XXXIX Cycle Ph.D. Handbook

UNIVERSITY OF NAPLES "PARTHENOPE"

Department of Engineering

Ph.D. PROGRAM

In

INFORMATION AND COMMUNICATION TECHNOLOGY AND ENGINEERING

Version 1.1

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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 clear and concise guide to the essential bureaucratic processes and academic requirements of the ICTE Ph.D. program. It is designed to demystify the administrative tasks and set out the objectives and the requirements of your 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

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:

- Nanoelectronic, optoelectronic, and photonic technologies and devices.
- Physical, chemical, biological sensors, biochips, lab-on-chip, micro and nanosystems.
- Advanced diagnostic and imaging techniques.
- Big data management methodologies and techniques.
- Human-like reasoning and neuromorphic problem-solving software systems in medical contexts.
- Advanced human-machine interaction environments in medical and cultural heritage sectors.
- Advanced data processing techniques for radar imaging systems.
- Large-scale remote sensing data processing methodologies.
- Development of control system modeling and design methodologies for complex plants.
- Advanced antenna synthesis techniques.
- Modeling and optimization of electrical, magnetic, and superconductive systems and materials on macro, micro, and nanoscales.
- Signal processing circuits, nonlinear circuits, and complex networks with applications in energy, biomedical, social, and environmental fields.
- Microwave remote sensing and model-based data processing.
- Non-stationary signal processing with applications in communications, radar/sonar, and biological systems.
- Artificial Intelligence (AI) techniques applied to ICT.

- Cybersecurity, especially regarding Critical Infrastructures and cloud platforms
- Secure application development through 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.

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.

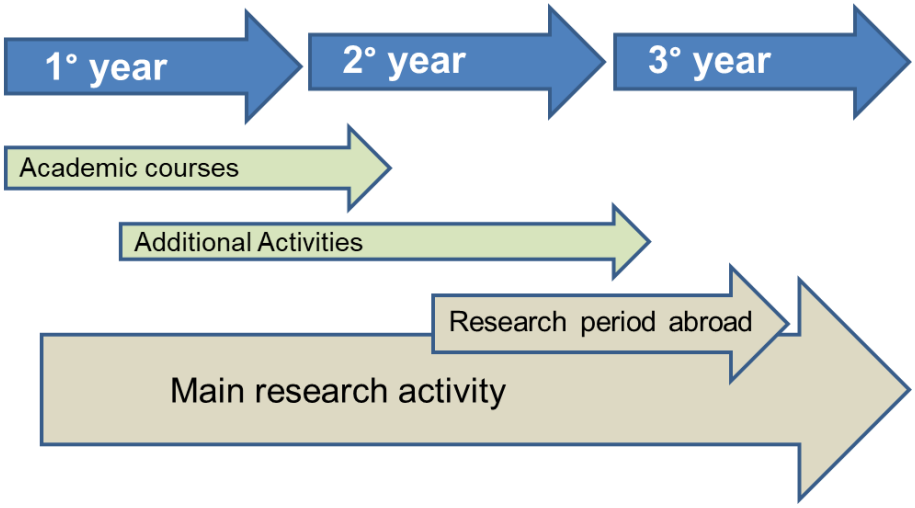

Figure 1 Flowchart of doctoral activities

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 is attached to this guide and published on ICTE Ph.D. webpage.

Each doctoral student, in agreement with her/his tutor, will identify her/his own educational activity plan (list of selected courses) with **at least 88 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 it is necessary to pass an exam.

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, will identify her/his own educational activity plan 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.

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.

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 pending the approval of the tutor. Upon the tutor's agreement on the value of the activity, a formal request for participation must be submitted to Ph.D. Board, specifically to the Ph.D. Coordinator. This request, bearing the signatures of both the student and the tutor, should be sent well in advance of the event's commencement.

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.

Research Period Abroad

All students enrolled in the Ph.D. program **must** complete a research period abroad. DM117 and DM118 participants **must** spend a minimum of six months abroad. Other candidates are expected to spend a minimum of three 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). During the abroad period the scholarship is increased by 50%.

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. This certificate, signed by the coordinator, enable the payment of 50% increase in the scholarship.

- For DM117 and DM118 positions, the period abroad will be established by March 2024.

- 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). 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.

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 DM118 with theme "Digital and Environmental Transitions" and DM117 **must** spend a minimum of six 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.

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. 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.

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

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.

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

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

For the first time, in the 2023 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.