



# Rules for the Ph.D. Program in Computer Science at Reykjavik University.

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# 1. Introduction

These rules describe the objectives and requirements of the international Ph.D. program in Computer Science at Reykjavik University. These rules are according to the Ph.D. rules for the university (see: [Rules on doctoral studies | Reykjavik University](#) ), but in some cases, these rules are more detailed than the university rules.

The objective of the program is to prepare students well for leading careers that build on research and development both in academia and in industry. Moreover, the aim is to educate responsible, ethical, innovative, and thoughtful researchers that carry on the legacy of Reykjavik University, through their future careers.

The official language of the program is English.

## 2. Degree

Upon successful completion of the Ph.D. program, Reykjavik University confers the title Doctor of Philosophy (Ph.D.) in Computer Science (ís. Doktor í tölvunarfræði) on the student that has successfully defended their thesis.

## 3. Program Coordination

The program is managed and coordinated by the Research and Graduate Study Council (RGSC) of the Department of Computer Science (DCS).

The RGSC handles any exceptional issues that cannot be resolved by students and their supervisor(s). Students may apply for exceptions to these rules to the RGSC. Such exceptions should have strong justification and must be agreed upon by the student's supervisor(s). The Department chair of the Department of Computer Science has the final authority in all matters that cannot be resolved by the RGSC.

## 4. Admission Procedure

Applicants should at minimum have completed an MSc. degree in Computer Science, or a related area, before entering the Ph.D. program. In the M.Sc. program, the applicant must have demonstrated strong potential for further graduate studies. According to the National Qualification Framework for higher education, a master's degree requires 90-120 ECTS of studies at the master level including a final project of at least 30 ECTS.

After having found a supervisor, the student must contact the department's graduate program administrator in order to submit an application to the Ph.D. program electronically. Each application must be accompanied by the following documentation:

- Confirmation of the MSc. degree, or expected graduation date, as confirmed by the applicant's institute or supervisor(s).
- An official transcript of the applicant's graduate and undergraduate program, together with a statement of the ranking of the applicant with respect to other graduates from the programs, if available.
- Three letters of recommendation from faculty members or others familiar with the applicant and the applicant's work (two letters are the rule of thumb).
- A "statement of purpose" written by the student, which includes an outline of the research plan and research direction that the applicant wishes to pursue, as well as a proposal for a particular faculty member(s) to supervise and co-supervise the doctoral thesis work.
- Any additional information that can aid in the assessment of the strengths and weaknesses of the applicant.
- For non-native English speakers, TOEFL scores, or comparable certifications, are strongly recommended.

All applications are reviewed by the RGSC, which makes a recommendation on acceptance or rejection to the Departmental chair, as well as determines whether students need to take any preparatory courses. The RGSC may request additional documents if necessary. The recommendation is based on student qualifications, the commitment of a qualified supervisor(s), and the availability of funds for supporting the Ph.D. student in his work. The Departmental chair makes the final decision. The student is notified of the decision and its justification in writing. Upon admission, a written contract is made among the student, the supervisor(s), and the Department of Computer Science. The contract specifies the student's research duties

and, where applicable, other duties such as teaching, as well as the support and facilities that will be available for the student. A response to an application for admission to the Ph.D. programme shall be made within two months of its submission. If an application for admission to doctoral studies is rejected, a statement of the reasons shall accompany the response.

## 5. Ph.D. Student

Ph.D. students should accept that the degree requires them to work towards intellectual independence within a supportive supervisory environment. As Reykjavik University's and the Department of Computer Science's most senior students, candidates must demonstrate a high level of commitment and personal initiative. They should expect to take the lead in most matters pertaining to the project, adhering to the principles that theirs is the main responsibility for the conduct and progress of the research. Ph.D. students should ensure that they are familiar with the regulations and procedures of the Ph.D. program at the DCS. Moreover, the responsibility includes following ethical guidelines and to involve the relevant stakeholders during the Ph.D. work. It is essential that Ph.D. students accept that, just as is a requirement of the supervisor(s) to provide advice and constructive criticism, necessary for the Ph.D. students to listen when such advice and criticism are offered. Ideally, this should take the form of a constructive dialogue, but there will, inevitably, be times when this is the source of some tension. In cases where such dialogue is proving difficult or impossible, this must be addressed as soon as possible within the Ph.D. student and supervisor(s) team. In case conflicts arise that prove unfit for solving within the Ph.D. student and supervisor(s) team, then the RGSC should be consulted.

The Ph.D. student responsibilities:

- to work independently, ethically, and responsibly.
- to be familiar with the Ph.D. rules of Reykjavik University and the Department of Computer Science.
- to schedule regular meetings with supervisor(s).
- to contribute to the research environment by cultivating a good research spirit.
- to meet all major milestones mentioned in the DCS Ph.D. rules.
- to follow the Vancouver rules of authorship, and include supervisors and others in the work.

## 6. Supervisor(s)

The primary supervisor must be a recognized expert in the intended area of thesis work and an active participant in the international research community in that field. The primary supervisor must be a faculty member (Professor, Associate Professor, or Assistant Professor) at the Department of Computer Science at Reykjavik University, holding a Ph.D. degree. Ph.D. supervision is performed as detailed in the contract described in Section 4. The supervisor must be available to the student on a regular basis. The supervisor must make every reasonable effort to give the student enough insight into the research area, pointers for reading, and facilities for conducting research, to allow the student to understand the research area, plan the research and finish the thesis. Moreover, the supervisor should also guide the Ph.D. student toward becoming a responsible researcher, and act as an ethical guardian of the work (in case there are ethical approvals to be sought for the planned research, the supervisor submits the ethical approvals). Each Ph.D. student has at least one supervisor and can have more than one supervisor, which acts as a primary supervisor and co-supervisor(s). The co-supervisor(s) may be external to the Department of Computer Science, but must also hold a Ph.D. degree and be a recognized expert in the intended area of thesis work. In case the main supervisor moves from the Department of Computer Science, a co-supervisor is assigned by the RGSC from within the department. The same rule applies in cases if the main supervisor is on leave or for some reason not located within Iceland for at least a year. All supervisors share the responsibility to aid the Ph.D. students in planning ways to fulfill the responsibilities of the Ph.D. students listed here above and to, upon successful defense of the Ph.D. thesis, sign off on the completion of the list above.

The primary supervisor is responsible:

- for securing funding for the Ph.D. student's salary, travel, publications, and equipment as stated in the contract described in Section 4. In exceptional cases, the Department of Computer Science may cover necessary costs.
- for proposing a thesis committee and examiner(s).
- for checking on the student and the committee members meeting milestones/deadlines.

All supervisors are equally responsible:

- for advising the student on their research.
- for providing insights on publication paths and guidance in future career development.
- for providing access to the supervisor(s) extended international network.
- for the Ph.D. students to become well versed in writing papers as well as reviewing papers written by others.

## 7. Double Degrees

A double Ph.D. degree issued by the Reykjavik University and another recognized university can be considered if the student is under joint supervision by a member of the Department of Computer Science and a faculty member of the other university. This can only be done on the basis of a contract with the other university that specifies the manner in which the rules and regulations of both universities will apply to the particular student and thesis and how cost and intellectual property issues are to be handled. The contract shall be reviewed by the RGSC and signed by the Department chair of the Department of Computer Science. If a double Ph.D. degree is awarded by Reykjavik University and another university, the transcripts or diploma issued by Reykjavik University shall explicitly mention the fact that the degree is a double degree.

## 8. Thesis Committee

The role of the thesis committee members is to guide the student toward the completion of the research. Aside from attending presentations and reviewing all documentation, as laid out in Section 9 below, each committee member has an advisory role and should attempt to communicate advice to the student as promptly as possible.

The thesis committee should be formed within 9 months of the start of the student's doctoral studies. The thesis committee is appointed by the RGSC after suggestions from the Ph.D. student's supervisor(s). The committee must consist of at least three members, who must be recognized experts in the intended area of thesis work and active participants in the international research community in that field. At least one thesis committee member must be external to the Department of Computer Science. In case of the co-supervision, the thesis committee must have at least two members other than the supervisors. The primary supervisor chairs the thesis committee. At least one of the thesis committee members must have prior experience in supervising Ph.D. students. Gender balance must be considered when forming the thesis committee in accordance with the rules in place at RU.

The thesis committee should ideally stay the same throughout the student's studies but can be changed if necessary. In that case, the new committee needs to be approved by the RGSC.

# 9. Academic Requirements

The Ph.D. program comprises 180-240 credits (ECTS). The program should be completed in four years or less. If the Ph.D. student wishes to extend the study period, then the Ph.D. student has to apply for such an extension to the RGSC.

International research collaboration is an important aspect of the Ph.D. program. Ph.D. students that have done their entire graduate studies in Iceland ought to spend at least three months at a foreign university or research laboratory. Furthermore, all Ph.D. students are encouraged to demonstrate significant international collaboration, e.g., as evidenced by active participation in joint international research projects or publications.

The successful graduate must adhere to the learning outcome of Ph.D. programs in Iceland: Icelandic Qualification Framework for Higher Education - ENICNARIC Iceland. The first condition is met through the breadth requirements described in Section 9.1 below; the remaining conditions are satisfied through the thesis work and verified in the evaluation process.

## 9.1 Breadth Requirements

All students must demonstrate a sufficient breadth of knowledge, both in computer science and in their chosen area of research. This is achieved through coursework requirements and a demonstration of research area knowledge during thesis proposal defense. The coursework requirements are as follows. Each student must pass (or have passed) the course “T-701-REM4 Research Methodology” or equivalent. Each student must pass (or have passed) the equivalent of one graduate course (at least 6 ECTS) from each of the following three major areas of Computer Science: Systems, Applications, and Theory. Students with insufficient background in Computer Science prior to entering the Ph.D. program may be required to complete preparatory courses from the undergraduate and/or graduate program at Reykjavik University. This should nominally be completed before joining the Ph.D. program but can in some cases (in dialog with RGCS) be completed during the program.

In those cases, then the student and Ph.D. supervisor(s) must create a plan for addressing these coursework requirements. This plan must then be reviewed by the RGSC. Generally, all courses ought to be finished within the first year. Courses may be taken at Reykjavik University, at cooperating institutions or at summer schools. Once the plan has been executed, the RGSC reviews the results. The supervisor(s) should submit a list of courses to RGSC that need to be finished (if any) or demonstrate that the student has fulfilled this requirement within 3 months of the acceptance into the Ph.D. program.

## 9.2 Thesis Proposal Defense

Before the end of the first year, the student must submit a research proposal to the thesis committee with a copy to RGSC, which must contain the following:

- Background and motivation for the work.
- Well-defined plan for research (with publication plan if applicable), including topics to study.
- Initial results, techniques, and/or ideas.
- List of references, which includes the reading list.

Following the proposal submission, a thesis proposal defense date is set by the supervisor(s). The thesis proposal defense consists of a short open presentation by the Ph.D. student, followed by a closed session with the thesis committee. The closed session includes an examination of the research area knowledge, as well as an examination of the proposed research plan. The thesis committee then convenes to determine whether the Ph.D. student is considered qualified to continue.

The committee may conclude that the Ph.D. student has passed the defense, failed the defense, or that major revisions are required in order to continue the work. In the case of major revisions, a second thesis proposal defense must be scheduled within three months, where the Ph.D. student either passes or fails. In the case of a second failure, the Ph.D. student must leave the Ph.D. program.

## 9.3 Thesis Progress Report

Before the end of the second year (and each year after that), the Ph.D. student must submit a research progress report to the thesis committee and the RGSC. The thesis progress report can be accompanied by an open seminar with the thesis committee. However, this is not a requirement. The report should include an update of the thesis proposal and contain the following:

- Updated background and motivation for the work;
- Substantial and up-to-date related work on the topic at hand;
- Updated plan for research (with publications if applicable), including topics to study;
- Intermediate results, techniques, and/or ideas.
- Preliminary discussions of the findings.
- Updated list of references.

Upon submission of the research progress report, the thesis committee reviews the report and gives comments to the Ph.D. student. In case of an unsatisfactory report, a second progress report may be requested within three months. If the progress is again unsatisfactory, the Department chair of the



Department of Computer Science may expel the Ph.D. student from the program, based on the recommendation of the RGSC.

## 9.4 Dissertation

Before graduation, the Ph.D. student submits a dissertation. The dissertation must present a coherent and significant body of original individual research work, which in quantity and quality matches or exceeds the expectations of the thesis committee and matches the learning outcomes. In the case of joint research work, the Ph.D. student must submit letters clearly stating the contributions made by the student, and those contributions, by themselves, must satisfy the requirements for significance, quality, and quantity.

The format of the dissertation can either be a monograph or a collection of peer-reviewed articles with the necessary introductory material (a cover text) to tie the peer-reviewed articles together and provide all the required content. In either case, the dissertation must be a coherent, well-structured document that details the research work and results, gives a complete overview of the existing state of the art, context, and prior work, and makes clear claims about the impact and contributions of the work.

The dissertation must be written in English. The format and binding of the dissertation are determined by the Department of Computer Science (see library rules <https://bokasafn.ru.is/computerscience/phd> and template).

## 9.5 Thesis Defense

After having reviewed the thesis, the thesis committee decides whether the thesis is feasible for defense. The decision must be announced to the Ph.D. student together with the comments on the thesis.

A thesis defense committee is formed by the supervisor(s) and the thesis defense committee suggestion is reviewed by the RGSC. A thesis defense committee consists of the thesis committee and one or more examiners. The thesis examiner must be external to Reykjavik University, but must otherwise meet the requirements for supervisor(s). The role of the thesis examiner(s) is to offer an independent assessment of the quality of the submitted Ph.D. dissertation. Hence the thesis examiner(s) must not have been involved in any of the research work presented in the thesis. The thesis examiner(s) attends the thesis defense and assists the thesis committee in making a decision on the success or failure of the thesis in meeting the thesis requirements.

The defense starts with an open presentation made by the Ph.D. student lasting at most 45 minutes, followed by 15 minutes of open questions from the audience. The thesis defense committee holds a closed session with the Ph.D. student. The whole defense should not take more than two hours.

The thesis defense must be attended by the thesis examiner(s), as well as the supervisor(s) and at least one other thesis committee member. Committee members that are unable to attend the defense may send a list of questions and/or suggestions to the student and supervisor(s) ahead of the defense.

In case the defense committee finds the thesis and/or the defense lacking, the committee can award the Ph.D. student as follows:

- In case of serious flaws the committee can fail the thesis without the option of resubmission.
- In case of flaws in the structure or lack of academic rigor the committee can request a resubmission of the thesis with a 6 - 12 month period for the student to work out the defined flaws. After the resubmission, a second (and final) defense will be held.
- In case of minor flaws the committee can award a Ph.D. degree with an extended period of refinement, 3 – 6 weeks, where the thesis committee will validate changes made before publishing.
- In case of no flaws the committee can award the Ph.D. degree right away.

The student has a right to a full written explanation of the defense committee's decision in case of failure or flaws found in the thesis and/or defense of the dissertation. The decision of the defense committee is final and cannot be challenged.

Once the final version of the dissertation is produced, taking into account any comments by thesis defense committee members, the version must be signed by all thesis defense committee members. The Ph.D. student must provide two printed and bound copies of the final dissertation, with thesis committee signatures and a library release form, to their supervisor(s). The student must also provide a digital version of the dissertation to the supervisor(s), for publication on the Reykjavik University website.

## 9.6 Deadlines

The reading list and coursework plan must be ready within three months of the Ph.D. student starting the Ph.D. program.

The thesis proposal must be presented by the end of the first year.

The progress report must be presented by the end of the second year (and each year after that).

The thesis must be defended by the end of the fourth year (or after the completion of the 180 ECTS). However, in case of parental leaves or exceptional circumstances, the period can be extended by the RGSC. The thesis defense process may start at any time before that, upon suggestions made by the supervisor(s). The Ph.D. student must meet the following deadlines:

- Dissertation delivered to thesis committee 8 weeks before the defense.
- Thesis committee comments delivered to Ph.D. student 6 weeks prior to the defense date.
- Dissertation delivered to thesis examiner(s) and the thesis defense committee 4 weeks before the defense.
- The printed version needs to be handed in no later than 2 months after the thesis defense.

In the case of major revisions, a revised dissertation must be submitted and a second defense held, following again the schedule above (see Section 9.5). The Ph.D. students are responsible for meeting all deadlines listed herein but the Ph.D. supervisor(s) are responsible for paving the way.

## 10. Tuition, Support, and Facilities

Ph.D. students must be registered for fall and spring semesters during their Ph.D. studies. As a rule, a Ph.D. student at the department works full-time at the department, is paid a salary, at a rate fixed university-wide, and does not pay any tuition. The salary is generally funded by a research project of the supervisor(s) or the Ph.D. student. In some cases, the department may cover the salary. The funding source for the salary (for at least the first year of the study, but ideally its full duration) must be determined before the student is admitted. If a Ph.D. student's salary is paid by the department, this may come with a requirement for teaching assistance duty of a maximum of 20% of the time, with no additional pay. If a Ph.D. student whose salary is paid by a project assists in teaching, they get paid extra for this service.

For all students that are paid a salary, the department generally arranges and covers the cost for:

- a desk, a chair, and a physical workspace,
- a computer and screen,
- access to the building, computer network, printers, etc.

Support for necessary conference travel (travel costs, conference fees, open access publication fees), software licenses, books, and similar should generally be covered by a research grant or the supervisor(s) research funding.

Tuition, support, and facilities for students that have their own funding or funding from a third party must be negotiated on a case-by-case basis with the Department of Computer Science. In any case, such students must demonstrate that they have funding for the intended duration of their studies.

# 11 Effect

These rules take effect immediately.