

## Appendix

To the Programme Regulations 2014 of the  
Master's degree programme in Computational Science and Engineering (CSE)

31 August 2010 (Version: 1 March 2012)

*Applies to students who commence or recommence the degree programme in Autumn Semester 2012 or later.*

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*This is an English translation only. The original German version is the legally binding document.*

This appendix sets out the prerequisites for and further details regarding admission to the Master's degree programme in CSE. It supplements the stipulations of the Admission Regulations of ETH Zurich and the Directive on Admission to Master's Degree Programmes.

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## 1 Profile of requirements

### *Policy*

For admission to the Master's degree programme in CSE (subsequently 'the degree programme') all of the following prerequisites must be satisfied.

### 1.1 Degree qualifications

<sup>1</sup> For admission to the degree programme one of the following is required:

- a. a university Bachelor's degree comprising at least 180 ECTS<sup>(1)</sup> credits or an equivalent university degree
- b. a Bachelor's degree from a Swiss university of applied sciences comprising at least 180 ECTS<sup>(2)</sup> credits

in a discipline in the context of which the academic prerequisites listed in 1.2 have been satisfied.

<sup>2</sup> ETH Zurich may also demand written proof from applicants that their Bachelor's degree qualifies them to enter the Master's degree programme consecutive to it at their home universities or at a university in the country where said Bachelor's degree was acquired.

### 1.2 Academic prerequisites

#### 1.2.1 Knowledge and competences

<sup>1</sup> Attendance of the Master's degree programme in CSE presupposes basic knowledge and competences in Mathematics, Computer Science and applied areas of Natural Sciences and Engineering which are in content, scope and quality equivalent to those covered in the ETH Bachelor's degree programme in CSE.

<sup>2</sup> The **discipline requirements profile** comprises **88 ECTS credits** in total and is based on knowledge and competences covered in the ETH Bachelor's degree programme in CSE. This includes training in the relevant methodological scientific thinking.

The discipline requirements profile is structured in three parts. The substance of the following course units from the ETH Bachelor's degree programme in CSE is required. Information regarding the content of these course units is published in the course catalogue ([www.vvz.ethz.ch](http://www.vvz.ethz.ch)).

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<sup>1</sup> ECTS: European Credit Transfer System. Credits describe the average time expended to achieve a learning goal. One credit corresponds to 25-30 hours of work.

<sup>2</sup> A Diploma from a Swiss university of applied sciences is considered equivalent to a Bachelor's degree in the same discipline. A Bachelor's degree from a German or Austrian university of applied sciences is considered equivalent to a Bachelor's degree from a Swiss university of applied sciences.

**Part 1: Basic knowledge and competences**

Part 1 comprises 52 ECTS credits and covers basic knowledge, as follows:

**Basics of Mathematics** (22 credits)

- Analysis I and II (14 credits)
- Lineare Algebra [Linear Algebra] (4 credits)
- Informatik [Computer Science] I (4 credits)

**Further basics** (30 credits)

- Physik [Physics] I and II 8 credits)
- Programmier Techniken [Programming Techniques] (5 credits)
- Numerische Methoden [Numerical Methods] (7 credits)
- Stochastik [Stochastics] (4 credits)
- Two lectures in a specialisation (6 credits)

**Part 2: Subject-specific knowledge and competences**

For Part 2 a total of 11 ECTS credits must be acquired in the following course units:

- Analysis III (4 credits)
- Technische Informatik [Computer Engineering] II (4 credits)
- Informationssysteme [Information Systems] (4 credits)
- Optimierungstechniken [Introduction to Optimization] (5 credits)
- Fluidodynamik für RW [Fluid Dynamics for CSE] (5 credits)
- Chemie für RW [Chemistry for CSE] (4 credits)
- Statistische Physik [Statistical Physics] (4 credits)
- Quantenmechanik [Quantum Mechanics] (4 credits)

**Part 3: Core knowledge**

Par 3 comprises 25 ECTS credits and covers knowledge and competences essential for the Master's degree.

- Numerical Methods for Partial Differential Equations (8 credits)
- High Performance Computing for Science and Engineering (11 credits)
- Software Design (6 credits)

## 1.2.2 Admission with additional requirements

<sup>1</sup> If the academic prerequisites listed in 1.2.1 are not completely satisfied, admission may be granted subject to the acquisition of the missing knowledge and competences in the form of additional credits (admission with additional requirements).

<sup>2</sup> The candidate must provide proof of the acquisition of the additional knowledge and competences required by passing the pertaining performance assessments by set deadlines (see Section 4).

<sup>3</sup> If the candidate fails said performance assessments or does not respect the set deadlines he/she will be regarded as having failed the degree programme and will be excluded from it.

## 1.3 Language prerequisites

<sup>1</sup> The teaching language of the degree programme is English.

<sup>2</sup> For admission to the degree programme, proof of sufficient knowledge of English (level C1)<sup>(3)</sup> must be provided.

<sup>3</sup> Applicants to the degree programme who hold a Bachelor's degree from a university of applied sciences must, according to the pertaining additional requirements (see Section 2.4, Subsection 2), also supply proof of sufficient knowledge of German (level C1).

## 2 Specific stipulations for admission and entering the degree programme

### 2.1 Bachelor's degree in CSE from ETH Zurich

#### *Unconditional admission*

Holders of a Bachelor's degree in CSE from ETH Zurich are unconditionally admitted to the degree programme.

#### *Registration*

Students of the Bachelor's degree programme in CSE already matriculated at ETH Zurich should enrol in the degree programme directly via [www.mystudies.ethz.ch](http://www.mystudies.ethz.ch). The admission procedure outlined in Section 3 is dispensed with.

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<sup>3</sup> The required language level is measured according to the Common European Framework of Reference for Languages (EFR) scale: *Common European Framework of Reference for Languages*, p. 23f. [www.coe.int/t/dg4/linguistic/Source/Framework\\_EN.pdf](http://www.coe.int/t/dg4/linguistic/Source/Framework_EN.pdf)

### *Entering the Master's degree programme*

<sup>1</sup> For all Bachelor's degree students already matriculated at ETH Zurich who progress to the ETH Master's degree programme, the following applies:

- a. The normal ETH enrolment dates and deadlines apply.
- b. Admission is provisional until the Bachelor's degree is issued. Admission will be revoked if the Bachelor's degree is not or cannot be issued.

<sup>2</sup> Students of the ETH Bachelor's degree programme in CSE may enrol directly in the programme, as long as

- a. a total of only 30 credits maximum towards the Bachelor's degree are pending
- b. the minimum number of credits required for the Bachelor's degree in the Bachelor's degree programme categories 'First-Year Subjects' and 'Basic Subjects' have been acquired.

## **2.2 Bachelor's degree in another discipline**

### **2.2.1 General regulations**

#### *Application*

Interested parties who hold a qualifying Bachelor's degree in a discipline other than CSE should apply for the programme via the ETH Zurich Admissions Office, and are subject to the admissions procedure set out in Section 3.

### **2.2.2 Bachelor's degree from ETH Zurich**

#### *Admission*

<sup>1</sup> For admission to the programme all the prerequisites set out in Section 1 must be satisfied. Very good performance in the preceding course of studies is also required.

<sup>2</sup> Admission may be subject to additional requirements.

<sup>3</sup> Admission is not possible if more than 30 additional credits must be acquired in order to satisfy the academic prerequisites.

### *Entering the Master's degree programme*

<sup>1</sup> For all Bachelor's degree students who are already matriculated at ETH Zurich and who progress to an ETH Master's degree programme, the following applies:

- a. The normal ETH enrolment dates and deadlines apply.
- b. Admission is provisional until the Bachelor's degree is issued. Admission will be revoked if the Bachelor's degree is not or cannot be issued.

<sup>2</sup> Students from an ETH Bachelor's degree programme who have been granted admission can enrol in the programme once they have acquired that number of credits which would

qualify them to enrol in the Master's degree programme consecutive to their original subject.<sup>4</sup>

### **2.2.3 Bachelor's degree from another university**

#### *Admission*

<sup>1</sup> For admission to the programme all the prerequisites set out in Section 1 must be satisfied. Very good performance in the preceding course of studies is also required.

<sup>2</sup> Admission may be subject to additional requirements.

<sup>3</sup> Admission is not possible if more than 30 additional credits must be acquired in order to satisfy the academic prerequisites.

#### *Entering the Master's degree programme*

Candidates who have been granted admission can enter the programme when they have completed the preceding Bachelor's degree programme.

### **2.2.4 Bachelor's degree from a Swiss university of applied sciences**

#### *Admission*

<sup>1</sup> For admission to the programme all the prerequisites set out in Section 1 must be satisfied. Very good performance in the preceding course of studies is also required.

<sup>2</sup> Admission is always subject to the acquisition of additional study achievements comprising at least 40 and at most 60 credits.

<sup>3</sup> Admission is not possible if the number of additional credits required to satisfy the academic prerequisites exceeds 60.

#### *Entering the Master's degree programme*

Candidates who have been granted admission can enter the programme when they have completed the preceding Bachelor's degree programme.

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<sup>4</sup> The permitted number of missing credits is set out in the Programme Regulations of the respective consecutive Master's degree programme (e.g., B.Sc. Physics > M.Sc. Physics).

### 3 Application and admission procedure

<sup>1</sup> All interested parties – with the exception of matriculated ETH Zurich students from the Bachelor's degree programme in CSE – must submit an application for admission to the degree programme. The specifications for application, in particular the documents required and the dates/deadlines for submission, are published on the website of the ETH Zurich Admissions Office ([www.admission.ethz.ch](http://www.admission.ethz.ch)).

<sup>2</sup> Application may be made even if the required preceding degree has not yet been issued.

<sup>3</sup> The admissions committee of the degree programme determines how far the background of the candidate corresponds to the profile of requirements. The Chair of the admissions committee<sup>5</sup> formulates and submits an application for admission/rejection to the Rector.

<sup>4</sup> On the basis of this application the Rector makes the final decision regarding admission without additional requirements, admission with additional requirements, or rejection.

<sup>5</sup> The candidate receives a written admissions decision which includes relevant information concerning any additional admission requirements.

### 4 Fulfilling additional admission requirements

#### 4.1 General regulations

<sup>1</sup> Candidates who are admitted subject to the fulfilment of additional requirements must acquire the required additional knowledge and competences before or during the Master's programme via self-study or by attending classes. The corresponding individual performance assessments must take place by set deadlines.

<sup>2</sup> If the candidate fails said performance assessments or does not respect the set deadlines he/she will be regarded as having failed the programme and will be excluded from it.

<sup>3</sup> The deadlines and conditions for undergoing said performance assessments depend upon the background of the candidate (see Sections 4.2 and 4.3).

#### 4.2 Candidates with a university Bachelor's degree

<sup>1</sup> Candidates holding a university Bachelor's degree must undertake all of the performance assessments pertaining to the additional admission requirements by the end of the first year of the Master's programme at the latest. All additional requirements, including any

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<sup>5</sup> The Chair of the admissions committee must be an ETH Zurich professor.

assessment repetitions, must be fulfilled within 18 months of the start of the Master's programme at the latest.

<sup>2</sup> A pass grade in each individual performance assessment is required.

<sup>3</sup> A failed performance assessment may be repeated once.

### **4.3 Candidates with a Bachelor's degree from a Swiss university of applied sciences**

<sup>1</sup> Candidates holding a Bachelor's degree from a Swiss university of applied sciences must undertake all of the performance assessments pertaining to the additional admission requirements by the end of the first year of the Master's programme at the latest. All additional requirements, including any assessment repetitions, must be fulfilled within two years of the start of the Master's programme at the latest.

<sup>2</sup> The performance assessments may be undertaken as examination blocks. A pass grade in the examination block is achieved if the average of the individual grades is at least a 4.

<sup>3</sup> A failed performance assessment or a failed examination block may be repeated once. Repeating an examination block entails repeating all of the performance assessments belonging to it.