella@iit.it lorenzo.natale@iit.it |
| Bionanotechnology | Dr. Giuseppe Vicidomini | giuseppe.vicidomini@iit.it |
| Cognitive Robotics, Interaction and Rehabilitation Technologies | Dr Alessandra Sciutti | alessandra.sciutti@iit.it |

Tutors

At the beginning of the program, the Ph.D. Board appoints for each student one or two Tutor/s¹, who is/are responsible for her/his scientific, technical as well as intellectual training.

At least one of the Tutors must be a University Professor, a University Researcher, or a highly qualified Scientist at IIT (at the level of Team Leader or higher).

Tutors make sure that Ph.D. students become active members of their research group.

Tutors support the publication of the scientific results of the students on international scientific journals or relevant conference proceedings, as well as their active participation in scientific conferences and schools.

Tutors are responsible for making available to their students all the resources needed to carry on their research projects. The availability of sufficient resources is checked by the Ph.D. Board and is a necessary condition to be appointed as Tutor.

Credit system

During the 3 years of Ph.D. students are required to obtain at least 180 credits (CF) - one CF corresponds nominally to about 25 hours of work. Credits are assigned as follows:

- *Structured Training activities (40 CF)*
- *Research activities (120 CF, i.e. 40 CF per year)*
- *Thesis writing (20 CF)*

Structured Training activities

Structured training activities include attending Ph.D. courses, national and/or international Ph.D. schools, and at least 30 Credits (CFs) have to be obtained during the first two years².

In general, “*structured training activities*” belong to the following typologies and Ph.D. Board will acknowledge an amount of CFs as shown below.

- (i) **Ph.D. courses**, specifically offered by the *Ph.D. Program in Bioengineering and Robotics*^{3,4}.

¹ In the case of two Tutors one has to be indicated as *Reference Tutor* who will become a member of the Ph.D. Board.

² It is highly recommended, that these CFs are allocated over the three years in decreasing weight, e.g. 25-30/5-10/0-5 to have more time during the 3rd year to formalize and disseminate the research results.

³ A list of offered courses is available on the PhD website: <https://biorob.phd.unige.it/courses>.

- a. A final exam must be positively passed
 - b. The number of credits assigned to each course is specified in the list of courses published each year.
- (ii) **Courses that are part of one of the *Graduate programs* (*Corso di Laurea Magistrale*)** offered at the University of Genova⁵ in agreement with the Tutor and with the approval of the Ph.D. Board.
- a. A final exam must be positively passed
 - b. CFs are the credits reported for the course on the official University website
- (iii) **Ph.D. Schools.** International Ph.D. Schools **approved in advance** by the Ph.D. Board upon a formal request to the Coordinator made by the Tutor⁶ including the detailed program of the School and its duration.
- a. A certificate of attendance of the school must be presented for the CFs to be assigned.
 - b. 3 CF/week are assigned (for a maximum of 9 CFs for each school).
- (iv) **Online Courses.** The attendance and CFs assignment for on-line courses must be requested by the Tutor to the Coordinator and approved in advance by the Ph.D. Board.
- a. An official certificate of attendance (issued by the legal entity providing the course) must be presented for the CFs to be assigned.
 - b. CFs will be acknowledged by the Ph.D. Board on the basis of:
 - i. course topic (basic/advanced);
 - ii. reputation of course provider;
 - iii. expected workload.
 - c. A maximum of 10 CFs can be acknowledged over the three years

Remark. Participation in *conferences, seminars, workshops* etc. does not grant CFs.

Remark. The list of the courses offered may vary over the years. In addition, other Ph.D. programs might offer courses in a wide range of science and engineering disciplines and they can be proposed by the student in agreement with her/his Tutor(s) and evaluated by the Ph.D. Board.

Remark Students with a non-engineering background, or whose research project requires the knowledge of topics that they never addressed before during their previous career are recommended to take some of the courses offered by the Graduate programs in engineering, science, and/or

⁴ Or offered by other Ph.D. programs of the University of Genova (e.g. Ph.D. in Computer Sciences and Systems Engineering).

⁵ For instance, the Graduate Programs in *Bioengineering* or in *Robotics Engineering, or Computer Engineering, etc.*

⁶ The Tutor of the student must send a letter

mathematics (mainly, but not exclusively, the programs of Bioengineering, Computer Science and Engineering, Robotics and Physics).

Training to Scientific Research and Evaluation Procedure

At the beginning of the Ph.D. program, Ph.D. students formulate a research plan of activities under the supervision of her/his tutor(s). Research is expected to be carried out in the labs which are made available by the Departments participating in the Ph.D. Program.

At the end of each academic year, Ph.D. students must submit to the *Reference Faculties* of their curriculum:

- 1) a detailed report of their research activities, including the list of publications
- 2) a work-plan for the following year.

Students are also required to present their results in an oral presentation to a specific commission⁷ for each one of the five curricula.

The Year 1 report will consist of the formulation of a thesis project identifying:

- 1) an assessed research work-plan;
- 2) the themes addressed and their relevance for bioengineering and robotics;
- 3) the preliminary findings (if any).

At the end of Years 2 and 3, the students are expected to exhibit substantial progress in their thesis project. The report will focus on the state of advancement of the thesis work and on the results obtained.

Each year after the presentations students will receive appropriate feedback/advice, and the commission will formulate a written evaluation. Based on this and on recommendations of the tutor(s) the Ph.D. Board will approve the admission (pass/fail) to the following year, including recommendations to the students.

Final examination and thesis defense

At the end of Year 3, based on the evaluation of the commission and the recommendation of the tutor(s), the Ph.D. Board decides on admission (pass/fail) to the final examination.

The requirements for admission to the final examination are summarized as follows:

- (i) Fulfilment of the training requirements (40 CFs);
- (ii) Positive evaluation from their tutor(s);

⁷ The *Coordinator* and the *Reference Faculties* for the curriculum, will appoint an evaluation commission (at least two reviewers within the Ph.D. Board or qualified Faculties excluding the tutor(s))

- (iii) Positive evaluation from the evaluation commission;
- (iv) Ph.D. board approval of Year 3 report;
- (v) Being author or co-author (first name) of at least one scientific paper in a peer-reviewed international journal (published or accepted for publication) or in a well-recognized international conference with peer review of full papers.

The Ph.D. candidates admitted to the final examination must submit a written dissertation (in English). In agreement with the university rules for doctoral programs⁸, the Ph.D. Board will appoint, for each candidate, at least two external reviewers with relevant expertise at international level in the field of the Ph.D. dissertation. The reviewers will assess the quality and the scientific relevance of the thesis work and within 30 days will provide a written evaluation report. The evaluation may propose to either admit candidates to the final exam or (in case of major requests for modifications) to postpone the exam for up to 6 months, during which candidates will be required to revise their work. The reviewers will provide an updated written evaluation that accounts for the revisions. After 6 months the thesis is admitted in any case to public defense.

The final exam consists of a public thesis defense, in front of a commission composed of three University Professors (including university Professors of foreign institutions and with at least one member of the Ph.D. Board) and up to two external experts (possibly among the reviewers that revised the thesis works) in a field related to the specific curriculum. The Ph.D. Board may appoint different commissions for each candidate or group of candidates with similar research themes.

Research Allowance

Ph.D. students have a personal fund of 1.650,00 €/year that can be used for the mobility (attendance at conferences, workshops, Ph.D. Schools, short visits at other universities or laboratories); for different types of purchase (e.g., laptops within the first 18 months of the course; consumables limited to the needs of the student and his/her research, adequately motivated by the student in agreement with the tutor; books and magazine; publication on open-access journals)

In order to use this funds, Ph.D. students must follow the procedure described in Appendix.

Activities of Tutoring

Ph.D. students, as an integral part of the training project, may carry out activities of tutoring for bachelor/master students, for a maximum of sixty hours per academic year, and, for a maximum forty hours each academic year, teaching assistance activities (didattica integrativa).

⁸ <http://www.unige.it/regolamenti/studenti/>

The previous activities must be previously authorized by the Ph.D. Board and they will not entail any increase in the scholarship.

International dimension

The Ph.D. Committee encourages Ph.D. students to carry out periods of research activity in foreign institutions as an integral part of their Ph.D. training. During the period carried out abroad, the scholarship is increased of 50% with respect to its nominal value.

The authorization to spend periods of research activity in foreign institutions must be requested to the Coordinator and approved by the Ph.D. board. The procedure is as follows:

1. The hosting institute must write a formal invitation letter for the student, clearly indicating the period of the visit (starting and ending dates)
2. The Tutor must write a letter of authorization to visit the hosting institute indicating the period of the visit (starting and ending dates – which must correspond to those reported in the invitation letter). The Tutor can also request the increment up to the 50% of the scholarship for the visiting period.
3. The letters must be sent to the Coordinator (ph.d.biorob@dibris.unige.it)

Ph.D. Structure

COORDINATOR

Prof. Paolo Massobrio Università di Genova
paolo.massobrio@unige.it

CURRICULA AND REFERENCE FACULTIES

| BIOENGINEERING | | |
|------------------------------|----------------------|--|
| Prof. Paolo Massobrio | Università di Genova | paolo.massobrio@unige.it |

| ROBOTICS AND AUTONOMOUS SYSTEMS | | |
|---------------------------------|----------------------|--|
| Prof. Giorgio Cannata | Università di Genova | Giorgio.cannata@unige.it |

| ADVANCED AND HUMANOID ROBOTICS | | |
|---|---------------------------------|--|
| Dr. Ferdinando Cannella Dr. Lorenzo Natale | Istituto Italiano di Tecnologia | lorenzo.natale@iit.it ferdinando.cannella@iit.it |

| BIONANOTECHNOLOGY | | |
|--------------------------------|---------------------------------|--|
| Dr. Giuseppe Vicidomini | Istituto Italiano di Tecnologia | giuseppe.vicidomini@iit.it |

| COGNITIVE ROBOTICS, INTERACTION AND REHABILITATION TECHNOLOGIES | | |
|---|---------------------------------|--|
| Dr. Alessandra Sciutti | Istituto Italiano di Tecnologia | alessandra.sciutti@unige.it |

ADMINISTRATIVE CONTACTS

Ph.D. Secretariat

Valentina Scanarotti
Emanuele Cannata

phd.biorob@dibris.unige.it

| BIOENGINEERING | | | |
|-----------------------|--------|--|--------------|
| SCANAROTTI Valentina | DIBRIS | phd.biorob@dibris.unige.it | 010 33 56682 |
| CANNATA Emanuele | DIBRIS | phd.biorob@dibris.unige.it | 010 33 52285 |

| ROBOTICS AND AUTONOMOUS SYSTEMS | | | |
|--|--------|--|--------------|
| SCANAROTTI Valentina | DIBRIS | phd.biorob@dibris.unige.it | 010 33 56682 |
| CANNATA Emanuele | DIBRIS | phd.biorob@dibris.unige.it | 010 33 52285 |

| ADVANCED AND HUMANOID ROBOTICS | | | |
|---------------------------------------|-------------------------------------|--|--------------|
| BETRO Lucia | IIT-iCub | lucia.betro@iit.it | 010 2897 322 |
| CARACALLI Marta | IIT-iCub | marta.caracalli@iit.it | 010 2898 250 |
| IVALDI Silvia | IIT- Advanced Robotics Departmen | silvia.ivaldi@iit.it | 010 2898 265 |
| SARDI Floriana | IIT- Advanced Robotics Departmen | floriana.sardi@iit.it | 010 2898 259 |

| BIONANOTECHNOLOGY | | | |
|--------------------------|---|--|--------------|
| SALVATORI Manuela | IIT – Molecular Microscopy and Spectroscopy Nanobiointeractions & Nanodiagnostics Nanoscopy & NIC@IIT | manuela.Salvatori@iit.it | 010 2897 609 |
| TUMINO Silvia | Smart Materials Polymers and Biomaterials | silvia.tumino@iit.it | 010 2896 876 |

| COGNITIVE ROBOTICS, INTERACTION AND REHABILITATION TECHNOLOGIES | | | |
|--|------------|--|--------------|
| BRUZZONE Anastasia | IIT - RBCS | Anastasia.Bruzzo@iit.it | 010 2897 207 |

Ph.D. Board 2022-2023
39th Cycle

Membri del collegio (Personale Docente e Ricercatori delle Università Italiane)

| n. | Cognome | Nome | e-mail | Ateneo | Ateneo/Ente di appartenenza |
|-----------|----------------|---------------|--|-----------------------|--|
| 1. | ARNULFO | Gabriele | gabriele.arnulfo@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 2. | CANESSA | Andrea | andrea.canessa@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 3. | CANNATA | Giorgio | giorgio.cannata@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 4. | CASADIO | Maura | maura.casadio@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 5. | CHIAPPALONE | Michela | michela.chiappalone@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 6. | FATO | Marco Massimo | Marco.fato@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 7. | GIACOMINI | Mauro | mauro.giacomini@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 8. | MARTINOIA | Sergio | sergio.martinoia@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 9. | MASSOBRIO | Paolo | paolo.massobrio@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 10. | MASTROGIOVANNI | Fulvio | fulvio.mastrogiovanni@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 11. | MESIN | Luca | luca.mesin@polito.it | Politecnico di TORINO | ELETTRONICA E TELECOMUNICAZIONI |
| 12. | PANI | Danilo | danilo.pani@unica.it | CAGLIARI | Ingegneria Elettrica ed Elettronica |
| 13. | PASTORINO | Laura | laura.pastorino@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 14. | RAITERI | Roberto | roberto.raiteri@unige.it | GENOVA | Informatica, bioingegneria, robotica e ingegneria dei sistemi (DIBRIS) |
| 15. | SABATINI | Silvio Paolo | silvio.sabatini@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 16. | SANGUINETI | Vittorio | vittorio.sanguineti@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 17. | SGORBISSA | Antonio | antonio.sgorbissa@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |
| 18. | SIMETTI | Enrico | enrico.simetti@unige.it | GENOVA | Informatica, bioingegneria ,robotica e ingegneria dei sistemi (DIBRIS) |
| 19. | SOLARI | Fabio | fabio.solari@unige.it | GENOVA | Informatica, bioingegneria,robotica e ingegneria dei sistemi (DIBRIS) |

Membri del collegio (Personale non accademico dipendente di altri Enti e Personale docente di Università Straniere)

| n. | Cognome | Nome | e-mail | Ruolo | Ateneo/Ente di appartenenza |
|-----------|----------------|-------------|--|------------------|---------------------------------------|
| 1. | ATHANASSIOU | Athanasia | Athanassia.Athanassiou@iit.it | Altro Componente | Istituto Italiano di Tecnologia - IIT |
| 2. | CANNELLA | Ferdinando | ferdinando.cannella@iit.it | Altro Componente | Istituto Italiano di Tecnologia - IIT |
| 3. | DANTE | Silvia | silvia.dante@iit.it | Altro Componente | Istituto Italiano di Tecnologia - IIT |
| 4. | GORI | Monica | monica.gori@iit.it | Altro Componente | Istituto Italiano di Tecnologia - IIT |
| 5. | METTA | Giorgio | giorgio.metta@iit.it | Altro Componente | Istituto Italiano di Tecnologia - IIT |
| 6. | MUSSA-IVALDI | Ferdinando | sandro.miv@gmail.com | Altro Componente | NORTHWESTERN UNIVERSITY |
| 7. | NATALE | Lorenzo | lorenzo.natale@iit.it | Altro Componente | Istituto Italiano di Tecnologia - IIT |
| 8. | PUCCI | Daniele | daniele.Pucci@iit.it | Altro Componente | Istituto Italiano di Tecnologia - IIT |
| 9. | REA | Francesco | francesco.rea@iit.it | Altro Componente | Istituto Italiano di Tecnologia - IIT |
| 10. | SCAGLIONE | Silvia | silvia.scaglione@mail.ge.cnr.it | Altro Componente | Consiglio Nazionale delle Ricerche |
| 11. | SCIUTTI | Alessandra | alessandra.sciutti@iit.it | Altro Componente | Istituto Italiano di Tecnologia - IIT |
| 12. | VICIDOMINI | Giuseppe | Giuseppe.vicidomini@iit.it | Altro Componente | Istituto Italiano di Tecnologia - IIT |

Appendix: Travels

U_WEB Missioni

Authorization Mission Instructions:

Before travelling (no less than 2 weeks before planned travel time)

- Go to <https://unige.u-web.cineca.it/appautmis> and log in using your UNIGE credentials⁹
- Please check the following link for the correct procedure to insert the mission request

https://unige.u-web.cineca.it/appautmis/resources/Manual_U_WEB_AUTMIS_Request_en.pdf

Once you have logged in, click on the “new mission” tab and fill in the form as show below:

The screenshot shows the 'Destination' section of the U_WEB AUTMIS form. It includes a table with one entry for 'Roma, Italia' and several input fields with red arrows pointing to them. The fields and their instructions are:

| Location | Start date and time | End date and time | Suspension |
|--------------|---------------------|-------------------|------------|
| Roma, Italia | 28/11/2019 00:00 | 29/11/2019 23:59 | No |

Fields and instructions:

- Title:** Please select the title: DR (Arrow points to dropdown menu)
- Start location:** (Empty text field)
- Type of Request:** Please select: FRIC (Arrow points to dropdown menu)
- Head of Project:** Please fill in Paolo Massobrio (Arrow points to text field)
- Project:** (Empty text field)
- Structure concerned:** (Dropdown menu showing '100023 - Dipartimento di Informatica, bioingegneria, robotica e ingegneri')
- Paying structure:** (Dropdown menu)
- Regulation:** Please select: TES (Arrow points to dropdown menu)
- Reason:** (Empty text area)
- Notes:** Please fill in: 10% specifying the Phd Course (BIOROB, curriculum and the number of the cycle) (Arrow points to text area)
- Method:** (Dropdown menu showing 'List of expenses incurred')
- Mission without expenses

Buttons at the bottom: SPECIAL MEANS, EXPENSES WITH ESTIMATE

The Department Administration will activate the procedures to authorize your travel/mission. We warmly recommend Ph.D. students to read carefully the University rules for travels and reimbursements reported ad this link:

https://unige.it/sites/contenuti.unige.it/files/documents/Regolamento_mobilita_missioni.pdf

Ph.D. students can travel using only the following means of transportation:

⁹ In case of technical problem, send an e-mail to roberta.usari@unige.it

1. Train, plane, suburban bus (e.g. FlixBus), and all public urban transportations.
2. Taxi: only for transfers from and to airports-/train stations/hotel/conference or meeting venue).

If you leave from an airport other than Genova you have to show that this option is cheaper. When you book the flight, you must print from web the flight offers from Genoa airport and your selected airport. The printout must be attached to the documentation at the time of the refund request.

Please keep in mind that affordability must also account for the cost of transportation to airports other than Genoa.

The Department can directly pay the registration to conference/workshop or Winter/summer schools when the bank transfer is available as method of payment. It is exceptionally possible to ask an advance payment of the possible expenditures for the mission when the quote is equal or higher than € 250,00. For missions an anticipation of the 75% of the all expenses is possible (follow the instructions in the Manual).

The Ph.D. student is required to pay all expenses in advance and collect original receipts for items such as train/flight tickets, meals, public transportation, and certificates of attendance. Upon returning, please submit the original receipts to the Department Administration from Monday to Wednesday in the morning (9:00-12:00). If you require a different time, kindly send an e-mail to Roberta Usari (roberta.usari@unige.it) to schedule an appointment.

If your travel is reimbursed by another institution, as UNIGE Ph.D. students, you must obtain authorization from UNIGE using the same procedure as mentioned above. Upon your return, close the procedure by selecting the option “mission done without expenses”

CONTACT PERSONS Roberta Usari (roberta.usari@unige.it)

IIT Phd Students Authorization Mission Instructions

Note: for the IIT students the 10% budget will be reimbursed directly by IIT.

For insurance reasons, you still need to request authorization from Coordinator Prof. Massobrio. Follow the procedure outlined above and select “*mission without expenses*” in the first screenshot:

The screenshot shows a web form for mission authorization. At the top, there is a 'Destination' section with a table containing one entry: 'Roma, Italia' with start and end dates and a 'Suspension' status of 'No'. Below this are several input fields with red arrows and instructions:

- Title:** A dropdown menu with the instruction "Please select the title: DR".
- Head of Project:** A text input field with the instruction "Please fill in Paolo Massobrio".
- Type of Request:** A dropdown menu with the instruction "Please select: FRIC".
- Regulation:** A dropdown menu with the instruction "Please select: TES".
- Notes:** A text area with the instruction "Please fill in: 10% specifying the Phd Course (BIOROB) and the number of the cycle".
- Mission without expenses:** A checkbox with the instruction "Please flag this box".

At the bottom, there are two expandable sections: "SPECIAL MEANS" and "EXPENSES WITH ESTIMATE".

After completing the mission, you must close it by selecting either “mission done, no refund” or “mission not done” (“missione effettuata, no rimborso/missione non effettuata”).

The 10% budget will be directly managed by IIT, covering expenses such as conference registration fees and participation in summer/winter schools, etc

Please contact the administrative reference for your curriculum.