Ph.D. Program in Information Engineering 40th Cycle

Kick-off Meeting

November 4th, 2024

Agenda

1. Welcome to DEI!
2. Ph.D. Program organization
3. Starting your Ph.D.
4. Learning activity
5. Research activity
6. Presentation of Department Services

Ph.D. Program Websites

□ Main website
- https://phd.dei.unipd.it

□ eLearning website (requires SSO login)
- https://stem.elearning.unipd.it
- host for Ph.D. Courses Moodle pages
- Resources for Ph.D. Students page
  - Enrolment key: PhD-INF
  - Group key: PhD-INF40
  - Upload of reports and presentations
  - Enrollment in Ph.D. Courses
  - Upload mobility/ext. activity/TA permission requests

Department of Information Engineering (DEI)

❑ Department director
  - o Gaudenzio Meneghesso
  - o Giovanni Sparacino (vice-director)
  - o Sandra Borgato, Massimiliano Settin, Gabriella Squicciarini (secretary)
❑ Department website
  - o www.dei.unipd.it (Italian)
  - o www.dei.unipd.it/en (English)
❑ Opening hours
  - o 7:30 – 21:00 (working days)
  - o badge always required

Ph.D. Program Contacts

❑ Fabio Vandin
  o Coordinator of the Ph. D. Program

❑ Andrea Facchinetti
  o Vice-Coordinator of the Ph. D. Program

❑ Sara Borgato
  o Ph. D. Program Secretariat
  o phdschool@dei.unipd.it
  o corso.dottorato@dei.unipd.it

❑ Academic Board of the PhD Program (*Collegio dei docenti*)

  ○ 86 members plus 13 (...) student representatives

  ○ teaching and research activity programming

  ○ formally **assign each student a supervisor, at least one co-supervisor and approve a study and research plan**

  ○ propose the expulsion of students in case of:

    ▪ unauthorized working activity;

    ▪ unjustified absence for long periods;

    ▪ negative evaluation of the research and learning activity

Board of the Ph.D. Program Student representatives

❑ Students must elect every year their delegates to represent their issues in the Academic Board

  o 13 representatives for the 40° cycle

❑ You will be soon contacted by the delegates-in-charge for elections

Ph. D. Program Organs

❑ Executive Board (*Consiglio direttivo*)

- o seven members (including the Coordinator), two student representatives

- o annual and intermediate evaluation of students research and learning activities

- o authorisation of any activity outside the study and research plan

- o long mobility (> 6 months) authorisation

E-mail accounts & SSO

Two different e-mail adresses and network accounts

❑ University e-mail and SSO credentials

  o e-mail: *name.surname*@studenti.unipd.it

    ▪ All Ph.D. Program and University official communications will be sent to this address

    ▪ alias: *name.surname*@phd.unipd.it

  o SSO username: *name.surname*@studenti.unipd.it

    ▪ used to access University-wide internet services like

    ▪ **Eduroam**: world-wide university wi-fi network

    ▪ **eLearning**: Moodle-based platform for courses

Department network and computing facilities

❑ Department e-mail and account (after completion of the GIGA procedure):

- o your badge will be enabled to access all Department common spaces and a selected number of laboratories
- o must complete the online safety course before badge can be enabled
- o E-mail address and aliases
  - ▪ *login*@dei.unipd.it
  - ▪ *name.surname*@dei.unipd.it
  - ▪ *surname.name*@dei.unipd.it
  - ▪ used by the Department for official communications

❑ **Research project**
  o produce original results and publish them
❑ **Learning activity**
  o courses to be completed by the end of the 2nd year
  o attend seminars during the three-year program
❑ **Annual evaluation**
  o submit reports and presentations
❑ **Follow the procedures**
  o permission requests (mobility, teaching, external activity)
  o interaction with Dept. personnel and services

DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE

- ❑ Find a potential **Supervisor**
  - ○ and one or more Co-Supervisor(s) (<u>mandatory!</u>)
- ❑ Prepare a **study and research plan (SRP)**
  - ○ discuss it with your Supervisor
- ❑ Fill in the **SRP form** and upload it
  - ○ Find the <u>SRP form</u> and the link to upload it on the PhD Program web site
  - ○ Upload both the filled doc file and the scanned pdf copy of the signed form
  - ○ Deadline: **November 22nd, 2024**
  - ○ **New**: insert the information in the Google Form <u>https://forms.gle/b7GKXUm5SHgssT7x8</u>

- ❑ (almost) Everything you need to know about the Study Plan is reported in the Ph. D. Program [Course Catalogue](#)
  - ○ Find it on the Ph.D. Program website
  - ○ Read it carefully
  - ○ Suggestion: take more courses and seminars than the minimum required
  - ○ First course starts on November 5th

Learning activity classification

❑ Courses + Seminar <u>Series</u>

- o Final exam or equivalent form of verification
- o Courses give credits (CFU)
- o **Requirement 1**: earn at least 16 credits ($\approx$80 hours of courses)

❑ Seminars, Distinguished Lectures (DL)

- o Don't give credits. No exam.
- o **Requirement 2**:
  - ▪ attend at least three seminars advertised by the PhD Program or by the Department, all DL's, and and two *interdisciplinary training courses* organized by the PhD Office

COURSE CODE	COURSE TITLE	INSTRUCTOR	CFU/HOURS
Transversal Skills; Mathematical and Statistical Methods			
TSK 1	Entrepreneurship and Startup	M. Muffatto, F. Ferrati	5 CFU (21 hours)
TSK 2	Python programming for Scientific Engineering	S. Tortora	4 CFU (20 hours)
TSK 3	Data Visualization	M. Ceccarello	4 CFU (20 hours)
TSK 4	Geopolitics of ICT in an unpredictably changing world	A. Paccagnella, David Burigana	4 CFU (15+5 hours)
IE_MSM 1	Statistics for Engineers	L. Salmaso , R. Arboretti, M. Disegna	7 CFU (40 hours)
IE_MSM 2	Heuristics for Mathematical Optimization	D. Salvagnin	4 CFU (20 hours)
Computer Science			
IE_CSC 1	Bayesian Machine Learning	G. M. Di Nunzio	4 CFU (20 hours)
IE_CSC 2	Advanced scientific and parallel programming with HPC infrastructures	G.Baruzzo	4 CFU (20 hours)
IE_CSC 3	Methods for Scalable Graph Analytics	S. Marchesin, L. Pellegrina	2 + 2CFU (20 hours)
Applied Optics			
IE_OPT 1	Quantum Communication: methods and implementations	M. Avesani, F. Vedovato	3+1 CFU (15 + 5) hours
Control Theory and Applications			
IE_AUT 1	Elements of Deep Learning	G. A. Susto	5 CFU (24 hours)
IE_AUT 2	Applied Functional Analysis and Machine Learning :from regularization to deep networks	G. Pillonetto	5 CFU (24 hours)
IE_AUT 3	Applied Linear Algebra	L. Schenato	4 CFU (20 hours)
IE_AUT 4	Analysis and Control of Multi-agent Systems	M. Fabris	
IE_AUT 5	Quantum Probability, Information and Dynamics	F. Ticozzi	3 CFU (16 hours)
IE_AUT 6	Advanced topics on model predictive control	M. Bruschetta, R. Carli, S. Del Favero	4 CFU (8+6+6 hours)
Electronics			
IE_ELE 1	Physics and Operation of Heterostructure-Based Electronic and Optoelectronic Devices	M. Meneghini, C. De Santi, M. Buffolo	4 CFU (6 + 6 + 8 hours)
IE_ELE 2	Embedded Design with FPGA	D. Vogrig, A. Stanco	not offered
Bioengineering			
IE_BIO 1	Statistical Learning for Big Data in Medicine	A. Facchinetti, M. Vettoretti	not offered
IE_BIO 2	Quantitative Neuroimaging: from microparameters to connectomics	A. Bertoldo, M. Veronese	not offered
IE_BIO 3	Elements of Synthetic Biology	M. Bellato	4 CFU (20 hours)
IE_BIO 4	Deep Learning for Biomedical Images	M. Castellaro	4 CFU (20 hours)
IE_BIO 5	Healthcare data management and analytics	E. Longato	4 CFU (20 hours)
Telecommunications			
IE_TLC 1	Information Theoretic Models in Security	N. Laurenti	not offered
IE_TLC 2	A Deep Dive into 5G Network Specifications and its Applications	M. Giordani	4 CFU (20 hours)
IE_TLC 3	Underwater Simulation and Experimentation	F. Campagnaro	4 CFU (20 hours)
IE_TLC 4	A walkthrough on Generative AI: the evolution of generative strategies from GANs to diffusion models	S. Milani	4 CFU (20 hours)
Seminar series for the PhD program			
IE_CSC 4	Fairness, Accountability, and Transparency in AI	A. Fabris (MPI-SP)	4 CFU
IE_AUT 7	Applied Causal Inference	R. Arghandeh (Western Norway University)	4 CFU
IE_AUT 8	Distributed Machine Learning and Optimization: from ADMM to Federated and multiagent Reinforcement Learning	S. Dey (Uppsala University, Sweden)	4 CFU
IE_AUT 9	Fundamentals of Adaptive Control for Applications	A. Serrani (Ohio State University)	4 CFU
IE_AUT 10	Seminars on Quantum Probability, Information and Dynamics	T. Grigoletto	1 CFU
IE_ELE 3	Diagnostics of Electron Devices	G. Mura (Universita` di Cagliari)	4 CFU
IE_TLC 5	Machine Learning for Mobile Communication Systems	P. Dini (Centre Tecnològic de Telecomunicacions	4 CFU
IE_TLC 6	Information theory and learning	S. Rini (NCTU, Taiwan)	4 CFU

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Area	Competence	COURSE	HOURS	CFU	PERIODO
Cognitive abilities	Creativity	Public speaking	5 h	1 CFU	Jan.-Mar. 2025
Self-management	Manage personal professional development	CLA courses: intensive language courses	30 h	TBD	
	Manage personal professional development	Writing a CV outside the academia	5 h	1 CFU	Apr.-May 2025
Working with others	Promote inclusion & diversity	Equità e inclusione: questioni di genere, omotransfobia, razzismo e discriminazione		1 CFU	
	Promote inclusion & diversity	Generi e Linguaggi (Modulo 1) Generi e Linguaggi (Modulo 2): analisi e revisione dei documenti amministrativi per la parità di genere		1 CFU	
Doing research	Perform scientific research	Introduction to machine learning and artificial intelligence: methods and applications	10 h	2 CFU	Mar. 2025
	Comunicate to the broad public	How not to submit a paper. Pressures, predators, preprints and other oddities scientific literature	3 days	3 CFU	9-11 Jun. 2025
Managing research	Mobilise resources	Funding opportunities for Postdocs with a focus on MSCA-PF/Strategies and tools for Career Development in Research: The new European Charter for Researchers, Euraxess, International Foundations	9 hours	1,5 cfu	02-09-16 Apr. 2025
Managing research tools	Promote citizien science	Science communication and knowledge valorization: practices and tools	20 hours	2 CFU: module 1 + module 2 1.5 CFU: module 1 + Keynote + 2 labs 1 CFU: module 1 + Keynote	Nov-Dec 2024; Jan.-Mar. 2025 II ed. Gennaio-Marzo
	Manage intellectual property rights	Research, Intellectual Property and Exploitation: the PhD perspective	5 hours	1 CFU	May-25
	Manage research data	Introduction to big data science: methods and tools	7 hours	1 CFU	Jun-Jul 2025
	Managaing research data	Open access and scholarly communication / from open access to open data: the open science framework	13 hours	2 CFU	May-25
Making an impact	Increase the impact of Science on Policy and Society	The impact of my research: bridging knowledge to people needs	10.5 hours	2 CFU	TBD
	Increase the impact of Science on Policy and Society	L'Agenda 2030 e gli obiettivi di sviluppo sostenibile (ITA/ENG)		1 CFU	

Notes:

- Most courses have limited capacity (around 30 students): **if you register, make sure to attend**! Or cancel your registration ASAP

- Check the following link for **info about each course and how to register** (available ~30 days before the course starts): https://www.unipd.it/en/phd-interdisciplinary-teachings

❑ You must register for the courses you want to take from the STUDY PLAN page of the Resources for PhD Students in STEM (to be activated in the next few days).

❑ From the RESTRICTED area of the PhD website https://dottorato.dei.unipd.it/login.php , you can access the PhD Program database to check your booklet and see the exams you have passed.

❑ To access the page use your DEI account login(@dei.unipd.it)

❑ Define the topic of your Ph.D. Thesis with your Supervisor

❑ Report a summary of the planned research activity in the SRP form

❑ Start working!

Main Deadlines:

❑ First year
- o Written report on 1st year activity
- o **deadline: September 30th, 2025**

❑ Second year
- o Written report on 2nd year activity, including also the 1st year activity
- o Presentation of the year activity to an internal Committee
- o **deadline: September 30th, 2026**

❑ Third year
- o Written report on the three-year activity
- o Presentation of the thesis draft to an internal Committee
- o **deadline: September 30th, 2027**

Ph. D. Program – Suspension

❑ It is possible to ask for a temporary suspension from the program for:
- o a) civil service
- o b) certified illness
- o c) other well-documented reasons (at most 6 months)

❑ For a) and b): contact the University PhD Office
❑ For c): the Academic Board of the PhD program must approve the suspension

❑ The PhD fellowship is not paid out for suspension > 30 days

❑ Overall, at most 18 months of suspension can be approved

❑ **NOTE**: you cannot ask for extensions of the PhD program for some event (e.g., illness) if you did not ask for a suspension when the event happend (e.g., illness)

❑ Thesis

  ○ (hard) **deadline: October. 31st, 2027**

  ○ Ph. D. Board decides whether or not to admit the thesis to the external evaluation phase

  ○ thesis sent to two external reviewers

  ○ possible review outcomes:

  ▪ no/minor revisions $\Rightarrow$ final examination Feb.-Apr. 2028

  ▪ major revisions $\Rightarrow$ up to six additional months to modify the thesis accordingly, then final examination in Nov. – Dec. 2028

Ph. D. Program – Research Activity

❑ You are expected to produce original results that advance the state of the art

❑ Demonstrated by publications on peer-reviewed journals or conference proceedings

❑ Minimum: 2 publications on journals/conference

- o At least one paper accepted by a journal/conference indexed by WoS/Scopus by the deadline for the 2nd year report

- o At least an additional paper accepted by a journal/conference indexed by WoS/Scopus by the deadline for the 3rd year report

❑ Long-term mobility (abroad)

- ○ long stay (up to a total of 12 months) at research institutions abroad is encouraged

- ○ 50% increase of salary for $\geq$ 15 days mobilty

- ○ must be authorized by the Ph. D. Executive Board

  - ▪ find a suitable host university/research institution

  - ▪ prepare (with the help of your supervisor) a convincing research plan

❑ Support for your research

- ○ facilities/laboratories (Supervisor)
- ○ funding
  - ■ Ph.D. Student funds:
    - • 4800 EUR available during the three years
  - ■ Ph. D. Program **(*** subject to changes depending on Program budget)**:
    - • funding to pay external instructors
    - • up to 1000******* EUR/student for long-term mobility
  - ■ Supervisor

Procedures: authorization requests

❑ Authorization by Executive Board / Coordinator / Department Director required for

  ○ Mobility/Travel for Research Activities (conference, etc.)

  ○ External activity

  ○ Teaching assistantship/tutoring

❑ Submit request at least 30 days before activity

❑ Follow the procedures detailed in the website

  ○ STUDENT RESOURCES menu

- ❑ Long mobility ($\geq$ 15 days)
- ❑ Required authorizations (before departure)
  - ○ Coordinator/Executive board
    - ▪ Fill-in mobility authorization form
    - ▪ Print and sign the form (student and supervisor)
    - ▪ Upload the scanned form
  - ○ Department
    - ▪ follow the procedure outlined here:
    - ▪ https://www.dei.unipd.it/node/815 $\Rightarrow$ Missioni (requires SSO authentication)
    - ▪ info in italian only; if you need support, see Administration - Mobility

❑ Short mobility (< 15 days)

❑ Required authorizations (before departure)

- ○ Department
  - ▪ follow the procedure outlined here:
  - ▪ https://www.dei.unipd.it/node/815 $\Rightarrow$ Missioni (requires SSO authentication)
  - ▪ info in italian only; if you need support, see Administration - Mobility

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❑ Any activity not included in the approved Study and Research Plan requires the authorization of the Executive Board

  o Fill-in external activity authorization form

  o Print and sign the form (student and supervisor)

  o Upload the scanned form

❑ Time limitations

  o **no more than 8 hours/week AND 180 hours/year**

  o no time limitations if the activity is coherent with the Study and Research plan

Teaching and tutoring

- ❑ Tutoring (more details [here](#))
  - ○ support to students or lecture/lab activity
  - ○ selections in May/June
  - ○ time limitation: $\leq$ 100 hours/year
- ❑ Teaching assistantship (*Didattica integrativa*)
  - ○ support to professors (problem solving lectures, lab sessions)
  - ○ selections in September
  - ○ time limitation: $\leq$ 40 hours/year
- ❑ Overall time limitation
  - ○ tutoring + TA $\leq$ 100 hours/year
- ❑ Authorization by Executive Board required
  - ○ follow the procedure reported on the website

❑ Services most frequently used by Ph.D. students:

- o Ph.D Secretariat (Sara Borgato)
- o Administration (Sabrina Michelotto)
- o Laboratories (Francesca Bettini)
- o Computing facilities (Lorenzo Sartoratti)
- o Technical Office (Fabio Luise)

Full list on DEI website:

www.dei.unipd.it $\Rightarrow$ SERVIZI

Department Services

❑ Proper interaction with Department Services

- ○ First, look on the HELPDESK https://helpdesk.dei.unipd.it

- ○ Look in www.dei.unipd.it $\Rightarrow$ SERVIZI for directions on how to get in touch with the proper office

The Department asks that all Ph.D. students who access the labs register
on **DEILabs** https://deilabs.dei.unipd.it/login
in order to be able to monitor the situation and occupation of the labs

- ❑ common space for young researchers to share ideas, bring up discussion, and talk about research
- ❑ Telegram channel: https://t.me/DEITalks
- ❑ Tentative time slot for DEITalks:
  - ○ Wednesday, 5:30pm
- ❑ You will soon receive an email with more info and the date of the kick-off event

Events organized by the University PhD Office

❑ Check https://www.unipd.it/en/phd-events

❑ Most events have limited capacity:

    ○ **If you register, make sure to attend or cancel your registration ASAP** (so that students in the waiting list will be able to attend)

UniPD PhD Welcome Day

Registration: https://www.unipd.it/phd-welcome-day-2024

Reminder

- ❏ Study and Research Plan, by November 22nd :
  - o Fill-in and upload form
  - o Google form https://forms.gle/b7GKXUm5SHgssT7x8
- ❏ Remember to request (and obtain) authorizations at least 30 days before:
  - o Long mobility/travel
  - o Starting any activity outside your SRP
  - o Teaching assistant / Tutor
- ❏ Register your presence in the labs: https://deilabs.dei.unipd.it/
- ❏ Contact Department Services by:
  - o Helpdesk: https://www.dei.unipd.it/helpdesk/
  - o DO NOT pop up in offices unannounced
    - ▪ Follow the directions in www.dei.unipd.it ⇒ SERVIZI

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Questions?

Come to the desk to collect the University of Padua Research Integrity Code.