

INTERNAL RULES

Aims and area of interests

The PhD Program in BioRobotics aims at educating competent young researchers to a modern engineering able to design high quality machines, systems and services. The Engineer of the future puts Society and People at the center of his project and it operates through the principles of technological, environmental, social, ethical, and economic sustainability. Students pursue important science and technology challenges according to the “science-based engineering” principle. During the Course the P.hD. student has to attend some training/didactical activities and has to develop a specific research program based on important science and technology challenges, according to the “science-based engineering” principle. At the end of the PhD program, in order to obtain the P.hD. degree student has to take a final exam (Thesis’s defence).

Research fields

- **Engineering: Biomedical engineering**
- **Engineering: Mechanical engineering**
- **Engineering: Electrical engineering and computer science**

COURSE LENGTH: 3 years

CAREER OPPORTUNITIES

The P.hD Course in BioRobotics aims at creating an innovative and professional profile, radically different from more traditional PhD courses. The P.hD Course in BioRobotics aims at creating the new engineer of the 21st century. The new engineer is trained in a very stimulating and multidisciplinary research environment. The new engineer attends high level courses and is engaged in developing a creative thesis. The engineer of the future has a strong education in technical and scientific aspects and a systemic methods to design work. He works focusing on the development of the technologies on the individual needs. He knows and manages innovative research projects, including industrial projects with a strong entrepreneurial ability.

TRAINING PLAN

Doctoral students have to attend training activities (courses) and are requested to obtain 20 ECT.

At the beginning of the PhD course the doctoral student agrees with his Supervisor a research program that will be developed along the three-year course.

The PhD board can decide whether a doctoral student will pass the year under condition. This means that the student may integrate his/her tasks with additional training activities.

Students are involved in the development of research projects. Projects can also have industrial exploitation.

In order to obtain the Ph.D Degree each PhD student has to collect a minimum of 160 credits (CFU) over the three-year course for research activities. Usually (CFU) are distribute over the three years program as follow:

40 ECTS during the 1st year;

50 ECTS during the 2nd year;

70 ECTS during the 3rd year.

For each article accepted on ISI journals or international conference proceedings with peer review (according to the Supervisor’s evaluation) 30 credits (CFU) for research activities will be achieved.

Credits (CFU) for research activities are approved by the Faculty Board at the end of each academic year together with the annual evaluation of the student’s reports.

OTHER ACTIVITIES

The Coordinator, in accordance with the Supervisor, can authorize P.hD students to carry on didactic activity for a maximum of 20 hours/year, *unless specified differently*" by the Faculty Board.

In order to be admitted in the next academic year, P.hD. students have to provide, within one month before the end of each academic year, the following documents:

Activity Report;

Next Year Plan.

The Faculty Board evaluates the Activity report and Next Year Plan, verifies the student's didactical and scientific progress and disposes the admission to the next year of the program.

CONTRIBUTION OF PERIOD ABROAD

A period abroad in a university or in a research institution is required. The length of the period abroad is usually of 6 months and its duration is of maximum 12 months.

The period abroad is compulsory unless differently specified by the Faculty Board.

Exceptionally the Faculty Board can authorize students to stay abroad for more than 12 month and for a maximum of 18 months.

The total amount of the reimbursement cannot in any case exceed 50% of the standard annual amount of the scholarship. The reimbursement has in all cases be authorized by the Faculty Board.

All requests for periods abroad and the associated refunds have to authorized in advance by the Supervisor and addressed to the Faculty Board for the final approval.

CONTRIBUTION FOR EXTERNAL RESEARCH ACTIVITIES

Starting from the second year of the course, each student has the right to receive contributions for the participation in summer school, seminars, congress and similar scientific activities, especially if papers have been accepted.

Requests for participation in external activities claims for reimbursement have to be agreed in advance by the Supervisor and addressed to the Faculty Board for the final approval.

THESIS

In order to defend their final dissertation, the Ph.D. students have to obtain at least 180 credits (ECTS) and precisely 160 credits (ECTS) from research activities and 20 credits (ECTS) from training activities.

Once students have fulfilled all the scientific and training requirements they are admitted to the final dissertation of their thesis.

The defense of the PhD thesis consists in an oral and public dissertation.

At the end of the three years of the course, students have maximum eight months for defense the thesis.

The thesis usually is write in English or in Italian but the board can admit, upon authorization, a different language.

WHITIN THE END OF THE THIRD YEAR of the PhD course, students have to:

- a. DELIVER THE FINAL VERSION OF THEIR PHD THESIS. It has to be uploaded online on the DIGITAL ARCHIVE OF THE OF THE SANT'ANNA School (DTA);
- b. DELIVER, to the administrative offices, THE FINAL REPORT summarizing research, courses, conference, congress, ect., carried out during the three years of the course;
- c. FIND OUT with the supervisor the name of minimum TWO EXTERNAL EVALUATORS that express a written analytical assessment of the thesis, and can propose the admission to the public final dissertation or can return the document if modifications are required. External evaluators can accord to the student maximum 6 months to revise the thesis. After the period accorded for the corrections the evaluators express a new written assessment and the thesis, independently to the assessment, is admitted to the public dissertation. The two external members are professors, also coming from foreign country. One of the two external evaluators can be a researcher from universities and also from research organizations.

External evaluators can participate, as members, to the final dissertation.

The Thesis Commission can assign the mark of 100/100 "cum laude" if the Dissertation Defence is considered outstanding; this is possible only if:

- 1) the thesis obtains the positive evaluation of at least evaluators on the first evaluation;
- 2) the candidate has at least three *Articles published* in *ISI* journals;
- 3) the candidate has proceedings on international conferences with peer review;
- 4) the candidate obtained relevant results in technological innovation (example: patents).

In order to attribute the "Laude" the Thesis Commission has to vote the "cum laude" unanimously.

The Thesis Commission assigns the mark and deliver a synthetic judgment.

In case of agreements for co-supervision of P.hD studies the procedure for the final dissertation can be integrated by the international arrangements.

The Coordinator, in accordance with the Supervisor proposes the members of the Ph.D Committee. The Ph.D committee is composed at least of three professors – one of them must be a Professor of Sant' Anna School - and of maximum two expert in the field (Italian or foreign). Also the external evaluators can participate, as members, to the final dissertation. Also the supervisor have can be a member of the PhD. Committee.

In case of goal theses are archived in the DTA and can be consulted on line. Theses are also delivered to the National Library of Firenze and Rome.

The Diploma is conferred during the annual award diploma ceremony.

OTHER INFORMATION

The Faculty Board can admit doctoral students, coming from Italian and International Institutions, to attend the Ph.D course in BioRobotics for one year or for shorter periods. The Faculty Board can ask for an economic contribution.