

## INTERNAL RULES AND REGULATIONS OF THE PhD COURSE IN COMPUTER SCIENCE AND MATHEMATICS – XXXII CYCLE

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### **Art. 1 – Regulation objectives**

In conformity with the existing rules, the present regulations refer to the management control and working principles of the PhD Course in Computer Science and Mathematics.

### **Art. 2 – Aims**

To supplement the general details of the PhD Course, as illustrated in the University (Ateneo) Regulations concerning the Research Doctorates, the specific aims of the PhD Course in Computer Science and Mathematics are to create new professional and autonomous figures, who are able to assume direct responsibilities in research activities in macro-areas, such as 01-A Mathematics, 01-B Computer Science and 09-H Computing Engineering.

One of the goals of the Research Doctorate is also to integrate the PhD students as *early stage researchers* into an exchange and internship system, in order to facilitate national and international contacts. This could also be done through the participation of students in research projects proposed by the Departments.

At the end of their studies, PhD students should be well-versed in the state-of-the-art connected to their thesis. They should also be able to communicate with researchers on related topics, participate in progressive international projects and identify and validate the eventual practical and technological impact of their research. Thanks to the didactic experience gained, the PhD students should be ready to collaborate in any academic course where specific disciplinary skills are required.

### **Art. 3 – Areas and scientific disciplines**

The area of reference of the PhD Course is

- Area 01 (Mathematics and Computer Science)

The scientific disciplines connected to the PhD Course are:

- Computer Science
- Computer Processing Systems
- Algebra
- Geometry
- Analysis
- Probability and Mathematical Statistics
- Mathematical Physics
- Numerical Analysis

#### **Art. 4 – General characteristics**

The PhD program lasts 3 years. Candidates must pass a public selection. Calls for applications are published every year, together with the number of places and scholarships available.

The most qualified students are admitted to the PhD Course, regardless of sex, age, nationality, religion, race and social class.

The official languages of the PhD Course are Italian and English.

Foreign students must learn the Italian language and must have at least an elementary command of this language by the end of the second year.

Entrance tests are usually in Italian, but students may ask for one of the foreign languages indicated on the application form, by means of a motivated, formal request to the academic coordinator, upon whose prior agreement, entrance tests may be performed in other foreign languages. The candidate should also demonstrate an appropriate knowledge of the English language. The PhD thesis can be written in Italian, in English or in another language if approved by the Scientific College.

#### **Art. 5 – PhD Course Bodies**

The PhD Course Bodies are:

- a) The College of Lecturers
- b) The Coordinator

The College of lecturers (henceforward named the “College”) has been composed and established according to the Regulations for Research Doctorates of the University of Bari “Aldo Moro” (hereafter referred to as “University Regulations”), issued in the Ministerial Decree no.2766, on July 3<sup>rd</sup> 2013.

The College executes tasks established in the University Regulations and the current Regulations.

The College is called to meet either by the Coordinator, who presides it, or on the request of the majority of its members. The meeting date is sent out at least 7 days before the first session, by e-mail. If the meeting is considered urgent, 3 days may be sufficient. The agenda is usually sent together with the meeting date.

The College meeting can be considered effectively valid if 50% plus one of its members is present. Decisions, discussed during the meeting, are passed by an absolute majority vote of all members present at the meeting. In the case of an equal number of votes for and against, the Coordinator’s vote will prevail.

At the College meeting, the PhD student representatives may participate in discussions on subjects such as the general evolution of the Doctorate or learning activities, as indicated in Art.6, but they are not allowed to vote.

The Coordinator is elected by the College, as established by the University Regulations. The Dean will approve the nomination with an administrative order. The Coordinator remains in office for 3 years approximately; he/she can be re-elected a second time, but not for more than 5 years.

The Coordinator supervises and performs tasks defined in the University Regulations and in the current Regulations.

#### **Art. 6 – Elections of the PhD student representatives in the College**

The participation of the PhD student representatives in the College meeting is 1/6 of the total number of PhD students enrolled. An Election Commission is charged by the College to organize the election procedures. The Commission calls the PhD students to present their candidacy and to vote. The PhD representative's mandate lasts 2 years; if it finishes within the 2 years, the other candidates who presented their candidacy, who have the highest number of votes on the list, will take over. If 2 candidates obtain an equal number of votes, then the eldest student prevails.

#### **Art. 7 – Tutors and co-Tutors**

Within 3 months of the beginning of the PhD Course, the College designates a tutor to each PhD student.

The Tutor is chosen, following consultation among the members of the College, taking into account the student's PhD curriculum and research field.

The duties of the Tutor include helping the PhD student to improve his/her didactic and scientific study techniques, integrating him/her into a research activity and suggesting a research topic. Moreover, the Tutor must guide the student to compile a plan for his/her scientific preparation and follow the PhD student's scientific developments. The tutor must also guide the student to choose courses within the Department or, if required, in other Universities abroad and prepare him/her for the final thesis.

The Tutor must inform the College of the PhD student's progress in his/her research activity or of any possible problems. He/she must also ask for the College's authorization if part of the PhD research activity must be completed abroad.

The College can, if necessary, also nominate a co-Tutor, who is internal or external to the College and must collaborate with the Tutor in his/her duties, assisting in the tasks by contributing further scientific and technological information.

The Tutor is the *supervisor* of the Doctorate thesis, while the co-Tutor is the *co-supervisor*.

If necessary the College may revoke a Tutor's assignment, provided a substitute is nominated contemporaneously, whereas it may revoke a co-Tutor's assignment without necessarily nominating a substitute.

## **Art. 8 – Doctorate Commission**

After a PhD student has presented his/her research project and syllabus, the College nominates a Doctorate Commission composed of the student's Tutor and another two professors/lecturers, at least one of whom must be a member of the College. The aim of the Doctorate Commission is to evaluate the PhD student's research work and give a written report to the College. In particular, the Doctorate Commission evaluates:

- The progress of the student's research project and his/her study plan;
- The end of the year reports produced by the PhD student, in order to be admitted to the following year or the final Doctorate exam;
- The final thesis

## **Art. 9 – Study Plan**

The study plan offers the following courses:

- a) Basic structured didactics (5 credits): a core course for all PhD students; this course aims at investigating theoretical and experimental paradigms, which are used in mathematics and computer science for knowledge progress;
- b) Specialized structured didactics (35 credits), which are “characterizing” courses;
- c) Seminar cycle on “Scientific Research Writing”;
- d) Seminar cycle on “Information Technology Outlook”;
- e) Seminar cycle on “Research Management”, “Knowledge Management Systems” and “Funding Systems”;
- f) Seminar cycle on “Optimization of research results and intellectual property”.

The “Basic structured didactics” core course is offered during the first year; the “Specialized structured didactics” courses are available during the first 2 years. The total 40 credits required for both “basic” and “specialized” structured didactic courses can be obtained by attending at least 8 courses. The College decides on the activation of the characterizing and basic didactics courses. A final test with a grade /30 is required in the basic structured didactics course. A final evaluation is made in at least 5 “characterizing” courses, in order to obtain 20 credits. The PhD student must pass the final tests/exams of the above-mentioned courses by the end of the 2<sup>nd</sup> year.

The seminar cycles (c-f) are activated during the 3rd-year courses of the doctoral program. The PhD student must attend at least 70% of the seminars offered in the different cycles and pass the final exam in each of the chosen courses.

Any changes or exceptions in the program requirements, attendances or exams must be supported by a request written by the PhD student and approved by the College.

The languages used in the Doctoral program may be Italian or English.

The course schedules are discussed every year by the College and may be modified and re-arranged by the Coordinator, in order to integrate other courses. The Coordinator communicates any variations via the PhD course portal.

## **Art. 10 – Study activities and research/studies abroad**

As of the 2<sup>nd</sup> year of study, the PhD student should think of spending some time abroad in foreign institutes to deepen his/her research. The study period abroad should last at least 3 months, in any case, not less than 2 months, unless approved by the Coordinator in specific situations. PhD students may decide to study abroad for a long non-stop period of 3 months or for different short periods. They usually choose to study in one place, but they can also decide to study in different places, if their research is connected to these places and this can enrich their research studies.

PhD students may spend a period of time studying abroad or in other places in Italy for up to 6 months, if authorized by the Coordinator. If that period is longer than 6 months, the College will then decide if it may be extended. The period of study cannot last for more than half of the whole PhD course program.

Exceptions concerning the compulsory study abroad and its duration may be discussed by the College, especially if PhD students are not supported by scholarships.

## **Art. 11 – Evaluation modalities for second and third year admission**

Each PhD student should:

- a) demonstrate a very good attendance record in the PhD courses, as established by the College. The attendance requirement is 1500 hours/year and is registered by the teacher.
- b) obtain an average of not less than 18/30 in no more than 2 courses of the PhD program and attend not less than 5 courses by the end of the second year.
- c) obtain a general positive evaluation from the College concerning the year of study. This includes an evaluation of the final papers, an interview related to the PhD student activities and a discussion on the in-class written tests. The evaluation will also consider publications in:
  - International Congress Acts with peer review;
  - ISI and SCOPUS Index Journals.

## **Art. 12 – Admission modalities to the final exam**

To be admitted to the final exam, the PhD student should present the preliminary version of his/her thesis within 3 months of the end of the final year. The structure of the thesis must have been previously discussed with the PhD student Tutor and co-Tutor.

Once the Commission has expressed its opinion on the first version of the thesis, the College will evaluate each PhD student on their activities during the course, as well as on their publications. The students who reach a good scientific level will then be evaluated by 2 or more highly qualified professors, who may come from other universities or foreign institutions. These external professors/referees are nominated and approved by the College of lecturers.

When the PhD student knows the names of the referees, he/she will send the preliminary version of his/her thesis, enclosing the College's evaluation. The referees are solicited to evaluate the PhD student's thesis within 30 days and will give the Coordinator a detailed report indicating the ways and suggestions on how to improve it. They will also have the task of either admitting the PhD student's thesis or returning it for corrections. The “rejection” of the thesis should serve as an encouragement to integrate material in the thesis, to correct it or complete it. These corrections need to be completed within no more than 6 months. After the 6<sup>th</sup> month, the thesis is automatically accepted and the

referees should give a new report.

### **Art. 13 – Doctorate Conferment**

The Commission of experts, nominated by the College, is appointed by the Dean's decree. It is composed of 3 permanent members and 3 alternate members who are selected between full professors, associate professors and researchers of the same scientific field as the PhD student; these professors could also come from foreign universities. The jury cannot have more than 2 experts belonging to public and private research institutions, even if they are foreign research institutions.

Lecturers who are members of the College and who have organized the PhD course, cannot also be members of the Commission, nor external Tutors of the College, appointed during the Course.

At least 2 members of the Commission must belong to universities not having taken part in the PhD program.

Lecturers, who were members of the Commission in the same PhD course in the previous year, cannot be members of the Commission again.

The Dean's decree establishes the modalities and duration of the Commission's duties. Starting from the date of the decree, the Commission has 60 days to examine and decide on the PhD candidate's work. Beyond that deadline the Dean can decide to nominate a new Commission.

The decree also establishes how to inform the PhD candidate concerning the Commission and the final exam. The Commission may confer a grade "summa cum laude" by unanimous decision, in recognition of important scientific results.

If, for any reason, members of the Commission cannot be present at the final exam, the examination may be conducted by videoconference. This is allowed only if 2 members of the Commission are present during the exam.

### **Art. 14 – PhD Student Rights and Duties**

Each PhD student must:

- plan his/her research work with the Tutor and possibly co-Tutor, defining the various meeting times;
- decide on a research project and plan scientific activities with the Tutor and possibly co-Tutor within the first 3 months, in order to improve his/her academic preparation;
- keep to time-limits when developing the research project and presenting reports;
- inform the Commission concerning the research progress;
- take the initiative to talk about problems encountered with the Tutor or co-Tutor or, under extreme circumstances, with the Coordinator.

PhD students must follow the procedures established by the College regarding their activities related to their academic path.

### **Art. 15 – Tutorial activities, integrative didactics and compatible activities**

As established in Art. 8 of the University Regulations concerning the Research Doctorate, PhD students can provide tutorial assistance or integrated support activity to students of the various Bachelor's and Master's degree courses, as an integral part of their academic preparation. The College

of lecturers must previously discuss this with the teaching staff in charge and give a “nulla osta”. However, this does not imply an increase in the scholarship amount and should not exceed 40 hours of tutorials during the whole academic year.

#### **Art. 16 – Amending the Regulations**

Each proposal to amend the Regulations must be submitted to the College of Lecturers. The new proposal can come into effect immediately after the College’s decision.

#### **Art. 17 – Final Rules and Correlation Regulations**

These Regulations complement the current National and University Regulations concerning the Research Doctorate.