

Univerza v Ljubljani
Fakulteta za *računalništvo in informatiko*



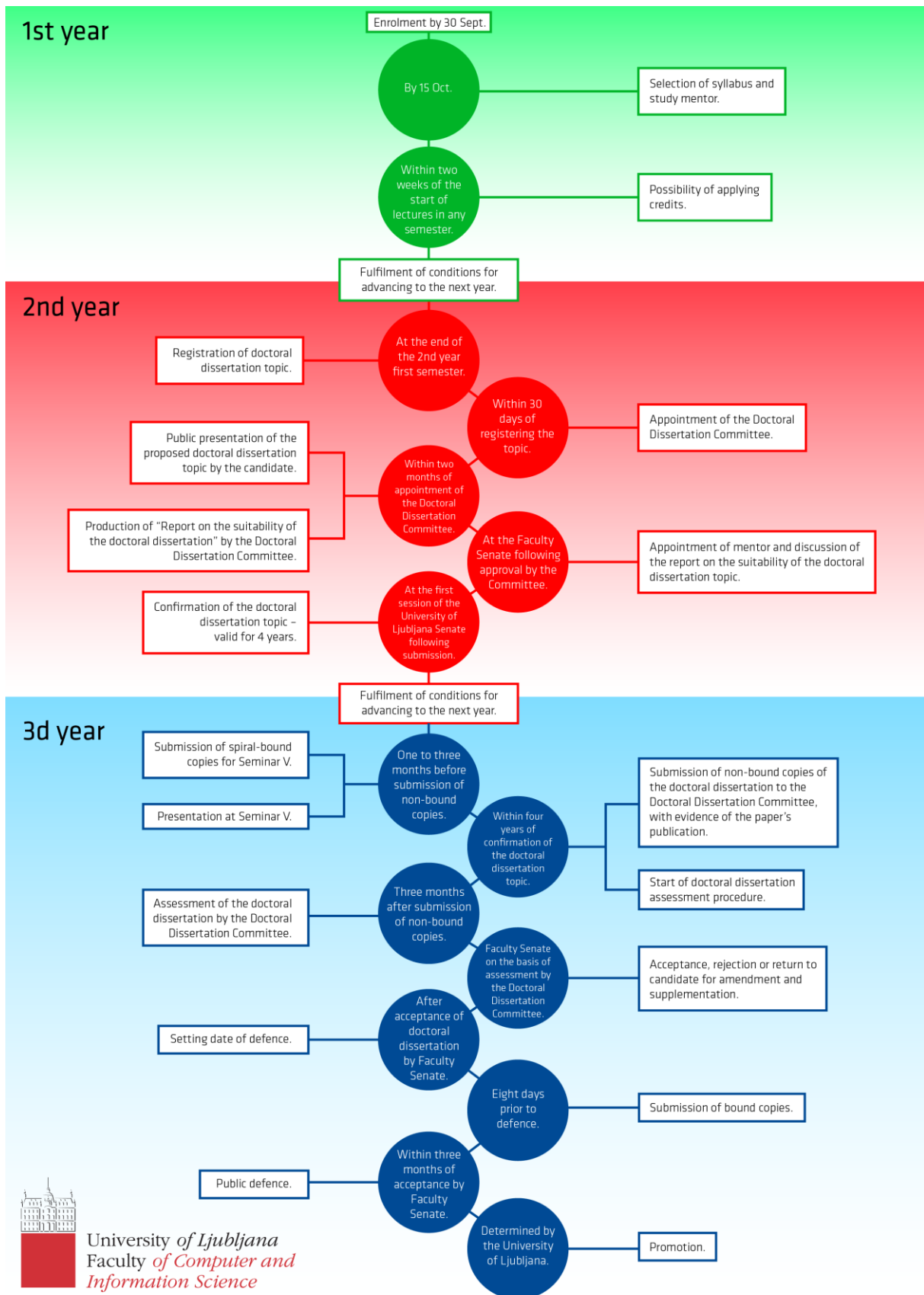
**INSTRUCTIONS FOR
DOCTORAL STUDIES IN COMPUTER AND INFORMATION SCIENCE**

FACULTY OF COMPUTER AND INFORMATION SCIENCE

October 2015

The Instructions were adopted by the Research and Doctoral Studies Committee on 29 October 2015 and enter into force on the date of publication on the website.

PROGRESS OF DOCTORAL STUDIES IN COMPUTER AND INFORMATION SCIENCE



University of Ljubljana
Faculty of Computer and Information Science

BOLOGNA DOCTORATE PROGRAMME AT THE FACULTY OF COMPUTER AND INFORMATION SCIENCE

The doctorate programme lasts three years and covers a total of 180 ECTS credits, of which 60 credits are for taught course units, and 120 credits are for individual research work together with the preparation of the doctoral thesis.

The title doctor of science may be obtained by anyone who successfully completes the requirements of the study programme and successfully defends their doctoral thesis in public. Doctoral candidates must publish at least one scholarly article in the field of their doctorate, covering the original scientific contributions of the candidate, in a journal indexed by the SCI. The doctoral candidate must be the lead author of the article. The scholarly article must be published or accepted for publication before the doctoral thesis is submitted for evaluation.

The procedure for acquiring the academic title doctor of science at the University of Ljubljana Faculty of Computer and Information Science (FCIS) is guided, managed and supervised by the Research and Doctoral Studies Committee (the Committee), which is headed by the Vice-Dean for Research (the Vice-Dean).

ADMISSION REQUIREMENTS

Enrolment in the doctoral programme is open to candidates who have completed:

- a second-cycle study programme,
- an integrated master's programme consisting of 300 ECTS credits,
- a programme leading to an academic higher education qualification, adopted before 11 June 2004,
- a study programme leading to a master's degree following the completion of a programme leading to an academic higher education qualification,
- a professional higher education programme adopted prior to 11 June 2004 and a study programme leading to a specialisation. Prior to enrolment, such candidate must meet requirements totalling at least 60 ECTS credits from the second-cycle programme in Computer and Information Science. The study requirements (selection of subjects) is determined for such candidate by the Faculty's Academic Affairs Committee, which takes into account the candidate's field of education (type of programme the candidate has completed).

The admission requirements for students from abroad are the same as for Slovenian citizens, provided they have completed an equal level of education abroad. Where a candidate has obtained education abroad, prior to enrolment they must complete the procedure for recognition of education for the purpose of continuing their studies in Slovenia, which serves to demonstrate the equal value of the previously acquired education abroad.

APPLICATION AND SELECTION PROCEDURE

Candidates apply for the doctoral studies programme by submitting an admission form by the close of the application period. They must attach with the form:

a certified photocopy of their diploma and annex to the diploma or certificate from the higher education institution,

- a curriculum vitae (personal data, work experience, education and training, knowledge of languages, prizes and awards, collaboration on projects and research work; a

bibliography including articles published in journals and conference proceedings, and information on external examinations passed, e.g. the GRE test),

- a certificate of average exam and tutorial grades at undergraduate and postgraduate level,
- a decision recognising their qualifications or their equivalency for the purpose of continuing studies, where the candidate has completed undergraduate or postgraduate studies abroad,
- a cover letter (which should also include a research plan),
- two letters of recommendation (from mentors at university or work/work placement, teachers in undergraduate programmes, other experts in computer and information science).

In the event that the number of candidates exceeds the number of available places, a selection procedure will be carried out. The selection of candidates will be based on average study grades (50%) and the bachelor's or master's thesis grade (50%).

A matriculation agreement will be concluded with the selected candidates. The tuition fee is set according to the regularly updated price tariff of the University of Ljubljana.

RECOGNITION OF KNOWLEDGE AND SKILLS ACQUIRED BEFORE ENROLMENT

Recognition may be given for knowledge and skills candidates have acquired prior to enrolment in the doctoral programme.

Upon enrolment in the doctoral studies programme, candidates with master's of science degrees are granted up to 60 ECTS credits.

Based on presented documents of non-formal education (project, design, invention, patent, publication of copyright work, certificate), candidates may be granted up to 30 ECTS credits towards elective subjects in the programme.

Upon enrolment, candidates submit an application for recognition of knowledge and skills acquired before enrolment in the doctoral programme. These applications will be processed by the Committee.

Together with such applications, applicants must enclose certificates showing the content and scope of the work invested, so that knowledge and skills can be evaluated under the ECTS system.

CONDITIONS FOR PROGRESSION THROUGH THE PROGRAMME

To progress to the second year, students must accumulate at least 55 ECTS credits, of which 20 credits derive from taught course units that must include the following first-year subjects:

- successful completion of one in-depth subject (5 credits),
- successful completion of Scientific Skills I (5 credits),
- successful completion of Seminar I and Seminar II (5 credits + 5 credits = 10 credits),
- successfully completed research in the first year, demonstrated by a positive report from the mentor (35 credits).

Students must meet all requirements totalling at least 115 ECTS credits to advance to the third year. Those requirements include:

- the successful completion of all first-year subjects (25 credits),

- successfully completed research in the first year, demonstrated by a positive report from the mentor (35 credits),
- successfully completed research in the second year, demonstrated by a positive report from the mentor (40 credits),
- successfully completed in-depth second-year subject (5 credits),
- successful completion of Seminar III and Seminar IV (5 credits + 5 credits = 10 credits),
- an approved doctoral thesis topic.

SYLLABUS SELECTION

The student chooses the syllabus in agreement with the selected mentor on enrolment. Students must obtain the approval of the mentor for any later changes to the syllabus. Students must make any changes to the syllabus before a specific subject is begun.

Students usually complete the requirements of the year within one academic year. Students wishing to complete a year over a longer period than one academic year may transfer the pursuit of subjects offered at the FCIS to the next academic year. Students must give notice of the transfer of a subject in advance to the Student Office no later than two weeks after the start of lectures in each semester.

In-depth elective subjects are generally offered every other year at the FCIS. First-year students may request one or two additional elective in-depth subjects, if it/they will be offered in the current academic year, but not in the next year.

MENTOR SELECTION

Prior to enrolment or at the latest upon enrolment in the doctoral study programme, students choose a mentor. The choice of mentor is confirmed by the Vice-Dean.

The selected mentor and possible co-mentor must fulfil the conditions for mentoring set out in the Rules for Doctoral Studies.

In the event that a doctoral thesis has an interdisciplinary topic, or where the mentor is not employed full-time or as an adjunct at the FCIS or University of Ljubljana, the FCIS will appoint a co-mentor.

The mentor (and possible co-mentor) guide the doctoral candidate, providing expert advice relating to the formulation of the doctoral thesis and working to ensure an appropriately scholarly level of the thesis.

Students have the option of changing their mentor (or co-mentor) by the start of the third semester, upon prior written agreement of the new mentor (or co-mentor). The change of mentor (or co-mentor) is confirmed by the Vice-Dean on the basis of the student's application submitted to the Student Office.

Appointment of the selected mentor/co-mentor is finalised in the procedure of confirming the topic of the doctoral thesis.

REGISTRATION OF DOCTORAL THESIS TOPIC

Students register the topic of their doctoral thesis in the second year of study, at the end of the first semester, by submitting to the Student Office a completed "Registration of doctoral thesis topic" form together with annexes. The registration form and annexes are submitted in three written copies and in electronic form.

In the event that students wish to write their doctoral thesis in English, they must submit to the Student Office a request with grounds for writing their thesis in English, and must also submit two copies of the topic registration in English. Students may write their doctoral theses in English if they, their mentor, co-mentor or a member of the Doctoral Thesis Committee are non-Slovenian.

Registration of the doctoral thesis topic may be written only in English if the student is non-Slovenian.

CONFIRMATION OF DOCTORAL THESIS TOPIC

Within 30 days of registering the topic of the doctoral thesis, on the proposal of the Committee the FCIS Senate in its expanded composition will appoint a Doctoral Thesis Committee, which monitors doctoral students from the stage of determining the suitability of the doctoral thesis topic to the assessment of the thesis and its defence.

Within 50 days of the appointment of the Doctoral Thesis Committee (DTC), the student makes a public presentation of the proposed doctoral thesis topic. The date and location of the public presentation are coordinated by the Student Office.

Each member of the DTC assesses the suitability of the topic by filling in the "Expert opinion" form. The DTC composes a "Report on the suitability of the doctoral thesis topic" within two months of its appointment. The report also proposes the student's mentor (and possibly also the co-mentor, in accordance with the rules on appointing a co-mentor).

Members of the DTC may communicate remarks to students even in the stage of assessing the doctoral thesis proposal. Students must respond to such remarks within one month. Even if a student does not respond to the remarks, the DTC will write a report.

The positive report on the suitability of the doctoral thesis topic and proposal of mentor are confirmed by the Committee and submitted to the FCIS Senate. The FCIS Senate discusses the topic of the doctoral thesis and appoints the mentor and possible co-mentor.

If the report from the DTC is negative or contains reservations, the Committee may decide that the student must change the topic, amend the registration or in some other way heed the DTC's remarks within one month. Student responses are reviewed by the DTC, and within one month it will submit a written assessment of the corrections, as an addendum to the DTC report. This assessment is once again discussed by the Committee. If the assessment is positive, the DTC report is sent together with evidence to the FCIS Senate for deliberation. If the report is negative, the Committee rejects the topic and duly notifies the FCIS Senate.

Following discussion of the doctoral thesis topic in the FCIS Senate, the DTC report is sent together with evidence to the University of Ljubljana Senate for deliberation, and following prior discussion in the University Committee for Doctoral Studies, the University Senate will grant approval for the topic.

The topic will be valid for four years from approval by the University of Ljubljana Senate.

PRODUCTION OF DOCTORAL THESIS

Doctoral theses must contain independent and original contributions to science. A doctoral thesis may be a component part of group work, if the candidate's contribution can be determined unambiguously.

Candidates who for justifiable reasons cannot deliver their doctoral thesis within the topic's period of validity, may request an extension, but for no more than one year. Such request is addressed to the FCIS Senate and submitted to the Student Office. If a candidate has not submitted a doctoral thesis in due time, and has not requested an extension prior to the expiry of the deadline, this means that they have withdrawn the registered topic.

Doctoral theses must be written in accordance with the Instructions for producing doctoral theses, and based on the outline sample accessible on the FCIS website. Theses must contain a summary in Slovenian and English, a table of contents, an introduction setting out the contributions to science, the body text, conclusion, a statement of originality and authorship of the thesis, a list of references used and index. The candidate is responsible for the content and the stylistic and grammatical accuracy of the language. References to the literature and the list of references must follow the bibliographic rules. Following submission of the doctoral thesis in electronic form, the work will be scanned using a programme to detect plagiarism.

Doctoral theses are to be written in Slovenian or English. Students may write their doctoral thesis in English upon prior approval of the FCIS Senate and University of Ljubljana Senate if they, their mentor, co-mentor or a member of the Doctoral Thesis Committee are non-Slovenian. In such case the introduction, conclusion and an extensive summary must also be provided in Slovenian.

PREPARATION OF DOCTORAL THESIS BASED ON ARTICLES

Doctoral theses may be prepared on the basis of at least three works by the candidate in the form of articles or papers in the field of computer and information science on the specific topic of the thesis, which have already been published or accepted for publication in journals referenced in the SCI database and in terms of impact factor (IF) are categorised in the upper half of the scale in at least one technical field. For at least three works included, the candidate must be the sole lead author.

For already published articles and papers, where necessary the candidate must request from the publisher the right to use the published work to prepare the thesis. For work that has been accepted but not yet published, the candidate must attach to the doctoral thesis a letter from the editor regarding acceptance of the article for publication and a written statement that the text of the article in the doctorate is identical to the text in the accepted work.

The form of the doctoral thesis based on articles and papers must fully observe the prescribed sample outline and the requirements for producing a doctoral thesis at the FCIS. The doctoral thesis must contain at least the following sections:

- An "Introduction" with a presentation of the area of study and the motivation for carrying out the research work, along with an indication of the independent and original contributions to science.
- The section "Review of published works", which in the introductory part briefly presents the content of the candidate's included papers and articles, and which in the case of articles with several co-authors, clearly defines the substantive contribution of the lead author, i.e. the candidate. The text should link the content of the articles together logically so that it will be evident that, together with any additional sections,

they make up a coherent whole. The principal concept, theoretical background and the contributions of each of the candidate's articles should be described in brief sub-sections.

- Articles serving as the basis for the doctoral thesis should be included in the thesis such that each article constitutes its own section. Articles should be included in the language in which they were published. If a doctoral thesis is written in Slovenian, the headings of sections will be Slovenian translations of the articles' titles. These sections may be formatted in accordance with the rest of the thesis text or in the same format as in the journal that published them. Attention should be paid here to the font and the font size, and the format and size of the illustrations in order to ensure proper legibility of the thesis.
- In addition to the articles, sections may also describe the candidate's research work that is not reported in the incorporated articles, but represents an important part of the candidate's research on the doctoral thesis topic. If the included articles in themselves make up a complete unit, these sections are not necessary.
- The "Discussion" and "Conclusion" may be provided as separate sections or as a joint section.
- The "References" – the list of cited bibliographical units – should contain only works that are cited in the sections of the doctoral thesis not made up by included articles.

Where a doctoral thesis is produced in English, candidates must obtain appropriate approval for this from the competent authorities in such a way that it is identical to that used for a doctoral thesis not prepared on the basis of articles. In such case the introduction, conclusion and an extensive summary must also be provided in Slovenian.

Candidates who wish to prepare a doctoral thesis using articles and papers must obtain approval from the FCIS Senate before submitting the non-bound thesis. Candidates are to submit written applications, addressed to the FCIS Senate, to the Student Office at the FCIS, and at the same time submit applications with articles via e-mail in PDF format. Applications must contain a reasoned request for the preparation of the doctoral thesis using articles and papers, with an indication of the articles and independent contributions by the candidate for each article. All articles must be attached to the application.

Applications will first be processed by the Committee, which then submits its opinion to the FCIS Senate.

SEMINAR V – PRELIMINARY DEFENCE

Prior to assessment of a doctoral thesis, the candidate must give a public presentation in Seminar V. This seminar is intended for the presentation of the candidate's research work during doctoral studies, which will afford members of the Doctoral Thesis Committee detailed insight into the candidate's work.

The requirement for admission to Seminar V is the completion of all study requirements except for Seminar V and the defence of the doctoral thesis. Candidates are to give a presentation in Seminar V at most three months and at least one month before the planned submission of non-bound copies of the doctoral thesis.

At least one month before the envisaged Seminar V presentation, candidates must request a date at the Student Office. Candidates must attach to the application a PDF of the doctoral thesis and as many spiral-bound copies as there are members of the Doctoral Thesis Committee. The Student Office will notify the mentor and coordinate the date of the presentation with members of the DTC and the Vice-Dean. The Student Office will notify the

candidate, mentor and members of the DTC of the date, and will publish a notice of the public presentation on the FCIS website.

Attendance at the Seminar V public presentation is compulsory for the mentor and members of the DTC (attendance may also be via video-conference). Before the seminar, each member of the DTC will make a thorough study of the submitted version of the doctorate, and on the form “Seminar V – critical assessment of committee member” they will provide a critical descriptive assessment, questions and proposals for amendments. At this stage the DTC performs the most in-depth analysis of the doctoral thesis.

Candidates will give a 20–30-minute presentation of their doctoral thesis topic, the research work they have done and the results of that work. They should emphasis in particular the original scientific contribution of the research, the positioning of contributions relative to related research and they should provide a critical assessment of the results. During the presentation, members of the DTC will pose key substantive questions and offer suggestions for improvement of the candidate’s research. The presentation will be followed by possible questions of others attending.

Following the public presentation, others in attendance will withdraw. This is followed by an in-depth discussion, closed to the public, between the candidate and members of the DTC regarding key substantive issues, the candidate’s knowledge of the research field, the originality of the scientific contributions and critical suggestions for improvement of the doctoral thesis.

Based on responses to the questions and the in-depth discussion, the DTC will assess the originality of the scientific contributions, the position of the contributions relative to related research, the evaluation of results, the structure of the presentation and the candidate’s ability to respond competently to the questions. They may recognise and point out possible deficiencies or errors and call on candidates to clarify selected aspects of their research. This enables the candidates to incorporate their remarks into the doctoral thesis.

In the “Seminar V – assessment of committee” form the DTC gives its assessment and additional remarks that the candidate should take into consideration in preparing the corrected version of the thesis. The assessment is positive if the DTC determines that corrections are not necessary, or if it requires corrections that the candidate can make within two months. In the event of a negative assessment, the candidate must correct the thesis appropriately and undertake Seminar V once again. The re-submitted doctoral thesis must be accompanied by a description of the changes made, and the candidate must explain how the remarks of DTC members were taken into account.

ASSESSMENT OF DOCTORAL THESIS

Once the candidate has successfully completed Seminar V, published an article in the field of the doctoral thesis in a journal with impact factor and concluded the writing of the thesis, on the basis of the mentor's approval the doctoral thesis may be submitted in the academic information system. The doctoral thesis must be set up in its final form. Following submission, the doctoral thesis is scanned for plagiarism. A report on the results of reviewing the suitability of the doctoral thesis is received by the mentor via e-mail. If the doctoral thesis is deemed suitable, the student then submits one non-bound copy of the thesis and published articles in the Student Office. Articles will also be submitted electronically as PDF files. In addition to the doctoral thesis, the candidate will also submit a description of the changes made, and the candidate must explain how the remarks of DTC members given in Seminar V were taken into account.

In submitting the doctoral thesis the candidate must submit evidence that the article has been published in an internationally recognised journal indexed by the SCI, or evidence that such article has been accepted for publication. The candidate must be the lead author of the article.

The DTC will give its written assessment generally within one month (at the latest within three months) of the submission of non-bound copies of the doctoral thesis.

Based on the submitted written assessments the FCIS Senate will accept, reject or return the doctoral thesis to the candidate for amendment, and in so doing it will set an appropriate deadline. In the event of a request for supplementation, the candidate will submit a corrected version plus a description of how the specific remarks of the DTC were taken into account. The candidate may correct or amend the doctoral thesis only once. In the event of corrections, each member of the DTC will once again review the work and submit to the FCIS Senate a new assessment, which must be either positive or negative. If the candidate fails to correct the thesis within the set deadline, it will be rejected.

Based on the submitted positive reports, the Student Office will organise the date of defence of the doctoral thesis in agreement with the members of the DTC, the mentor, possible co-mentor and the Dean or Vice-Dean.

After the acceptance of the doctoral thesis in the FCIS Senate, the Student Office determines the serial number of the doctoral thesis and communicates this to the candidate. The candidate attaches the serial number to the final copy of the doctoral thesis, as determined in the sample outline for formulating doctoral theses at the FCIS.

In submitting bound copies of the doctoral thesis, the candidate must attach a "Statement of authorship", containing permission in accordance with the Copyright and Related Rights Act (*Official Gazette of the Republic of Slovenia*, No 21/1995 and amendments) for the publication of the doctoral thesis on the faculty website.

The FCIS will publish the electronic version of the doctoral thesis in its collection "FCIS Works", which is accessible in the digital library of the University of Ljubljana and on the faculty website.

DEFENCE OF DOCTORAL THESIS

Upon acceptance of the doctoral thesis in the FCIS Senate, the FCIS Senate may appoint additional members to the Doctoral Thesis Committee.

The mentor, possible co-mentor, members of the DTC and the Dean or Vice-Dean will be present at the defence of the doctoral thesis.

Upon acceptance of the assessment of the thesis, the candidate submits a bound thesis to the DTC for defence. The candidate must submit bound copies of the doctoral thesis at least 8 days prior to the planned defence. The number of copies must be three more than the number of members of the DTC. The candidate must also submit the doctoral thesis electronically in PDF format.

The public defence of the doctoral thesis is generally performed within one month, and at the latest within three months, of the day the thesis was accepted by the FCIS Senate. The date, time and place of the defence must be published on the FCIS website and on the University of Ljubljana website.

The candidate must defend the doctoral thesis before the DTC and the Dean or Vice-Dean, and the mentor and possible co-mentor will also be present. The defence procedure is conducted by the Dean or Vice-Dean. The defence will be conducted in Slovenian, but if the candidate or a DTC member is non-Slovenian, it will be conducted in English.

The defence begins with a presentation of the candidate (biographical details), a presentation of the procedures to date in obtaining a doctorate and with a reading of the summary of the doctoral thesis assessment. The candidate then gives a 20–30-minute presentation of the doctoral thesis. Following the presentation of the doctoral thesis, members of the DTC and the Dean pose questions to the candidate. Following the DTC questions, those present will also have the right to pose questions.

After the defence, the DTC convenes with the Dean, and a decision on the success of the doctoral thesis defence is then adopted and written up. The decision must contain the name of the doctoral candidate, the title of the thesis, the date of defence and the questions posed during the defence. After the meeting the chair of the DTC pronounces the DTC's decision to the candidate and those present.

Following successful defence of the doctoral thesis, the Student Office notifies the University of Ljubljana Doctoral Studies Office of the promotion to doctor of science and sends it the record of the defence with annexes.

The Student Office at the FCIS keeps a list of awarded doctorates of science, and the library keeps one copy of every doctoral thesis.

For theses that are especially successful scientifically, on the proposal of the Committee the Dean may issue special praise to the candidate. The number of such "summa cum laude" works amounts to less than 10 percent of the total {2.

PROMOTION OF DOCTORATE OF SCIENCE

The promotion of new doctors of science is a public event and is conducted by the Rector or Vice-Rector of the University of Ljubljana.

The candidate advancing to the doctorate must complete a Statement of personal data.

REVOCAION OF DOCTORATE OF SCIENCE

A doctorate of science degree is revoked if it is found that the doctoral thesis is not the result of the candidate's own creative effort and achievements.

A motion for revocation of a doctorate of science may be given by any person with justified suspicions regarding the authenticity of the achievements or results of the doctoral thesis.

The procedure of revoking a doctorate of science is defined in the Statutes of the University of Ljubljana.

ANNEXES

A constituent part of these instructions is the annexes provided as forms and accessible on the FCIS website.

Form 1: Withdrawal from subject

Form 2: Application to complete a subject in advance

Form 3: Registration of doctoral thesis topic

Form 4: Expert opinion

Form 5: Report on the suitability of the doctoral thesis topic

Form 6: Seminar V – assessment of DTC

Form 7: Statement of submission of doctoral thesis

Form 8: Statement of authorship and permission for publication

Form 9: Statement of personal data

Research
and Doctoral Studies Committee