

## REGULATIONS OF THE PhD PROGRAMME IN COMPUTER SCIENCE AND MATHEMATICS – XXXIII CYCLE

Approved by the Doctorate Committee on November 13th, 2017.

### INDEX

- Art. 1 – Object of the Regulations
- Art. 2 – Objectives
- Art. 3 – Areas and scientific sectors
- Art. 4 – General characteristics
- Art. 5 – Doctorate Committee and Coordinator
- Art. 6 – Election of PhD student representatives
- Art. 7 – Tutor and Co-Tutor
- Art. 8 – Evaluation Commission
- Art. 9 – Study Plan
- Art. 10 – Study and research activities abroad
- Art. 11 – Evaluation for admission to second and third year
- Art. 12 – Evaluation for admission to the final exam
- Art. 13 – Final exam for getting the PhD degree
- Art. 14 – PhD student rights and duties
- Art. 15 – Tutoring and teaching activities by PhD students
- Art. 16 – Amending the Regulation
- Art. 17 – Final Rules and related Regulations

### Art. 1 – Object of the Regulations

In conformity with the existing rules by the Ministry of Education, Universities and Research, this regulation defines the management and operation of the PhD Programme in Computer Science and Mathematics.

### Art. 2 – Objectives

In addition to the general objectives illustrated in the Regulation concerning the PhD Programmes of the University of Bari Aldo Moro (hereafter referred to as “University Regulation”), issued in the University Decree no.2810, on September 3<sup>rd</sup> 2014, the specific objectives of the PhD Programme in Computer Science and Mathematics are to create highly professional and autonomous researchers who are able to take direct responsibilities in research activities, specifically in macro-areas, such as 01-A Mathematics, 01-B Computer Science and 09-H Computing Engineering.

A further goal of the PhD Programme is to integrate the PhD students as *early stage researchers* into an exchange and internship system, that will facilitate national and international relationships. This will also be achieved through the participation of students in research projects of the Departments involved in the PhD Programme.

At the end of their studies, people getting the PhD should be well versed in the state of the art related 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, they 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 Programme is

- Area 01 (Mathematics and Computer Science)

The scientific disciplines connected to the PhD Programme are:

- INF/01 Computer Science
- ING-INF/05 Information Processing Systems
- MAT/03 Geometry
- MAT/05 Mathematical Analysis
- MAT/08 Numerical Analysis

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

The PhD Programme lasts 3 years. Candidates are admitted after a public selection. Calls for applications are published every year, indicating the number of positions 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 Programme are Italian and English.

Foreign students should learn the Italian language during the programme in order to get at least a basic knowledge of Italian.

Admission tests are usually in Italian, but they might be in one of the foreign languages indicated on the application form if authorized by the Coordinator on the basis of a formal and motivated request by the candidate. The candidate should also demonstrate an appropriate knowledge of the English language. The PhD dissertation can be written in Italian, in English or in another language if approved by the Doctorate Committee.

#### **Art. 5 – Doctorate Committee and Coordinator**

The PhD Programme Bodies are:

- a) The Doctorate Committee
- b) The Coordinator

The Doctorate Committee is composed according to University Regulations. The Committee performs tasks according to the University Regulations and these Regulations.

The Committee meets either upon request of the Coordinator, who chairs it, or upon request of the majority of its members. Notices regarding an upcoming meeting are sent out at least 7 days before the meeting date, usually by e-mail. If the meeting is urgent, the notice may be reduced to 3 days. The agenda is usually communicated together with the meeting date.

The Committee meeting is valid if 50% plus one of its members are present. Decisions, discussed during the meeting, are approved 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 Committee meeting, the PhD student representatives may participate in discussions on topics such as the general evolution of the program or learning activities, as indicated in Art.6, but they are not allowed to vote.

The Coordinator is elected by the Doctorate Committee, as established by the University Regulations. The President of the University will approve the nomination with an administrative order. The Coordinator remains in office for 3 years; he/she can be re-elected only once, but not exceeding a total term of more than 5 years.

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

#### **Art. 6 – Election of the PhD student representatives**

The participation of PhD student representatives in meetings of the Doctorate Committee is made up of 1/6 of the total number of PhD students enrolled. The Committee creates an Election Commission to

organize the election procedures. The Commission interacts with all the PhD students to handle candidacy submissions and voting. The PhD student representatives are elected in the middle of the first year and their mandate lasts 2 years. If a candidate must quit before the end of the two-year mandate, the role is passed onto the candidate with the highest number of votes among those non-elected in the original election. If 2 or more candidates obtain an equal number of votes, the oldest student is elected.

### **Art. 7 – Tutor and co-Tutor**

Within 3 months of the beginning of the PhD Programme, the Doctorate Committee selects a Tutor for each PhD student.

The Tutor is chosen among the members of the Doctorate Committee available for this role, taking into account the student's PhD curriculum and research field.

The duties of the Tutors include helping students to improve their study and research techniques, integrating them into a research activity, and suggesting a research topic. Moreover, Tutors must guide students to develop a plan for their academic path and follow the students' research path. Tutors must also guide students to choose courses within the Department or, if required, in other Universities abroad, and prepare them for the final thesis.

The Tutors inform the Doctorate Committee about the PhD students' progress in their research activity or of any possible problems. Tutors must also ask for the Committee's authorization if part of the student's PhD research activity needs to be completed abroad.

The Doctorate Committee can, if necessary, also nominate a co-Tutor for a student, who is internal or external to the Committee and collaborates with the main Tutor in his/her duties, assisting in the aforementioned tasks and contributing further to the student's scientific and technological knowledge.

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

If necessary, the Doctorate Committee may revoke a Tutor's assignment, only after having found a substitute, whereas it may revoke a co-Tutor's assignment without necessarily nominating a substitute.

### **Art. 8 – Evaluation Commission**

After a PhD student has presented his/her research project and study plan, the Doctorate Committee nominates the student's Evaluation Commission composed of the student's Tutor (and Co-Tutor if previously nominated) and two other professors/researchers, of whom at least one must be a member of the Doctorate Committee. The aim of the Evaluation Commission is to evaluate the student's research work and provide a written report to the Doctorate Committee. In particular, this 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 exam;
- The final thesis

### **Art. 9 – Study Plan**

The programme offers the following courses:

- a) Basic structured didactics (5 credits): a course (or more courses) for all PhD students, aimed at investigating theoretical and experimental paradigms, which are used in mathematics and computer science to advance knowledge;
- b) Specialized structured didactics (35 credits), which are more field-specific courses;
- c) Seminar cycle on “Scientific Research Writing” (10 credits);
- d) Seminar cycle on “Information Technology Outlook” (10 credits);
- e) Seminar cycle on “Research Management, Research Systems and Funding Systems (10 credits);
- f) Seminar cycle on “Dissemination of research results and intellectual property” (10 credits).

The “Basic structured didactics” course(s) must be taken during the first year; the “Specialized structured didactics” courses can be taken during the first 2 years. The student is required to pass the exam for at least 5 courses (including the course(s) of Basic structured didactics) or a total of 20 CFUs during the first two years of the PhD Programme.

The seminar cycles (c-f) are activated during the 3 years of the PhD Programme. The PhD student must attend at least 70% of the offered seminars and pass the final exams if required.

Any changes or exceptions to these program requirements, regarding either attendance or exams, must be supported by a request written by the PhD student and approved by the Doctorate Committee.

PhD activities may be conducted in either Italian or English.

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

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

Around the 2nd year of study, the PhD student should consider spending some time abroad in foreign institutes to deepen his/her research. The study period abroad should last at least 3 months in total, but it can be made up of multiple shorter periods, each lasting no less than 2 months. Exceptions must be approved by the Coordinator in each case. Students usually choose to study in just one foreign institute, but they can also decide to study in multiple countries, as long as it is strictly beneficial to their research.

PhD students may study abroad or in other universities in Italy for up to 6 months, if authorized by the Coordinator. Any wishes to extend this period beyond the allowed 6 months must be approved by the Doctorate Committee. The period of study abroad cannot in any case last for more than half of the entire PhD Programme duration.

Exceptions concerning the study abroad period and its duration may be discussed by the Doctorate Committee if PhD students are not supported by any scholarships.

### **Art. 11 – Admission to second and third year**

Each PhD student should:

- a) demonstrate a very good attendance record in the PhD Programme, as established by the Doctorate Committee. The attendance requirement is 1500 hours each year and it is reported in a register of the activities;
- b) obtain a grade of not less than 18/30 in at least 2 courses of the PhD program by the end of the first year and obtain a grade of not less than 18/30 in at least 5 courses of the PhD program by the end of the second year.
- c) obtain a positive evaluation by the Doctorate Committee at the end of the year. This includes an evaluation of the student’s written annual report and the results of the interview by the Evaluation Commission related to the activities of the PhD student. The evaluation will also consider publications in:
  - International Congress Acts with peer review;
  - ISI and/or SCOPUS Indexed Journals.

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

To be admitted to the final exam, the PhD student should present the preliminary version of his/her thesis within 2 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, if any.

Once the Evaluation Commission has expressed its opinion on the first version of the thesis, the Doctorate Committee will evaluate each PhD student on their activities during the programme, as well as on their publications, in order to admit the student to the final exam. The admitted students will then be evaluated by 2 or more highly qualified professors (referees), who may come from other universities or institutions, possibly from abroad. These referees are selected by the Doctorate Committee.

When the PhD student is informed of the names of the referees, he/she will have to send the preliminary version of the thesis. The referees are solicited to evaluate the PhD student's thesis within 30 days and will give the Coordinator a detailed report including their comments and suggestions on how to improve it. They can either admit the PhD student's thesis or require a major revision within 6 months. After this time, the thesis is admitted anyway to the public discussion and the referees must give a new evaluation report.

### **Art. 13 – Final exam for obtaining the PhD degree**

The Commission of experts, nominated by the Doctorate Committee, is appointed by the President of the University with an administrative order. It is composed of 3 members, plus 3 substitute members, who are selected among full professors, associate professors and researchers of the scientific sectors of the PhD Programme, who may also come from foreign universities. In addition, there can be as further members no more than 2 experts belonging to public and/or private research institutions, including foreign institutions.

Lecturers who are members of the Doctorate Committee cannot be members of the Commission, nor can a Co-Tutor who is not member of the Doctorate Committee.

At least 2 members of the Commission must belong to universities not participating to the PhD Programme.

Members of the Commission in the previous year cannot be members of the Commission.

The administrative order of the President of the University establishes the nature and duration of the Commission's duties. Starting from the date of the administrative order, the Commission has 60 days to conclude its work. After this deadline, the Commission is not effective anymore and the President will nominate a new Commission.

The administrative order also determines how to inform the PhD candidate about the Commission and the final exam date. PhD candidates must send a copy of their thesis to the Commission at least 29 days before the final exam date.

The final exam consists in the public presentation and discussion of the thesis. At the end of the discussion, the Commission approves or rejects the thesis with a written evaluation. 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 at least 2 members of the Commission are physically 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 multiple meeting times (at least once a month);
- submit the research project and the plan for study and scientific activities, agreed with the Tutor and the possible co-Tutor, within the first 3 months;
- respect deadlines when developing the research project and the study plan, presenting written reports as required;
- inform the Evaluation Commission about the research progress;
- take the initiative to discuss any possible problems with the Tutor and/or co-Tutor or, under extreme circumstances, with the Coordinator.

### **Art. 15 – Tutoring and teaching activities by PhD students**

As established in Art. 8 of the University Regulations, PhD students can provide tutorial assistance to students or support teaching activities of the various Bachelor's and Master's degree courses of the

Department of Computer Science and the Department of Mathematics, as part of their academic preparation. The Doctorate Committee must discuss and approve these tutoring and teaching activities, which cannot exceed 40 hours of work in each of the first two years of the PhD Programme.

**Art. 16 – Amending the Regulations**

Each proposal to amend these Regulations must be approved by the Doctorate Committee. Any amendments come into effect the day after the Committee's decision.

**Art. 17 – Final Rules and related Regulations**

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