

Ph.D. Program in Bioengineering and Robotics

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

Students' Handbook, Edition 2023

Revision 2.0 - December 2022

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 Vicedomini	giuseppe.vicedomini@unige.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 and, for a maximum forty hours each academic year, the activities of teaching assistance.

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 Vicedomini	Istituto Italiano di Tecnologia	giuseppe.vicedomini@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.Bruzzone@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	Daniilo	daniilo.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' form in the U_WEB AUTMIS system. At the top, there is a table with columns: Location, Start date and time, End date and time, and Suspension. The table contains one entry: Roma, Italia, 28/11/2019 00:00, 29/11/2019 23:59, No. Below the table, there are several input fields and dropdown menus. Red arrows point to the following fields: 'Title' (with a red instruction 'Please select the title: DR'), 'Head of Project' (with a red instruction 'Please fill in Paolo Massobrio'), 'Structure concerned' (with a red instruction 'Please fill in: 10% specifying the Phd Course (BIOROB, curriculum and the number of the cycle)'), 'Type of Request' (with a red instruction 'Please select: FRIC'), 'Regulation' (with a red instruction 'Please select: TES'), and 'Notes' (with a red instruction 'Please fill in: 10% specifying the Phd Course (BIOROB, curriculum and the number of the cycle)'). At the bottom, there are two expandable sections: 'SPECIAL MEANS' and 'EXPENSES WITH ESTIMATE'.

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

Title * Please select the title: DR
ND - Personale tecnico amministrativo

Head of Project * Please fill in Paolo Massobrio

Structure concerned * 100023 - Dipartimento di Informatica, bioingegneria, robotica e ingegneria

Type of Request * Please select: FRIC
FRIC - Fondi di progetto

Regulation * Please select: TES

Notes * Please fill in: 10% specifying the Phd Course (BIOROB, curriculum and the number of the cycle)

☐ Mission without expenses

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 at 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' from '28/11/2019 00:00' to '29/11/2019 23:59' with 'No' suspension. Below this, the form is divided into several sections with red arrows pointing to specific fields and instructions:

- Title:** A dropdown menu with the instruction 'Please select the title: DR' and a red arrow pointing to the 'ND - Personale tecnico amministrativo' option.
- Head of Project:** A text field with the instruction 'Please fill in Paolo Massobrio' and a red arrow pointing to the field.
- Structure concerned:** A dropdown menu with the instruction 'Please fill in: 10% specifying the Phd Course (BIOROB) and the number of the cycle' and a red arrow pointing to the field.
- Notes:** A text area with the same instruction as above and a red arrow pointing to it.
- Type of Request:** A dropdown menu with the instruction 'Please select: FRIC' and a red arrow pointing to the 'FRIC - Fondi di progetto' option.
- Regulation:** A dropdown menu with the instruction 'Please select: TES' and a red arrow pointing to the field.
- Method:** A dropdown menu with the instruction 'List of expenses incurred' and a red arrow pointing to it.
- Mission without expenses:** A checkbox with the instruction 'Please flag this box' and a red arrow pointing to it.

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.