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Academic Regulations for the Interuniversity Doctoral Program in Electronic Engineering in the Framework of the New Doctoral Studies (Royal Decrees 1393/2007 and 99/2011)

I. Preface:

The reference framework for doctoral studies at the Universitat Politècnica de Catalunya (UPC) is governed by the regulations set out in agreement number 106/2009 drawn up by the Board of Governors (CG 20/5 2009, adapted to the RD 1393/2007). These regulations will be replaced by regulations included in the agreement no. 105/2011 (GC 2/7 2011, adapted to the RD 99/2011) as doctoral programs are audited in accordance with the provisions of the new Royal Decree 99/2011. This new legislation provides that, during the transition period and for all programs, the regulations on the jury, defense and evaluation of the doctoral thesis (section IV.4 of this document) will be determined by document GC 2/7 2011, with effects starting 11th February 2012.

This internal Academic Regulation supplements the framework for the Interuniversity Doctoral Program in Electronic Engineering, which is jointly run by the UPC's Department of Electronic Engineering and the Universitat de les Illes Balears. Respect to previous Regulations of the same program, it incorporates the consequences of the implementation of the above mentioned transition period. The entry into force of this regulation occurs on 11th February 2012, and will be replaced by a new Regulation when the Program completes the verification process to the new Decree 99/2011

The spirit of internal Academic Regulation, is to provide new applicants and admitted students with clear itineraries and criteria to aid their progress and their understanding of how they are assessed over the various stages of the program, from their initial admission to the defence of their doctoral thesis. In addition to the regulatory reference framework, the requirements of the scholarships offered by public organizations (FPU/FI/FPI/UPC) and the requirements set to turn these scholarships into contracts, have been taken into account.

The current regulatory framework specifies that doctoral studies are divided into two periods with clearly defined access criteria: the training period and the research period of investigation. The training period must allow newly admitted students to the program

to complete their training in terms of theoretical scientific and technical knowledge and practical skills (bibliographic research, drawing up of reports, presentation of results, etc.), so that they are able to carry out a high quality research in the area of specialization they have chosen for their doctoral thesis. They will therefore be in a position to begin their research while they are attending classes and completing academic assignments. All of these activities must be undertaken as ECTS credits in the framework of those offered by Master's courses offered by the Institution where the doctoral student has registered.

II. Training and research periods for the Doctoral Program

Students who hold a Spanish degree or foreign equivalent may find themselves in one of the following circumstances:

- 1) They hold an official degree from a Spanish university in **Telecommunications Engineering, Industrial Engineering** or **Electronic Engineering**, or from a higher education institution in the European Higher Education Area (EHEA) that entitles them to access postgraduate courses, or they are degree holders from an institution outside the EHEA whose qualifications are equivalent to the corresponding official Spanish university degrees.

Admission criteria

The above students will be **admitted to the training period**.

They must pass 60 ECTS credits before they are allowed to access the research period.

Their tutor will draw up an enrolment proposal whereby they will enrol for at least **30 ECTS credits on subjects from the UPC-UIB Master's Degree in Electronic Engineering** or from other master's degree courses. The proposal must be approved by the Doctoral Program's Academic Committee (CAPD).

The remaining **30 ECTS credits** may either be **postgraduate research credits on the UPC-UIB Master's Degree in Electronic Engineering** or subjects from other master's degree courses. In either case, approval must be sought from the tutor and the CAPD. **Postgraduate research credits** will be assessed according to the criteria set out in Appendix I to these regulations.

In cases in which a student's academic record covers subjects that are very similar to those taught on the current UPC-UIB Master's Degree in Electronic Engineering, the CAPD will propose that the number of credits it sees fit is recognized by the Academic Committee for the Master's Degree in Electronic Engineering. Under no circumstances shall such recognition entitle a student to obtain the Master's Degree qualification. It shall only be valid for calculating the number of ECTS credits needed to gain access to the research period of the Doctoral Program.

- 2) They hold a **qualification in other engineering disciplines in the field of ICT** or **a degree** (particularly, in physical sciences) that gives access to the Doctoral Program, or they are future students who have an undergraduate **engineering qualification** (or current students who have a foreign undergraduate qualification) in the fields of ICT, aerospace engineering or applied sciences, who are able to provide proof of having earned **at least 240 ECTS credits**.

Admission criteria

The above students will be **admitted to the training period**, and **they must enroll in and pass the final year of the UPC-UIB Master's Degree in Electronic Engineering** (semester of specialization and master's thesis). They must therefore pass **60 ECTS credits** before being admitted to the research period.

- 3) They hold a master's degree in the fields of ICT, industrial engineering, applied sciences, or they have studied subjects to the same level in the EHEA.
- 4) They hold a master's degree that has been issued by a higher education institution in the fields of ICT, industrial engineering, applied sciences, or they have studied subjects to the same level outside the EHEA and are entitled to be admitted to doctoral courses.
- 5) They are able to prove they have earned 60 ECTS credits on one or several master's degree courses in the fields of ICT, industrial engineering, applied sciences, or they have studied subjects to the same level in higher education institutions in the EHEA.
- 6) They belong to category 1) and hold a Diploma of Advanced Studies (DEA) obtained in accordance with the provisions of Royal Decree 778/1998, or they have obtained their minimum research capacity as regulated by Royal Decree 185/1985.

Admission criteria

As a general rule, the above students will be **admitted to the research period**, unless the tutor and/or the CAPD recommends that they attend **bridging courses** from the UPC-UIB Master's Degree in Electronic Engineering or other master's degree courses and/or postgraduate research credits from the UPC-UIB Master's Degree in Electronic Engineering. In no case will they be required to take more than **30 ECTS credits**. The **postgraduate research credits** will be assessed in accordance with the criteria set out in Appendix I to these regulations.

In all cases, and provided they have not undertaken courses of transversal content during the training period, students must complete during the research period some training activity(ies) with transversal contents, of 10 hours minimum, which can be those courses and seminars organized annually by the UPC Doctorate Office, or Master courses with transversal content. These activities are counted as item III in the annual tutorship evaluation of students during the research period (Appendix II).

III. Designation and role of the tutoring professor and the director of the doctoral thesis

III.1 The tutoring professor

All new students of the Doctoral Program must have a tutoring professor assigned by the CAPD during the admission process. The tutor has the role to guide the student and act as the academic element to contact with the program and the University until the student is assigned a director for his thesis, and is also who validates the registration of the student. The tutor must be a member of the group of professors or a researcher of the Doctoral Program. The initial designation of a tutor can be replaced by a director if the subject of the thesis is already defined during the first registration of the Program, in accordance between the student and the director. The tutor can be member of the CAPD itself or be a professor of the program that fulfils with the same requirements as a director of thesis.

III.2 The director of thesis

Once the subject of research has been defined by mutual agreement between the student and the director (usually at the moment of presentation of the doctoral thesis), the academic commission of the corresponding doctoral program fixes the director of the thesis. This professor or researcher must have the title of doctor and the capacity and experience in research accredited in the scientific or technological area of the subject of the doctoral thesis.

The CAPD stated in its meeting of the 05/11/2009 that the list of academic staff linked to the program that can act as a tutor or director of the doctoral thesis is formed by the permanent research academic staff with full time dedication and with a doctor grade attached the Electronic Engineering Department of the UPC or the UIB, that have been teaching in the last three years in any of the learning activities of the semester of specialization of the Master in Electronic Engineering member of the Doctoral Program, o that have actively participated in any of the research groups of the Doctoral Program. Moreover they must prove that they comply with any of the following requirements:

- Have directed a doctoral thesis in the last 5 years.
- Have a research thread alive (obtained in the last 7 years).
- Act as main researcher of a project financed by a public institution, awarded in competitive regime.

The young doctors of the participant units in the Doctoral Program that do not comply with any of the three above requirements can ac as co-directors of thesis with another co-director that is already in the list of professor of the Doctoral Program.

III.3 Agreement

When a director is assigned to the thesis, the student must sign jointly with his director an agreement (available in the doctoral office of the UPC and in the web page of the Program), that must be delivered to the Doctoral Office so that it's signed by the vice-president of doctoral studies.

IV. Student progress and assessment on the Doctoral Program

In general, the length of the training and research periods, including the thesis defense, should not be longer than four years. This coincides with the length of most Spanish and foreign scholarships. In the case of students from master's degree or similar courses (with 60 postgraduate ECTS credits) who are directly admitted to the research stage, this period should generally last three years.

IV.1. Duration of the training period

Once students have been admitted to the training period on the Interuniversity Doctoral Program, they must take 60 ECTS credits (or the number that the tutor and the CAPD may establish in each case) **within two academic years at the most**, as is provided for in the UPC's regulations on doctoral courses (CG 20/5 2009). Students who apply for a pre-doctoral scholarship must take into account that they must enrol in and pass all of the **60 ECTS credits in the first academic year**.

IV.2. Admission to the research period

At the end of each academic year, the CAPD will approve admissions to the research period of those students who are able to prove that they have passed the 60 ECTS credits or the bridging courses, as applicable, that they were required to follow by the tutor and/or the CAPD at the time they were admitted to the training period.

IV.3. Research period

Students who are admitted to the research period must **enroll in tutorials for the academic year** and have a **thesis supervisor**.

At the end of the academic year, the director or tutor must write a **student progress report**. It will reflect the work carried out by students, who will either be awarded a **pass** or a **fail** mark, which must be endorsed by the signature of the thesis supervisor. CAPD will do an annual evaluation of the students in the research period based on this progress report, the progress level of the students and a series of quantitative items described in Appendix II.

During the research period (preferably at the end of the first year of this period), students must register and present a **thesis proposal** that contains the following sections (whenever possible, drawn up in English¹)

- Personal details of the doctoral student and the thesis supervisor.
- Title of the thesis proposal.
- Summary of the proposal.
- Goals.
- Current status of the subject matter.
- Work schedule with estimated deadlines.
- Bibliographic research.
- Material published in the field, if applicable.

¹ In no case, the language of the report or the presentation will affect the grade of the evaluation of the thesis proposal.

The Thesis Proposal will be examined by a committee composed of three doctor members, one of them a professor of the program representing the CAPD, another member a professor of the program expert in the subject of the proposal and if possible Full Professor, and a third member expert and external to the Program. In case the students have registered their thesis proposal as master thesis to the Master in Electronic Engineering, this board of examination will be completed in order to fulfil the Master regulations.

In compliance with Article III.9 of the new academic regulations for the doctoral studies at the UPC (GC 2/7 2011), any research stay in a foreign center, aimed to meet the requirements to obtain the International Recognition in the Doctoral Degree, must have been communicated to the CAPD in advance. When the student has finished the stay, he/she must provide the CAPD the corresponding certificate issued by the head of the research group of the hosting institution.

IV.4. Deposit, defense, evaluation committee and assessment of the doctoral thesis

The procedures deposit, defense, evaluation committee of the doctoral thesis and the way it is assessed are set out in Chapter III of the new academic regulations for the doctoral studies at the UPC (CG 2/7 2011, adapted to the new RD 99/11).

Some of the aspects of the UPC regulations that are related with the deposit and defence of the doctoral thesis are left at the discretion of the doctoral program. In this sense, the Interuniversity Doctoral Program in Electronic Engineering describes the following articles of the UPC Academic Regulations:

Art. III.2 About the evaluation of the doctoral thesis by the academic commission of the doctoral program: the CAPD must validate the quality of the thesis before its deposit, according to the indications of quality acknowledged internationally in the thesis field and the program. These indications of quality are detailed in the Appendix II. When the CAPD does not have a proof of the existence of these indications to the thesis or when it considers it necessary to validate the quality of the thesis, a report will be asked to two people external to the program and the UPC, named by the commission itself, that are expert in the subject of research of the thesis, with the purpose of revising the thesis and making a reasonable report of the suitability of the work as a doctoral thesis, in less than a month from the date of reception of the thesis.

Art. III.3 About the proposal of the doctoral thesis evaluation committee: it is left on the director of the thesis the decision if the tribunal must consist of three or five main members. In both cases the appointment procedures must respect the UPC regulations. The director of the doctoral thesis will provide the CAPD a prioritized proposal for the evaluation committee, and for every candidate of the committee, a brief CV² and the acceptance of the candidate to be part of the committee, all in standard forms. Given the interuniversity characteristic of the Doctoral Program in Electrical Engineering, the majority of main members must be external to both the UPC and the UIB. As for the committee members internal to the UPC or UIB, they must have proven research experience³.

² Only for members external to both UPC and UIB, and in electronic format (PDF).

³ Fulfill at least one of the following conditions: Have acted as director of a doctoral thesis defended during the last five years, or Have an active recognized research period (obtained during the last seven years), or Act or have acted during the last five years as principal investigator in a research project funded by some public institution external to the university, obtained on a competitive basis.

Art. III.3 and III.10 On the presence of co-authors of publications in the evaluation committee of the doctoral thesis: if any member of the evaluation committee is co-author of publications arising from the thesis, the thesis director must provide the CAPD a justification that his/her participation in the overall work of the thesis to be evaluated was marginal, and the CAPD must authorize his/her presence in the committee. In the case of a thesis presented as a compendium of publications, the presence of co-authors in the examination committee is not allowed.

Art. III.11 On the presentation of theses subject to protection processes and/or confidentiality agreements: in the case of deposit of a doctoral thesis subject to confidentiality agreements or on the content of which patents may be generated, the student can submit a request to the CAPD to benefit from the procedure described in Article III.11 of the academic regulations of the UPC (GC 2/7 2011), attaching the documentation specified in that document.

IV.5. Temporary interruption of the doctorate

Students may apply to the CAPD for a temporary interruption of their doctoral studies during one or more academic years, thus releasing from the obligation to register the yearly tutorship if the interruption was authorized. The temporary interruption must be approved by the CAPD and justified by a document certifying the reason why the interruption is requested (employment contract, medical certificate, etc.) which will be filed in the student's record.

IV.6. Withdrawal from the Doctoral Program

Students will be withdrawn from the Doctoral Program under the following circumstances:

- a) The maximum deadline for passing the bridging courses has run out.
- b) The thesis proposal and/or work for tutorials have been awarded a fail mark for two consecutive academic years.

Appendix I: assessment of postgraduate research credits during the training period.

The assessment of postgraduate research credits will be based on the submission of a research assignment and its public defense before a panel made up of lecturers from the Doctoral Program and the Master's Degree in Electronic Engineering.

The research assignment must reflect the doctoral thesis proposal and should contain the following sections (whenever possible, drawn up in English⁴):

- Personal details of the doctoral student and the thesis supervisor.
- Title of the thesis proposal.
- Summary of the proposal.
- Goals.
- Current status of the subject matter.
- Work schedule with estimated deadlines.
- Bibliographic research.
- Material published in the field, if applicable.

⁴ In no case, the language of the report or the presentation will affect the grade of the evaluation of the thesis proposal.

Appendix II: assessment criteria for students taking the research period

During the research period, students will be assessed based on their examination results, which must be endorsed by their supervisor (or tutor, should the supervisor not be a lecturer on the Doctoral Program), and the documentation proving that other submitted items are valid. This documentation and the examination results must be submitted to the Doctoral Program's Academic Committee (CAPD) under the terms established each academic year. This committee will approve the results and will issue a report with the final mark (pass or fail) for all students enrolled in tutorials for the research period at the end of each academic year.

The following items are considered necessary for obtaining a pass mark, although these marks are subject to the report of the director and his final evaluation:

- I. Accepted publications⁵ (must belong to the field dealt with in the doctoral thesis) in any of the following:
 - a) Indexed scientific journals
 - b) High-profile conferences
 - c) Other journals
 - d) Other conferences/workshops
 - e) Research book chapters
 - f) Research book
 - g) Patents
- II. Research stays (outside the UPC and the UIB, that do not involve attending courses or seminars), for a minimum of two weeks, on which a report must be drawn up.
- III. Training courses, seminars or activities related to research methods (with an attendance report and the number of hours).

Over the first and second year of tutorial sessions, students must provide proof of point I or II, in addition to at least one of the activities described in point III during each of the academic years during the research period. If the doctoral program does not organize any academic activities of the type III the students exempt from this last requirement during that year.

Before officially depositing their thesis, students must provide proof that they have published at least one paper in an indexed journal, a research book, or that they have filed a patent. Alternatively, they must have accomplished any two items in point I, or completed a research stay.

In any event, the fail or pass mark will be accompanied by an assessment by the thesis supervisor on the level of progress made by students in their research.

⁵ In case of magazines, seminars and patents it is enough to present the official acceptance of the publication. The student must be the first author.