



Internal Regulations of the Ph.D. Program in Mathematics and Computer Science

The educational pathway of the Ph.D. Program in Mathematics and Computer Science consists of various activities that each doctoral candidate must complete to progress to subsequent years of the Program and to be eligible for the final examination. These requirements are designed to ensure that each doctoral candidate develops knowledge and skills, not only for the preparation of their dissertation, but also to achieve full scientific maturity in the specific disciplines of the Program.

1. Courses

During the first two years of the Program, each doctoral candidate is required to attend advanced courses in the specific disciplines of the Ph.D. Program and in other closely related fields. These courses always include a final assessment and fall into the following categories:

- Courses organized by the Ph.D. Program, which periodically establishes the list of courses to be offered;
- Cross-disciplinary courses intended for doctoral candidates of the University of Cagliari;
- Courses offered by doctoral schools in Italy and abroad;
- Courses delivered by master's degree programs;
- Online courses provided by Universities and other organizations.

2. Seminar Series

The Ph.D. Program organizes seminar series on research topics related to the disciplines of the program. These seminars provide an opportunity for each doctoral candidate to present the state of the art and the most significant results in their research area. The seminars are supervised by a coordinator designated by the Academic Board, who reports on the activities of individual doctoral candidates at the end of the series.

Additionally, doctoral candidates may actively participate in disciplinary seminar series organized by the Department of Mathematics and Computer Science.

Attendance at the courses mentioned in point 1 is considered equivalent to participation in seminar series (without oral presentations) if the student does not take the corresponding final exams. In such cases, one hour of course attendance is equivalent to one hour of seminar participation.

3. Research Activities

Research activities, conducted under the guidance of a supervisor and any co-supervisors, aim at preparing a written dissertation (Ph.D. thesis), which is the primary objective of the program. The Ph.D. thesis must document a comprehensive and cohesive body of work,



containing original results that meet the standards for publication in international journals and conference proceedings.

Parts of the thesis may be published during the three-year program.

4. Supplementary Activities

In addition to coursework, seminar series, and research activities for the preparation of the doctoral thesis, each Ph.D. candidate is required to carry out supplementary activities, which also contribute to meeting the requirements for progression to the next academic year. These activities include:

- Publishing research papers in scientific journals and conference or workshop proceedings;
- Presenting research work at conferences, workshops, doctoral symposiums (including poster sessions);
- Attending additional seminars beyond the mandatory ones;
- Teaching activities, such as lecturing or tutoring in University courses;
- Writing and presenting research proposals;
- Reviewing scientific articles;
- Participating in organizing committees or program committees for conferences or workshops.

Any activities not explicitly listed must be pre-approved by the Academic Board.

5. Requirements for Admission to Subsequent Years

The Academic Board evaluates the activities of each doctoral candidate annually. For this purpose, the Board organizes a series of presentations, typically in September. Each candidate must present a report outlining their chosen research topic, a brief discussion of known results and open challenges, any results achieved, and an overview of completed activities (courses, seminars, supplementary activities).

These presentations are open to all members of the Academic Board, faculty members from the Department of Mathematics and Computer Science, the candidates' supervisors and co-supervisors, and other experts in the relevant research areas as designated by the Board. To provide detailed feedback on each candidate's research project, the Board may form smaller thematic committees.

5.1. Admission to the Second Year

At the end of the first year, each doctoral candidate must deliver an oral presentation to the Academic Board, as outlined above. The slides used in the presentation must be made available to the Board. The candidate's supervisor is also required to submit a written report on the progress of the candidate's research project.

Based on the candidate's and the supervisor's reports, the Academic Board decides whether the candidate may progress to the next year.



To be admitted to the second year, the doctoral candidate must also have:

- Actively participated in seminar series (see point 2) for a total of at least **20 hours**;
- Either attended at least one course and passed the corresponding final exam, **or** completed at least one supplementary activity as mentioned in point 4.

Courses taken from master's degree programs or offered online are subject to the following conditions:

- **Authorization:** Participation must be approved by the Ph.D. Program Coordinator after consulting the candidate's supervisor.
- **Final Exam Certification:** Passing the final exam must be certified by a document signed by the course instructor.
- **Limitations:** Each doctoral candidate may attend at most one master's degree course and at most one online course.
- **Credit Hours Adjustment:** The lecturing hours of a master's degree course are counted at **50%** for the Ph.D. program. For example, a course with 48 hours of lectures will count as **24 hours** for the program requirements.

5.2. Admission to the Third Year

At the end of the second year, each doctoral candidate must present a written report to the Academic Board, as previously described. The supervisor is required to submit a written report on the progress of the candidate's research project. Based on these reports, the Academic Board decides on the candidate's progression to the third year.

To be admitted to the third year, the doctoral candidate must also have, during the first two years of the program:

- Completed at least **48 hours of lectures** (potentially distributed across different courses) and passed the corresponding final exams, adhering to the constraints outlined in Section 5.1.
- Completed at least **three different types of supplementary activities** as mentioned in Section 4, including those already considered for admission to the second year.

5.3. Admission to the Final Examination

At the end of the third year, the doctoral candidate must submit a written report to the Academic Board detailing the final status of the research project and the educational and research activities completed. The supervisor must provide a concise evaluation of the candidate's scientific capabilities. Based on these documents, the Academic Board decides whether the candidate can be admitted to the final examination.

To be admitted to the final exam, the doctoral candidate must also have, during the three years of the program:

- The candidate must have obtained a certification of English language proficiency at a level of at least **B2**.



- Over the three years, the candidate must have conducted research and training activities at highly qualified foreign Universities or research institutions for a minimum of **six months**, as required by the Regulations for Ph.D. Programs at the University of Cagliari.
- The candidate must have presented their research work at least once at an international event (e.g., conferences, workshops, Ph.D. symposiums, or seminars organized by foreign Universities).
- Completed at least **four different types of supplementary activities** listed in Section 4, including those already considered for admission to the third year.

6. Authorizations

Doctoral candidates are required to seek authorization from the Academic Board, through the coordinator, for the following activities:

- Participation in missions (e.g., research trips, conferences, or workshops);
- Teaching assignments;
- Enrollment in courses from master's degree programs or online courses.

Note: The Academic Board reserves the right to approve exceptions to these regulations for valid scientific or personal reasons.