

Welcome meeting

PhD cycle 39

14 Nov 2023

EECE PhD Program

Electrical,
Electronics and
Communications
Engineering

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EECE Coordinator

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Politecnico
di Torino

ScuDo

Scuola di Dottorato ~ Doctoral School

WHAT YOU ARE, TAKES YOU FAR

POLITO and the EECE PhD Program

POLITO: According to the 2023 QS world university ranking

38th worldwide for **Electrical & Electronic Engineering** (12th in Europe)

EECE PhD Program

Very well appreciated worldwide

Deeply connected with the international research community

Strongly supported by the research groups and departments

Strong connections with companies

Many opportunities offered to its students

POLITO is investing significant resources in all its PhD programs, including EECE

PhD students are a major resource in all research universities worldwide

The Doctoral Candidates...



... are both **students** and **early stage researchers**

The PhD Program trains to carry out research...

→ in the **academic environment**

→ in **companies** looking for **professionals**
who will inspire and manage the innovation process

The PhD Goal

learn how to make research – by doing it!

PhD candidates are expected to

acquire any **background knowledge** that is required

become aware of **the state of the art** in his/her research area

develop new ideas and prove their effectiveness/limitations

publish the results (journals and international conferences)

interact with the worldwide research community

(learn how to) attract resources and **funding**

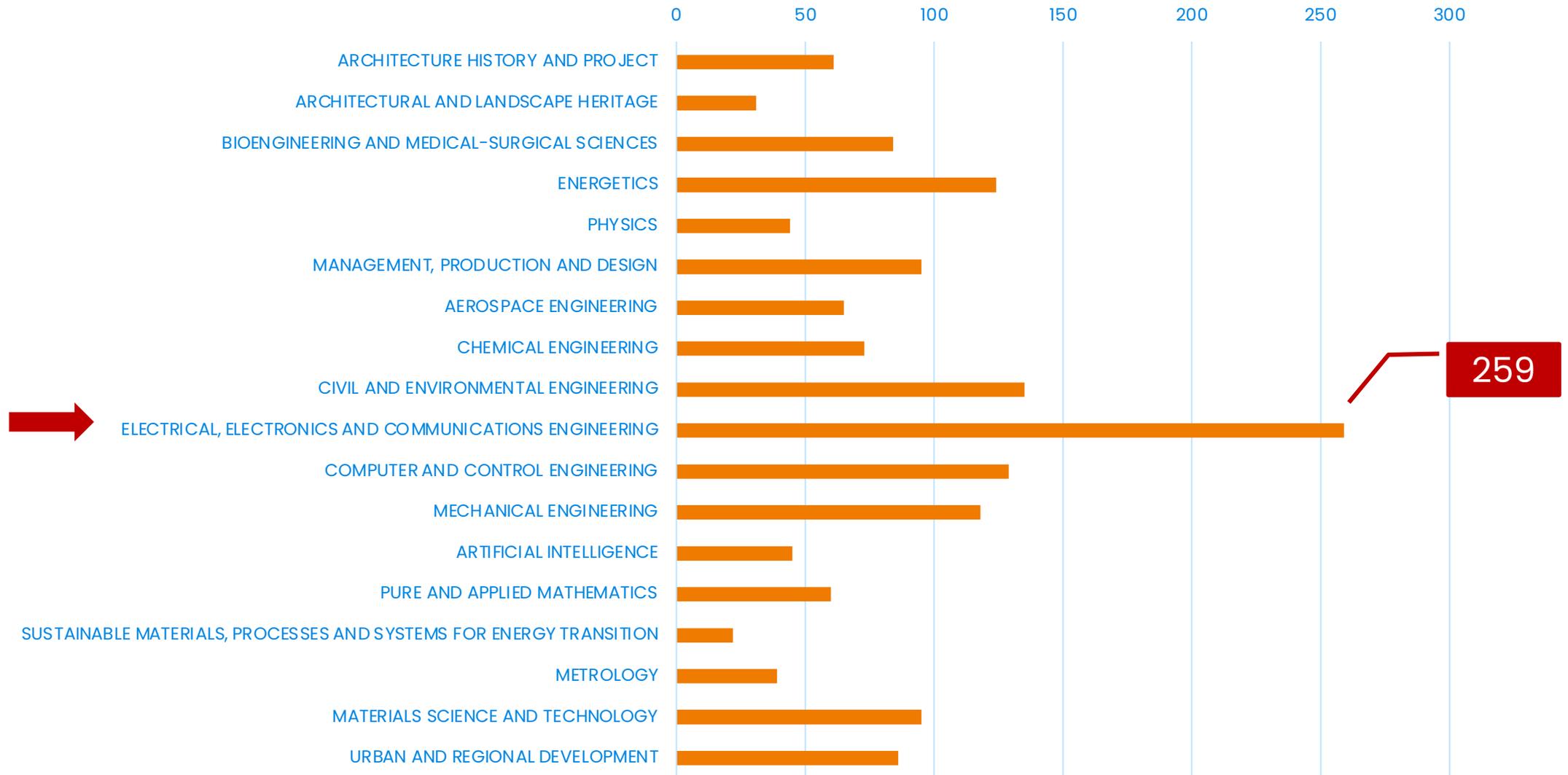
They are typically involved in **research projects**

with **companies**

funded by **public bodies** (national, EU or international levels – **PNRR**)

Each PhD candidate is guided by a **supervisor**

Number of PhD Candidates @ PoliTO: cycles 35-38



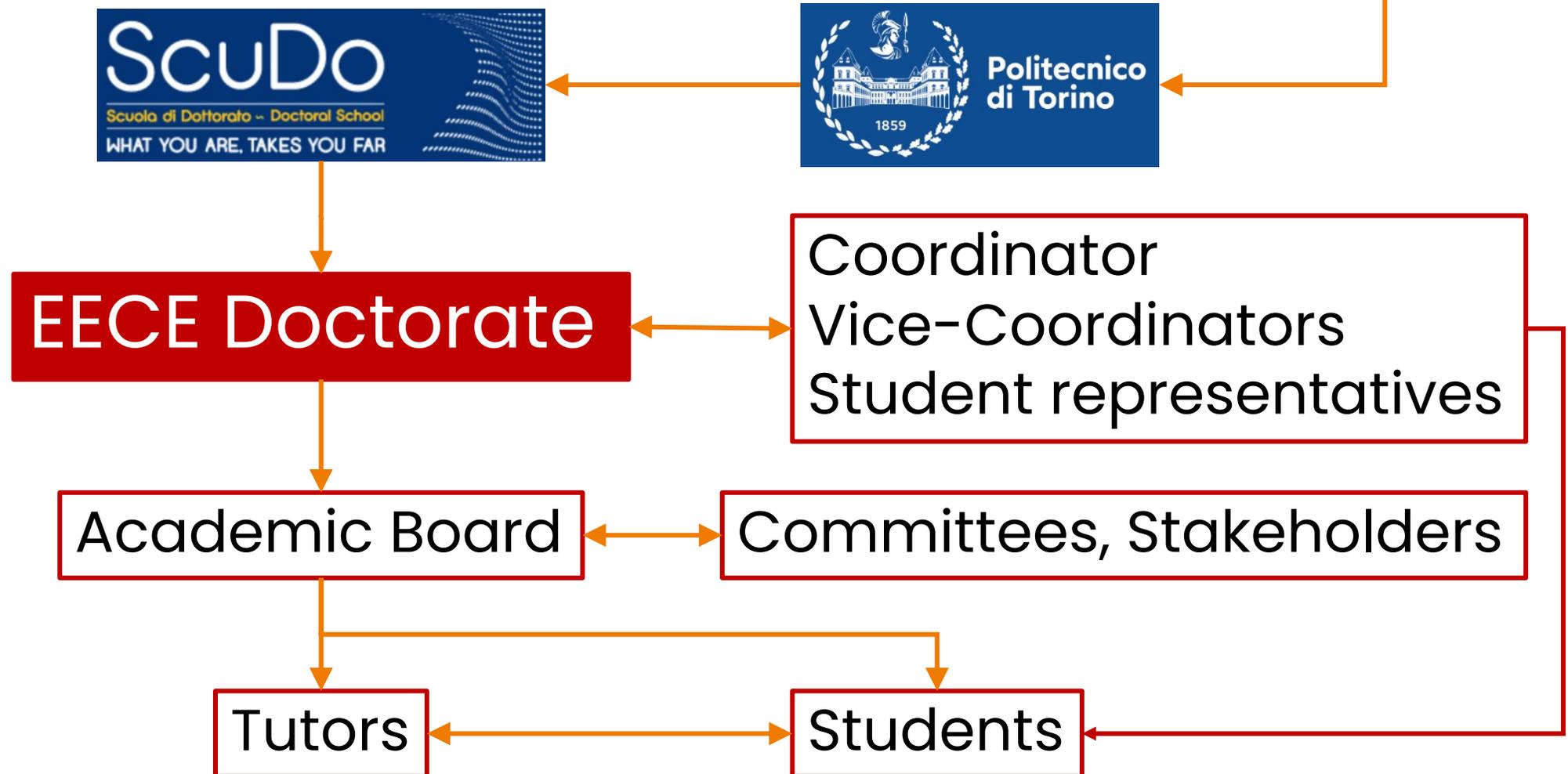
EECE: Some Numbers

Cycle	PhD Years	Number of PhD Candidates	
31	2016-2018	32	1 lost, 31 completed
32	2017-2019	31	2 lost, 29 completed
33	2018-2020	58	3 lost, 55 completed
34	2019-2021	56	6 lost, 2 active, 48 completed
35	2020-2022	53	2 lost, 42 active, 9 completed
36	2021-2023	73	6 lost, 66 active
37	2022-2024	73	4 lost, 69 active
38	2023-2025	73	2 lost, 71 active
39	2024-2026	Application is open NOW!	

General Organization



Ministero dell'Istruzione
dell'Università e della Ricerca



EECE Organization: Academic Board (46)

Stefano GRIVET TALOCIA

Roberto GAUDINO

Michele GOANO

Francesco P. ANDRIULLI

Andrea BIANCO

Aldo BOGLIETTI

Iustin Radu BOJOI

Ettore F. BOMPARD

Fabrizio BONANI

Giuseppe C. CALAFIORE

Aldo CANOVA

Federica CAPPELLUTI

Andrea CARENA

Marcello CHIABERGE

Carla F. CHIASSERINI

Gianfranco CHICCO

Paolo CROVETTI

Vittorio CURRI

Danilo DEMARCHI

Fabio DOVIS

Sergio FERRERO

Giovanni GHIONE

Paolo GUGLIELMI

Luciano LAVAGNO

Emilio LEONARDI

Enrico MAGLI

Guido MASERA

Ladislau MATEKOVITS

Michela MEO

Gian Mario PELLEGRINO

Candido PIRRI

Carlo Stefano RAGUSA

Maurizio REPETTO

Alessandro RIZZO

Luciano SCALTRITO

Gianluca SETTI

Filippo SPERTINO

Alberto TAGLIAFERRO

Alberto TENCONI

Elena Maria TRESSO

Giuseppe VECCHI

Francesca VIPIANA

Fabrizio DABBENE – C.N.R.

Gianni MAZZA – I.N.F.N.

Angelo RIVETTI – I.N.F.N.

Amedeo STAIANO – I.N.F.N.

EECE Organization: Who's Who

Coordinator

Stefano Grivet Talocia

Vice-coordinators

Roberto Gaudino

Michele Goano

Secretary

Emilio Leonardi

Administration

Andrea Trinchera (DET)

Mariapia Martino (DENERG)

Tiziana Marangoni (DISAT)

Executive board

Stefano Grivet Talocia

Roberto Gaudino

Maurizio Zamboni

Michele Goano

Radu Bojoi

Giuseppe Vecchi

Alessandro Rizzo

Students representatives

Matteo Perrone (DET)

Matteo Raggi (DET)

EECE Organization: Who's Who

Teaching activities committee

Carlo Ragusa

Franco Fiori

Stefano Grivet Talocia

Francesco Bertazzi

Emilio Leonardi

Giuseppe Vecchi

Poster Day committee

Paolo Bardella

Paolo Giaccone

Patrizia Savi

Awards committee

Simona Donati

Fabio Pareschi

Maurizio Repetto

External communications committee

Stefano Grivet Talocia

Maurizio Repetto

Alberto Tibaldi

Alex Minetto

Matteo Raggi

Matteo Perrone

EECE Organization: Stakeholders

Natale AIELLO, STMicroelectronics, Italia

Alessandro AIMAR, Synthara, Svizzera

Mauro BANDINELLI, Ingegneria dei Sistemi S.p.A., Italia

Emanuele BARDO, SPEA S.p.A., Italia

Davide CUDA, Google, Svizzera

Lorenzo D'ANCONA, Vishay Semiconductor Italiana S.p.A., Italia

Natasha DE LEO, INRIM, Italia

Annarita LAZZARI, Deltamu, Italia

Antonio NAPOLI, Infineon, Germania

Daniela PAOLOTTI, Fondazione ISI, Italia

Radu PORUMB, Universitatea Politecnica Bucharest, Romania

Roberto QUAGLIA, Cardiff University, Regno Unito

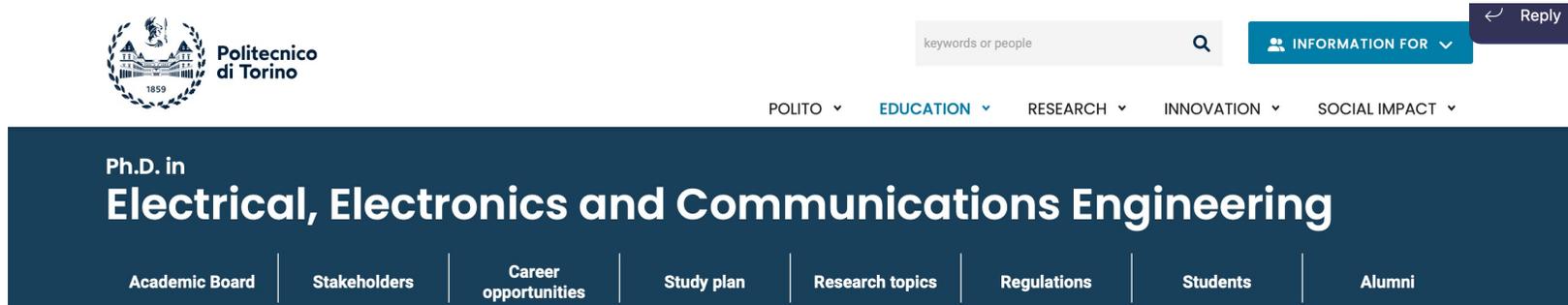
Vittorio RAVELLO, Centro Ricerche Fiat, Italia

Fabio L. TRAVERSA, MemComputing Inc, USA

Paolo VILMERCATI, STMicroelectronics, Italia

Main source of info: web site

<http://www.polito.it/phd/39-411>



The screenshot shows the website for the Ph.D. in Electrical, Electronics and Communications Engineering at Politecnico di Torino. The page features a dark blue header with the university logo and navigation menu. Below the header, there is a navigation bar with links to Academic Board, Stakeholders, Career opportunities, Study plan, Research topics, Regulations, Students, and Alumni. The main content area is titled "Ph.D. in Electrical, Electronics and Communications Engineering" and includes a "Key information" section on the right.

Home > Education > Ph.D. programmes and Postgraduate School > Ph.D. programmes > **Electrical, Electronics and Communications E...**

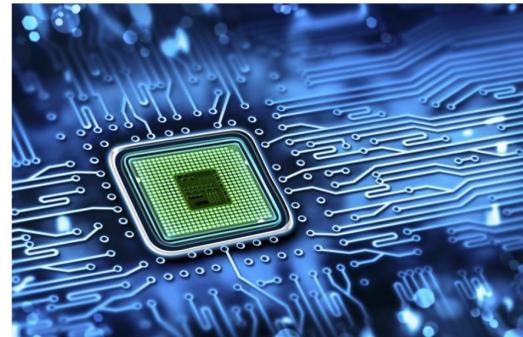
Programme overview

The EECE doctorate program aims at training highly qualified researchers and experts in the general field of electrical, electronics, and communications engineering. Our Ph.D. candidates acquire those fundamental skills that are necessary to carry out theoretical and experimental research, both in highly specialized technical disciplines and in a broader multidisciplinary setting. Ph.D. laureates are expected to become active players in scientific and technical innovation in academia, industry, or research institutions.

This doctorate is the largest Ph.D. program at Politecnico di Torino. The research topics of interest include but are not limited to the broad set of [IEEE](#) disciplines. The EECE Program formally includes two curricula:

- **General:** covers most disciplines in the general fields of Electronics, Electromagnetic Fields, Communications and Computer Networks, Electrical Engineering and Power Systems, Automation and Robotics, and Mechatronics. For a detailed list click [here](#).
- **Electron devices (INFN):** specializes in research and developments of high-performance electronic devices and components supporting large experiments on fundamental matter physics; this curriculum is conducted in collaboration with the [National Institute of Nuclear Physics](#).

The [Academic Board](#) managing this doctorate includes about fifty highly qualified Professors and Researchers belonging to four departments of Politecnico:



Key information

- **TYPE OF PROGRAMME:**
PhD programme
- **DEPARTMENT:**
[Department of Electronics and Telecommunications](#)
- **CHAIRMAN:**
[GRIVET TALOCIA STEFANO](#)
- **VICE-CHAIRMAN:**
[GAUDINO ROBERTO](#)
[GOANO MICHELE](#)
- **ADMISSION:**
Open, through competitive selection

EECE PhD Program: Topics

<http://www.polito.it/phd/39-411> -> **Research topics**

“Electrical/Power”

Power systems

Power converters

Electrical machines and drives

“Electromagnetics”

Antennas, electromagnetic devices, radars

Biomedical devices and applications

Computational Electromagnetics (low and high frequency)

EECE PhD Program: Topics

<http://www.polito.it/phd/39-411> -> **Research topics**

“Electronics”

Analog, Power, Mixed-Signal Circuits, Embedded Systems

Electromagnetic Compatibility, Signal and Power Integrity

Electronic devices: modeling and characterization

Micro-, nano-technologies, devices, systems, applications

Modeling, simulation and CAD

Photonic devices and solar cells

Radio frequency and microwave electronics

VLSI theory, design and applications

Radiation detectors and readout electronics (INFN, Nat. Inst. Nuclear Physics)

EECE PhD Program: Topics

<http://www.polito.it/phd/39-411> -> **Research topics**

“Communications”

Big Data, Machine Learning, Neural Networks, Data Science

Communication and Computer Networks

Geo-positioning, Navigation Systems and Remote sensing

Multimedia Signal Processing

Optical and Wireless Digital Transmissions Systems

“Controls”

Mechatronics and robotics

Systems, Automation and Control

Some basic rules...

Duration The PhD program lasts 3 years

1 Nov 2023 – 31 Oct 2026

Max 6 months extension*

*only duration, not scholarship

To graduate Training requirements

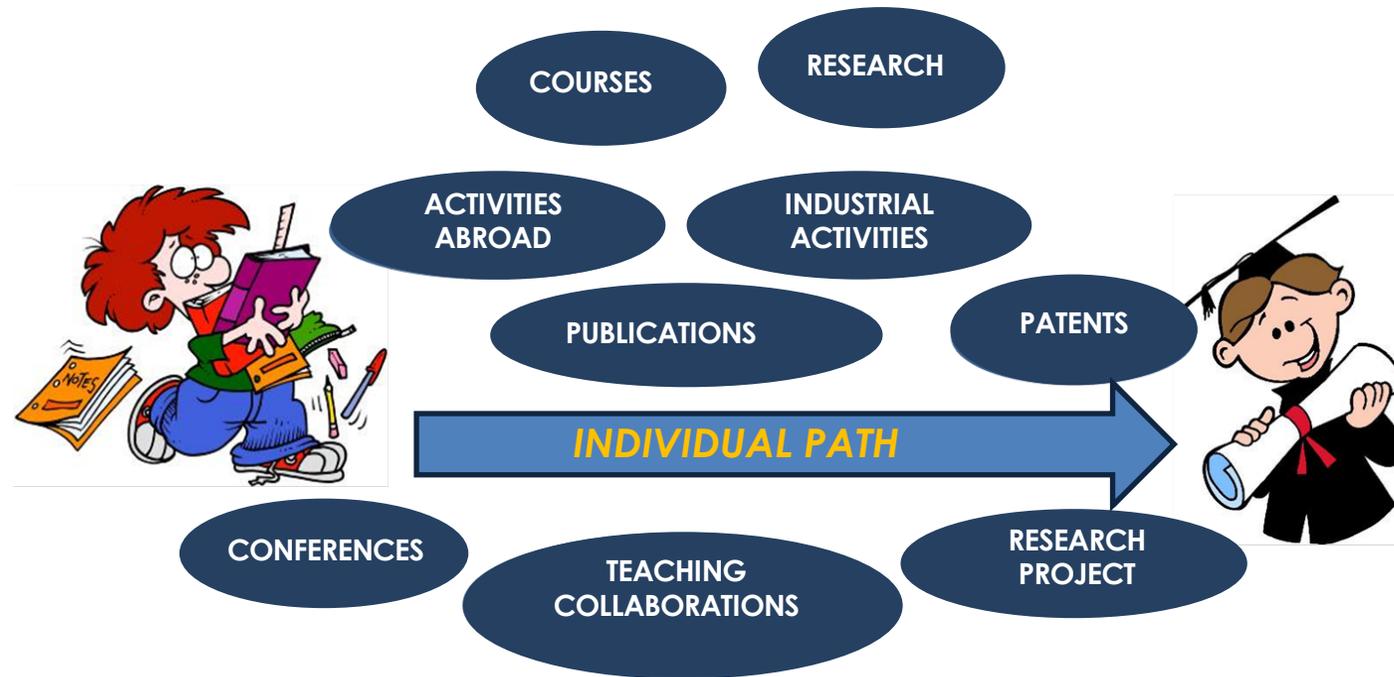
Publication requirements

Write a PhD thesis

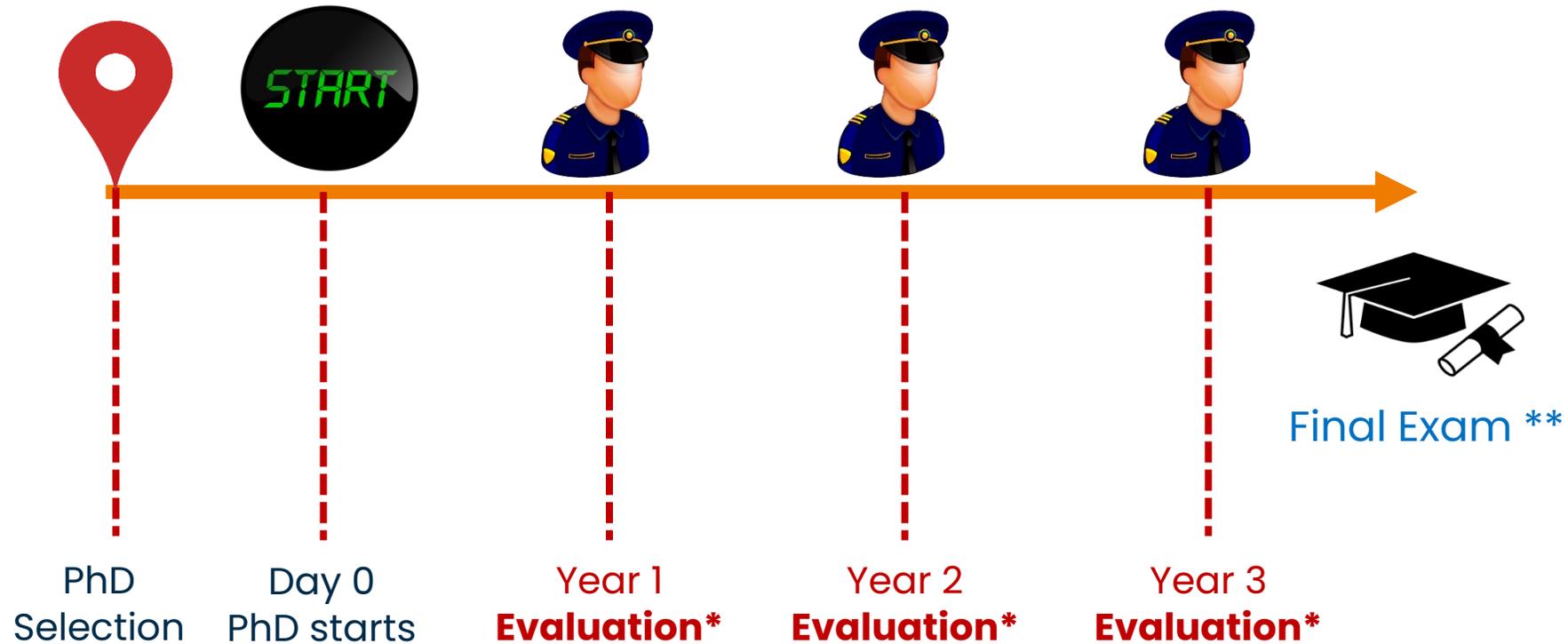
Pass the final examination



The PhD Candidate Path



Some Logistics: the PhD Candidate Path



***based on: training (courses), publications, research periods abroad,...**

****based on: thesis document (refereed by experts) and thesis defense**

PhD Activities

Accounting of all PhD activities is based on a point system

1. Training (hard and soft skills)
2. External research periods (abroad)
3. Publications and scientific production

Training Activities

Hard skills: specialized technical courses (EECE: about 50)

<http://www.polito.it/phd/39-411> -> **Study plan/Hard Skills**

Soft skills: writing a proposal, exploiting IP, speaking in public, ethics, ...

<http://www.polito.it/phd/39-411> -> **Study plan/Soft Skills**

How to choose?

Official courses from Scudo + EECE catalogs

External training activities

PhD Summer Schools

Tutorials at conferences

Seminars at prestigious institutions

Soft Skill Courses

Legend

 = E-learning / MOC

 = Room / Laboratory

Research and Academia 

Industry, companies and professionals 

Entrepreneurship and start-ups 

Public sector and public organizations 

Hard Skill Courses

Managed by  ScuDo

Collecting catalogues from all polito PhD programs

List of official courses»

<http://www.polito.it/phd/39-411> -> **Study plan/Hard Skills**

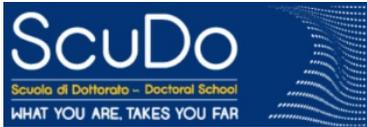
EECE maintains its own list of courses

Some courses are offered every 2 years

This is not visible on the ScuDo official catalog

<http://www.polito.it/phd/39-411> -> **Study plan**

Hard Skill Courses: External Training



allows attending external courses

→ **must be approved by the Coordinator!**

EECE has its own guidelines for course approval

Official courseware from Universities or Institutions (**YES**)

Participation to conferences or workshops (**NO**)

Tutorials and short courses at conferences (**YES**)

Software training (**NO**, except if requested by tutor)

Seminars at prestigious Universities/institutions (**YES**)

Online courses (**NO**, except if requested by tutor)

«PitchD» seminars by IEEE Student Branch (**YES**)

Note: this page refers to hard skill Courses attended outside POLITO.

Research periods abroad are also accounted in the PhD career, but they are treated in a different way, see later

Must provide a certificate of attendance

reporting your name and the number of course hours

No certificate ⇒ No approval

Careful:

the certificate of attendance must be detailed and, whenever possible, signed by one of the organizers

Approval Process of External Courses

The following steps in the EXACT ORDER please:

1. Courses must be inserted in the «cruscotto» [**after attending each course**]

Course description (must be clear!)

Number of course hours and course dates

Signed certificate by course organizer

2. Submit the certificate for approval (as part of step 1)

An **automated procedure** is in place

Upload directly the certificate (single PDF, all items in step 1)

in the dashboard («cruscotto»), as part of application submission

3. The Coordinator or his delegate (Prof. Gaudino) will approve

Hours will be verified, as well as exam marks and course level (BSc, MSc, PhD)

Very important: a (single) pdf document should contain all relevant information. Quite often, the certificate of attendance is NOT sufficient, and you have to merge in the same pdf also OTHER information, like the course program

Training Activities: Accounting

All activities MUST be inserted in the «cruscotto»

$H_{s,i}, H_{h,i}$: **hours** of course i (s : soft, h : hard)

Phd hard skill course hours are counted in full

M.Sc. hard skill course hours count only 1/2

B.Sc. hard skill course hours count only 1/3

$E_{s,i}, E_{h,i}$: **weight** that accounts for examination result

1 if no exam

4/3 if «pass» (18–24)

5/3 if «pass with merit» (25–30)

$D_{s,i}, D_{h,i}$: training **points**

$$H_h = \sum_i H_{h,i}$$

$$H_s = \sum_i H_{s,i}$$

$$D_{h,i} = E_{h,i} \cdot H_{h,i}$$

$$D_h = \sum_i D_{h,i}$$

$$D_{s,i} = E_{s,i} \cdot H_{s,i}$$

$$D_s = \sum_i D_{s,i}$$

Research Activities and Publications

Research results should be published

- Journal publications

- Conference publications

- Other (book chapters, patents, etc...)

All publications must be inserted in IRIS database

<https://iris.polito.it>

Automatically copied to the «cruscotto»

Publication metrics are used to evaluate faculty...

...and PhD Students too!

No publications ⇒ No graduation

Publications: Accounting

*www.scopus.com

**www.webofknowledge.com

Publication metrics that are relevant for your PhD

N : total number of **exclusive journal publications** $N = \sum_i N_i$

Only indexed journals in SCOPUS* or WOS** (VQR-approved)

If k authors are polito PhD students, then $N_i = 1/k$
(other non-PhD-Student Authors do not count)

R : cumulative indicator of all publications (includes also conferences)

P_i : score of i -th publication according to polito rules

Journals in 4 quartiles (A: 1.0, B: 0.8, C: 0.5, D: 0.0)

Conferences: standard score 0.5

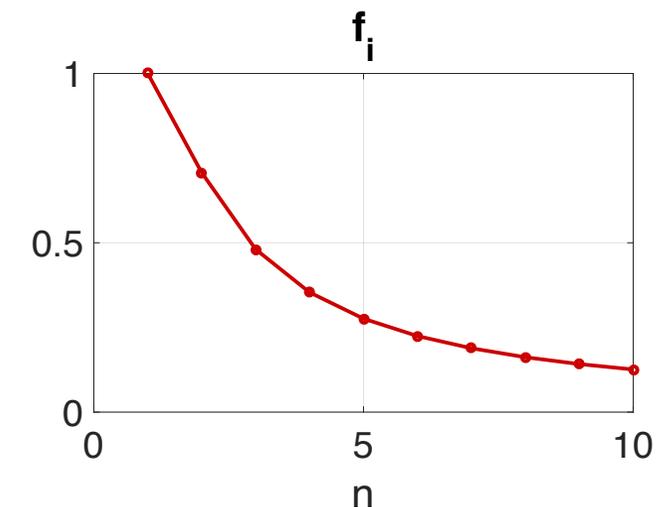
f_i : weight accounting for number of authors n

$$f_i = \left(\frac{1}{n}\right)^{\left(\frac{n-1}{n}\right)} \text{ if } n \leq 10, \quad f_i = 0.1 \text{ if } n > 10$$

$$R = 50N + \alpha \sum_i P_i f_i$$

$$\alpha = 60$$

EECE



External Research Activities

All PhD students are **strongly encouraged**
to spend a **research period abroad**

Up to 12 months: scholarship amount will be augmented by 50%

Usually, the Tutor plans your research stay

Various calls for proposal to retrieve funding (Erasmus+, etc..)

Plenty of opportunities

Including intershships at companies (**that will probably hire you**)

All external research activities must be logged in your «cruscotto»

External Research Activities: accounting

1. Request authorization BEFORE departure!!

There is a special section in your «cruscotto»

2. When you return

Upload in your «cruscotto» a final PDF report

Short signed letter from your host confirming the dates of your stay

No report ⇒ No accounting

3. **External research stay indicator:** $R_e = d/5$

where d is the number of days of your stay

EECE

delegate for external research stay approval

Prof. Gaudino: roberto.gaudino@polito.it

... but by default use the «cruscotto»

(sends notifications automatically: e-mail ONLY for exceptions)

Very important: the external research activities are accounted for (see next slides) ONLY if you successfully upload the PDF report in the "cruscotto"

Traveling

When you travel (officially, i.e., paid by polito)

1. You **MUST request authorization BEFORE departure**

<https://polito.u-web.cineca.it/>

Include an estimate of your expenses

MUST select a responsible for the funds to be used: **your supervisor, not you!**

2. Approval process

Tutor first, then Coordinator : **Tutor does not click ⇒ Coordinator will not approve**

3. When back

Submit travel report including receipts on the web portal

Keep all original receipts (may have to deliver those too)

Research funds for traveling available (5656€), for each of you

This is a MUST also to grant health insurance

*Very important: submit your travel request at least **one week before departure!***

EECE PhD Regulations (about to change!)



Admission to final exam (**hours** and not **points**)

$$N \geq 1, R \geq 50, H_s \geq 40, H_h \geq 100$$

Admission to second and third year

No specific requirement: each board decides

EECE

All above SCUDO requirements, plus:

Admission to final exam (for hard skills: **points** and not **hours**)

$$N \geq 1, R \geq 100, H_s \geq 40, D_h \geq 200 + \text{good marks at poster day}$$

Admission to 3° year:

$$T = R + R_e + D_s + D_h \geq 220 + \text{good marks at poster day}$$

Admission to 2° year:

$$T = R + R_e + D_s + D_h \geq 100 + \text{good marks at poster day}$$

EECE PhD Poster Day

Main event for all EECE PhD Students

Takes place yearly (October)

For 1° , 2° and 3° year students

Last Poster Day: 29–30 September 2022

See web site: <https://posterday-eece.polito.it>

All students must participate

Posters discussed with faculty, other students, and visitors

Results used for admission to 2° and 3° year and final exam

Awards

The best PhD students are awarded \$\$\$

Each academic year: Students who completed 2° year

Evaluation based on a 2-step process

Dedicated EECE committee

1. Preselection based on points

Your «cruscotto» must be up to date!

2. Shortlisted candidates

Prepare a 5-minute video... guidelines will be provided

Videos are ranked by Reviewers

Last year: 8 total awardees

The Final Exam

Your PhD Thesis must be completed in 3 years!

XXXIX cycle: by October 31, 2026

The final exam starts ONLY... if minimum requirements are met

The academic board votes admission to final exam

can grant short extensions: BY LAW, no more than 6 months

Common critical cases:

... no journal publication

... did not update my «cruscotto»

... still have to complete my thesis (this is ok)

Minimum requirements not met ⇒ Drop from PhD

The Final Exam

1. Admission from academic board
Make sure your «cruscotto» is always updated!
2. Enroll online
3. Evaluation of the PhD thesis by external referees
Two from a list of at most 5
May require revisions and resubmissions
Thesis must be checked for anti-plegiarism, software available
4. Thesis defense
Examination board: 2 referees + 3 other membes
Presentation (about 40 min), in English, Q&A
5. Approved Thesis document upload to IRIS

Student or Researcher?

You have 2 different Email accounts

	SERVIZI PER LA RICERCA	SERVIZI PER GLI STUDENTI
ID NUMBER	D111222	S333444
MAIL ADDRESS	D111222@polito.it	S333444@studenti.polito.it
ALIAS	john.smith@polito.it	john.smith@studenti.polito.it

Make sure to select one main account

setup automated redirection from the other

Read your Email!

the only official means of communication

keep your Email clients (PC, phone) in sync!

Respond to requests from Tutor and Coordinator

promptly, do not wait for days before replying

General Recommendations

Training activities

- Try to complete your education during the first two years of your PhD program

Research activities

- **Year 1:** Identification of a research problem, in accordance with your tutor and following an intensive literature survey
- **Year 2:** full-time research work, including stays abroad, establish publication plan ASAP, present your work in public (conferences, seminars)!
- **Year 3:** complete your PhD thesis, finalize publications

General Recommendations

Never lose contact with your Tutor!

Your Supervisor is the ultimate responsible for your PhD activities

You must collaborate closely with your Tutor

A **Declaration of Intent (DoI)** will be executed (**mandatory!**)

Establishes mutually agreed expectations from Tutor and Student

Official document, which will be used by Coordinator to verify compliance (both from Tutor and Student) in the course of the 3 PhD years

If Anything Goes Wrong

*S**t happens...*

Most problems occur because of

- Poor communication between Tutor and Student
- Bad planning, «I still have 2 years, no worries»
- Ignorance of rules and regulations (both Tutor and Student)

Problems must be identified as early as possible

- Contact your student representatives
- Contact the Coordinator – immediately!!!

The Coordinator is here to help you, not to judge you

The Coordinator has the responsibility of applying regulations

Getting Help

Coordinator

In case anything else fails...

Your Tutor should always be the first contact

Administrative offices

DET: Andrea Trinchera (andrea.trinchera@polito.it)

DENERG: MariaPia Martino (mariapia.martino@polito.it)

DISAT: Tiziana Marangoni (tiziana.marangoni@polito.it)

The Student Representatives

Matteo Perrone (matteo_perrone@polito.it)

Matteo Raggi (matteo.raggi@polito.it)

Your senior colleagues

Final Slide: you MUST

Know rules and regulations

Read Email (always: 365/7/24)

Respond to requests from Scudo, Coordinator and Tutor

Meet deadlines (assuming there will be no extension)

Keep the «cruscotto» up to date (daily)

... and enjoy your Doctorate!

Q & A

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Electrical, Electronics and Communications Engineering

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ScuDo

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