The PhD Course in Bioengineering

Andrea Aliverti, chairman

andrea.aliverti@polimi.it
Politecnico di Milano
PhD School

18 Programmes
1100+ PhD students
250-300 new PhD students per year
(85% of them earn grants or research contracts)

~ 30% International students
150-200 third-level courses, held by Italian and International Experts
PhD Programmes

**Engineering**
- Aerospace Engineering
- **Bioengineering**
- Electrical Engineering
- Energy and Nuclear Science and Technology (STEN)
- Environmental and Infrastructure Engineering
- Industrial Chemistry and Chemical Engineering
- Information Technology
- Management, Economics and Industrial Engineering (DRIG)
- Materials Engineering
- Mathematical Models and Methods in Engineering
- Mechanical Engineering
- Physics
- Structural Seismic and Geotechnical Engineering

**Architecture & Design**
- Architecture, Built Environment and Construction Engineering (ABC)
- Architectural, Urban and Interior Design (PAUI)
- Design
- Preservation of Architectural Heritage
- Urban Planning, Design, and Policy
PhD Course in Bioengineering

The Doctoral (PhD) Programme in Bioengineering trains graduate students through the development of a research project developing engineering methodologies and/or innovative technology which involve biological or physiological systems and health sciences.

Methods, devices, and systems are developed with a multidisciplinary approach, considering problems at different possible scales (from the molecular and cellular level to complex living organisms and systems), with the objective of improving diagnosis, therapy or health structures and services.

These competences prepare PhD candidates to work in research, either in private or public context as well as in industry or academia.
The Doctoral (PhD) programme in Bioengineering trains graduate students through a strong interdisciplinary education in engineering methodologies and technologies to develop research on biological systems and health sciences. Methods, devices, and systems are developed with a multidisciplinary approach, from the molecular and the cellular levels to living organisms up to biomedical systems, with the purposes of improving diagnosis and therapy as well as health and daily life structures and services.

These competences prepare PhD candidates to work inside a research group either in private or public context as well as in industry, with which close collaboration are in place.

Students develop their PhD research programs at the Departments of Electronics, Information and Bioengineering (DEIB) and Chemistry, Materials and Chemical Engineering “Giulio Natta” (CMIC) at Politecnico di Milano. Stage periods in distinguished national and international research institutes are an essential feature of the student training.

http://www.phdbioengineering.polimi.it/
available from December, 20th
The **PhD Program in Bioengineering** is organized with an inter-departmental structure.

Faculty members of the PhD Board belong to two Departments:
- **DEIB** (Department of Electronics, Information and Bioengineering)
- **CMIC** (Department of Chemistry, Materials and Chemical Engineering “G. Natta”)
Board of Professors

Aliverti Andrea – DEIB (Chair)
Bianchi Anna Maria - DEIB
Candiani Gabriele - CMIC
Cerveri Pietro - DEIB
Chiesa Roberto - CMIC
Cimolin Veronica - DEIB
Costantino Maria Laura - CMIC
Dellacà Raffaele - DEIB
De Momi Elena - DEIB
Farè Silvia - CMIC
Ferrante Simona - DEIB
Fiore Gianfranco B. - DEIB
Gastaldi Dario - CMIC

Guazzoni Chiara - DEIB
Mainardi Luca T. - DEIB
Mantero Sara – CMIC (vice-Chair)
Pattini Linda - DEIB
Pennati Giancarlo - CMIC
Pozzi Giuseppe - DEIB
Raimondi Manuela T. - CMIC
Ravazzani Paolo – CNR (vice-Chair)
Redaelli Alberto C. - DEIB
Rodriguez-Mata Josè - CMIC
Signorini Maria G. - DEIB
Soncini Monica - DEIB
Villa Tomaso - CMIC
Support for administration procedures

• Secretariat of PhD Program
  The secretariat is responsible for supporting the students and PhD Board in their teaching, administration activities, and formalization of procedures to enroll, and to obtain the degree. It is located in building 20 of DEIB, on the ground floor, in the administrative area.
  **Mara Pedercini** - secretariat responsible
  mara.pedercini@polimi.it - tel. 3354

• Specific support for international students: Welcome Office
  The welcome office is responsible for supporting students coming from abroad in issues not specifically related to PhD (e.g., visa, accommodation). It is located in building 20 of DEIB, on the ground floor, in the administrative area.
  **Laura Brambilla** – welcome office responsible
  welcome-deib@polimi.it – tel. 3427
Support for administration procedures

Traveling

If you plan to go abroad for research periods, conferences, summer schools, etc., before leaving you must:

• submit requests exclusively online (at least 10 days before departure) by accessing, through your personal page on the Polimi site (http://www.polimi.it/servizionline/), to the application "Phd students career". Such requests should be explicitly approved by the PhD Program Coordinator.

• after getting approval, fill the form online available on http://www.polimi.it/servizionline/, in the Mission section, to request funding for missions to the Coordinator, if the mission is paid by your PhD funds, or to any other professor that will pay for your mission. Please, check the box stating that your request has already been approved by the Program Coordinator. For insurance matters, you must fill this form even if you don't request any funding.

BOTH authorizations should come to the mission office BEFORE your leaving date.

If the mission is in Italy you have to:

• fill the form online available on http://www.polimi.it/servizionline/, in the Mission section, to request funds for missions to the Coordinator, if the mission is paid by your PhD funds, or to any other professor that will pay for your mission.

The person in charge of this activity is: Nadia Prada (phone 3537 - fernanda.prada@polimi.it)
Support for administration procedures

Purchases
Virgilio Testa, Marco Zuin (tel. 3754 – ufficioacquisti-deib@polimi.it)
Procedure: fill the on-line request of order for the purchase available on
https://intranet.dei.polimi.it/servizi/acquisti.php

Communication
Laura Brambilla, Rosa Petrelli (tel. 3427 – redazione-deib@polimi.it)
You have to update before December 1st your page on the Department website, by sending to redazione-deib@polimi.it:

- a short bio in Italian and English, or English only
- a photo of you that will be published there
- link to personal pages, if any

As soon as you define a research line, you should send a short description of it to redazione-deib, to update your personal page.
PhD development – Workload distribution

PhD candidate workload: ≥ 30 CFU
(5 CFU ~ 25h)
≥ 10 CFU: soft and transferable skills
≥ 10 CFU: disciplinary skills

study thesis

1\textsuperscript{st} year

2\textsuperscript{nd} year

3\textsuperscript{rd} year
PhD curriculum

Research

Courses

Personal development

PhD is a full time activity, usually over three (or four) years
PhD curriculum: research

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,
- robotics and functional genomics.

Research focuses on theoretical models, methods, and technologies to support design of applications, software and hardware systems, together with tools and prototype devices.

The involvement of industrial and clinical partners reinforces the mix between theory and application, which is the strength of PhD in Bioengineering.
PhD Research - Laboratories

- Biocompatibility and Cell culture Lab (BioCell) - CMIC, Polimi
- Biomaterials laboratory (BioMatLab) - CMIC, Polimi
- Biomedical Technology Lab (TBMLab) - DEIB, Polimi
- Bioreactors and Mechanical Testing Laboratory - CMIC, Polimi
- Biosignals, Bioimaging and Bioinformatics (B3 lab) - DEIB, Polimi
- Computational Biomechanics Lab (CB Lab) - DEIB, Polimi
- Experimental Micro and Biofluid dynamics ($\mu$BS Lab) - DEIB, Polimi
- Engineering for Health and Wellbeing Group - IEIFT, CNR
- Laboratory of Biological Structure Mechanics (LaBS) - CMIC, Polimi
- Laboratory of movement analysis “Luigi Divieti” - DEIB, Polimi
- Materials for Biomedical Application and Biomimetic Treatments (CMIC, Polimi)
- Medical Informatics laboratory (e-Health Lab) - DEIB, Polimi
- Neuroengineering and medical robotics Laboratory (NearLab) - DEIB, Polimi

→ + EXTERNAL FACILITIES, LABS, HOSPITALS
Each student can use 2740 euros in the triennium for:
- Traveling, conferences, publications
- Books, computers, … which remain to the PhD School

Long stays abroad are possible (up to 18 months). Scholarships are increased 50% for the first six months. Formal approval by PhD Board is required.

Other funding may come from the advisor’s funds, teaching (up to 40 hours per academic year), …
Courses (not the main focus of your studies, to complement your preparation)

– A minimum number of **30 ECTS credits** is required to earn,

– at least **10 credits (min 10, max 20)** (corresponding to 2 PhD School courses) shall be obtained through soft and transferable skills courses organized by the PhD School (requirement established for candidates of the 33+ cycle, entering Nov 2017 or later)

– at least **10 credits (min 10, max 20)** shall be obtained through courses yearly offered by the PhD Programme in Bioengineering, which are specific of the Bioengineering area (‘characterizing courses’). A **minimum of one Annual Bioengineering School (Bressanone), providing 5 credits, is required**
### PhD School courses → focused on soft and transferable skills

<table>
<thead>
<tr>
<th>Course name</th>
<th>Professor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethics in Research</td>
<td>Andrea Aliverti</td>
</tr>
<tr>
<td>Ethics, Technology, and Society</td>
<td>Viola Schiaffonati</td>
</tr>
<tr>
<td>From Knowledge to Decision</td>
<td>Simona Chiodo</td>
</tr>
<tr>
<td>Public Engagement and Communication for Science and Research</td>
<td>Paolo Ciuccarelli</td>
</tr>
<tr>
<td>Sulla Responsabilità della Tecnica</td>
<td>Paolo Maria Ossi</td>
</tr>
<tr>
<td>Sociology of research</td>
<td>Paolo Volontè</td>
</tr>
<tr>
<td>Design thinking - management and production of ideas</td>
<td>Nicola Crea</td>
</tr>
<tr>
<td>Methods and models for the decision making</td>
<td>Alberto Colorni</td>
</tr>
<tr>
<td>Collaborative Research Methodologies</td>
<td>Rami Shani</td>
</tr>
<tr>
<td>Scientific Communication in English</td>
<td>Timothy J Sluckin</td>
</tr>
<tr>
<td>Advanced Interaction Skills for Academic Professionals</td>
<td>Michela Arnaboldi</td>
</tr>
<tr>
<td>Professional Communication</td>
<td>Nicoletta Di Blas</td>
</tr>
<tr>
<td>Science, Technology, Society and Wikipedia</td>
<td>Guido Raos</td>
</tr>
<tr>
<td>Disseminating Research</td>
<td>Anna Maria Paganoni</td>
</tr>
<tr>
<td>Research Skills</td>
<td>Donatella Sciuto</td>
</tr>
<tr>
<td>Research Planning</td>
<td>Tullio Tolio</td>
</tr>
<tr>
<td>Innovative Teaching Skills</td>
<td>Giulio Magli</td>
</tr>
<tr>
<td>Industrial Skills</td>
<td>Paolo Biscari</td>
</tr>
<tr>
<td>Project Management Basics</td>
<td>Alfonso Fuggetta</td>
</tr>
<tr>
<td>Project Management (in Action)</td>
<td>Mauro Mancini</td>
</tr>
<tr>
<td>Project Management PMI-CAPM Certification Preparation</td>
<td>Alfonso Fuggetta</td>
</tr>
</tbody>
</table>
Email from Prof. Paolo Biscari (PhD Dean), 31 October 2017

For PhD School (soft and transferable skills) courses, please fill in and submit this form by Monday, December 4th 2017. The courses will be then assigned to each on you according to your preferences and to the availability of each course. Specific rules to fill the form follow:

- Please insert a valid email @polimi.it: in this way you will receive feedback on your choices
- You can modify your choices within the same deadline; each submitted form automatically cancels the choices in the forms you may have submitted before
- You may choose more courses than you are intended to attend. Courses will be then assigned to you according to your preferences and to the availability of each course
- One course (Advanced Interaction Skills for Academic Professionals) will begin on November 27th 2017. Candidates interested in following this course are required to deliver their form by Nov 20th 2017.
- Some courses may not be assigned together, as their programmes overlap. This applies to the following groups:
  - max 1 course among “Ethics in Research” and “Ethics, Technology and Society”
  - max 1 course among “Scientific Communication in English” and “Professional Communication”
  - max 1 course among “Communicating Scientific Research”, “Science, Technology, Society and Wikipedia”, and “Public Engagement and Communication for Science and Research”
  - max 1 course among “Advanced Interaction Skills” and “Collaborative Research Methodologies”
  - max 1 course among “Project Management (in Action)” and “Project Management Basics”
  - max 1 course among “Resource Planning and Management within Sustainable Development” and “Sustainability Metrics, Life Cycle Assessment and Environmental Footprint”.

Candidates may choose two or more courses from the same group, but only one will be assigned to them.

Ø Disciplinary courses (typically delivered within your Department). Your PhD Programme Head will soon contact you to provide you with more details on the specific rules concerning your PhD Programme courses.
<table>
<thead>
<tr>
<th>Codice</th>
<th>Denominazione Insegnamento</th>
<th>Periodo di svolgimento</th>
<th>Corso di Dottorato</th>
</tr>
</thead>
<tbody>
<tr>
<td>051946</td>
<td>3D PRINTING AND MODELING: TOWARDS PATIENT'S TAILORED TREATMENT AND SURGICAL PLANNING</td>
<td>31 gen 2018 - 06 feb 2018</td>
<td>Redaelli Alberto Cesare De Bonis Michele</td>
</tr>
<tr>
<td>099057</td>
<td>ADVANCED PROCESSING OF BIOMEDICAL SIGNALS AND DATA</td>
<td>19 feb 2018 - 23 feb 2018</td>
<td>Cerutti Sergio Sassi Roberto Corino Valentina Ferrario Manuela</td>
</tr>
<tr>
<td>051948</td>
<td>ANNUAL SCHOOL OF BIOENGINEERING-BRESSANONE 2018</td>
<td>10 set 2018 - 14 set 2018</td>
<td></td>
</tr>
<tr>
<td>051947</td>
<td>E-HEALTH AND M-HEALTH</td>
<td>25 giu 2018 - 06 lug 2018</td>
<td></td>
</tr>
<tr>
<td>099060</td>
<td>ELECTRONIC TECHNOLOGIES IN BIOMEDICAL ENGINEERING</td>
<td>24 gen 2018 - 30 gen 2018</td>
<td>Piccini Luca Ferrante Simona</td>
</tr>
<tr>
<td>098574</td>
<td>ETHICS IN RESEARCH</td>
<td>05 feb 2018 - 09 feb 2018</td>
<td>Aliverti Andrea Hughes Jonathan</td>
</tr>
<tr>
<td>099048</td>
<td>EXPERIMENTAL BIOMECHANICS</td>
<td>09 gen 2018- 23 gen 2018</td>
<td>Pennati Giancarlo Boschetti Federica Villa Tomaso Maria Tobia</td>
</tr>
<tr>
<td>051945</td>
<td>HUMAN-ROBOT COLLABORATION FOR PROFESSIONALS AND DAILY LIFE</td>
<td>19 mar 2018 - 23 mar 2018</td>
<td>Secchi Cristian De Momi Elena Ajoudani Arash De Momi Elena</td>
</tr>
<tr>
<td>099059</td>
<td>METHODS AND TECHNIQUES FOR RESEARCH IN NEUROSCIENCE</td>
<td>04 giu 2018 - 08 giu 2018</td>
<td>Casellato Claudia Ghezzi Diego Ambrosini Emilia Gandolla Marta Pedrocchi Alessandra</td>
</tr>
</tbody>
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# Interdoctoral Course 098574

**ETHICS IN RESEARCH**

<table>
<thead>
<tr>
<th>Date</th>
<th>Morning (9:30 -12:30)</th>
<th>Afternoon (13:30 -16:30)</th>
</tr>
</thead>
</table>
| Monday, 20 Feb 2017 | Course introduction – A. Aliverti  
Locating ethics in research – J. Hughes | Case studies: locating ethics in research – J. Hughes                                   |
| Tuesday, 21 Feb 2017 | Balancing harms and benefits in research – J. Hughes                               | Case studies: Balancing harms and benefits in research - J. Hughes                      |
| Wednesday, 22 Feb 2017 | Information Ethics – V. Schiaffonati  
Management of sensitive data/information - personal and private information, confidential scientific/industrial information, sensitive information in the digital world) | Case studies: Information Ethics – V. Schiaffonati                                      |
| Thursday, 23 Feb 2017 | Ethical Institutions: research ethics Committees/Institutional Review Boards  
- M. Galli  
Case study: how to submit a proposal to a Research Ethics Committee | Ethical Issues in research funding agencies (EU projects and Horizon 2020 program) – R. Cippitani  
Case study: how to deal with Ethics Issues in a Horizon2020 proposal |
| Friday, 24 Feb 2017  | Publication ethics: ‘good practice’ in scientific communication - A. Aliverti  
Case studies: publication ethics | Final discussion                                                                         |
Among the PhD courses, the GNB School is held every year for one week on themes of advanced research in bioengineering through the participation of highly qualified teachers.

The School is held in Brixen (near Bolzano) and offers also the unique opportunity to put together students from different Doctoral programs in Bioengineering and neighbouring field in Italy.

1 session of the School is mandatory in the study plan
GRUPPO NAZIONALE DI BIOINGEGNERIA

UNIVERSITÀ DEGLI STUDI DI PADOVA
Cicli di conferenze in Bressanone
Dipartimento di Ingegneria dell’Informazione

DOTTORATI DI RICERCA IN BIOINGEGNERIA

XXXVI Scuola Annuale

E-Health
Medicina Digitale

Bressanone, 18 - 22 settembre 2017
presso
Casa della Giunta dell’Università di Padova
via Rio Bianco, 6
Bressanone (Bolzano)

Si ringraziano:
Medas srl (www.medas-solutions.it)
TCCLS (tccls.computer.org)

PROGRAMMA della SCUOLA

Lunedì 18 settembre 2017 (14:00-18:30)

IL FRAMEWORK DI RIFERIMENTO

14.00 Apertura della scuola (S. Quaglini, F. Pinciroli, M. Giacomini, M. Cesarelli)
14.15 Il Sistema Sanitario Nazionale (M. Crivellini)
15.00 L’agenzia per l’Italia digitale e il suo ruolo nella promozione della e-Health (M. Bani)
15.45 INTERVALLO
16.15 Osservatori della Sanità digitale (P. R. Locatelli)
17.00 Servizi Digitali per la salute (C. Saccavini, S. Lotti, A. Barone)

Martedì 19 settembre 2017 (9:00-18:30)

APPROCCI INNOVATIVI PER DATA MANAGEMENT, DATA REPRESENTATION AND INFORMATION EXTRACTION

9.00 New models for biomedical data representation, integration, and management (J. Holmes)
9.45 Information extraction nei sistemi di supporto alla decisione in medicina (M. Monti, G. Tognola)
10.45 INTERVALLO
11.15 Modello di processi di cura: 1-Processo mining; 2- Clinical Paths (S. Montani, G. Balestra)
12.30 PRANZO

NEW TRENDS

14.00 App per i cittadini, i pazienti e i medici (S. Marceglia)
14.45 Internet of things in e-health (R. Giaffreda)
15.30 Discussione complessiva delle due relazioni
16.00 INTERVALLO
16.30 Medical shared decision making (L. Sacchi)
17.15 Sistemi informativi Geografici (GIS) e loro applicazione in ambito e-Health (P. Velti)
18.00 Discussione complessiva delle due relazioni e consegna travel awards

Mercoledì 20 settembre 2017 (9:00-12:00)

9-12 Assemblea del GNB
12.00 PRANZO

Mercoledì 20 settembre 2017 (14:00-18:30)

EVIDENCE-BASED MEDICINE VS PRECISION MEDICINE

14.00 I clinical trial: metodi e prospettive (L. Tavazzii)
14.45 Linee guida per la pratica clinica:
1-Metodologie e Tecnologie (P. Terenziani); 2-Il punto di vista dell’utente (C. Micieli, S. Ricci)
16.10 INTERVALLO
16.30 Medicina personalizzata e medicina traslazionale (R. Bellazzii, A. Zambelli)
17.30 Lezione Magistrale: Engineering better healthcare, at higher resolution of person, time and place (I. Buchan)

Giovedì 21 settembre 2017 (9:00-18:30)

OTTIMIZZAZIONE DELLE RISORSE E AVANZAMENTO SCIENTIFICO

9.00 Open data in healthcare (A.M. Bianchi)
10.00 Biobanche (P. Romano)
10.45 INTERVALLO
11.15 Il cognitive computing al punto di care (F. Fioravanti)
12.00 E-Health nei curricula di Medicina (F. Consorti)

CRITICITA’

14.00 Problemi medico-legali in e-health (B. Bottalico)
14.45 Protezione dei dati sanitari - Applicazioni (E. Sini)
15.30 Evaluation of the impact of patient portals on patient empowerment (E. Ammenwerth)
16.15 INTERVALLO
16.45 Data Protection and Information Security for eHealth and Digital Medicine -Methods (B. Blobel)
17.45 Standard e interoperabilità in e-health (M. Giacomini)

Venerdì 22 settembre 2017 (9:00-12:30)

9.00 Tavola rotonda: il ruolo delle aziende nella e-health (M. Meroso, Biomedica Santa Lucia; N. Barbarini, BIOMERIS; P. Tombolato, Medas; R. Gazzarata, Healthropy; M. Tiberi, wHealth)
11.00 AMICI DELL’UNIVERSITÀ DI PADOVA, BRESSANONE FREUNDE DER UNIVERSITÄT PADUA, BRIXEN
Consegna premi di laurea e di dottorato
12.00 Chiusura della Scuola (Silvana Quaglini, Mario Cesarelli, Mauro Giacomini, Francesco Pinciroli)
Study Plan

Study plan submission

Each PhD candidate must submit his/her study plan online.

Candidates will have the opportunity to permanently review it in order to adapt it to possible changes in the training offer or to needs justified by the development of his/her educational activity.

The study plan is submitted for (periodic) approval to the Coordinator
Annual evaluations

**Yearly evaluation:** based on credits and course grades and on the results achieved with the research performed. It is an exam, a grade is assigned.

**Admission to final exam:** based on the overall course and research achievements.

**Final exam:** Evaluation committee mainly external.
Passaggio del PRIMO anno

Il passaggio dal primo al secondo anno prevede un colloquio d’esame con presentazione da parte del dottorando con il Tutor e in presenza del Relatore.

a) tutor, dottorando e relatore si accordano sulla data del colloquio d’esame, da stabilirsi nell’intervallo di tempo indicato dalla Segreteria di dottorato.

b) alla data del colloquio d’esame, il Relatore dovrà aver già compilato e depositato la sua relazione con relativa valutazione;

c) la presentazione da parte del dottorando ha una durata massima di 15 minuti, a cui seguiranno le domande da parte del Tutor. In tale presentazione, il dottorando espone: 1) stato dell’arte; 2) obiettivo/i del lavoro; 3) metodologie previste; 4) piano del lavoro; 5) possibili criticità; 6) risultati preliminari.

..\ValutazionePrimoAnno\ValutazionePrimoAnno.docx
2° - 3° year

- Presentation of a report (through the online system)
- Oral presentation (15 minutes) and question
- Commission composed of 4-5 members of the Board of Professors
Annual exam procedures

At every yearly evaluation, the candidate receives an evaluation. Grades are A (excellent), B (very good), C (good), D (fair), E (not sufficient to pass the exam).
In the case of grades from A to D, the candidate is admitted either to the next year (1st and 2nd year evaluation) or to the final exam (3rd year evaluation).
In the case of grade E, the candidate is qualified either as “Repeating” (E-R) or “not able to carry on with the PhD” (E-I).
At the end of the last year the candidate receives an overall evaluation, with the same grading system as described above. On that basis, her/his admission to the final PhD exam is deliberated.
The evaluation takes into account the structure of the thesis, the quality and number of publications, together with an overall evaluation of the PhD research project.
In some cases the candidate can obtain an extension of a maximum of 12 months, even if she/he has achieved sufficient results but still needs additional time to finalize the thesis.
**Final exam**

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**Schedule of the Day**

**11.00-11.30**  
Committee Meeting

**11.30-12.30**  
First Ph.D. presentation and discussion

**Dr. Ilaria LIORNI – XXVIII Cycle**  
*Electromagnetic Fields Exposure Assessment in the Early Life: From Prenatal Stage to Infancy*  
Supervisors: Profs. Marta Parazzini, Paolo Giuseppe Ravazzani

**12.30-13.30**  
Second Ph.D. presentation and discussion

**Dr. Francesco PICCAGLI – XXVII Cycle**  
*Percutaneous Transluminal Angioplasty PTA balloon stretch blow molding process: development of a numerical model and optimization for lean design*  
Supervisor: Profs. Gabriele Dubini, Roberto Ghidini

**Lunch**

**14.30**  
Final Committee Meeting

**15.00**  
Proclamation

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**Committee Members**

**Graziano CERRI**  
Professor  
Department of Information Engineering  
Università Politecnica delle Marche  
Ancona, Italy

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**Markus REITERER**  
Medtronic Strategy and Scientific Operations  
Core Technologies Department  
Minneapolis, USA

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**Theodoros SAMARAS**  
Professor  
Department of Physics  
Aristotle University of Thessaloniki  
Thessaloniki, Greece

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**Anna Maria BIANCHI**  
Professor  
Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano  
Milano, Italy
Final exam

The Examination Committee is usually composed by three or four members: two/three external (typically, one of them chosen among the two reviewers of the thesis) and one chosen among the members of the PhD Board.

The Examination Committee should consider in the evaluation: a) the quality of the thesis; b) the scientific value of the PhD research project; c) the quality of the presentation; and d) the quality and number of publications related to the PhD project.

The Examination Committee, finally, decides about awarding the candidate with the PhD title, eventually by accompanying the award with ‘cum laude’.
The **Tutor** monitors and reviews the duties, the study plan and the activities of the candidate and acts as the ‘interface’ between the PhD candidate and the PhD Board.

In agreement with the PhD candidate proposal, the PhD Board nominates one or two **Advisor/s** who directly support the PhD candidate in his/her research activity.

→ Supervisors and tutor are to be agreed with your **PhD Program Coordinator**
Ruolo di Relatori e Tutor

Dal regolamento:

**Tutor**
Art. 12 c. 3 - All’inizio del corso il Collegio dei Docenti assegna ad ogni dottorando un tutor che lo supervisiona e supporta nel percorso formativo complessivo. Il tutor è un docente del Politecnico di Milano **appartenente al Collegio dei Docenti**. Il tutor può essere un docente di un altro Ateneo (purché componente del Collegio) nel caso di Dottorato in convenzione con altre Università.

**Relatore**
Art. 10 c. 4. Il Collegio dei Docenti nomina, con l’assenso dello studente, un relatore della tesi, che supporta il dottorando nell’impostazione e nelle attività di sviluppo della tesi. Il relatore può anche non essere componente del Collegio dei Docenti e non appartenere al Politecnico di Milano. In ogni caso il relatore è responsabile nei confronti del Collegio dei Docenti dello svolgimento del lavoro di tesi dell’allievo, e si impegna a rispettare le indicazioni del Collegio dei Docenti e del Progetto formativo del Dottorato.

“**Il Relatore è il referente scientifico e supervisore del lavoro di tesi**”.
PhD opportunities: Internationalization

- A period abroad is strongly encouraged
  - suggested at least 3 months,
  - up to 18 months abroad

- If you have a scholarship by Politecnico di Milano there is 50% stipend increase (€ 500 per month)

- Shorter stays (at least 3 months) in Europe qualify for the **Doctor Europaeus** certification (see regulations)
International agreements

offer the candidates the opportunity to develop their PhD career in collaboration with International universities and research centers. Different forms of doctoral co-operation are possible:

• thesis co-supervision
  research is co-supervised by advisors belonging to two or more institutions, but with PhD title delivered only by one of them. (Polimi does not require a formal agreement)

• joint doctoral agreement
  doctoral path designed by two institutions. The PhD candidate prepares a single PhD thesis, and earns a joint diploma, signed and stamped by both institutions. (min 3 yrs)

• Double doctoral agreement
  awards two doctoral degrees. Each involved institution issues the diploma independently, upon completion of the requirements settled in the agreement. (min 4 yrs)
IDEA League

IDEA League is a strategic alliance among five leading European universities of technology:

• ETH Zurich
• TU Delft
• Chalmers
• RWTH Aachen
• Politecnico di Milano
IDEA League Student Grants

Funds are available to support PhD candidates’ short-term research exchanges among IDEA League partners.

– The grant amount equals to **600 EUR gross per month**, inclusive of the taxes owed by the Politecnico di Milano.
– Research exchanges from 2 weeks to 6 months are covered.
– The research exchange must take place in 2018.
– The grant can be combined with any other funding available (e.g., with the 50% scholarship increase due for periods abroad).

Please check our [website](#) for inspecting the call and preparing the application. **Deadline for applications is December 15th, 2017.**

*(We suggest to prepare your application ASAP, as you will need to obtain an invitation letter/email from the hosting research group)*
IDEA League Doctoral School “Engineering Complex Systems with Big data and information Technology”

– The Doctoral School will offer a broad perspective on the role of big data analysis and emergent IT technologies in complex systems engineering in large-scale, interconnected, highly complex and dynamic socio-technical systems, from the point of view of different disciplines.

– It includes four modules, to be held at Delft, Aachen, Milano and Goteborg, and will therefore offer you the opportunity of visiting four of the five IDEA League campuses.

– Participation is restricted to 30 PhD candidates from all the IDEA League partners.

– The organizers waive the registration fees and cover lodging and living expenses during the School for all the selected IDEA League PhD candidates. You will therefore ask for financial support from your PhD programme for the travel expenses only.

Please check the IDEA League website for inspecting the call and submitting your application. **Deadline for application is November 30th, 2017.**