

# IBES PhD Programme Kick-off meeting Cycle 41

27/11/2025

11.00 - Room 2.7A

Department of Electrical, Electronic, and Information Engineering "Guglielmo Marconi" DEI



WELCOME ON BOARD



OUR ALMA MATER IN NUMBERS

## University of Bologna

#### **Constituent Principles**

The primary goals of the University are teaching and research, two inseparable activities aimed at pursuing critical knowledge open to dialogue and interaction between cultures, respecting the freedom of science and teaching.

Given its long-standing identity as a place of general studies, the University acknowledges the equal dignity and opportunities of all branches of learning that assure scientific and educational capital.

University Statute, Constituent Principles, Art. 1 para. 1, 3



## University of Bologna

#### **Multi-campus**

- Bologna (DEI)
- Cesena Campus (DEI)
- Forlì Campus
- Ravenna Campus
- Rimini Campus
- Representación en la República Argentina





## University of Bologna

1088

STUDIUM IN BOLOGNA

IT IS THE OLDEST UNIVERSITY IN THE WESTERN WORLD



**ARCHIGINNASIO** 

1988

MAGNA CHARTA UNIVERSITATUM

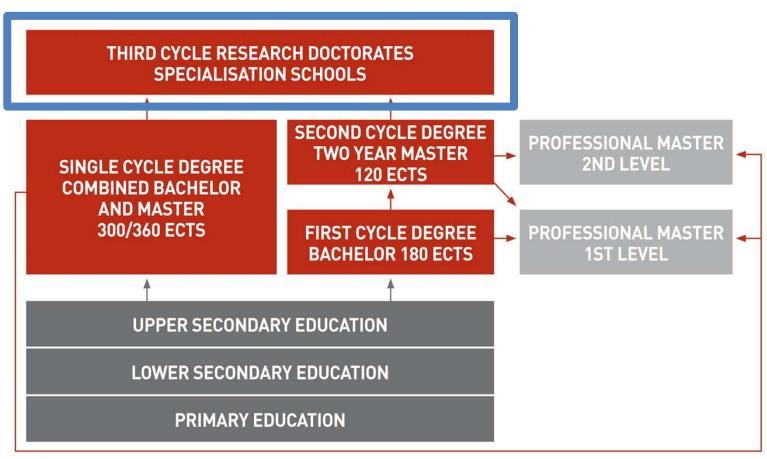
CONFIRMS THE ESSENTIAL ROLE OF THE UNIVERSITY IN CONTEMPORARY SOCIETY



**ANATOMICAL THEATRE 1653** 



## **Italian University System**



ECTS= EUROPEAN CREDIT TRANSFER SYSTEM.

1 CREDIT= 25 HOURS STUDENT WORKLOAD (CLASSES, INDIVIDUAL STUDY, EXAMS, ETC.)



#### our Alma Mater in numbers

- More than 96,000 students, among which more than 9,000 international students (upd. March 2025)
- 1645 grants for PhD positions in the last 3 years
- 260 degree programmes
- 51 PhD/ Doctoral programmes
- 3382 Professors and 3235 members of the professional staff
- Many funded research projects (EU, national or regional funding, NRRP)
- 31 Departments; 11 of them have been selected as Departments of excellence by the Italian Ministry of Universities and Research (MUR)





**OUR DEPARTMENT** 

## The Department of Electrical, Electronic, and Information Engineering «Guglielmo Marconi» (DEI)

- More than 150 Professors and Researchers
- 30 internal research laboratories
- 3 Inter-departmental research centers:
  - ARCES
  - CIRLICT
  - CIRI HST
- External research centers associated:
  - CNIT
  - CNR
  - NITEL
  - ELMO
- 3 PhD Programmes:
  - ET-IT: Electronics, Telecommunications and Information Technologies Engineering
  - EIT4SEMM: Engineering and Information Technology for Structural and Environmental Monitoring and Risk Management
  - ➤ IBES Biomedical, Eletrical and Systems Engineering









IBES PhD Programme

## **IBES History and Scope**

- IBES is the merging of three previously independent programmes:
  - Ingegneria dei Sistemi, later Automatica e Ricerca Operativa
  - Ingegneria Biomedica
  - Ingegneria Elettrica
  - all started from 1° Cycle (1983)
- "IBES" Alumni is a large and highly successful community including a large number of permanent academic staff and researchers employed in public and private industries worldwide
- Large number of students: >15 enrolled every year (some supported by external funds)
- Large number of potential PhD advisors ("IBES" disciplines are >60% of DEI staff)
- Wide scope and interdisciplinary nature
  - Automatic & Operations Research
  - Bioengineering
  - Electrical engineering
- Web site <a href="https://phd.unibo.it/ibes/en">https://phd.unibo.it/ibes/en</a>
- Email dei-phd-ibes@unibo.it



## IBES PhD Program: our numbers

#### > 3 Curriculum:

- Automatic Control and Operations Research (ARO)
- Biomedical Engineering (BIO)
- Electrical Engineering (EE)

#### > 63 Enrolled PhD Students

- 17 in Cycle 41
- 24 in Cycle 40
- 17 in Cycle 39
- 5 in Cycle 38
- **22** Professors are members of the IBES PhD program Board
- 1 PhD Coordinator and 3 Curriculum Advisors
- ☐ 1 PhD Student Representative
- ☐ 1 PhD Manager



## IBES PhD Programme: contacts

- Coordinator: prof. Michele Monaci (michele.monaci@unibo.it)
- > PhD Students' Representative: dott. Davide Valenti (d.valenti@unibo.it)
- PhD Manager: dott.ssa Francesca Lazzaretti (dei-phd-ibes@unibo.it)
- Curriculum Advisors
  - ARO → prof. Alessandro Macchelli (alessandro.macchelli@unibo.it)
  - BIO → prof. Simone Furini (<u>simone.furini@unibo.it</u>)
  - EE → prof. Luca Zarri (luca.zarri2@unibo.it)

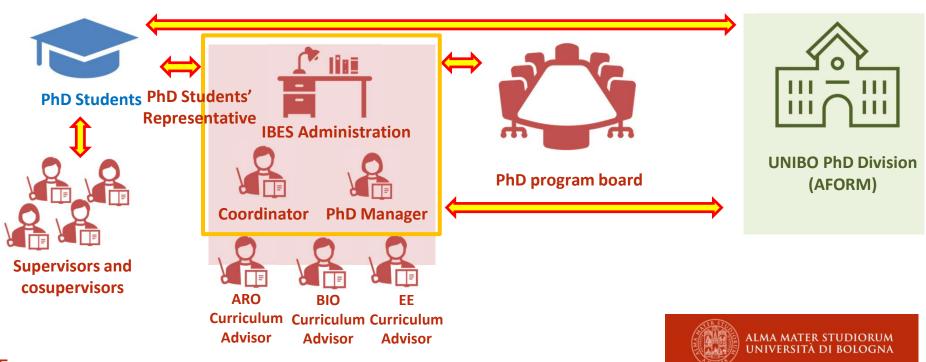
N.B.: official communications take place only through the institution email address (name.surname@unibo.it).

## IBES PhD Program: organization structure

When you have a question, first check the IBES website and the UNIBO PhD webpage.

If you do not find the answer, please contact us (dei-phd-ibes@unibo.it).

Some information can only be provided by the UNIBO PhD Unit. In that case, we may refer you to **AFORM** – **Corsi e carriere** (aform.udottricerca@unibo.it).



## IBES PhD Program: laws and regulations

The rights and obligations of PhD students, as well as the details of all the stages in the PhD career, are outlined in the documents mentioned below.

- We strongly recommend you to read it carefully.
- Ministerial Decree n. 226/2021, issued by the Italian Ministry of University and Research (MUR) (n.b. available only in Italian)
- Regolamento in materia di corsi di dottorato, issued by UNIBO (n.b. available only in Italian).

Moreover, any decisions by the IBES PhD Board will be published on the IBES website and notified to PhD Students via UNIBO email.



## Academic requirements



You can always check them **HERE** 

(Besides daily cooperation with the supervisor)

IBES PhD Students must:

- 1. obtain at least 36 Doctoral Credits (DC);
- carry out a research period of at least 3 months abroad;
- attend at least 1 Summer School or 1
   National/International School, whose topic is close to their own research topic;
- 4. present at least **1 paper at an international conference** on a topic related to their research topic
- 5. publish at least **1 article on an international journal** on a topic related to their research topic;
- 6. comply with the specific requirements for their curricula (if applicable).



#### **Doctoral Credits: introduction**

- Doctoral Credits (DCs) measure the workload that a PhD Student is required to invest in research and training activities in order to obtain the PhD Degree.
- With regard to research training, one DC is equivalent to one European Credit Transfer and Accumulation System (ECTS) credit.
- PhD students must complete 60 DCs per year, corresponding to 1,500 hours of activity. Each DC is worth 25 hours of the PhD student's total commitment (including both both classroom-based learning and self-study effort).

Table A – Distribution of DCs between research and training					
Type of activity Total number of DCs %					
Research activities	144	80			
Training activities	36	20			
Total	180	100			



Training activities are divided into 5 categories:

- 1. Disciplinary and multidisciplinary training
- 2. Soft skills
- 3. Extra-curricular training
- 4. Dissemination
- 5. Supplementary teaching and tutoring

Each PhD course establishes the **minimum and maximum number of DCs** to be achieved in each category of activities.

Table B – Requirements for DC distribution between training activities						
Type of activity	Minimum number of DCs	Maximum number of DCs				
Disciplinary and multidisciplinary training	12	21				
Soft skills	3	6				
Extra-curricular training	1	6				
Dissemination	1	6				
Supplementary teaching and tutoring	0	9				



#### 1. Disciplinary and multidisciplinary training

Training activities may cover:

- specific topics related to the research project, including aspects linked to significant scientific and technological developments;
- broader topics (multidisciplinary, transdisciplinary, and interdisciplinary), aimed at addressing training gaps relevant to all scientific domains included in the PhD programme and its curricula;

These activities may be organized either by the PhD Course or by the University. Doctoral students may also earn Doctoral Credits (DCs) through activities offered by **other PhD Courses** (possibly outside the University of Bologna) and/or from **first- and second-cycle educational programmes**.



#### 2. Soft skills

Training activities in this area may cover:

- Research valorization and management, covering technology transfer, innovation management, data management, publishing policies, and open science.
- **Communication and dissemination**, including scientific writing, presentations, communication techniques, and advanced language skills.
- Societal impact and research systems, addressing the impact of science on society and sustainable development, and knowledge of European and international funding mechanisms.
- Professional and ethical development, including career planning, teaching training, and principles of ethics, gender equality, and research integrity.

These activities may be organized either by the PhD Course or by the University.

#### 3. Extra-curricular training

Activities aimed at strengthening the growth of PhD students as active members of the scientific community may include:

- participation in national and international training schools;
- opportunities for presenting and discussing research results, such as PhD symposia or similar exchange events.

#### 4. Dissemination

This category includes the participation of PhD students in congresses, conferences, workshops, and similar events as speakers or poster presenters.

#### 5. Supplementary teaching and tutoring

This category refers to the participation of PhD students in supplementary teaching and tutoring activities, provided that such activities are consistent with and compatible with their ongoing research.

## Doctoral Credits: intermediate requirements

To ensure a balanced engagement in training and research activities, each PhD Course defines the **recommended number of DCs** to be earned for training activities in each year of the programme.

For each year, the Course also establishes a **minimum number of DCs**, below which a PhD student may be excluded from the PhD programme.

Table C – Training DCs to be acquired at the end of each course year						
Training DCs to be acquired Recommended Minimum						
at the end of the 1st year	15	0				
at the end of the 2nd year	24	9				
at the end of the 3rd year	36	36				



#### Doctoral Credits: how to obtain them

- The number of DCs associated with curricular training activities is determined by taking into account both classroom-based learning and selfstudy effort.
- Each PhD Course establishes general criteria for allocating DCs to all types of training activities.
- When an activity whether conducted at the University of Bologna or elsewhere - formally awards a certain number of ECTS credits, 1 ECTS credit is equivalent to 1 DC.
- For activities that do not require independent study (e.g., attendance at a seminar or event), 1 DC is awarded for every 25 hours of participation.



## Doctoral Credits: how to obtain them

Table D – Correspondence between workload hours and acquired DCs						
Type of activity	Hours in class	Self-study hours	Total hours	DC		
Courses (disciplinary and multidisciplinary teaching)	5	20	25	1		
Other disciplinary and multidisciplinary university courses (1st and 2nd level) *	10	15	25	1		
Soft skills (attendance only)	25	0	25	1		
Soft skills (with additional individual work) *	15	10	25	1		
Laboratory courses	12,5	12,5	25	1		
Seminars that require self-study	15	10	25	1		
Seminars that do not require self-study	25	0	25	1		
Supplementary teaching and tutoring	8	17	25	1		
Teaching activities (cosupervision of bachelor/master theses, per single thesis, to be split among cosupervisors)	0	10	10	0,4		
Extra-curricular training	1 day			0,4		
Dissemination				1 day		0,4

## **Doctoral Credits: general observations**

- DCs may be earned for activities carried out both at the University of Bologna and at external institutions.
- Periods spent at institutions other than the University of Bologna do not automatically yield DCs, unless formal training activities are conducted at those institutions.
- The acquisition of DCs is verified during the year-end evaluation meeting of the PhD Board, which decides on the student's progression to the following year and admission to the final exam.



## Study Plan for the acquisition of DCs

PhD Students, in agreement with their supervisors and co-supervisors, define their specific training and research pathways in a flexible manner:

- selecting activities in terms of type and quantity;
- respecting the minimum and maximum DC requirements established by the Academic Board for each activity and each year of the programme.

To assist PhD students and supervisors in this process, starting this year we require the completion of a **Study Plan for the three-year period**, which must be **agreed upon and signed by the supervisor**.

The Study Plan is **not strictly binding** and **can be revised each year**. Its purpose is to:

- serve as a formal agreement between the PhD student and the supervisor;
- provide a clear roadmap and ensure that progress is monitored throughout the year, so that required credits and activities are completed in a timely manner.

A template and the form for submitting the signed Study Plan will be provided together with a deadline.

## Doctoral Credits: operative rules

The Operating Manual is available HERE

PhD Students must submit their requests through the **Dottorandi** app.

This tool is used also by:

- supervisors, for verifying the coherence of the requests with the student's research and,
  if necessary, requesting revisions;
- the PhD Board, for reviewing and possibly assigning DCs.

Training activities that are validated will be **recorded in the diploma supplement** at the end of the three-year PhD programme.

Formazione disciplinare e multidisciplinare Formazion Formazione extra-curriculare Disseminazione	ne relativa alle co	mpetenze trasversali 🔘 Tutorato o attività didattica integrativa	
Dal*		AI*	
gg/mm/aaaa		gg/mm/aaaa	
Nome dell'attività formativa* :			
Tipo di valutazione* :  O Solo partecipazione O Idoneo O Voto			
Numero ore *:		Crediti dottorali di cui si chiede il riconoscimento *:	
Allegato*			



#### **IBES** training activities

- Every year, the IBES PhD Board offers various courses and seminars addressed specifically to PhD Students.
- You can choose the ones that suit your academic needs in order to comply with the academic requirement n.1
- The schedule of the training activities for the a.y. 2025/2026 will be made available by January 2026 on the specific IBES webpage. Further information about each activity will be published also on the IBES Agenda and sent by email before its start.



## Research stays outside Bologna (in Italy or abroad)

First of all, you need specific authorization issued by the Coordinator.

#### **Before starting**

- 1. Collect the <u>supervisor approval</u> and the <u>invitation letter</u> by the research institute or industry
- 2. Fill in and sign the authorization request form
- 3. Send them to dei-phd-ibes@unibo.it

#### **During the stay**

 If you are planning to prolong your stay, you need the PhD Board authorization. Fill the <u>specific request form</u> and send it to <u>dei-phd-ibes@unibo.it</u>

Up-to-date information is accessible <u>HERE</u>



## Mobility funding – 50% increase of the standard PhD scholarship

For periods of study and research abroad you may receive a financial endowment amounting to **50% of the standard PhD scholarship**, regardless how you are funding your PhD.

This cannot be obtained for periods shorter than one continuous month or longer than 12 months (or 18 months if you are in a cotutelle agreement), and in any case not in your country of residence.

In order to ask for this increase please follow the procedure explained on the <u>UNIBO Intranet</u> (**n.b.** available only in Italian) or contact AFORM – Corsi e carriere (<u>aform.udottricerca@unibo.it</u>).

#### **N.B.** This kind of funding is **managed by:**

- the UNIBO PhD Prog. Division (AFORM) if you have a scholarship;
- the Department if you have a research grant.



## Mobility funding – Marco Polo Programme

The Marco Polo Programme offers mobility scholarships to promote research activities abroad for young UNIBO researchers and PhD students.

The Programme has **two calls**: one in May and one in November.

To apply for the Marco Polo Programme you need the authorization for spending a research period abroad issued by the Coordinator.

The deadlines and the application procedure are set by the Department Council, not by the IBES PhD Board. Therefore, please submit your authorization request at least one week before the Marco Polo deadlines.

**N.B.** This kind of funding is **managed by the Department**.

The Marco Polo grant and the 50% increase are compatible up to the maximum amount of Marco Polo assigned.

## Working while attending the PhD

Any time you are planning to accept a job assignment, **no matter if the employer is UNIBO**, you must complete the specific **authorization form** available on the **Dottorandi** app.

It will be reviewed by the supervisor and approved by the Coordinator.



Wait for the approval of the Coordinator <a href="before">before</a> signing the contract.

**N.B.** Only working activities that are **strictly related** to your research duties can be authorized

Up-to-date information is accessible HERE



## 10% budget for funding research

- Starting on the first year, you have access to a budget that amounts to at least 10% of the standard PhD scholarship, regardless how your PhD is funded.
- This budget can be used to fund your PhD research (e.g., hardware) and training activities (e.g., travels, courses, conferences, both in Italy and abroad).
- All expenses must be approved by your supervisor and must comply with UNIBO rules.
  - In particular: before starting a research travel, please check the <u>Regolamento delle</u> <u>missioni</u>, <u>mobilità intra ateneo e trasferte</u> and contact DEI-Missioni (<u>dei.missioniweb@unibo.it</u>) in case any further information about the procedure to ask for reimbursement is needed.

Up-to-date information is accessible HERE



## 10% budget for funding research

#### How does the 10% budget work?

If you have been granted a PhD scholarship funded by:

- Programmes (e.g. NRRP), your 10% budget is set aside in a specific fund, accessible only to the Supervisor and/or the Coordinator, or even to the Student him/herself.
- ➤ UNIBO or the Department, your 10% budget is <u>ensured through your supervisor's research funds</u>. For instance, when your supervisor covers your travel expenses for a conference, you are already utilizing your 10% funds.
- **N.B.** While this is a general rule, there may be specific cases that differ from what has just been mentioned. Please reach out to <a href="mailto:dei-phd-ibes@unibo.it">dei-phd-ibes@unibo.it</a> for further information.



#### Year-end evalutation

At the end of each academic year, the **Curriculum Board** and the **PhD Board** assess the research progress and overall work of PhD students and decide on their **admission to the following year**.

#### 1. Submission of the annual report & summary

PhD students submit a report summarizing their research work, activities and academic obligations, following the provided templates and instructions.

#### 2. Presentation of Research Work

They present their research progress to the Curriculum Committee.

#### Final Assessment and Admission

The PhD Board reviews the evaluations from the Curriculum Committees and formalizes the student's admission to the following year. Attendance at this session is not required for PhD students.



#### Admission to the final exam

At the end of the 3rd year, PhD Students are evaluated for admission to the final exam.

In addition to the year-end evaluation, the thesis is evaluated by **external examiners** who assign a score.

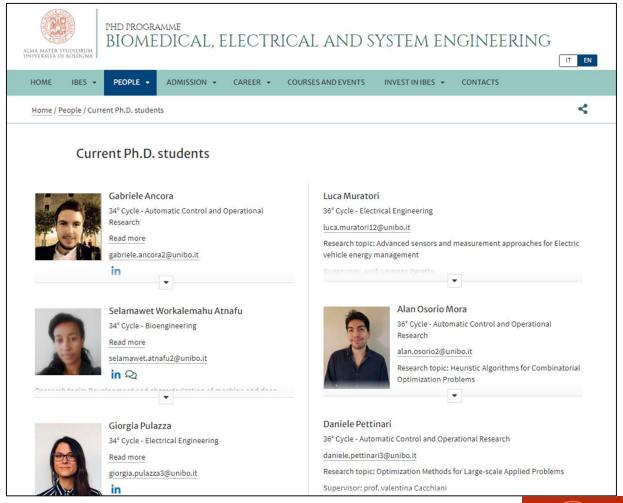
- If the score is not assigned, the defense is postponed for 6 months so that the thesis can be improved and re-evaluated.
- If the score is still negative, you cannot proceed any further.

PhD Students **defend their thesis before a committee** composed of professors from the University of Bologna and other research institutions.



## Meet your colleagues: PhD Students 38°, 39°, and 40° cycle

#### https://phd.unibo.it/ibes/en/people/current-ph-d-students





#### **IBES Board**

#### **Faculty**

- Monaci Michele
- Borghetti Alberto
- Breschi Marco
- Cavallini Andrea
- Cirimele Vincenzo
- Furini Simone
- Giordano Emanuele Domenico
- Macchelli Alessandro
- Malaguti Enrico
- Marconi Lorenzo
- Melchiorri Claudio
- Mingotti Alessandro
- Notarstefano Giuseppe
- Nucci Carlo Alberto
- Palli Gianluca
- Sandrolini Leonardo
- Severi Stefano
- Tani Angelo
- Traverso Pier Andrea
- Ursino Mauro
- Vigo Daniele
- Zarri Luca

#### **DEI - PhD Support office**

Dott.ssa Francesca Lazzaretti
dei-phd-ibes@unibo.it
3rd floor of the "new-building"
DEI Department
Viale del Risorgimento 2,
Bologna

**Unibo - PhD Unit** 

aform.udottricerca@unibo.it

Via Zamboni 33, Bologna



Family name Name	Research topic	Supervisor	Co-supervisor	Curriculum	SSD	Place
BARGELLINI DAVIDE	Integrazione di tecniche di Artificial Intelligence e di robotica per il settore manufatturiero	Roberto Meattini	Gianluca Palli	Automatic Control and Operations Research	IINF-04/A	DEI Bologna
CHEN QIAN	Sistemi intelligenti per la manipolazione robotica collaborativa human-in-the- loop	Claudio Melchiorri	Roberto Meattini	Automatic Control and Operations Research	IINF-04/A	DEI Bologna
CUTORE SALVATORE MATTIA	Modellistica elettrotermica di un solenoide superconduttivo ad alta temperatura critica	Marco Breschi	Lorenzo Cavallucci	Electrical engineering	IIET-01/A	DEI Bologna & ENEA Frascati
DALLARA CARLO	Controllo e ottimizzazione di sistemi autonomi complessi per robotica spaziale	Giuseppe Notarstefano	Guido Carnevale	Automatic Control and Operations Research	IINF-04/A	DEI Bologna



Family name Name	Research topic	Supervisor	Co-supervisor	Curriculum	SSD	Place
DONG CHENGXIAO	Interactive Perception and Imitation Learning Framework for Robust Robot Manipulation	Gianluca Palli	Alessio Caporali	Automatic Control and Operations Research	IINF-04/A	DEI Bologna
DRAGHETTI MATILDE	Materiali innovativi nella schermatura elettromagnetica	Leonardo Sandrolini	Mattia Simonazzi	Electrical engineering	IIET-01/A	DEI Bologna
FRATERNALI MATTEO	Signal processing and artificial intelligence methods for the multimodal characterization of physiopathological states	Elisa Magosso	Davide Borra	Bioengineering	IBIO-01/A	DEI Cesena
GEMINIANI CHRISTIAN	Integrated Co-Design of Smart and Compliant Mechatronic Systems	Andrea Tilli	Roberto Diversi	Automatic Control and Operations Research	IINF-04/A	DEI Bologna



Family name Name	Research topic	Supervisor	Co-supervisor	Curriculum	SSD	Place
MENEGON MARCO	Sistemi avanzati per il controllo e il condition monitoring di azionamenti alimentati da convertitori multifase e multilivello	Gabriele Rizzoli	Luca Vancini	Electrical engineering	IIND-08/A	DEI Bologna
NING YUAN	Sviluppo di un sistema per la misura di scariche parziali utilizzando sia un sistema di un trigger innovativo e logiche di intelligenza artificiale	Andrea Cavallini	Paolo Seri	Electrical engineering	IIND-08/B	DEI Bologna
NOORI FARDIN	Misure sincronizzate e gemello digitale per la diagnostica nelle reti elettriche di potenza	Lorenzo Peretto	Roberto Tinarelli	Electrical engineering	IMIS-01/B	DEI Bologna



Family name Name	Research topic	Supervisor	Co-supervisor	Curriculum	SSD	Place
PIERMARIA GIULIA	Advanced processing methods of neuroelectrical signals, and neurocomputational modeling for cognitive neuroscience	Mauro Ursino	Elisa Magosso	Bioengineering	IBIO-01/A	DEI Bologna
SACCANI CRISTINA	Multimodal Active Perception and Modular Skills for Dexterous Manipulation of Deformable Objects	Gianluca Palli	Alessio Caporali	Automatic Control and Operations Research	IINF-04/A	DEI Bologna
SAFABAKHSH TAHA	Energy Management Systems based on Optimization Algorithms and Machine Learning	Alberto Borghetti	Carlo Alberto Nucci	Electrical engineering	IIND-08/B	DEI Bologna



Family name Name	Research topic	Supervisor	Co-supervisor	Curriculum	SSD	Place
SUTERA LODOVICA PIA MARIA	Sviluppo di modello di Intelligenza Artificiale per l'analisi di immagini ecografiche del canale anale	Stefano Diciotti	Emanuel Cavazzoni	Bioengineering	IBIO-01/A	DEI Bologna & THD S.p.a.
VERNA VIRGINIA	Ottimizzazione in condizioni di incertezza: azioni di ricorso e riottimizzazione	Michele Monaci	Andrea Lodi	Automatic Control and Operations Research	MATH-06/A	DEI Bologna
ZARABINI DAVIDE	Metodi di controllo avanzati per l'incremento di autonomia in sistemi robotici e macchine intelligenti	Giuseppe Notarstefano	Riccardo Trevisan	Automatic Control and Operations Research	IINF-04/A	DEI Bologna



#### **Contacts**

#### **PhD Manager**

Dott.ssa Francesca Lazzaretti

dei-phd-ibes@unibo.it

3rd floor - "new building"

DEI Department - Viale del Risorgimento, 2 – Bologna

#### **Coordinator**

Prof. Michele Monaci

michele.monaci@unibo.it

