



PhD in BIOINGEGNERIA / BIOENGINEERING - 41st cycle

Number of scholarship offered	6
Department	DIPARTIMENTO DI ELETTRONICA, INFORMAZIONE E BIOINGEGNERIA

Description of the PhD Programme

The PhD Programme aims at developing scientific profiles who intend to practice their major activities in the field of Bioengineering. It addresses theoretical and experimental activities in 4 major research areas: Biomimetic Engineering and Micro-nano Technologies, Rehabilitation Engineering and Technology, Technologies for Therapy, and 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, Neuro-prostheses, 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, Biomedical signal and image processing, E-Health, Bioinformatics, functional genomics and molecular medicine. Research focuses both on theoretical models, methods and technologies to support design of applications, software and hardware systems, together with tools and prototype device development. The involvement of industrial and clinical partners reinforces the mix between theory and application which is the strength of this PhD. Stage periods in distinguished research institutes in Italy and abroad are an essential feature of the PhD candidate training. Scientific and research activities of PhD Bioengineering candidates are strongly grounded on research laboratories located inside and outside the Departments in cooperation with other research institutions and university hospitals. Publications in scientific peer-reviewed journals, participation to international projects and the numerous collaborations confirm the excellence level of the activities carried out in this PhD programme.



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OPEN SUBJECT Research Field: BIOINGEGNERIA / BIOENGINEERING

Monthly net income of PhDscholarship (max 36 months)

€ 1400.0

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

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



	<ul style="list-style-type: none"> • E-Health • Bioinformatics, functional genomics and molecular medicine • Artificial intelligence in medicine. <p>More information available at: https://www.phdbioengineering.polimi.it/</p>
Methods and techniques that will be developed and used to carry out the research	<p>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.</p>
Educational objectives	<p>The supervisor and his research team support the development of the research. Seminars and courses encourage an interdisciplinary approach. The laboratory activity completes the research programme. Students are also encouraged to spend a period of study abroad (with the availability of additional financial support). More information available at: https://www.dottorato.polimi.it/en/</p>
Job opportunities	<p>Employment opportunities include research positions both in academic and private institutions, in Italy and abroad, and in industry. Spin-offs and startups from research results are encouraged. Employment in this sector offers several interesting opportunities.</p>
Composition of the research group	<p>17 Full Professors 24 Associated Professors 15 Assistant Professors 165 PhD Students</p>
Name of the research directors	<p>Any faculty member can act as research director</p>



Contacts

PhD Coordinator:

Prof. Raffaele Dellacà

Department of Electronics, Information and Bioengineering

email: raffaele.dellaca@polimi.it

phone: +39 02 2399 9005

PhD Programme BIO Secretary:

Marco Simonini

Department of Electronics, Information and Bioengineering

email1: phd-bio@polimi.it

email2: marco.simonini@polimi.it

phone: +39 02 2399 3632

Chiara Zitta

Department of Electronics, Information and Bioengineering

email1: phd-bio@polimi.it

email2: chiara.zitta@polimi.it

phone: +39 02 2399 9091

Additional support - Financial aid per PhD student per year (gross amount)

Housing - Foreign Students

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Housing - Out-of-town residents

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Scholarship Increase for a period abroad

Amount monthly

700.0 €

By number of months

6

Stage and period abroad

Institution or company where the candidate will spend the period abroad (name and brief description)

By number of months abroad

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Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

The PhD student will be involved in educational activities along with teaching assistantship covering topics of imaging in small animal models and bioengineering of the respiratory system. A shared desk and computer will be given to the student for the time needed to carry out the research.