



Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Department of Biosystems (D-BSSE)

Detailed stipulations regarding the doctorate of 27 January 2022

This English translation serves information purposes only and has no legal force. The original German version is the legally binding document.

The ETH Zurich Executive Board,

at the request of the Department of Biosystems of ETH Zurich¹ and pursuant to Art. 52 of the Ordinance on the Doctorate ETH Zurich of 23 November 2021²,

hereby decrees the following detailed stipulations regarding the doctorate:

Section 1 – General

Art. 1 Scope and purpose

¹ These detailed stipulations govern the department-specific details for the doctorate at the Department Biosystems (D-BSSE) at ETH Zurich. They are based on the fundamental provisions of the Ordinance on the Doctorate ETH Zurich (DO) of 23 November 2021³ and on the Rector's Implementation Provisions (IP) for the ETH Zurich Ordinance on the Doctorate of 23 November 2021⁴.

² The measures described below intend to contribute to the quality assurance of the doctoral theses at the D-BSSE. Decisive for the quality of the doctoral theses are the doctoral students and their supervision, as well as the project topic.

Art. 2 Doctoral Committee (cf. DO Art. 4)

The doctoral committee consists of:

- a. At least three full or associate professors of the D-BSSE. They represent the three basic disciplines of experimental biology, engineering and computational sciences.
- b. The department coordinator. She or he has no voting rights.

¹ Resolution of the D-BSSE department conference of 7 December 2021 (approval of the detailed stipulations).

² SR 414.133.1

³ SR 414.133.1

⁴ RSETHZ 340.311

Section 2 – Admission to the Doctorate

Art. 3 Doctoral plan (cf. DO Art.11, IP item 3)

The doctoral plan must be submitted to the aptitude committee and the doctoral administration of the D-BSSE at least four weeks before the date of the aptitude colloquium. A template provided by the D-BSSE must be used for the doctoral plan.

Art. 4 Aptitude colloquium (cf. DO Art. 12-15, IP item 4)

¹ The aptitude colloquium consists of:

1. a 30-minute presentation by the candidate on the planned research project and
2. an oral examination.

² The aptitude committee examines the candidate's suitability to independently conduct a research project and to write a doctoral thesis. The subject of the examination is the research project described in the doctoral plan.

³ The physical presence of the aptitude committee as well as of the candidate at the aptitude colloquium is not mandatory. Alternatively, the participants can be connected via video conference. In this case, two-way communication in video and audio must be guaranteed for the entire duration of the examination. The examination chairperson and the persons connected are responsible for the functioning of the video link. If two-way communication via video or audio is not or is no longer possible, it is the duty of the examination chairperson to interrupt the colloquium and to organise a date to resume it. The examination chairperson decides whether to restart the colloquium from the beginning, or whether it can be resumed at the point of interruption.

Art. 5 Aptitude committee (cf. DO Art. 16)

¹ The aptitude committee consists at least of:

- a. a member of the doctoral committee or a full or associate professor of the D-BSSE,
- b. the doctoral thesis supervisor and
- c. the second advisor.

If other second advisors or co-examiners are registered, they are also part of the aptitude committee.

² The person referred to in subparagraph (a) takes over the chair.

Section 3 – Supervision of the doctorate

Art. 6 Second Advisor

¹ The following persons can be second advisors:

- a. an active professor of a university, or
- b. a person who has proven expertise in the subject area of the doctoral thesis and is equivalent to a professor therein.
- c. Postdocs and senior scientists. They can act as additional second advisors.

² Second advisors who are not ETH professors must be confirmed by the Department Conference.

Section 4 – Individual doctoral studies

Art. 7 Regular doctoral studies (cf. DO Art. 34, IP item 10)

¹ Doctoral students must acquire at least 12 ECTS credits during their doctoral studies, with one credit corresponding to 25-30 hours of study (Art. 35 DO). The scope and details of the doctoral studies must be discussed and determined with the supervisor. If doctoral students are uncertain about the creditability and assessment of the course unit they wish to take, they must consult the departmental coordinator. This should be done before registering the course unit. The departmental doctoral committee is considered the final authority that decides on the recognition of ECTS credits. The departmental coordinator issues the confirmation of the acquisition of the ECTS credits required for the doctoral studies.

² For the doctoral studies at the D-BSSE, performance must be delivered in each of the following three areas:

- a. Consolidation of knowledge in the research area of the doctoral thesis and the extension of knowledge beyond the discipline.

All courses with performance assessment offered in the course catalogues of ETH Zurich, the University of Zürich, and the University of Basel are available for selection. The ECTS credits are awarded according to the information in the course catalogue.

Doctoral students must acquire at least six credit points in this section.

- b. Acquisition of transferable skills.

Doctoral students must acquire at least one ECTS credit by attending a course on ethics and good scientific practice. Moreover, transferable skills can be acquired by attending «soft skills» courses or by participating in committees or commissions of ETH Zurich.

At the D-BSSE, one ECTS credit per year can be earned for active participation in the "*Verein des Mittelbaus*" (VMB). For this, at least 25 hours of relevant working time must be completed. For this purpose, the VMB Board draws up a list of doctoral students and submits it to the doctoral committee by 15 October of each year. The doctoral committee decides on the proposal. A maximum of two ECTS credits can be acquired.

- c. Integration into the scientific community.

This is done e.g., by attending international summer schools and conferences. Participation in such events will only be credited if doctoral students provide evidence that they have presented a poster, given a lecture or taken part in an exercise: One ECTS credit can be credited for participation in events lasting up to three days, and two ECTS credits can be credited for participation in longer events.

³ The following also applies to the recognition of academic achievements:

- a. at least 4 weeks before submitting the written doctoral thesis, doctoral students must submit an overview of their doctoral studies to the departmental coordinator;
- b. all documents confirming participation in the offers according to lit. a – c as well as the corresponding performance records must be enclosed.

Art. 8 Thesis committee meetings

¹ Mandatory thesis committee meetings take place before the end of the fourth and fifth year and are organised by the doctoral student.

² At the end of the second and/or third year, voluntary thesis committee meetings may also take place, if requested by either the doctoral student or the thesis supervisor.

³ The thesis committee consists at least of:

- a. the supervisor of the doctoral thesis,
- b. the second advisor (other registered second advisors are also part of the thesis committee);
- c. the registered co-examiners.

At least one member must be from outside the D-BSSE.

⁴ The D-BSSE provides a template for recording the minutes of the thesis committee meeting. The thesis committee meeting can only replace the first part of the annual status conversation (scientific progress), but not the second part (appraisal, career and personal development), which takes place confidentially between the supervisor and the doctoral candidate.

Section 5 – Doctoral thesis and Doctoral examination

Art. 9 Research Integrity and Good Scientific Practice

The guidelines for research integrity and good scientific practice at ETH Zurich of 14 November 2007⁵ apply to all doctoral theses at ETH Zurich.

Art. 10 Cumulative doctoral thesis (cf. IP item 11.2)

¹ The decision on the format of the written doctoral thesis is made by the doctoral student with the approval of the supervisor of the doctoral thesis.

² Published manuscripts or manuscripts submitted for publication may be included in the doctoral thesis - brought together by a suitable framework text with introduction and summary - if the examination committee can clearly assess the independent scientific contribution of the doctoral candidate on this basis. The doctoral thesis must be written in a consistent style. A succession of already-published articles in the various layouts of the respective publishers is

⁵ RSETHZ 414

not permitted. In the case of publications that are the result of collaboration between several doctoral students and are therefore to be included in several doctoral theses, the individual authors' own contribution must be clearly recognisable. A corresponding indication of possible use in a further doctoral thesis must be written. Such a publication must clearly fit into the main topic of the doctoral thesis.

Art. 11 Composition of the examination committee (cf. DO Art 40)

The examination committee consists of:

- a. a chairperson;
- b. the doctoral thesis supervisor as examiner;
- c. at least one co-examiner and
- d. a further independent expert if there is any relationship of dependence between the supervisor and the co-examiner(s) or the doctoral students and the co-examiner(s). Employment relationships within the last five years are considered dependent relationships.

Art. 12 Notification and confirmation of co-examiners (cf. DO Art. 40, IP item 11.3)

¹ At least one co-examiner must come from outside ETH Zurich. The following are eligible:

- a. an active professor from another university, or
- b. a person, who is a proven expert in the area of the doctoral thesis and is equivalent to a professor in this (e.g., a research director from a research institution in the ETH domain, a Max-Planck institute or a Centre National de la Recherche Scientifique).

Persons from universities of applied sciences or from the private industry with the corresponding expertise are not included among the persons mentioned under point 2. However, they may additionally be included in the examination committee.

² All external co-examiners and internal persons, who are not professors, must be confirmed once by the departmental conference before registering for the doctoral examination. If one of these persons is already confirmed as second advisor, this obligation does not apply.

Art. 13 Registration for doctoral examination, dates for submission of deposit copies and the evaluation reports (cf. DO Art. 39, IP item 11.4)

¹ The doctoral student has the form „Registration for Doctoral Exam“ and other relevant documents signed by the departmental coordinator.

² The doctoral student registers for the doctoral examination with the doctoral administration office of the academic services. Registration can only take place with the consent of the supervisor of the doctoral thesis and after consultation with the co-examiners. Registration takes place at least four weeks before the examination date with a printout of the title page and the official form of the Academic Services.

³ Doctoral students submit an electronic copy of the doctoral thesis to the members of the examination committee and the d-BSSE doctoral administration at least four weeks before the doctoral examination.

⁴ The evaluation reports of the examiner and the co-examiners must be submitted to the coordinator at least five working days before the examination date.

Art. 14 Doctoral examination (cf. Do Art. 39, IP item 11.6 and 11.7)

¹ The doctoral examination consists of:

- a. a 30-minute presentation by the doctoral student on the most important results of the thesis.
- b. an oral examination of at least 60 minutes by the examination committee. The questions relate to the subject area and the results of the doctoral thesis and should also place the research work in a broader scientific context. The chairperson of the examination committee conducts the oral examination.

² The presentation and oral examination will be conducted in English, unless otherwise agreed between all parties.

³ The doctoral examination is in principle open to the public. If the examination committee wishes to hold a non-public doctoral examination, this must be justified and the D-BSSE department coordinator must be informed four weeks before the date of the examination is set. Reasons for holding a non-public doctoral examination may include that the doctoral thesis contains results that are subject of legally pending patent proceedings. The examination chairperson decides whether questions from the public are permitted. Answers to questions from the audience are not included in the examination evaluation.

⁴ The physical presence of the examination committee as well as of the doctoral student at the doctoral examination is not mandatory. Alternatively, the participants can be connected via video conference. In this case, two-way communication in video and audio must be guaranteed for the entire duration of the examination. The examination chairperson and the person connected are responsible for the functioning of the video link. If two-way communication via video and/or audio is not or is no longer possible, it is the duty of the examination chairperson to interrupt the examination and to organise a date to resume it. The examination chairperson decides whether to restart the examination from the beginning, or whether it can be resumed at the point of interruption.

Section 6 – Final provisions

Art. 15 Transitional provisions for individual doctoral studies

For doctoral students who complete their individual doctoral studies under the old law in accordance with DV Art. 65, the provisions set out in Annex 1 shall apply.

Art. 16 Entry into force

These detailed stipulations come into force on 01.01.2022. They replace the detailed stipulations of the D-BSSE on doctoral studies of 01.09.2009.

Application of the salary rates

The application of the salary rates for doctoral students is carried out in accordance with Art. 8 para. 3 of the Ordinance on Scientific Personnel at ETH Zurich⁶, in conjunction with item 1 para. 3 of the Directives for doctoral students with employment at ETH Zurich⁷.

The D-BSSE promotes the fair and transparent application of the salary rates for all doctoral students. For this purpose, each professorship defines for all its doctoral students a standard salary rate (at least level 2 is recommended). If a doctoral student fulfils significant additional functions (e.g., in teaching, administration or supervision of equipment, etc.), this should be honoured by a higher salary rate.

⁶ SR 172.220.113.11

⁷ RSETHZ 622

Departement of Biosystems Science and Engineering (D-BSSE)**Detailed Regulations on Doctoral Studies**1. September 2009¹ (Stand am 1. January 2018)

Approved by the ETH Management Board on 12. December 2017.

D-BSSE issues the following detailed regulations for individual doctoral studies:

Based on Art. 23 Abs. 3 of the Ordinance on Doctoral Studies ETH Zurich" dated July 1, 2008, and the "Rector's Implementation Provisions for the Doctorate Ordinance of 17. October 2013:

Art. 1 Educational Activities

The doctoral candidates must obtain approval for their individually tailored doctoral program from their supervisor. They are required to complete at least 12 credit points during their doctorate. One credit point corresponds to a student workload of 25-30 hours (Art. 24 Abs. 2 Ordinance on Doctoral Studies ETH Zürich). One third (1/3) of these points must be collected by attending courses or other educational activities outside of the doctoral candidates' research field (Art. 25 Abs 2 of the Ordinance on Doctoral Studies). The scope and specifics of these courses have to be discussed and agreed upon with the doctorate supervisor in advance. If at any time a student is unsure about the qualifications and grading of the courses he/ she wishes to attend, the Department Coordinator should be consulted. This should be done prior to attending the courses.

Art. 2 Scope of Educational Activities

The Department of Biosystems Science and Engineering (D-BSSE) awards credit points to the Doctoral program for the courses and activities as indicated below.

- a) Any courses from the regular catalogues from the ETH Zürich, University of Zürich, or University of Basel with a performance control.
For a course unit with exam, as many credit points as ECTS points noted in the course catalogue are awarded.
For a course unit with another proof of performance than an exam: one credit point per hour/week of the lecture and exercises is awarded.
Each candidate must acquire at least 6 ECTS in this section.

- b) Summer schools and conferences
Candidates may participate in summer schools, conferences, symposia series, or other annual meetings.
Only summer schools/conferences at which the candidate presented a poster, held a presentation, or participated in exercises count towards credit points as follows:
≤ 3 days: 1 CP
> 3 days 2 CP

¹ Version with changes according to the D-BSSE Department Conference of 05.12.2017, in effect since 01.01.2018.

² SR **414.133.1**

³ RSETHZ **340.311**

Art. 3 Credit Point Validation Procedure

For the validation of academic performances:

- At least one (1) month prior to submitting the written dissertation, the doctoral candidate has to submit a performance overview of his or her doctoral program, checked and signed by the supervisor, to the D-BSSE Department Coordinator.
- All documents that confirm participation in the course activities as mentioned in Art. 2 Bst. a and b as well as documents which prove that all the required credit points have been earned successfully must be included.
- The D-BSSE doctoral committee is the deciding body on questions concerning the validity of specific credit points.

Art. 4 Confirmation of Credit Points for the Rectorate

The Department Coordinator signs a written confirmation that the candidate has earned all the credit points required. This confirmation is submitted to the Rectorate (Doctoral Administration) together with the application for the doctoral examination by the coordinator.

Art. 5 Format of Dissertation

The D-BSSE leaves it up to the mentor and the doctoral committee to decide on the format of the written dissertation. In cases where publications make up the bulk of the document, a proper introduction as well as a discussion and conclusion have to be part of such a dissertation.

Art. 6 The Examination Committee

The examination committee must be composed following the rules below:

- Each examination requires a chairperson who is not the mentor of the student being examined. Normally the head of the department, his/her deputy, or the director of studies should perform this activity.
- A total of three (3) referees or experts are needed in the examination committee. One of these three is the supervisor; the second referee must be a professor of any university; the third referee may be an internal or external person according to the general ETH rules for referees. All external referees have to be approved by the Departments Conference.

Art. 7 Finding an Examination Date

The doctoral candidate is responsible for contacting the committee and finding an examination date that suits the requirements outlined in Art. 8.

Art. 8 Preparation for the Exam

- The doctoral candidate should bring the 'Registration for Doctoral Examination' form and all the relevant documents to the Department Coordinator for signature.
- The examination committee must be given enough time to read the thesis. This means the student should provide them with a copy of the thesis at least 4 weeks before the examination date.

- All of the documents needed for the registration of the examination have to reach the ETH Doctoral Administration office at least twelve (12) days before the examination.
- Reports from at least 2 co-referees have to be submitted electronically or as a copy at least 2 days prior to the examination. Three originals, containing original signatures must be submitted to the Examination Chairperson on the day of the exam at the latest.

Art. 9. The Examination Process

The doctoral examination includes two parts:

1. A presentation of a maximum duration of 30 minutes given by the doctoral candidate, who reports on the most important findings of his/her work.
2. An oral examination of the candidate under the direction of the examination chairperson by the referee and co-referee(s). The examination questions should cover the topic(s) and results obtained during the PhD thesis as well as the broader scientific context of the work.

Both, the presentation and oral examination sections of the exam are to be carried out in English and are generally open to a public audience. If the examination committee wishes to hold a nonpublic examination, this must be duly justified and communicated one (1) month prior to fixing the examination date. Reasons for nonpublic examination may include the fact that dissertation results include information relevant to pending patenting procedures etc.

The examination chair person decides, whether questions of the general audience will be admitted. Questions of the audience will not be considered in establishing the overall examination score.

Art. 10. Physical Presence of the Examination Committee

The *minimal* Examination Committee, who has to be physically present during the doctoral examination is consisting of the chairperson and at least one co-referee.

Art. 11 Entry into force

These detailed regulations enter into force on 1. September 2009.