POLITECNICO
MILANO 1863

PhD School - Politecnico di Milano

Regulations of the PhD Programme in:

BIOENGINEERING

Cycle XL

1. General Information

PhD School - Politecnico di Milano

PhD Programme: BIOENGINEERING

Course start: November 2024

Location of the PhD Programme: Milano Leonardo

Promoter Departments:

- Department of Electronics, Information and Bioengineering
- Department of Chemistry, Materials and Chemical Engineering “G. Natta”

Scientific Disciplinary Sectors:

- ING/INF 06 - Electronic and Informatics Bioengineering
- ING-IND 34 - Industrial Bioengineering

PhD School Website: https://www.dottorato.polimi.it/en/
PhD Programme Website: http://www.phdbioengineering.polimi.it/

Areas:
Area 09 – Industrial and Information Engineering

2. General presentation

The PhD programme in Bioengineering aims at developing scientific profiles who intend to carry on most of their professional activity in the field of Bioengineering.
It addresses theoretical and experimental activities in four major research areas:

- Biomimetic Engineering and Micro-Nano Technologies
- Rehabilitation Engineering and Technology
- Technologies for Therapy
- Physiological Modelling and non-Invasive Diagnostics.

More specific areas include, but are not limited to:

- Molecular and cellular engineering
- Biomaterials
- Tissue engineering
- Bio-artificial interfaces and devices
- Neuroprostheses
- Movement analysis
- Cardiovascular and respiratory system bioengineering
- Central nervous system signal and image processing for rehabilitation
- Biomechanics

- Computational fluid dynamics
- Computer assisted surgery and radiotherapy
- Artificial organs
- Implantable devices
- Microfluidic and lab-on-a-chip systems
- Biomedical signal and image processing
- E-Health
- Bioinformatics, functional genomics and molecular medicine
- Robotics
- Artificial intelligence in medicine.

Research focuses on theoretical models, methods and technologies to support the design of applications, software and hardware systems, together with tools and prototype device development. The involvement of industrial and clinical partners strengthens the mix between theory and application, which is the strength of this PhD programme. Internships at prestigious research institutes in Italy and abroad throughout the world are essential elements in the training of doctoral students. The scientific and research activities of doctoral students are strongly rooted in research laboratories located inside and outside the Departments, in collaboration with other research institutions and university hospitals. Publications in scientific peer-reviewed journals, participation in international projects and the many collaborations confirm the excellence level of the activities carried out in this PhD Programme.
The PhD Board of professors is made up of highly qualified and active researchers in Bioengineering, belonging to the Department of Electronics, Information and Bioengineering (DEIB), and the Department of Chemistry, Materials and Chemical Engineering "G. Natta" (DCMC). The Coordinator chairs the Faculty Board, coordinates the preparation of the annual Educational Programme and organises the general educational activities of the PhD course (see Attachment A1). The Faculty Board is responsible for the Educational Programme implementation and for teaching and administrative activities related to the PhD Programme (see Attachment A2).

3. Objectives

The main objective of the PhD Programme in Bioengineering is to prepare PhD Candidates to the development of scientific research projects dealing with a complex problem, which can be at different scales, from the molecular and the cellular levels to living organisms up to biomedical systems. They investigate original methods, devices, and systems with different purposes: increasing knowledge, proposing innovative methods for diagnosis and therapy as well as improving healthcare and daily life structures and services. The PhD Programme aims at developing high level engineering problem-solving abilities in biomedical, healthcare and life sciences, within research groups or in private/public industrial contexts, through a strong interdisciplinary training bridging engineering and medical/biological knowledge.
At the end of the PhD Programme, the Candidate are expected to be able to carry out innovative projects and research and development in the field of Bioengineering, by proposing new methodological and technological solutions and properly evaluating the technology impact on healthcare, life sciences and biomedical industry.

4. Professional opportunities and job market

Graduated PhDs in Bioengineering have a wide range of professional opportunities, including research positions in universities, public and private research institutions, and public health services, as well as in the industrial or healthcare context.
More in general, the competencies of graduated PhDs are particularly appreciated for the coordination and management of research projects. In addition, the PhD Programme also encourages the opportunity to generate spin-off and start-up initiatives where to exploit innovative results.
Fellowships directly sponsored by external subjects may easily lead to work opportunities.

5. Enrolment

5.1 Admission requirements

Italian and foreign citizens can apply. Candidates are requested to either possess a degree according to the Italian legislation preceding the Ministerial Decree D.M. 3.11.1999 no. 509, or have a Master of Science degree according to the Decree D.M. 3.11.1999 no. 509, or have a Master of Science degree according to the Decree D.M. 22.10.2004 no. 270, or a similar academic title obtained abroad, equivalent for duration and content to the Italian title, with an overall duration of university studies of at least five years.
Certified knowledge of the English language is a requirement for admission. Please refer to the PhD School website for details.
Admission to the programme will be established according to the evaluation of the Candidate's curriculum, motivation letter, and an illustrative report describing the development of a possible PhD research, which the Candidate has submitted contextually with his/her application to the admission announcement.

5.2 Admission deadlines and number of vacancies

The number of available positions is indicated in the Call for admission to the 40th PhD cycle Programmes:
http://www.polimi.it/phd
Scholarships on both general and specific themes are available, in accordance with provisions in the call for admission.

6. Contents

6.1 Requirements for the PhD title achievement

The achievement of the PhD title in Bioengineering requires a study and research activity of at least three years' equivalent full time study and research and the development of the PhD thesis.
Candidates will be asked to demonstrate knowledge of the Italian language, equal to at least A1 level of the Common European Framework of Reference for the knowledge of languages. This requirement will be needed in order to register for the final exam. Italian native speakers and all those who can

demonstrate knowledge of the Italian language to the required level will be exempt.
A mandatory, formal requirement is that PhD Candidates in Bioengineering must earn a minimum of 30 course credits (see paragraph 6.3 below), and continuously conduct studies and research.
Once a year the PhD Faculty Board assesses the advancements of the PhD Candidates' activities in order to grant admission to the next year or to the final exam for PhD title awarding. The evaluation criteria adopted by the Board comprise the originality and scientific value of the research, as well as the quality and results of the education programme. In addition, the activity of the PhD Candidate is evaluated also considering quantitative and qualitative indicators related to the scientific publications, which must state the Candidate's affiliation to Politecnico di Milano (see point 6.5 for further details).
At the beginning of the course, the PhD Faculty Board assigns a Tutor to every Candidate to supervise and assist him/her in the overall training programme. The Tutor shall be a professor belonging to the Faculty Board. The Tutors assist the Candidates in choosing the courses to be included in the study plan, which is eventually submitted for approval to the Coordinator of the PhD Programme (see also section 6.4 below).
The Faculty Board may assign extra courses to one or more Candidates if they need to complete their preparation on specific topics relevant to their research projects.

6.2 Research development

The main objective of all PhD programmes at the Politecnico di Milano is the development in Candidates of a research-oriented mindset, with skills and expertise on a specific research topic. To this end, Candidates develop problem solving skills in complex contexts, including the ability to perform in-depth analysis of problems, identify original solutions and evaluate their applicability in practical contexts. These skills provide PhD students with greater opportunities for development in their research both in the academic environment and in public and private organisations.
PhD students are required to develop an original research contribution. The doctoral thesis must therefore contribute to increasing knowledge in the Candidate's research field. Furthermore, it must be consistent with the research topics developed in the Department in which the PhD programme takes place. The original research results are collected in the doctoral thesis, where the Candidate's contribution is put into perspective with respect to the state of the art of research in the specific research field.
The doctoral research is developed under the guidance of a Supervisor ("Relatore"), who supports the Candidate in setting up and in the daily activities related to the development of the thesis. The Supervisor is not necessarily a member of the Academic Board and may also belong to an institution other than the Politecnico di Milano. The Supervisor can be assisted by one or more Co-Supervisors.
Further activities, aimed at developing the Candidate's personal skills and research competences, are encouraged during the PhD programme.
Applicants should acquire the ability to present and discuss their work in their own research community. Consequently, both participation in international conferences and publication of research results in peer-reviewed journals are encouraged.
The doctoral programme fosters Candidates' research interactions with other groups in their research field, preferably abroad. Research visits of at least three months are strongly encouraged, as through them Candidates can acquire additional skills to develop their research work and thesis.
The duration of the programme is normally three years.

6.3 Objectives and general framework of the teaching activities

The Doctorates and the Doctoral School activate educational forms of different nature and credit value, including courses, seminars, design workshops, laboratories. The teaching activity focuses both on basic research topics (problems, theories, methods), which represent the founding element of the PhD programme and clearly identify its cultural collocation, and on specialized research topics related to the problems developed in theses.

Lessons are generally held in English, unless otherwise indicated. The PhD programme includes at least one complete path taught in English.

Structured teaching activities allow the acquisition of ECTS credits. Other activities, typically specialized and for which it is difficult to evaluate and quantify the teaching contents, are included in the scientific activities taken into consideration by the Faculty Board in the overall evaluation, but do not allow the acquisition of credits.

The Doctoral School of Politecnico di Milano offers a series of courses aimed at training doctoral students in transversal and transferable skills. The competencies and skills provided by these courses should assist Candidates in different areas of their career in order to respond to the rapidly changing needs of the global economy and society at large. The Doctoral School courses activated for the 2023-2024 Academic Year are summarized in the following table.

Professor	Course name (5 ETCS)
Aliverti Andrea	Ethics in Research
Armondi Simonetta	Strengthening Critical Spatial Thinking
Arnaboldi Michela	Advanced Interaction Skills for Academic Professionals
Biscari Paolo	Industrial Skills
Biscari Paolo	English for Academic Communication
Biscari Paolo	Scientific Communication in English
Biscari Paolo	Research Skills
Bobadilla Rodriguez Hernan Felipe	Scientific Models: Conceptual Foundations and Philosophical Issues
Boeri Elisa	Recording Work 4 Building Memory: Methods, Practices, Tools, Skills to Manage the Knowledge
Brovelli Maria Antonia	The Copernicus Green Revolution for Sustainable Development
Brunetto Domenico Savio	Innovative Teaching Skills
Canina Maria Rita	Creative Design Thinking
Cardilli Lorenzo	European Culture
Colombo Gabriele	Research Communication. Issue Mapping: Exploring Public Debates Surrounding Academic Topics
Conci Claudio	Communication Strategies that Score in Worldwide Academia
Di Blas Nicoletta	Professional Communication
Fuggetta Alfonso	Project Management Basics
Hesselbein Christopher Lorenz	Technology and Society
Iarossi Maria Pompeiana	Power of Images and Visual Communication for Research Dissemination
Lavagna Monica	Sustainability Metrics, Life Cycle Assessment and Environmental Footprint

Mancini Mauro	Project Management (in Action)
Masarati Pierangelo	Ethical Aspects of Research on Dual Use Technologies
Oppio Alessandra	How to Support Complex Decisions: Approaches and Tools
Ossi Paolo Maria	Sulla responsabilità della tecnica
Paganoni Anna Maria	La comunicazione nella scienza
Parmeggiani Fabio	Science, Technology, Society and Wikipedia
Pizzocaro Silvia Luisa	Practicing Research Collaboration
Rocchi Daniele	Ethics of Artificial Intelligence
Sancassani Susanna	Teaching Methodologies, Strategies and Styles
Shendrikova Diana	Science Diplomacy for Researchers. Filling the Gap between Science and Policy within the Global Challenges
Volonte' Paolo Gaetano	Introduction to Academic Research
Volonte' Paolo Gaetano	Technology and Inequality

At least 10 of the 30 training credits that each Candidate is required to achieve must be acquired through soft skills and transferable courses organized by the Doctoral School.
At least 15 of the 30 credits that each Candidate must acquire must be achieved through courses offered by the PhD programme in Bioengineering (see Table A), specific to the Bioengineering area ('characterizing courses').

Since the XXXIV cycle, the offer includes every year, at least:

a. A course on biostatistics and experimental design;
b. A course on methods and techniques for modelling (alternating multi-scale models of biomedical systems, in one year, and biomedical data, signals and images modelling, in the following year);
c. A course on experimental methods and techniques for laboratory measurements (alternating electronic technologies in biomedical engineering, in one year, and experimental biomechanics, in the following year);
d. At least one course on new perspectives and trends in biomedical engineering technologies;
e. A cycle of seminars (at least five per year, covering the following topics: image processing, signal processing biomechanics of the musculo-skeletal system, biomechanics of the cardio-vascular system, regenerative medicine (biomaterials and mechanobiology), neuroengineering/rehabilation/robotics, wearables) and artificial intelligence in medicine.

The offer also includes, every year, the school of the National Bioengineering Group, which takes place annually for one week in Bressanone-Brixen (BZ). Each year, the School focuses on a different topic.
The remaining 5 credits can be chosen either among those offered by the PhD School, or those offered by the PhD Programme in Bioengineering or by other PhD Programmes - in the latter case subject to approval by the Faculty Board.
Normally, each course has a weight of 5 ETCS (25-30 hours). The Candidates are strongly encouraged to attend all the courses within the first two years and devote most of the second and the third years to research and development of the PhD thesis. However, the Candidates should relentlessly dedicate most of their working time to the research activity, following the lead of their Supervisors and the Faculty Board.

The tables below summarises the Candidate's path (as regards coursework activities).

First/Second Year

Courses	*Possible details or reference to following tables*	*Number of credits (min-max)*	*Note*
PhD School Courses		*10-15*	
Courses characterising the PhD Programme	*Table A*	*15-20*	Minimum 1 Annual Bioengineering School (Bressanone-Brixen)
Other PhD courses		*0-5*	

Third year

In the third year the Candidate should devote him/herself entirely to the research and the development of the PhD thesis.

PhD Course List

A) The PhD Programme in Bioengineering organizes the **Characterizing Courses** listed in table A. For the admission to the final exam, the acquisition of at least 15 credits in this list is **mandatory**.

B) The PhD School organises every year general and interdoctoral courses. The acquisition of **at least 10 credits** is **mandatory** among the courses of B type. The list of PhD courses organized by the PhD School is available at the website
https://www11.ceda.polimi.it/manifestidott/manifestidott/controller/MainPublic.do

C) Other PhD courses

A maximum of 5 mandatory credits can be obtained by choosing among courses provided by other PhD Programmes at Politecnico di Milano and/or external Institutions (in this case the preliminary approval by the Tutor and the coordinator is mandatory).

PREPARATORY COURSES (only if foreseen)

If the Supervisor and the Tutor deem it useful or necessary for the Candidate to attend preparatory courses (chosen among the courses activated at the Politecnico di Milano) the Faculty Board of the PhD programme can assign some extra credits to be acquired in order to complete the training path . The credits thus acquired will be considered additional to the compulsory credits to be acquired with the doctoral courses.

SPECIALISTIC COURSES, LONG-TRAINING SEMINARS

The attendance of Specialist Courses, Workshops, Schools, Seminar cycles is strongly encouraged and may permit to acquire credits (if these seminars, workshops are certified and evaluated) according the modalities established by the Faculty Board and the preliminary approval of the study plan submitted by the Candidate.

Below is the list of the courses scheduled for the 2023-2024 academic year. Other courses can be activated during the year. In this case, Candidates will be promptly informed and will be able to include these new courses in their study plan.

Table A: PHD COURSES CHARACTERISING THE PHD PROGRAMME IN BIOENGINEERING

Name of the Course	Professor/s	A.A.	Language	Credits
Biostatistics and Experimental Design	Caiani Enrico Mainardi Luca Pattini Linda	2024-2025	English	5
Electronics Technologies in Biomedical Engineering	Ferrante Simona Piccini Luca	2023-2024	English	5
Advanced Modelling in Biomechanics	Berti Francesca Gautieri Alfonso La Barbera Luigi Luraghi Giulia	2024-2025	English	5
Digital Twin for Personalized Medicine in Cardiovascular Diseases: Advanced Image-based Data Analytics and Computational Approaches	Corino Valentina Corti Anna Rodríguez Matas José Félix	2024-2025	English	5
Open-source Data Science: Structuring, Sharing and Exploiting Multi-center and Multi-source Biomedical Data	Bianchi Anna Maria Coelli Stefania Maggioni Eleonora Pattini Linda	2024-2025	English	5
Multimodal Data Integration in Biomedical Applications	Carrara Marta Coelli Stefania Corino Valentina Ferrario Manuela Maggioni Eleonora	2024-2025	English	5
Explainable AI in Oncology	Antonietti Alberto Miskovic Vanja Pedrocchi Alessandra Laura Giulia Prelaj Arsela Trovò Francesco	2024-2025	English	5
AI Methods for Bioengineering Challenges	Cerveri Pietro Barbieri Riccardo Mainardi Luca	2024-2025	English	5
Seminars in Biomedical Engineering	Barbieri Riccardo Candiani Gabriele Dellaca' Raffaele Soncini Monica Villa Tomaso	2024-2025	English	5
External Course Bio	Dubini Gabriele (resp.)	2024-2025	English	5
Summer School Bio	Dubini Gabriele (resp.)	2024-2025	English	5
Annual School of Bioengineering (Bressanone-Brixen 2024)	Dubini Gabriele (resp.)	2024-2025	English	5

Table B SUGGESTED CROSS –SECTORAL COURSES

Name of the Course	Professor	Semester	Language	Credits
Ethics in research	Aliverti Andrea	2024-2025	English	5

6.4 Presentation of the study plan

PhD students must submit a study plan, which can be reviewed periodically (approximately every three months), in order to adapt it to any changes to the list of courses or to needs motivated by the development of their doctoral career. The study plans must be approved by the Coordinator of the Doctoral Programme, in accordance with the procedures established by the Faculty Board of the Programme itself.

6.5 Annual assessment

At the end of each academic year, PhD students must pass an annual assessment in order to be admitted to the following PhD year. The evaluation is based on a written report and an oral presentation offered to a Commission composed of 3 to 5 Faculty Board members. In the first year, the presentation is entrusted to the Tutor who will report to the Faculty Board.

The written report must contain: i) a brief description of the Candidate's specific activities on her/his doctoral project; ii) a brief description of the Candidate's other research activity during the year under examination; iii) the Candidate's publications during the year.

The activities of doctoral students that can provide additional elements for the evaluation typically include: internships, external courses (carried out at other academic institutions, companies or other), national and international seminars, conferences and workshops, participation in national and international research projects, scientific paper writing and paper presentations on research results, support for teaching activities.

The evaluation of the third year establishes the admission of the Candidate to the final discussion of the doctorate (PhD defence).

Following each annual evaluation, Candidates receive an evaluation expressed with the following grades: A (excellent), B (very good), C (good), D (fair), E (poor, insufficient to pass the exam).

In the case of grades from A to D, the Candidate is admitted either to the following year (1st and 2nd year assessment) or to the final exam (3rd year assessment). In case of grade E, the Candidate is qualified as "repeating Candidate" (Er) or "impossible to continue the doctorate" (Ei).

After the final year, Candidates who have achieved sufficient results but need more time to write their thesis can obtain an extension of up to 12 months.

6.6 PhD thesis preparation

The main objective of the doctoral career is the development of an original research contribution. The doctoral thesis should contribute to the advancement of knowledge in the Candidate's research field.

The doctoral study and research work takes place full-time, during the three years of the doctoral programme. Internships or periods of study in companies or other bodies – in Italy or abroad – can complete the Candidate's preparation.

The doctoral research is developed under the guidance of a Supervisor, who supports the Candidate in setting out and in the daily activities related to the development of the thesis. The PhD student must prepare an original thesis, explaining how the thesis contributes to the advancement of the state of the

art in the research field. The contents of the thesis must also be consistent with the research themes of the Department where the PhD programme is developed.
At the end of the doctoral studies, the Faculty Board evaluates the Candidate's work. Candidates who receive a positive evaluation can submit their thesis to two external reviewers for peer review. If the evaluation provided by the reviewers is positive (or after the revisions requested by the external reviewers), the Candidates can discuss their thesis in a final exam, before a Commission made up of three members (of which at least two must be external experts).

7. Laboratories, PhD Secretary Services

7.1 Laboratories

The scientific research activity of PhD students takes place in experimental laboratories located at Politecnico di Milano or outside, typically in research centres, hospitals, industries.
When the research is carried out within Politecnico, PhD students are usually assigned to one of the following laboratories belonging to DEIB or DCMC:

- Laboratory of Biological Structure Mechanics (LaBS) - DCMC
- Laboratory of Movement Analysis "Luigi Divieti" – DEIB
- Medical Informatics Laboratory – DEIB
- Neuroengineering and Medical Robotics Laboratory (NearLab) - DEIB
- Biosignals, Bioimaging and Bioinformatics (B3 Lab) – DEIB
- Biomaterials Laboratory (BioMatLab) - DCMC
- Biomedical Technology Laboratory (TBMLab), CasCart, LaRes, TechRes, MBMC - DEIB
- Experimental Micro and Biofluid Dynamics (μBS Lab) – DEIB
- Computational Biomechanics Laboratory – DEIB
- Biocompatibility and Cell Culture Laboratory (BioCell) - DCMC
- Bioreactors Laboratory – DCMC.

The Istituto di Elettronica, Ingegneria dell'Informazione e delle Telecomunicazioni (IEIIT) is another possible option. IEIIT is part of the Consiglio Nazionale delle Ricerche (CNR, the Italian National Research Council) and is located at DEIB.

7.2 Administrative offices of the PhD Programme in Bioengineering

Secretary

Marco Simonini
Chiara Zitta
Department of Electronics, Information and Bioengineering (DEIB)
Building 20, Via Golgi, 33 - Politecnico di Milano – 20133 Milano
Phone: +39 - 02 2399 3632
Fax: +39 - 02 2399 3360
e-mail: PhD-BIO@polimi.it

Administration

Fabio Conti
Department of Electronics, Information and Bioengineering (DEIB)

Building 20, Via Golgi, 33 - Politecnico di Milano – 20133 Milano
Phone: +39 - 02 2399 3431
Fax: + 39 - 02 2399 3417
e-mail: fabio.conti@polimi.it

8. Internationalization and inter-sectoriality

A research internship in external laboratories is strongly recommended.
Politecnico di Milano supports joint doctoral paths with international Institutions and Joint and Double Doctoral Programmes. Further information is available in the Doctoral School website and on the Doctoral Programme website.
Interaction with and exposure to non-academic fields offer significant benefits to doctoral students and research and innovation intensive employment sectors. Direct exposure to challenges and opportunities in the non-academic sectors of economy and society at large is facilitated by networking, connectivity, cross-sectoral mobility and broad access to knowledge. In particular, the PhD Programme in Bioengineering considers the following collaborations: European Training Networks (ETN) - Marie Skłodowska Curie Actions (MSCA), international agreements such as CSF-Confap (Brazil) and CSC (China), several agreements with industries (Medtronic (USA), E-Novia Spa, LIFE CORPORATION Sa (LUX), ALASCOM Services Srl, Medteor GmbH (GER), AB.ACUS Srl, Qura Srl, Kalpa Srl, AZCOM Technology Srl, Lifecharger Srl, Linkverse Srl), research and clinical centres, such as CNR Institutes (STIIMA, IEIIT); IRCCS (E. Medea, Policlinico S. Donato, Besta, Ist. Maugeri, Ist. Nazionale dei Tumori, Ist. Europeo di Oncologia, Humanitas, Ente Ospedaliero Cantonale (CH), Houston Methodist Research Institute (USA)), Foundations (Fond. IIT, Fond. Grigioni).

Attachment A1 – PhD Programme Coordinator

Gabriele Dubini is the Chairman (Coordinator) of the PhD Programme in Bioengineering for the period 2022-24. He is Full Professor of Industrial Bioengineering at the Department of Chemistry, Materials and Chemical Engineering 'Giulio Natta' (DCMC), Politecnico di Milano. He teaches Thermodynamics and Heat Transfer in the BSc programme and Transport Phenomena in Biological Systems in the MSc programme in Bioengineering. He obtained the MSc degree in Mechanical Engineering in 1988 and the PhD in Bioengineering in 1993 at Politecnico di Milano.

Research Assistant in the Cardiothoracic Unit of Great Ormond Street Hospital for Children - NHS Trust in London, UK, 1993-94. Assistant Professor of Thermodynamics and Heat Transfer at the Energy Engineering Department of Politecnico di Milano (1996). Associate Professor (2001) and Full Professor (2007) in Industrial Bioengineering at the Department of Structural Engineering of Politecnico di Milano and the Department of Chemistry, Materials and Chemical Engineering 'Giulio Natta' since 2013.

From 2003 to 2007 he was Director of the Laboratory of Biological Structure Mechanics (LaBS). From 2007 to 2012 he was a member of the Scientific Panel of the Coordination Centre on NanoBiotechnologies and Nanomedicine at Politecnico di Milano and from 2008 to 2012 a member of the Council of the European Society of Biomechanics (ESB), the Secretary-General for the 2010-12 biennium. He was a member of the Board of Directors of Fondazione Politecnico di Milano, Milan, Italy (2015-19) and Deputy Director of the Department of Chemistry, Materials and Chemical Engineering 'Giulio Natta' (2017-19). He was elected EAMBES Fellow, Class of 2019; EAMBES is the European Alliance for Medical and Biological Engineering Sciences. His research activity has focused on the vascular microcirculation, the virtual planning of paediatric cardiac surgery procedures, and the design and characterization of endovascular devices and microfluidic devices for biomedical applications. He is author and co-author of more than 300 scientific works, of which over 200 published in peer-reviewed international journals. h index: 51 (Scopus, as of 19 April 2024).

Attachment A2 – PhD Faculty Board

Name	Affiliation	Scientific Disciplinary Sector
Aliverti Andrea	DEIB	ING-INF/06
Andreoni Giuseppe	DESIGN	ICAR/13
Bianchi Anna Maria	DEIB	ING-INF/06
Boschetti Federica	DCMC	ING-IND/34
Candiani Gabriele	DCMC	ING-IND/34
Cerveri Pietro	DEIB	ING-INF/06
Cimolin Veronica	DEIB	ING-INF/06
Corino Valentina	DEIB	ING-INF/06
Dellaca' Raffaele	DEIB	ING-INF/06
De Momi Elena	DEIB	ING-INF/06
Draghi Lorenza	DCMC	ING-IND/22
Dubini Gabriele (Coordinator)	DCMC	ING-IND/34
Fare' Silvia	DCMC	ING-IND/34
Ferrario Manuela	DEIB	ING-INF/06
Fiore Gianfranco Beniamino	DEIB	ING-IND/34
Gastaldi Dario	DCMC	ING-IND/34
Guazzoni Chiara	DEIB	ING-INF/01
La Barbera Luigi	DCMC	ING-IND/34
Pattini Linda	DEIB	ING-INF/06
Petrini Paola	DCMC	ING-IND/34
Pedrocchi Alessandra	DEIB	ING-INF/06
Pozzi Giuseppe	DEIB	ING-INF/05
Rasponi Marco	DEIB	ING-IND/34
Ravazzani Paolo	CNR @ DEIB	ING-INF/06
Rodríguez Matas José Félix	DCMC	ING-IND/34
Signorini Maria Gabriella	DEIB	ING-INF/06
Soncini Monica	DEIB	ING-IND/34
Vergara Christian	DCMC	MAT/08
Villa Tomaso	DCMC	ING-IND/34
Votta Emiliano	DEIB	ING-IND/34

Attachment A3 – PhD Advisory Board

Name	Affiliation
Antiga Luca	Orobix
Bechi Giulia	Fondazione Cariplo
Bottinelli Elena	Gruppo San Donato
Castellano Barbara	Panakes
Chiesi Andrea	Chiesi Farmaceutica
Mainetti Stefano	Polihub
Varinelli Claudio	AB Medica