



PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 38th cycle

Research Area n. 2 - Electronics

Number of scholarship offered	5
Department	DIPARTIMENTO DI ELETTRONICA, INFORMAZIONE E BIOINGEGNERIA

Description of the Research Area

The Area Electronics of the PhD Programme in Information Technology at the Department of Electronics, Information and Bioengineering (DEIB) carries out research and teaching activity in the various fields of Electronics. It originates from the activity of Emilio Gatti, who was called to cover the first full professor chair of Electronics established in Italy at the Politecnico di Milano in 1957. The research area currently has 11 full professors, 11 associate professors, 5 assistant professors, 61 students of the Ph.D. curriculum and about 13 contract researchers and post-doc appointees. An essential characteristic feature of the research in electronics is the imprinting given by Emilio Gatti: always challenge the research issues by facing the objective data coming from the experimental facts. Such attitude is necessary for detecting the problems to be solved and discovering the keys for the solution, for evaluating with critical mind any conjecture and solution devised. It is mandatory for staying competitive at international level in the development of electronic, microelectronic and optoelectronic technologies and their applications. Therefore, it is necessary to own significant experimental facilities and maintain them updated. This constitutes an important commitment in terms of cost, space for laboratories and working time of staff. This approach represents a distinguishing element, which implies specific operating modes and requirements that characterize the Electronics research areas. In the research activity, developments in the science and technology of electronic, microelectronic and optoelectronic devices, circuits and systems give rise and support to new developments in diversified fields of interest for the present-day society. Besides, aiming to typical themes of the ICT (Information and Communication Technology), the research work looks to other developments, such as application of nanoelectronic and diagnostic technologies to genetics and biomedicine, diagnostics of cultural heritage and astrophysics applications. The research framework is naturally dynamical, and it evolves continuously driven by prospects and new initiatives. The Research area in Electronics is organized in Research Lines as follows:

- **Circuit and System Theory and Applications**, which deals with models of circuit parasitic phenomena and numerical methods for circuit analysis.



- **Sensors and Instrumentation**, which deals with the development of advanced detectors for optical and ionizing radiation and of the related electronic systems, addressing applications in various fields that range from life sciences to space research.
- **Microelectronics and Emerging Technologies**, which is devoted to the design of integrated circuits for radio-frequency transceivers and power management, the characterization and modelling of non-volatile memories, and the investigation of electronic properties at the nanoscale and organic semiconductor devices.

Research lines in Electronics share a service for fast PCB prototyping and ad-hoc instrumentation development, bonders and a wafer scribe for device/sample preparation, safety cabinets for chemical handling. In addition to the computer rooms dedicated to integrated circuits CAD and/or devices simulations, labs are dedicated to specific research lines.

Further information:

- Research at the DEIB Department: <https://www.deib.polimi.it/eng/>
- PhD Programme in Information Technology (IT PhD): <https://dottoratoit.deib.polimi.it/>
- Electronics Section at DEIB: <https://www.deib.polimi.it/eng/electronics>



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OPEN SUBJECT Research Field: ELECTRONICS

Monthly net income of PhDscholarship (max 36 months)

€ 1250.0

In case of a change of the welfare rates or of changes of the scholarship minimum amount from the Ministry of University and Research, during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

In the research activity, developments carried out in electronic, microelectronic, and optoelectronic devices, circuits, and systems find use in a variety of topics of interest in today's society. Beside typical themes of the ICT (Information and Communication Technology), the research work looks to other developments, such as application of nanoelectronic and diagnostic technologies to genetics and biomedicine, diagnostics of cultural heritage and analysis of materials. The research framework is naturally dynamical and it evolves continuously driven by prospects and new initiatives.

<http://www.deib.polimi.it/eng/electronics>

Methods and techniques that will be developed and used to carry out the research

The research is carried out typically within a research group under the guidance of a supervisor. The activity is frequently carried out in international collaborations as well as in an interdisciplinary framework. Laboratory activity is usually part of the research workplan.

Educational objectives

The doctoral program offers advanced training in the hot topics explored by the scientific community and industry. A period of study within one foreign research institution is encouraged and financially supported by the doctoral school.



	http://dottoratoit.deib.polimi.it/
Job opportunities	Careers in the leading electronics companies are facilitated by the strong connection between the academic and industrial research. Post doc positions in the university are frequently offered.
Composition of the research group	11 Full Professors 11 Associated Professors 5 Assistant Professors 61 PhD Students
Name of the research directors	Any faculty member can act as research director

Contacts	
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Additional support - Financial aid per PhD student per year (gross amount)			
	1st year	2nd year	3rd year
Housing - Foreign Students	1500.0 € per student	1000.0 € per student	1000.0 € per student
max number of financial aid available: 2, given in order of merit ..			
Housing - Out-of-town residents (more than 80Km out of Milano)	--		

Scholarship Increase for a period abroad



Amount monthly	625.0 €
By number of months	6

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

EDUCATIONAL ACTIVITIES (purchase of study books and material, including computers, funding for participation in courses, summer schools, workshops and conferences): financial aid per PhD student
5.095,96 Euro per student

TEACHING ASSISTANTSHIP: availability of funding in recognition of supporting teaching activities by the PhD student

There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.

COMPUTER AVAILABILITY:

1st year: Yes

2nd year: Yes

3rd year: Yes

DESK AVAILABILITY:

1st year: Yes

2nd year: Yes

3rd year: Yes