

Università
della
Svizzera
italiana

Faculty
of
Informatics

Regulations for the PhD Programme

2010

The present Regulations come into force on 30 March 2010
and replace the previous set dated 11 October 2005.



Art. 1. **Purpose**

1. The PhD program of the Faculty of informatics at the Università della Svizzera italiana (USI) promotes the development of professionals interested in academic or industrial research careers.

Art. 2 **PhD Program** **Structure**

1. The PhD program is structured according to

Duties. They define the activities that each PhD student performs as a service to the Faculty.

Competencies. They define the general skill set required by all graduates of the program.

Milestones. They are visible achievements for both the student and the Faculty to assess the progress towards graduation. Students must achieve all milestones along the timeline described in Section 5 to remain in the program and graduate.
2. Each PhD student is affiliated with an *academic advisor*, a *research advisor*, and possibly one or more *research co-advisors*.
3. It is the responsibility of the Faculty to guarantee that students graduating with a PhD degree have achieved the goals of the program. Students determined by the Faculty as not making sufficient progress may be asked to leave the program.
4. It is the responsibility of each Faculty member to give their advisees enough opportunities to develop the required competencies and to guide them towards achievement of the required milestones.

¹ The terms of masculine gender used in these regulations always refer also to the corresponding feminine term.

**Art. 3
PhD Program
Director**

1. At least one member of the Faculty serves as *PhD program director*.
2. The PhD program director is responsible for the general oversight of the program, as delegated by the Faculty, and for reviewing and approving the students' milestones.
3. The Dean of the Faculty is responsible for reviewing and approving the milestones of the students advised by the PhD program director.

**Art. 4
Academic
Advisors**

1. Academic advisors are responsible for ensuring that their advisees meet all the requirements of the PhD program.
2. Only regular members of the Faculty can serve as academic advisors.

**Art. 5
Research
Advisors
and Research
Co-Advisors**

1. Research advisors are responsible for supervising the dissertation work of their advisees.
2. Only regular and adjunct members of the Faculty can serve as research advisors.
3. When students have an adjunct member of the Faculty as their research advisor, a regular member of the Faculty must serve as their academic advisor.
4. A PhD student may have one or more research co-advisors, who may or may not be members of the Faculty. The Faculty must approve research co-advisors who are not regular or adjunct members of the Faculty.

**Art.6
External
Research
Advisors**

1. External Research Advisors can be appointed for a duration of 4 years by the Faculty. The appointment can be renewed.
2. A condition for the appointment is that the candidate has successfully co-supervised at least one PhD student in the Faculty.

Cap. II Admission & Leaves

**Art. 7
Prerequisites
for Admission**

1. Admission into the PhD program is with official consent of the Faculty of Informatics subject to the general rules and procedures of the University.
2. To be admitted, the prospective PhD student must have completed a Master degree in computer science, informatics, mathematics, or a closely related field prior to joining the program (but not necessarily prior to applying to the program).

**Art. 8
Time Frame and
Admission
Process**

1. An *admission committee*, chaired by the PhD program director, reviews the applications at least twice per year and recommends a list of candidates to be accepted into the program. Final admission decisions may be subject to the availability of funds to support each student.
2. Applications are considered according to the following annual schedule:
 - Application deadline: November 1 / May 1
 - Notification date: January 1 / July 1
 - Ideal starting date: March 1 / September 1

**Art. 9
Debits**

1. Students applying to the program with a Master degree in computer science, informatics, mathematics, or closely related disciplines will be accepted into the program with a debit of 0 to 30 ECTS, to be gained at the beginning of the PhD studies.
2. Students applying to the program with a 4-years Bachelor degree in computer science, informatics, mathematics, or closely related disciplines will be accepted into the program with a debit of 60 ECTS, to be gained at the beginning of the PhD studies.
3. The admission committee assesses the debits for each applicant on a case-by-case basis, taking into account the background and the intended field of research of the applicant.

**Art. 10
Leave of
Absence**

1. A PhD student may request an unpaid leave of absence of up to one year, which must be approved by the student's advisors and the PhD program director.

**Cap. III
Duties****Art. 11
Teaching and
Mentoring**

1. Teaching is an integral and formative component of the PhD program. PhD students are expected to serve as teaching assistants and undergraduate student mentors according to the needs of the Faculty as determined by the Dean.

Cap. IV Competencies

Art. 12 Depth of Knowledge

1. PhD students must demonstrate the ability to acquire *depth of knowledge* by performing doctoral research in a chosen area of informatics, leading to the dissertation.

Art. 13 Breadth of Knowledge

1. PhD students must demonstrate the ability to acquire *breadth of knowledge*, an understanding of the basic principles, achievements, and research problems of areas outside the domain of their dissertation. This gives students a broader perspective on informatics as an intellectual discipline as well as better chances to interact with colleagues outside their area of research.
2. Each student must demonstrate general knowledge in at least two areas out of the following list:
 - Algorithms and Complexity
 - Architecture and Organization
 - Computational Science
 - Discrete Structures
 - Graphics and Visual Computing
 - Human-Computer Interaction
 - Information Management
 - Intelligent Systems
 - Net-centric Computing
 - Operating Systems
 - Programming Languages
 - Software Engineering
 - Statistics & Data Science
 - *At most one other area approved by the Faculty*

¹ European Credit Transfer System

3. Students must obtain 12 ECTS¹ credits, using the following means:

PhD Courses. These are courses offered by the Faculty to students pursuing a PhD at the Faculty. The course Introduction to Doctoral Studies is mandatory for first year PhD students. PhD students must obtain at least 50% of the breadth requirement through PhD courses and cross-listed MSc courses.

Cross-listed MSc courses. Master courses may be cross-listed as PhD courses. For PhD students such courses may have a different value in ECTS from the one associated to the Master course.

Minor option. This is a research project (e.g., an internship) conducted under the guidance of someone other than the research advisor or co-advisor. A maximum of 6 ECTS can be obtained through the minor option.

The attendance of other knowledge-fostering events, such as Summer/Winter schools, conference tutorials, reading groups, etc. A maximum of 2 ECTS for each such option can be counted towards the breadth requirement.

The attendance of courses at other USI faculties or universities.

4. The PhD director must approve the fulfilment of the breadth requirement.
5. Students must fulfil the breadth requirement before their dissertation proposal review.

Cap. V Milestones

Art. 14 Research Prospectus

1. Typically within the first year the student must prepare the *research prospectus*².
2. The research prospectus outlines the research area in which the student intends to perform research, and describes initial work performed by the student.
3. The research prospectus should be no more than 4 pages in length (excluding bibliography).
4. The research prospectus must be submitted to the prospectus review committee at least one week before the *prospectus review*.

Art. 15 Research Prospectus Review

1. The PhD program director forms the *prospectus review committee*, composed of the academic and research advisors and two additional regular or adjunct members of the Faculty appointed by the PhD program director.
2. The PhD student schedules together with the review committee the date and time of the review, and sends the prospectus title and abstract to the Dean's Office so that the review can be announced.
3. The student discusses the prospectus with the review committee. The student's research advisor chairs the prospectus review. The discussion may be supported by a presentation lasting no more than 15 minutes. The ensuing discussion is open-ended and can last as long as needed.
4. After the review the committee deliberates on its outcome and gives feedback to the student using the research prospectus review form one of the following recommendations on the research prospectus:

² A LATEX template can be found at <https://www.desk.usi.ch/en/regolamento-degli-studi-di-dottorato-moduli-e-template-facolta-di-scienze-informatiche>

Pass: The prospectus was judged of sufficient quality. The student is asked to take into account eventual comments of the committee and can continue the PhD studies.

Repeat: The prospectus was judged of insufficient quality. The student is asked to resubmit and discuss the prospectus as early as possible, taking into account the comments of the committee. This outcome is possible only once.

Fail: The committee recommends that the student be asked to leave the PhD program. The review committee chair must notify the PhD director, who will present the case to the Faculty.

5. Students must pass the prospectus review within 18 months from the beginning of the PhD studies. Failure to do so results in the exclusion from the PhD program.

Art. 16 Dissertation Proposal

1. Typically within the first two years the student must prepare the *dissertation proposal*³.
2. The dissertation proposal describes the hypotheses of the research, the prior and related work in the area, the research methods to be employed, a partial results that provide evidence of viability and relevance of the research, a plan for validating or evaluating the results of the research, a *timeline of the work performed since the beginning of the PhD*, and a schedule for conducting and completing the work.
3. The dissertation proposal should be no more than 20 pages in length (excluding bibliography).
4. After the student has written the dissertation proposal to the satisfaction of the research advisor, the dissertation proposal must be submitted to the internal committee at least one month before the *proposal review*.

Art. 17 Dissertation Proposal Review

1. The PhD advisor(s) propose a *dissertation committee* to the PhD director, who will check if the proposed people are eligible, and then presents - together with the research advisor - the committee to the Faculty for approval. After approval by the Faculty, the advisor invites the members of the committee.
2. The members of the dissertation committee review the student's dissertation proposal, provide technical advice, and judge both the dissertation and the outcome of the PhD defense. The dissertation committee consists of an *internal committee* and an *external committee*.

³ A LATEX template can be found at <https://www.desk.usi.ch/en/regolamento-degli-studi-di-dottorato-moduli-e-template-facolta-di-scienze-informatiche>

- The internal committee is composed of the research advisor and two other regular or adjunct Faculty members.
 - The external committee is composed of at least one research domain expert from outside the Faculty. The recommended number of external members is 2-4.
3. The student schedules the date, time, and location of the review together with the internal committee, and sends the proposal title and abstract to the Dean's Office so that the review can be announced.
 4. The student discusses the proposal with the internal committee. The discussion may be supported by a presentation lasting no more than 30 minutes. The discussion is open-ended and can go on as long as needed.
 5. The student's research advisor chairs the proposal review.
 6. The internal committee gives feedback to the student and a recommendation on the proposal, using the dissertation proposal review form. The possible recommendations are:

Pass: The proposal was judged of sufficient quality. The student is asked to take into account eventual comments of the internal committee and then submits the proposal to the external committee, who will in turn judge it.

Repeat: The proposal was judged of insufficient quality. The student is asked to resubmit and discuss the proposal as early as possible. This outcome is possible only once.

Fail: The committee recommends that the student be asked to leave the PhD program. The review committee chair must notify the PhD director, who will present the case to the Faculty.
 7. The chair submits the completed form to the Dean's Office. The Dean's Office hands the form to the PhD program director who signs it and returns the form to the Dean's Office to enter it into the student's file. The Dean's Office sends a copy to the student, who then discusses the comments with the research advisor.
 8. After a successful internal review the chair informs the external reviewers about the evaluation procedure and collects the individual evaluation reports. These reports can be written in any form, but have to explicitly express a pass/repeat/fail judgment as specified in Art. 17.6. The reports will be sent to the research advisor who discusses the comments with the PhD student, which may lead to changes in the proposal. Once all outcomes are pass, the student produces the final version of the proposal, to be signed by the research advisor and the PhD program director (who signs it after examining all completed forms and reports). The signed proposal together with all the reports is submitted to the Dean's Office to enter it into the student's file.

Art. 18 Doctoral Dissertation

9. The dissertation committee must accept the dissertation proposal within 36 months from the beginning of a student's PhD studies. Failure to do so results in the exclusion from the PhD program.
1. The student writes a doctoral dissertation ⁴, which is a book-length presentation of significant research contributions. The dissertation demonstrates the student's ability to perform scholarly research in a specific field of informatics. Upon completion, the student should be an expert in the topic area of the dissertation.
2. Each dissertation committee member is expected to prepare a detailed report on the dissertation, indicating if the criteria stated in Section 1.1. (process guidelines) have been satisfied, and, if not, what modifications are necessary. Each committee member provides comments and makes one of the following recommendations:

Pass: The committee members may make this recommendation for a dissertation that is either accepted as fully satisfactory to the degree, or which may require correction of deficiencies in addition to minor typographical errors, but which are not of sufficient importance to warrant submission for re-examination. Such amendments would be minor editing of the script (e.g., spelling, punctuation, grammar, tables or figures to be revised, etc.), the insertion of additional information, or the clarification of points in the text. In addition to such corrections, further amendments might include rewriting and/or reworking certain aspects of the text as specified by the dissertation committee. The changes should not entail further experimental work or substantial re-writing of the thesis. Such changes would be carried out to the satisfaction of the research advisor.

Repeat: This recommendation is to be used when the dissertation contains flaws that have the potential to affect its substantive conclusions, but shows some merit which may, by a limited amount of further work (a maximum of one year) under approved supervision, be sufficiently improved for re-submission. The dissertation may require further work in any or all areas, e.g., further experimental work, further statistical analysis, major expansion of the literature review, etc. The dissertation committee should give clear, detailed guidelines as to what the candidate has omitted or misinterpreted. The reasons for making this recommendation should stand scrutiny in an appeal process.

The revised dissertation will normally be resubmitted within twelve months. A dissertation deferred for such a major revision previously may not be deferred again, but shall be passed or failed.

⁴ LATEX template can be found at <https://www.desk.usi.ch/en/regolamento-degli-studi-di-dottorato-moduli-e-template-facolta-di-scienze-informatiche>

Fail: The dissertation contains substantial flaws that are irredeemable. The dissertation committee makes this recommendation for a dissertation when a limited amount of additional work or modification will not raise the dissertation to an acceptable standard, and it is clear that the candidate has not presented sufficient evidence to warrant the award of the degree. The dissertation committee is requested to detail as fully as possible the reasons for this recommendation in the report. These reasons should stand scrutiny in an appeal process. The thesis cannot be re-submitted for the same degree.

3. Each dissertation committee member may also indicate if any part of the report is to be restricted. In such a case, that part of the report is to be marked "In Confidence"

Art. 19 Dissertation Defense

1. PhD students defend their dissertation during a formal examination by the dissertation committee.
2. All members of the dissertation committee must attend the defense in person or in teleconference. At least one external committee member must be present in person at the defense.
3. The dissertation committee reports one of the following outcomes of the dissertation defense to the PhD program director:

Pass: The student has defended the doctoral work to the satisfaction of the committee and needs to submit the final version of the dissertation to the PhD program director, possibly after making minor changes to the dissertation text.

Repeat: The student is required to perform some additional and substantial research work to the satisfaction of the committee. The committee determines whether to delegate the final approval of the dissertation ("Pass") to the research advisor, or whether to require another dissertation defense.

Fail: The student must begin the research again at the point of writing (or modifying) a dissertation proposal for approval of the dissertation committee.

4. In case the committee cannot agree on an outcome of the defense, the judgments of the individual members of the committee are reported to the PhD program director who, in consultation with the committee, determines the outcome.
5. The dissertation committee members can recommend a thesis to be considered for the best thesis award of the academic year. The award is assigned by a committee chaired by the PhD program director.

1. Guidelines for PhD Dissertation Committee Members

Dissertation committee members are expected to be active in research and scholarship, thus ensuring that their knowledge of the field is up to date, and should be familiar with the supervision and examination process of PhD theses. The dissertation committee members are invited to examine a PhD dissertation by the PhD program director. The committee members and the advisor are asked to individually and independently assess the dissertation and prepare brief assessment reports for the guidance of the candidate.

1.1. Criteria for Doctor of Philosophy

The PhD degree is normally undertaken over the equivalent of 3-5 years full-time candidature, which is spent primarily undertaking a supervised program of original research. The program provides training and higher education, with the aim of producing graduates able to conduct research independently at the highest levels of originality and quality. The PhD is a recognition of successful research experience at the standard used internationally in that discipline.

In the dissertation, the candidate is required to demonstrate:

Knowledge of the literature relevant to the dissertation

The candidate should demonstrate to have become sufficiently familiar with the relevant body of literature to be able to make a critical assessment of the present state of knowledge in the subject. While not all references in the field must be included, the list should be reasonably complete and include the key references in the relevant area.

The ability to design an investigation, and to gather and analyze information

The candidate should present evidence to have been trained in the techniques relevant to the field of research and to be able to apply and adapt these techniques to other research projects. The candidate should show to have satisfactorily designed, undertaken and concluded an investigation in the nominated field of research. The

aim of the research should be described clearly and the study design should be appropriate for the aim and for the field of study. The dissertation should show that the techniques adopted were appropriate to the subject matter and were applied properly.

The ability to present information in a manner consistent with publication in the relevant discipline

The dissertation should communicate the purpose and results of the research in a concise, logical and effective manner, by presenting them in a manner and at a level appropriate for publication in the field of the research. The dissertation must be written clearly, accurately and cogently, and all sources must be documented fully. The quality of English and general presentation should be of a scholarly standard, suitable for publication. The dissertation should be free of typographical and grammatical errors.

Critical appraisal of own work relative to that of others

The candidate should show to have recognized the limitations of the study and should justify fully any conclusions. The dissertation should demonstrate the candidate's ability to assess the contribution of the own original work to the state of knowledge of the discipline and the more defined area of study, by identifying key references from the literature for comparison with the results of the research.

A significant and original contribution to knowledge of fact and/or theory

While it is difficult to assess what constitutes a "significant contribution", one way of gauging if a candidate's work meets this expectation is to consider the extent to which the dissertation is publishable. Normally a satisfactory PhD dissertation would be expected to form the basis of at least one article in a recognized international research journal, conference proceedings or, in some disciplines, a monograph from a specialist publisher. It would be helpful for the dissertation committee member to offer an opinion on the publishable content of the dissertation. However, the dissertation should not be failed solely because similar work conducted simultaneously elsewhere has resulted in prior publication, unless such simultaneous work could be reasonably expected to be known to the candidate.

"Originality" may be shown in several ways. For example, a candidate may have posed an important new problem, have formulated an existing problem in a novel and useful way, investigated previously ignored material, offered new and significant insights about issues which have been examined by other researchers, developed new techniques for investigating issues or have applied appropriate techniques to a new set of problems. Replications of previous investigations would be acceptable only if they incorporated important new elements in the design or execution of the investigation.

Independent and critical thought. The candidate should demonstrate the ability to conceive original ideas for further investigation from independent, critical examination of the literature, to state clearly the central theme or argument, to develop this theme

systematically and to assess the results of those investigations in a critical manner, relative to the work of others.

The capacity to work independently of supervision

The originality and significance of the contribution to the field, and the rigour of the independent, critical thought should be high enough to suggest that the candidate can initiate and conduct independent research leading to publication in a scholarly journal or equivalent.

2. Guidelines for the Organization of a PhD Dissertation Defense

2.1. Before the Dissertation Defense

A dissertation defense can only take place after all thesis assessment reports have been received by the research advisor, and the PhD program director agrees with proceeding with the defense. A defense has to take place at USI and cannot take place on public holidays. The more senior of the two internal committee members chairs the defense.

At least two weeks before the date of the defense the Dean's Office sends an announcement with the date, time, location, the list of the dissertation committee members, and the title and abstract of the dissertation.

At least one week before the date of the defense the Dean's Office must send the thesis assessment reports to the chair.

2.2. The Dissertation Defense

All members of the dissertation committee must attend the defense in person or in teleconference. At least one external committee member must be present in person at the defense. The defense chair checks that this quorum is reached before starting the defense. If the quorum is not reached, the defense has to be rescheduled.

The chair is in charge of the conduct of the defense, which takes place according to the following process:

1. The chair introduces the student and the members of the dissertation committee to the public.
2. The student present the work in a talk lasting no more than 45 minutes. Only members of the dissertation committee are allowed to ask questions during the talk. The chair moderates the questions and makes sure the talk does not go overtime.
3. At the end of the talk the chair ask the members of the dissertation committee for any further question they might want to pose the student. This part of the defense is open-ended and can go as long as needed. The chair moderates the questions and the ensuing discussion.
4. Only after the dissertation committee has finished, members of the public can ask additional questions, moderated by the defense chair. The chair asks the members of the public and the candidate to leave

5. the room while the members of the dissertation committee deliberate on the outcome of the defense. The chair moderates the discussion and makes sure the members of the dissertation committee fill and sign the dissertation defense report at the end.

When the dissertation committee has finished deliberating, the chair

6. announces the outcome of the defense to the candidate and the public.

2.3. After the Dissertation Defense

The research advisor is in charge of making sure the student makes all the requested changes to the dissertation within a reasonable time frame.

The student must summarize in a document the changes made to the thesis. The document must be signed by both the advisor and the PhD program director.

1. After the student has made all the requested changes to the satisfaction of the research advisor, a bound copy of the dissertation is passed to the PhD program director, who carries out a final check, signs it, and passes it to the Dean's Office.

2. After this final check the student can submit to the library a copy of the dissertation in PDF format, for inclusion in the ReroDoc database⁵.

Only after these final actions does the student acquire the doctoral title.

⁵ See instructions at: https://en.bul.sbu.usi.ch/information/phd_thesis

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