

XL Cycle Ph.D.

Handbook



UNIVERSITY OF NAPLES "PARTHENOPE"

Department of Engineering

Ph.D. PROGRAM

in

INFORMATION AND COMMUNICATION TECHNOLOGY AND ENGINEERING

Table of Contents

Purpose of this Handbook	3
The Doctoral Description	3
Training Program Structure.....	4
Training Activities.....	5
Practical Information	5
External Training Activities Authorization.....	6
Research Period Abroad	6
Research period at National Research Institutions, Enterprises, Public Administration	6
Research Funds.....	7
Final Year Examination.....	7
Survey	8

Purpose of this Handbook

The purpose of this handbook is to streamline your Ph.D. journey at the University of Naples Parthenope by providing a guide to the essential bureaucratic processes and academic requirements of the ICTE Ph.D. program. This handbook is a quick reference to provide you a clear picture of the milestones, documentations, and administrative channels that you will deal with during your Ph.D. experience.

The complete regulation is available on the University website at the link https://www.uniparthenope.it/Portale-Ateneo/statuto_e_regolamenti

The Doctoral Description

The Ph.D. program in Information and Communication Technology Engineering at the University of Naples Parthenope is designed to the professional growth of students in the framework of technological science and innovation. The ICTE program is to prepare candidates for high-profile roles in contexts that demand a deep knowledge of Information and Communication Technologies (ICT). The program's goal is to endow future PhDs with both theoretical and practical knowledge, enabling them to take leading roles in academic and industrial settings. This is achieved by fostering active participation in qualified workgroups and by developing independent capabilities in research, innovation, and management of national and international research projects. These competencies are crucial for contributing to public and industrial research and for encouraging the emergence of new high-tech startups.

The educational objectives of the course are framed within the following areas:

- Nano-electronic, optoelectronic and photonic technologies and devices, for telecommunications, interconnections on chips, sensor networks;
- Physical, chemical, biological sensors, biochips, lab-on-chip, micro and nanosystems for the environment, industrial processes, materials and structures, transport, space, security, food, biotechnology, medicine;
- Diagnostic techniques and advanced imaging for cultural heritage, security, industrial processes, materials and structures, automotive and aerospace, biomedicine;
- Methods and techniques for the formalization, extraction, and the management of information from large amounts of data (big data);
- Software systems for simulation/emulation of the "human-like reasoning" and neuromorphic problem solving in medical field;
- Techniques for "human-machine" interaction in medicine and cultural heritage;
- Methods for processing large volumes of remote sensing data based on distributed computing infrastructures;
- Development of methodologies for modeling and design of control systems for complex systems;
- Advanced techniques for the synthesis of antennas;
- Modeling and optimization of electrical, magnetic and superconductive systems and materials on macro-, micro- and nano-scale;
- Signal processing circuits and non-linear circuits for applications in energetic, biomedical and environmental fields;
- Multi-polarization of scattering models for applications involving remote sensing and electromagnetic diagnostics to microwaves;
- Non-stationary signals with applications to communications, radar sonar and biological systems;
- Application of Artificial Intelligence (AI) techniques to Imaging and ICT;
- Cybersecurity for Critical infrastructures and cloud platforms;
- Development advance security systems based on Trusted Execution technologies

In the framework of the Ph.D. course, it is also possible to obtain a Double Doctoral Degree with Xidian University, Xi'an, China, following a training program approved by the Doctoral College.

XL cycle positions

n. 5 ordinary positions with scholarship of which

- **n. 2** positions funded by the Univ. of Napoli Parthenope;
- **n. 2** positions funded by Institute for electromagnetic sensing of the environment, IREA-CNR;
- **n. 1** position funded by Institute of Applied Science and Intelligent System, ISASI-CNR;

n. 2 positions with scholarship funded by DM 630/2024 of which

- **n. 1** DM 630 position co-funded by Comesvil spa;
- **n. 1** DM 630 position co-funded by Emodial srl;

n. 1 position reserved to employees of company Dostrat srl;

n. 1 position reserved to employees of company ICS Maugeri spa;

n. 1 position reserved to employees of company Prisma srl;

n. 2 positions without scholarship

Training Program Structure

The ICTE doctoral program, with over 15 years of establishment, spans a three-year period dedicated to full-time study and research, amounting to 1500 hours annually. While the program commences on the 1st of November each year, there is flexibility for some students to post-pone their enrolment during the first year.

The ICTE Ph.D. program is organized according to the schematic of Figure 1.

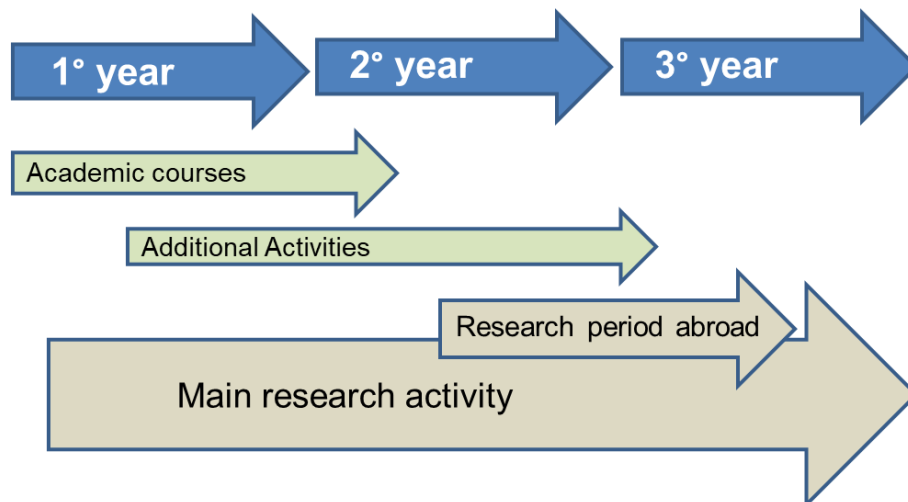


Figure 1 Flowchart of doctoral activities

Every candidate will be guided by at least one supervisor. The role of the supervisor (also referred to as a tutor) and any co-supervisors is to monitor the Ph.D. candidate's research developments, oversee the dissertation composition, approve expenses related to research, approve periods of international research, and endorse conference and Ph.D. school attendance. They also provide support in the candidate's academic or professional career advancement. Regular communication with the supervisor is mandatory for students to ensure they are kept up to date with the student's advancements.

Training Activities

The ICTE Doctoral Program is to train researchers who are experts in the various areas of Information Engineering and Communications through educational paths oriented towards high-level research activities.

The educational program for each doctoral student includes different types of activities:

- a) *Academic courses* specifically provided for the ICTE doctorate. The list of the courses and their time scheduling are published on ICTE Ph.D. webpage. The exact agenda of the lessons will be defined before the beginning of the course.

Each doctoral student, in agreement with her/his tutor(s), will identify her/his own activity plan of academic courses (list of selected courses) with **at least 72 hours** of lessons, in line with the educational objectives of the doctoral course and the specificity of her/his research activity. To complete the course, the student must attend at least 80% of the scheduled lessons (80% of the hours) and pass an exam. The exam can be written or oral depending on the instructions provided by the teachers.

- b) *Additional Educational Activities* include:

- Seminars on specific research activities and/or on cross-cutting themes addressed by the Doctorate.
- Doctoral students are encouraged to participate in dedicated training schools (doctoral or winter/summer schools) both national and international.
- Cross-disciplinary skills such as: i) the ability to draft a research project or the acquisition and management of research funds; ii) the enhancement and dissemination of research results also through scientific publication; iii) language improvement. Please give a look to the “master class nature” courses at following links:
<https://international.uniparthenope.it/nature-masterclasses-online/>
<https://masterclasses.nature.com/>
- Educational activities borrowed from other doctoral courses.

Each doctoral student, in agreement with her/his tutor(s), will identify her/his own activity plan of *Additional Educational Activities* with **at least 50 hours** of lessons, in line with the educational objectives of the doctoral course and the specificity of her/his research activity. Such activities need to be approved first by the tutor(s) and further by Coordinator/Board; please see next section for the right procedure.

- c) *Research activities, thesis writing*. Doctoral students are encouraged to participate in conferences and/or workshops as speakers. Doctoral students **must** complete a research period abroad; please see next section for details.
- d) *Teaching or Teaching support activities*. The ICTE Doctoral Course encourages PhD students to participate in teaching support and tutoring activities related to their research field, and according to their research timeline. Under the supervision of their tutors, doctoral students can hold seminars, participate in workshops, and engage in various teaching support activities. These include mentoring bachelor and master students, conducting seminars, preparing exercises, and supervising laboratory sessions

Practical Information

In this section, practical details and procedures will be given.

Some useful information and documents can be find here:

<https://www.uniparthenope.it/Portale-Ateneo/modulistica-dottorati>

External Training Activities Authorization

Ph.D. candidates may engage in external educational activities (especially regarding activities from point *b*) in above list), including Winter/Summer Schools, seminars, and other significant international training events. Such activities need to be approved first by the tutor(s) and further by PhD Board. Basically, a formal request for participation in such activities must be submitted to Ph.D. Board, specifically to the Ph.D. Coordinator, including details about where the activities will be carried out, starting and ending date and total number of hour. This request, bearing the signatures of both the student and the tutor, should be sent well in advance of the event's commencement. A template of the request is available on website.

Note: It is mandatory to present to the Board a certificate of attendance for each event, which must specify the total number of hours attended and the exam result, if any. This certificate must be attached to the annual activities report.

Research Period Abroad

All students enrolled in the Ph.D. program **must** complete a research period abroad.

DM630 participants **must** spend a minimum of six (6) months abroad. Other candidates (including candidates without scholarship) **must** spend a minimum of three (3) months abroad. The period abroad can be extended up to 12 months; it can be extended up to 18 months in the case of a specific program with foreign co-supervisor (co-tutela). For industrial doctorate positions the period abroad is strongly recommended but not mandatory

During the abroad period the scholarship is increased by 50%.

Starting

- For DM630 positions, the period abroad has been already established before 01/11/2024 accordingly to the specific research topic of each position.
- For other positions. To initiate their abroad research, students must provide an invitation letter signed by the tutor of the host institution. Alongside the invitation letter, students must also submit to the Ph.D. board a formal request for approval of their research activities abroad and for 50% grant increases, indicating the number of months that she/he intends to spend abroad (with departure date) and a short description of the research activities she/he intend to carry out. The application must be signed also by the tutor of the student. Students have to send the application letter and the invitation letter to the coordinator via email **at least 45 days** before the departure to ensure bureaucratic procedures for the grant increase are completed in a timely manner.

At the end of the abroad period (or alternatively month by month), the tutor of the foreign institution has to certify the activity and period abroad of the student. The student must send this certificate to the coordinator that is necessary to enable the payment of 50% increase in the scholarship. It is not possible to receive the 50% increase in advance.

Research period at National Research Institutions, Enterprises, Public Administration

All students enrolled in the Ph.D. program are invited to spend a period or study and research activity at National Research Institutions, Enterprises, and Public Administration. The students with scholarship funded by DM630 **must** spend a minimum of six (6) months in enterprises.

In case of public research institute or university, an invitation letter similar to that described in the previous section for the period abroad is required. To spend a period or study and research activity in enterprises, a formal agreement between the University and the Enterprise is requested.

Research Funds

All students have an additional budget per year of 10% of the annual scholarship, which can be allocated toward their research activities. This budget may be used to cover (for instance):

- Technological equipment and research tools purchasing, Laptop, measurement instruments, Software Licenses, Lab Materials, ...;
- Cover conference cost including registration fee, accommodation, travel ¹.
- Ph.D. school cost Enrolment and other cost;
- Publications, Journal fees, proceeding, ...;

The total amount per Year is about €1620,00 Net

To use these funds, the Ph.D. candidate must obtain the appropriate form from the administration and agree on the intended use of the funds with their tutor. Subsequently, the candidate must submit the completed form to the administrative office with Coordinator signature.

The PhD board invite all students to use their available budget for the research activities.

Final Year Examination

I/II Year

Within 10 days following the conclusion of the first and second years, students are required to submit an annual report detailing the activities undertaken, including courses or conferences attended, along with the principal scientific outcomes of the year, and a proposed title for their Ph.D. thesis.

Moreover, students have to submit the annual registers (logbooks) approved by tutors. The registers must contain a brief daily description of activities with an annual time commitment of 1500-1600 hours.

Students must then present their activities to the Ph.D. board, which decides on admission to the second or third year based on the report and presentation.

III Year

In their third year, students finalize their research under the guidance of the Ph.D. program's Scientific Committee and draft their dissertation. They are also expected to disseminate their findings at conferences and submit their work to scientific journals for potential publication.

Within 10 days following the conclusion of the first and second years, students are required to submit an annual report detailing the activities undertaken, including courses or conferences attended, along with the principal scientific outcomes of the year, and a proposed title for their Ph.D. thesis. Moreover, students have to submit the annual registers (logbooks) approved by tutors. The registers must contain a brief daily description of activities with an annual time commitment of 1500-1600 hours.

Then the students must submit their dissertation to a Review Committee, consisting of three external evaluators appointed by the Rector upon the Scientific Committee's recommendation.

The Review Committee has one month time period to assess the dissertation and suggest its acceptance, revision, or rejection. In cases where significant revisions are required, the Committee may grant up to six

¹ For limitations related to travels, meals and accommodation, please refer to the University regulations.

additional months for the student to revise and resubmit the dissertation for re-evaluation. Following this period, the dissertation is eligible for the final defence.

Finally, students are required to submit the final version of their dissertation, incorporating all feedback from the evaluators to Doctoral Office.

Following this step, the Ph.D. board recommends to the Rector three experts to form the Examination Committee for the doctoral defense. These experts cannot be the members of the Review Committee and of the Ph.D. Board. The Examination Committee fix the date for the final defense of the PhD. Candidates.

Survey

At the end of each year, in October, the level of satisfaction of PhD Students and PhD Graduates has been evaluated by a proper survey. The survey is extremely important for PhD Board and for Students for two main reasons:

1. The PhD program will be evaluated based on the satisfaction degree of PhD Students/Graduates;
2. The PhD board will have to choose and adopt appropriate corrective actions to improve PhD Student/Graduates satisfaction.

Therefore, each year, students will be asked to spend about 15 minutes of your time to carefully answer simple questions. The survey will be provided in October.