

**Department of Materials (D-MATL)**  
**Detailed stipulations regarding the doctorate**

of 23 November 2021

*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 Materials at ETH Zurich<sup>1</sup>, and pursuant to Art. 52 of the ETH Zurich Ordinance on the Doctorate of 23 November 2021<sup>2</sup>,

*hereby decrees the following detailed stipulations regarding the doctorate:*

**Section 1:                   General provisions****Art. 1       Scope and purpose**

<sup>1</sup> These detailed stipulations set out the department-specific provisions governing the doctorate at the ETH Zurich Department of Materials (D-MATL). They are based on the provisions of the ETH Zurich Ordinance on the Doctorate of 23 November 2021<sup>3</sup> and the Rector's Implementation Provisions for the ETH Zurich Ordinance on the Doctorate of 23 November 2021<sup>4</sup>.

<sup>2</sup> The measures described below are intended to contribute to the quality assurance of doctoral theses at D-MATL. Decisive for the quality of doctoral theses are doctoral students, their supervision and the project topic.

**Art. 2       Doctoral committee**

The composition and duties of the doctoral committee are specified in the by-laws<sup>5</sup> of the Department of Materials.

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<sup>1</sup> Resolution of the D-MATL Department Conference of 27 May 2021 (approval of the detailed stipulations)

<sup>2</sup> SR **414.133.1**

<sup>3</sup> SR **414.133.1**

<sup>4</sup> RSETHZ **340.311**

<sup>5</sup> RSETHZ **320.23**

## **Section 2: Recruitment and admission to the doctorate**

### **Art. 3 Doctoral programmes**

<sup>1</sup> D-MATL doctoral students are automatically signed up by default for the «Materials and Processes» doctoral programme (MaP Doctoral School). However, they may opt out of participating in the Doctoral School when they register for the doctorate.

<sup>2</sup> Doctoral students who have been directly admitted to the MaP Doctoral School are also admitted to the doctorate at D-MATL.

<sup>3</sup> The requirements of the doctoral programme are specified in the regulations<sup>6</sup> of the MaP Doctoral School.

### **Art. 4 Doctoral plan**

<sup>1</sup> Doctoral students, in consultation with the doctoral thesis supervisor, develop a research proposal on the topic of the doctoral thesis and summarise it in the doctoral plan. The doctoral plan includes:

- a. Objectives of and issue addressed by the thesis project
- b. Placement in the scientific context
- c. Research approach, methodology and planned progression
- d. Preliminary results

<sup>2</sup> The doctoral plan must also include details of teaching duties and any other tasks that the doctoral student will undertake in the research group (e.g. supervision of equipment, public relations). The supervisory relationships must also be stated.

<sup>3</sup> The doctoral plan must be submitted to the aptitude committee between nine and eleven months after provisional admission to the doctorate. Extensions to this deadline are only granted in exceptional cases and require the approval of the doctoral committee.

### **Art. 5 Aptitude committee**

<sup>1</sup> The aptitude committee comprises at least three members, as follows:

- A representative of the doctoral committee, usually the Head of Department or their deputy
- The doctoral thesis supervisor
- The second advisor

<sup>2</sup> If the second advisor is not an elected professor, the aptitude committee can be supplemented by an additional member. This person must be an elected or associate D-MATL professor.

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<sup>6</sup> <https://ethz.ch/content/dam/ethz/special-interest/study-programme-websites/map-doctoral-school-dam/documents/MaP-DS-Geschäftsordnung.pdf>

<sup>3</sup> The committee may include further additional members. These must be approved by the representative of the doctoral committee, if they are not elected professors or permanent scientific staff members.

## **Art. 6** Aptitude colloquium

<sup>1</sup> The aptitude colloquium takes place as early as possible, and within twelve months of provisional admission to the doctorate. At the colloquium the doctoral plan is presented to the aptitude committee in a presentation of at most 30 minutes, and is then discussed for another 30 minutes.

<sup>2</sup> The doctoral student must also be able to answer general questions about the academic background of the project.

<sup>3</sup> If the aptitude committee gives the project a positive assessment, the documents are forwarded to the doctoral committee by the D-MATL Study Administration.

<sup>4</sup> A failed aptitude colloquium may be repeated once, provided that the doctoral thesis supervisor agrees to a repetition. Repetition can only be refused if the aptitude committee unanimously assessed the first attempt as «failed».

<sup>5</sup> The aptitude colloquium may only be repeated once, between four weeks and three months after the first attempt. The deadline is determined by the aptitude committee. The committee can also ask the doctoral student to make changes to the written document (i.e. the doctoral plan).

<sup>6</sup> After the aptitude colloquium the doctoral student has the opportunity to discuss their experiences during the first year of the doctorate with the chairperson, in the absence of other committee members. This discussion is strictly confidential.

<sup>7</sup> The aptitude committee's decision and a short summary of the discussion are taken down in writing and forwarded to the D-MATL Study Administration together with a copy of the doctoral plan. The documents are also sent to the doctoral student.

## **Section 3: Supervision of the doctorate**

### **Art. 7** Second advisor

<sup>1</sup> The second advisor provides the doctoral student with additional academic mentoring and support. The doctoral thesis supervisor designates this person in agreement with the doctoral student. The second advisor must be named by the time of submission of the doctoral plan at the latest.

<sup>2</sup> The second advisor is normally a professor or a permanent scientific staff member from a different research group at D-MATL or within the ETH Domain.

<sup>3</sup> If the doctoral thesis project is conducted at the Swiss Federal Laboratories for Materials Science and Technology (Empa) or at the Paul Scherrer Institut (PSI), the direct supervisor at Empa or PSI usually assumes the role of second advisor.

<sup>4</sup> The doctoral committee may grant exceptions for second advisors who do not meet the criteria listed above.

**Art. 8** Approval of adjunct professors as doctoral thesis supervisors

Adjunct D-MATL professors are entitled to supervise doctoral theses.

**Art. 9** Progress report

Every year doctoral students must submit a scientific progress report on the current status of the project and further plans to the doctoral thesis supervisor and the second advisor. Any significant deviations from the doctoral plan must be described.

**Art. 10** Annual status conversation

<sup>1</sup> The progress report is presented and discussed orally during the first part of the annual status conversation. The respective documents or a 1-page summary of the presentation must also be given to the doctoral thesis supervisor.

<sup>2</sup> Written notes of the discussion are taken by the doctoral thesis supervisor. The supervisor and the doctoral student are both required to store copies of the progress report and the summary of the discussion until the time of exmatriculation.

<sup>3</sup> Every year the doctoral thesis supervisor conducts an additional discussion with the doctoral student, usually after the presentation of the progress report. This corresponds to the second part of the status conversation (appraisal, career and personal development). Guiding questions which may be used to structure the discussion are available. The outcome of the discussion is taken down in writing and signed by both parties.

**Section 4: Regular doctoral studies**

**Art. 11**

<sup>1</sup> Doctoral students have the right and duty to pursue continuing education as part of regular doctoral studies.

<sup>2</sup> Doctoral students must obtain at least 12 ECTS credits in three different categories during regular doctoral studies, as described in detail in item 10.3 of the Rector's Implementation Provisions for the ETH Zurich Ordinance on the Doctorate. 8 credits must be obtained within the ETH Domain.

<sup>3</sup> All doctoral students at D-MATL must obtain 1 credit in the «transferable skills» category by attending a scientific writing course.

<sup>4</sup> At least 8 credits must be acquired by attending courses or Summer/Winter Schools.

## **Section 5: Doctoral thesis and doctoral examination**

### **Art. 12 External doctoral theses**

The doctoral thesis supervisor must submit an outline of the proposed doctoral project to the doctoral committee which provides grounds for why it should be carried out outside the ETH Domain. The doctoral committee reviews the request and submits it to the Department Conference for approval.

### **Art. 13 Cumulative doctoral theses**

<sup>1</sup> The doctoral thesis is mainly scrutinised for scientific quality and presentation.

<sup>2</sup> Doctoral theses at D-MATL usually comprise subtopics structured into several chapters, and may be based on publications. In the context of collaborations the doctoral student's own work must be clearly recognisable. The formatting of the doctoral thesis must be uniform, i.e. the mere assembling of publications in PDF form is not allowed.

<sup>3</sup> Doctoral theses must contain a comprehensive introduction, a summary/conclusion and an outlook.

<sup>4</sup> If a large portion of the doctoral thesis is based on publications, at least one of the co-examiners may not be a co-author of any of the publications used.

### **Art. 14 Composition of the examination committee**

<sup>1</sup> The examination committee is composed of the following persons:

- a. A chairperson
- b. The doctoral thesis supervisor as examiner
- c. At least two co-examiners, to whom the following points apply:
  1. One co-examiner must be completely independent<sup>7</sup> of the thesis supervisor.
  2. The provisions of Art. 13, Para. 4 must be adhered to.

<sup>2</sup> All elected D-MATL professors may act as the examination committee chairperson.

<sup>3</sup> At least one co-examiner must come from outside ETH Zurich (see item 11.3 of the Rector's Implementation Provisions for the ETH Zurich Ordinance on the Doctorate).

<sup>4</sup> Additional co-examiners may be included in the examination committee, for example the second advisor.

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<sup>7</sup> A conflict of interest may arise if the doctoral thesis supervisor and co-examiners are collaborating in the respective research area; if they have published anything jointly within the past five years; or if they have had a close professional relationship (e.g. as former group members) during the past five years. In these cases the independence of a co-examiner is unclear.

<sup>5</sup> If the doctoral thesis supervisor is not an elected professor, at least one co-examiner must be an elected D-MATL professor. This person must not belong to the same research group as the doctoral thesis supervisor.

#### **Art. 15** Notification and approval of co-examiners

The doctoral thesis supervisor communicates the composition of the examination committee (including brief curricula vitae of any co-examiners from outside ETH Zurich) to the departmental doctoral committee. The latter may request further members. At the request of the doctoral committee, the Department Conference approves the examination committee at the latest during the last possible Conference before the doctoral examination.

#### **Art. 16** Procedure before the doctoral examination and submission of examination copies and experts' reports

<sup>1</sup> At least 3 months before they register for the doctoral examination, doctoral students must obtain confirmation from the D-MATL Study Administration that they have acquired the credits required for doctoral studies. If the doctoral studies requirements have not been met, the examination must be postponed. Therefore it is recommended that doctoral students obtain the confirmation of completion of credits at least 6 months before the doctoral examination.

<sup>2</sup> The completed doctoral thesis must be submitted electronically to the examination committee and the D-MATL Study Administration 20 working days before the oral examination at the latest. The format of the thesis must conform to the requirements specified in the Rector's Implementation Provisions for the ETH Zurich Ordinance on the Doctorate.

<sup>3</sup> A printed copy of the completed doctoral thesis must be submitted to the D-MATL Study Administration at registration for the oral examination, i.e. at the latest 15 working days before the doctoral examination.

<sup>4</sup> Co-examiners must submit their written experts' reports to the chairperson of the examination committee and to the D-MATL Study Administration at least 5 working days before the oral examination. The doctoral thesis supervisor is responsible for contacting co-examiners if their reports do not arrive on time. In exceptional cases, and only if the doctoral thesis is recommended for acceptance at least 5 working days before the examination, the chairperson may accept late reports.

#### **Art. 17** Doctoral examination and presentation

<sup>1</sup> The doctoral examination includes a presentation of at most 30 minutes and an oral examination of at least one hour on the subject area of the doctoral thesis. The presentation and the examination are generally public.

<sup>2</sup> The chairperson decides on the examination mode after consulting with the doctoral student and the doctoral thesis supervisor. Normally the doctoral student and two members of the examination committee are physically present. External co-examiners may join the examination remotely.

## **Section 6: Final provisions**

### **Art. 18** Transitional provisions regarding regular doctoral studies

Doctoral students who are completing their regular doctoral studies under the previous regulations in accordance with Art. 65 of the ETH Zurich Ordinance on the Doctorate are subject to the provisions set out in Annex 1.

### **Art. 19** Entry into force

These detailed stipulations enter into force on 1 January 2022. They replace the detailed D-MATL stipulations regarding doctoral studies of 9 July 2019.

## **Application of salary rates**

Salary rates for doctoral students are governed by the stipulations set out in Art. 8, Para. 3 of the Ordinance Governing Scientific Employees of ETH Zurich<sup>8</sup>, in association with Section 1 (3) of the Directives for Doctoral Students Employed at ETH Zurich<sup>9</sup>.

D-MATL promotes fair and transparent application of salary rates for all doctoral students. Each professorship defines a standard salary rate for all its doctoral students (for most D-MATL professorships this is salary rate II). If it is clear that a doctoral student performs more additional tasks (e.g. in teaching, supervision of equipment or administration) than the average doctoral student, this may be compensated with a higher salary rate.

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<sup>8</sup> SR 172.220.113.11

<sup>9</sup> RSETHZ 622

# Annex 1

## D-MATL: Detailed Stipulations Governing Doctoral Studies

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**Please note: This English Translation is for information purposes only. Only the German version of the stipulations is legally binding.**

Entry into effect: 05.05.2011

Version: 09.07.2019

For further information: D-MATL Study Administration

Pursuant to the Ordinance on Doctoral Studies at ETH Zurich of 1 July 2008, Art. 2 ('Doctorates'), Para. 1a

<sup>1</sup> *The ETH Zurich confers:*

*a. regular doctorates as proof of the graduate's ability to conduct high-level scientific research based on an independently produced original study;*

the Department of Materials has determined the following detailed stipulations:

### **Art. 1 Area of application**

<sup>1</sup> These stipulations govern the application of the Regulations for Doctoral Studies at ETH Zurich of 1 July 2008 (RSETHZ 340.31) and the Rector's Implementation Provisions for the Doctorate Ordinance of 1 September 2008 (RSETHZ 340.311) for the Department of Materials. They extend and further define these provisions.

<sup>2</sup> The aim of the measures described below is to ensure the quality of doctoral theses at the Department of Materials. Decisive for the quality of said theses are the doctoral student, the project theme and the supervision of the thesis. Extended project planning in a doctoral thesis project committee, clear guidelines for recognition of credits in the context of doctoral studies, the procedure regarding cumulative dissertations and the composition of the doctoral examination committee further this intention. The inclusion of the Head of Department in this process fosters consistency in the Department of Materials.

### **Part 1 Research plan and project assessment**

#### **Art. 2 Project proposal and research plan**

<sup>1</sup> Together with the supervisor the doctoral student prepares a project proposal which describes the prospective doctoral thesis in research project form. This project proposal corresponds to the research plan, and sets out

- a. the objectives of the thesis;
- b. an outline of the expectations of the thesis;
- c. a feasibility assessment;
- d. preliminary results;
- e. a timetable.

<sup>2</sup> The research plan must be submitted within twelve months of the provisional admission. Extensions to this deadline require the approval of the doctoral committee.

#### **Art. 3 Project assessment**

<sup>1</sup> A project assessment is conducted at the latest twelve months after provisional admission to the doctoral studies. In the assessment the project draft is presented to the project committee in a talk of at most 30 minutes and subsequently discussed. The details of project supervision must also be determined.

<sup>2</sup> If the committee's assessment of the project is positive, the project proposal is forwarded to the departmental doctoral committee.

<sup>3</sup> The approval of both the project committee and the doctoral committee must be recorded on the doctoral student's respective form. This form is then submitted to the Study Administration Office together with a copy of the research plan.

#### **Art. 4 Project committee**

The project committee consists of three (M1-M3) or four members (M1-M4), in which at least three members have to be elected professors of the Department of Materials:

**M1:** the Head of the Department of Materials (or the deputy Head)

**M2:** a professor from among the elected members of the Department of Materials

**M3:** the thesis supervisor

**M4:** a designated co-examiner from among the members of the Department of Materials

Exceptions regarding the composition of the project committee may be approved by the Head of the Department of Materials.

#### **Art. 5 Submission of the project proposal**

The project proposal must be submitted to the project committee at least two weeks before the project assessment.

#### **Art. 6 Repetition of the project assessment**

If the project committee judges the project proposal to be unsatisfactory, it will propose changes to be incorporated into a new version. This new version must be submitted within three months. D-MATL's Head of Department decides whether the new version should also be presented to a project committee and discussed.

#### **Art. 7 Rejection of the project proposal**

If the project committee also judges the second project proposal to be unsatisfactory, the doctoral project in question cannot be carried out.

### **Part 2 Doctoral studies**

#### **Art. 8 Objective, form and requirements**

<sup>1</sup> Doctoral students have the right and the duty to pursue further studies.

<sup>2</sup> The objectives of doctoral studies are

- a. the acquisition of knowledge and competences in the field of the doctoral thesis project, in neighbouring disciplines and in cross-disciplinary fields;
- b. integration into the scientific community.

<sup>3</sup> Doctoral programme studies are certified in the form of credits.

<sup>4</sup> One credit corresponds to an academic workload of 25 to 30 hours. Credits are only given if independent work can be demonstrated.

<sup>5</sup> At least 12 credits are required.

<sup>6</sup> Doctoral students must acquire at least a third of the required credits outside the field of their own research.

#### **Art. 9 Agreement of the thesis supervisor**

The doctoral student's further studies must be approved by the thesis supervisor.

## **Art. 10 Recognition of courses attended and other academic achievements**

<sup>1</sup> At least 8 of the required 12 credits must be acquired via courses which correspond to the terms of Para. 2a below.

<sup>2</sup> The Department of Materials recognises credits towards the doctoral programme, which have been acquired via the following courses/educational activities:

- a. Attendance of all courses at ETH Zurich, and – with the approval of the thesis supervisor – other courses in the ETH Domain and at other universities and research institutions. The prerequisite for acquisition of credits is a performance assessment. The credits are considered according to the number of ECTS credits listed in the Course Catalogue and according to Art. 8, Para. 4 and 6.
- b. A talk or talks delivered to a general scientific audience at an international scientific conference (1 credit per talk).
- c. Active participation in working groups or organizations of ETH and/or the Department of Materials can be considered on an individual basis.

<sup>3</sup> Credits explicitly not recognised:

- Qualifying examinations for the doctorate
- Courses attended prior to commencing the doctoral programme

## **Art. 11 Checking of credits**

<sup>1</sup> Doctoral students must submit a list of the credits acquired, signed by the supervisor, to the Study Administration Office at least three weeks before the oral doctoral examination. The Study Administration Office checks them.

<sup>2</sup> The Study Administration Office issues a confirmation that the credits required for the doctoral degree have been acquired.

<sup>3</sup> The doctoral candidate encloses this confirmation with the application for the doctoral examination.

## **Part 3 Doctoral thesis and doctoral examination**

### **Art. 12 Doctoral thesis**

<sup>1</sup> Scientific quality is the main factor in the evaluation of the doctoral thesis.

<sup>2</sup> D-MATL theses normally comprise subtopics organised into several chapters; these may be based upon publications. In the context of collaborative work the doctoral candidate's own work must be shown. A plain assembly of publications is not allowed. If a large portion of the dissertation is based upon publications, at least one of the co-examiner must not be a co-author of any (or at the most one) of the respective publications.

<sup>3</sup> Theses must include a comprehensive introduction and summary/conclusion. Value is laid on good introductory paragraphs and summaries in the individual chapters. The most important factors by far, however, are formal presentation of content, linguistic acumen and clarity.

### **Art. 13 Designation of co-examiners**

<sup>1</sup> The thesis supervisor should designate at least one co-examiner preferably after the successful completion of the project assessment, but at the latest 12 months after provisional admission to the doctoral programme. Normally this co-examiner is a full professor of the department who has been involved in the project assessment.

<sup>2</sup> If the thesis supervisor is not an elected professor at least one co-examiner must be an elected professor at ETH Zurich.

#### **Art. 14 Examination committee**

<sup>1</sup> The examination committee comprises

- a. a chairperson;
- b. the thesis supervisor as examiner;
- c. at least two co-examiners who are independent of the supervisor.

<sup>2</sup> The Head of Department is normally the chairperson of the examination committee. He/she may name a representative from among the former Heads of D-MATL. If any relationships of interdependency exist between the thesis supervisor and the examiners, further independent experts must be recruited (see Para. 1c). At least one co-examiner must not be a member of the Department of Materials.

<sup>3</sup> The thesis supervisor submits the composition of the examination committee (including brief curricula vitae of any non-ETHZ co-examiners) to the departmental doctoral committee, which may request the naming of further members. At the request of the doctoral committee, the Departmental Conference approves the composition of the examination committee during the last conference before the oral doctoral examination.

#### **Art. 15 Doctoral examination**

<sup>1</sup> The doctoral examination comprises an oral examination of at least one hour which covers the subject area(s) of the doctoral thesis.

<sup>2</sup> The examination committee conducts the doctoral examination.

Approved by the D-MATL Departmental Conference on 24.05.2018

Approved by the Rector on 09.07.2019