

Departments of Mathematics and Physics
Programme Regulations 2005
Master Programme in
Computational Science and Engineering

24 May 2005

(English is not an official language of the Swiss Confederation. This translation is provided for information purposes only and has no legal force.)

	Article
Chapter 1: General Regulations	1 – 11
Chapter 2: Content, Extent and Structure of the Master Programme	12 – 18
Chapter 3: Admission to the Master Programme	19 – 22
Chapter 4: Performance Assessment Regulations	23 – 35
Chapter 5: Issuing the Master Degree	36 – 39
Chapter 6: Final Regulations	40 – 43
Appendix	

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The ETH Zurich Executive Board,

pursuant to Art. 4, Para. 1, Lit. a of the ETH Zurich Organisation Ordinance of 16 December 2003¹,

hereby decrees:

Chapter 1: General Regulations

Section 1: General

Art. 1 Subject-matter and Scope, Appendix

¹ These Programme Regulations determine the requirements under which the Master degree in Computational Science and Engineering can be acquired at the Departments of Mathematics and Physics, ETH Zurich (hereafter referred to as D-MATH/D-PHYS).

² The Appendix is part of these Programme Regulations. Any modifications to the Appendix are decided by the Rector, upon the request of, or following a hearing with D-MATH/D-PHYS.

Art. 2 Academic Title

¹ The Master degree in Computational Science and Engineering entitles its holders to bear the following academic title:

Master of Science ETH in Rechnergestützten Wissenschaften
(abbreviated title: MSc ETH RW).

² The English title is:

Master of Science ETH in Computational Science and Engineering
(abbreviated title: MSc ETH CSE).

³ Holders of this Master degree can also use the abbreviated title “MSc ETH”.

¹ RSETHZ 201.021 (available in German only)

Art. 3 Legal Basis

These Programme Regulations are based on the following legal provisions:

- a. ETH Zurich General Ordinance on Performance Assessments of 10 September 2002² (AVL ETHZ – acronym for German document);
- b. Ordinance on Admission to Studying at ETH Zurich of 10 September 2002³ (Zulassungsverordnung ETHZ).

Art. 4 Course Catalogue

D-MATH/D-PHYS determine the Master programme courses for each semester and list them in the course catalogue that is binding. This catalogue is submitted to the Rector for approval within the period stipulated. Specific details are outlined in Art. 28 of AVL ETHZ and in the corresponding implementation provisions.

Art. 5 Language of Instruction

¹ Teaching and performance assessments are normally in English. The language used in any particular course is listed in the course catalogue.

² Should a performance assessment only be held in English, students may, upon request, complete the performance assessment in German. In such cases, students must hand in a request to the responsible examiner at the latest four weeks before the assessment is carried out.

³ Students, who wish to complete a performance assessment in a language other than English or German, must obtain the agreement of the responsible examiner. An official request must be submitted within the time limit indicated in Para. 2.

Section 2: Credit System

Art. 6 Principle

¹ The study programme is based on a credit system that complies with the European Credit Transfer System (ECTS).

² The implementation of ECTS at ETH Zurich is defined in the Guidelines⁴ on the Credit System.

² SR 414.135.1, RSETHZ 322.021 (available in German only)

³ SR 414.131.52, RSETHZ 310.5 (available in German only)

⁴ The guidelines can be accessed online at: www.rektorat.ethz.ch/directives (available in German only)

Art. 7 Credits

Credits define the average amount of time required for a study performance.

Art. 8 Basis for Calculating Credits

When studying full-time, the entire student workload for each year of study comprises an average of 60 credits. The student workload includes all study-related activities necessary to obtain credits.

Art. 9 Allocation of Credits

¹ D-MATH/D-PHYS allocate a certain number of credits to their own courses, which are subsequently specified in the course catalogue.

² For courses that are part of the curriculum of several study programmes, the department offering the course uniformly allocates the credits in consultation with the departments concerned. The Rector decides in the case of disagreement.

Art. 10 Issuing Credits

¹ Credits are only issued for satisfactory performance. Study performances are considered satisfactory, if they are graded with at least 4 or as “passed”.

² No credits are issued for unsatisfactory performance.

³ The full amount of credits is always issued for the course in question, when the prerequisites in Para. 1 have been fulfilled. Partial issuing of credits is not allowed.

⁴ The number of credits to be issued is specified in the course catalogue valid at the time at which the performance assessment is completed.

Art. 11 Registering, Checking and Managing Credits

D-MATH/D-PHYS register, check and manage the credits.

Chapter 2: Content, Extent and Structure of the Master Programme

Section 1: Content of the Programme, Extent and Structure

Art. 12 Content of the Programme

The Master programme in Computational Science and Engineering (CSE) builds on the ETH CSE Bachelor programme. In addition to acquiring an interdisciplinary education in application areas in science and engineering, important mathematical methods and computer science tools in both these areas are also taught. The programme concludes with a Master thesis in which the students show their ability to independently produce a coherent and scientific piece of work. The Master degree prepares graduates to enter the job market or leads onto doctoral studies. The scientific and methodological knowledge is complemented with electives in general education courses in Humanities, Social and Political Sciences (GESS).

Art. 13 Extent and Duration of the Programme; Limitation on the Duration of Studies

¹ It is necessary to obtain 90 credits, as indicated in Art. 36, Para. 1, to acquire the Master degree. At least 60 of the required 90 credits must be acquired at ETH Zurich.

² The CSE Master programme is designed to be completed within one and a half years.

³ The maximum duration of studies is three years. Upon request, the Rector can extend the duration of studies for compelling reasons.

⁴ Should admission to the CSE Master programme be stipulated with the need to fulfil additional requirements, this entitles the extension of the maximum duration of studies as follows:

- six months to acquire 21 – 30 additional credits;
- one year to acquire 31 – 60 additional credits.

Should less than 21 additional credits have to be acquired, the maximum duration of studies is not extended.

Art. 14 Study Procedure, Study Advisory Service

¹ D-MATH/D-PHYS compile a study guide to the CSE Master programme. It comprises an overview of the study programme.

² The CSE study advisor helps students to plan their course of study, particularly relating to exchange programmes.

Art. 15 Recognition of Study Achievements Acquired outside the Master Programme

The Director of Studies ultimately decides on the recognition of study achievements acquired in other ETH Zurich study programmes or at other universities (e.g. student exchange) during the Master programme. Performance evaluations are handled in accordance with Art. 12 of AVL ETHZ⁵.

Art. 16 Student Exchange

¹ During the Master programme, students can acquire credits at other universities. Of these mobility credits, a maximum of 30 can be recognised to obtain the Master degree. If requested by the student, any additional credits are listed in the addendum to the final academic record.

² Students, who wish to spend an exchange semester at another university, must first prepare a written study programme in collaboration with the CSE study advisor. This study programme specifies the credits to be acquired at the host university and has to be approved by the Director of Studies.

Section 2: Subjects and Grouping according to Category

Art. 17 Grouping according to Category

¹ To acquire the Master degree, it is necessary to have study achievements in the following categories. The minimum number of credits required in each category is indicated in Art. 36.

- a. Core Courses and Compensatory Courses ;
- b. Fields of Specialisation;
- c. Electives;
- d. Case Studies;
- e. Semester Paper;
- f. Compulsory Electives in Humanities, Social and Political Sciences;
- g. Master Thesis.

² D-MATH/D-PHYS specify in the course catalogue which courses are allocated to each category as listed in Para. 1.

⁵ SR 414.135.1, RSETHZ 322.021

Art. 18 Category Overview

¹ **Core Courses:** They serve to transfer computational scientific and mathematical methods, and advanced knowledge of Computer Science. They are of primary importance for Computational Science and Engineering.

² **Compensatory Courses:** If the required number of credits for the core courses cannot be acquired by not having passed the respective exams, these missing credits can be acquired in the compensatory courses. The maximum number of credits that can be compensated is specified in Art. 36, Para. 3.

³ **Fields of Specialisation:** They serve to transfer in-depth knowledge of application areas of computational sciences and engineering. The fields of specialisation that can be chosen are listed in the course catalogue. Each field of specialisation consists of several courses. Further details are specified in Art. 29.

⁴ **Electives:** They serve to broaden and deepen theoretical and methodological knowledge. Details are specified in Art. 30.

⁵ **Case Studies:** In the course category Case Studies, ETH and external lecturers present case studies from their own application areas – from modelling to computational problem-solving. Details are specified in Art. 31.

⁶ **Semester Paper:** This paper serves to deepen knowledge in a particular subject area. Furthermore, students learn to work in an established scientific group and, by becoming familiar with the applications, they also learn how to tackle problems from such applications computationally. Details are specified in Art. 32.

⁷ **Compulsory Electives in Humanities, Social and Political Sciences:** Students have to choose courses from the general education courses in Humanities, Social and Political Sciences (GESS). Further details are specified in the Rector's directives on GESS compulsory electives.

⁸ **Master Thesis:** It concludes the Master programme. By writing up the Master thesis, students show their ability to independently produce a coherent and scientific piece of work. Details are specified in Art. 34.

Chapter 3: Admission to the Master Programme

Art. 19 Admission Prerequisites

¹ To be eligible for admission to the CSE Master programme, candidates must fulfil one of the following prerequisites:

- a. They hold an ETH Zurich Bachelor degree in Computational Science and Engineering.
- b. They hold a Bachelor degree that corresponds to at least 180 ECTS credits, or an equivalent university degree, or a degree from a Swiss University of Applied Sciences in a scientific discipline qualifying for the CSE Master programme. Details on the required scientific knowledge (requirement profile) for the CSE Master programme are listed in Item 1 of the Appendix. The following also applies:
 1. Candidates must have adequate knowledge of English. If requested, they must be able to provide proof.
 2. If requested, candidates must provide proof that they would be admitted to the Master programme of the corresponding discipline at their home university or in their country of origin, should such a programme be available.
 3. Reservation is made for the provisions in Item 1.2 of the Appendix.

² The Rector decides on any exceptions on the request of the Director of Studies.

Art. 20 Admission Procedure

¹ The admission procedure is managed according to the candidates' previous education. The following differentiation is made at the time of registration or application:

- a. Candidates, who are enrolled in the ETH Zurich CSE Bachelor programme (see Para. 2), or
- b. Candidates, who already hold an ETH Zurich CSE Bachelor degree (see Para. 3); or
- c. Candidates, who do not fulfil the prerequisites listed in Lit. a or b, but are enrolled at a university in a scientific discipline qualifying for the CSE Master programme, or hold a corresponding Bachelor degree, or at least an equivalent degree (see Para. 4).

² ETH Zurich students from the CSE Bachelor programme can directly enrol for the CSE Master programme when they only need to acquire a certain number of credits for the Bachelor degree. Details are specified in Item 2 of the Appendix. The following also applies:

- a. The regular dates and deadlines for enrolment at ETH Zurich are applicable.

- b. Admission is conditional if the Bachelor degree still has to be completed. The admission is revoked, if the Bachelor degree has not been acquired or cannot be acquired.
- c. The Rector decides on any exceptions on the request of the Director of Studies.

³ Candidates, who already hold an ETH Zurich CSE Bachelor degree, have to contact the ETH Rectorate to enrol in the CSE Master programme.

⁴ Candidates, who come in Para. 1, Lit. c, should send their application for admission to the CSE Master programme to the ETH Rectorate. They can submit their application before they have acquired their degree. The way in which applications are managed is determined by the Rector. The following also applies:

- a. The CSE Admissions Committee evaluates the candidates' applications in terms of their academic qualifications and aptitude for the Master programme, and requests the Director of Studies to either admit or reject the candidate, including the credits that can be recognised and those still to be acquired.
- b. Upon the request of the Director of Studies, the Rector decides on admission or rejection, including the credits that can be recognised and those still to be acquired.
- c. Candidates, who are not enrolled in an ETH Zurich Bachelor programme, can only enrol for the CSE Master programme when they have obtained their (Bachelor) degree.

Art. 21 Admission without Additional Requirements

¹ An ETH Zurich CSE Bachelor degree qualifies for admission to the CSE Master programme without having to fulfil any additional requirements.

² Other university degrees allowing admission to the CSE Master programme without any additional requirements are listed in Item 3 of the Appendix.

Art. 22 *abrogated*⁶

⁶ Art. 22 has been abrogated. Details on the rejection of admission are specified in Item 1.2 of the Appendix.

Chapter 4: Performance Assessment Regulations

Section 1: General Regulations

Art. 23 Types of Performance Assessment, Performance Evaluation

¹ The CSE Master programme primarily involves the following types of performance assessment:

- a. examinations;
- b. written reports;
- c. presentations.

² Performance in an examination is graded. Other types of performance assessments are evaluated with a grade or with “passed/failed”.

Art. 24 Conditions of Admission to Performance Assessments

¹ Conditions of admission to performance assessments can be implemented.

² D-MATH/D-PHYS verify that any conditions of admission to performance assessments have been fulfilled.

Art. 25 Registering for End-of-Semester Examinations and Examination Sessions, Carrying out Examinations

¹ The AVL ETHZ regulations⁷ and the Rector’s directives apply for courses offered by ETH Zurich with respect to registering for end-of-semester examinations and for examinations in the examination sessions as well for carrying out examinations.

² The regulations applicable at other universities apply for courses offered at other institutions with respect to registering for examinations.

Art. 25a Registration for other Performance Assessments

Registration is normally done directly via the responsible examiner for performance assessments not coming under Art. 25.

⁷ SR414.135.1, RSETHZ 322.021

Art. 26 Performance Assessments for Additional Requirements

¹ Performance assessments for courses defined as additional requirements for admission to the CSE Master programme can be grouped into examination blocks. Any such examination blocks are to be specified in the admission decree.

² If no examination blocks are formed, an appropriate means of compensation is to be provided should a performance assessment be failed twice.

³ Should the additional requirements not be completely fulfilled due to the student having failed performance assessments, admission to the CSE Master programme is revoked. Should such candidates apply for an ETH Zurich Bachelor programme and be admitted, the following rules are effective for performance assessments already carried out to fulfil additional requirements:

- a. Performance assessments or examination blocks that have been passed can be recognised in the Bachelor programme. Any recognised performance assessments are allocated credits.
- b. No credits are allocated for performance assessments that have not been passed.
- c. The Rector decides on the recognition of credits upon the request of the responsible department.

Art. 27 Dishonest Behaviour

Details on dealing with dishonest behaviour with respect to performance assessments are specified in the ETH Zurich Disciplinary Code of 2 November 2004⁸.

Section 2: Performance Assessments

Art. 28 Core Courses and Compensatory Courses

¹ Both core courses must be attended. If a core course is failed twice and the required number of credits cannot be obtained, these missing credits can be acquired in the compensatory courses. The maximum number of credits that can be compensated is specified in Art. 36, Para. 3.

² Each course in the category *Core Courses and Compensatory Courses* is evaluated with an examination.

⁸ SR 414.138.1, RSETHZ 361.1 (available in English: RSETHZ: 361.1 engl.)

Art. 29 Fields of Specialisation

¹ Five courses must be attended in the category *Fields of Specialisation*, one of which must be a seminar. The various means of attendance are specified in Para. 3 and 4.

² A seminar involves carrying out a semester performance. Each other course in the category *Fields of Specialisation* is evaluated with an examination.

³ The following applies for students, who do not hold an ETH CSE Bachelor degree: the courses to be attended, including the seminar, must be part of one and the same field of specialisation.

⁴ Students, who hold an ETH CSE Bachelor degree, can choose one of the following two alternatives:

- a. The five courses, including the seminar, are part of one and the same field of specialisation that was not attended during the ETH CSE Bachelor programme.
- b. Three courses, including the seminar, are part of the field of specialisation taken during the ETH CSE Bachelor programme; two courses are part of another field of specialisation.

⁵ The following applies for students, who have attended courses from the fields of specialisation and already taken the relevant exams during the ETH CSE Bachelor programme:

- a. Students, who failed an exam once, can only have one attempt at the exam in the corresponding course in the CSE Master programme.
- b. Students, who failed an exam twice, cannot attend the corresponding course in the CSE Master programme.
- c. Students, who passed an exam, but did not use the corresponding credits to acquire their Bachelor degree, can have these credits recognised as follows to acquire the Master degree:
 1. in the category *Fields of Specialisation*, if the conditions in Para. 4 have been adhered to; or
 2. in the category *Electives*.

⁶ Upon request in well-founded cases, the Director of Studies can approve attending courses other than those offered in the fields of specialisation.

Art. 30 Electives

¹ Students must take at least two electives. The following also applies:

- a. Courses from the category *Fields of Specialisation* can be recognised as an elective.
- b. Courses from the category *Core Courses and Compensatory Courses* cannot be recognised as an elective.
- c. Upon request, the Director of Studies can approve attending courses other than those offered as an elective. This is subject to the regulations in Lit. b.

² Each course in the category *Electives* is evaluated with an examination.

³ The following applies for students, who have already taken exams in electives during the ETH CSE Bachelor programme:

- a. Students, who failed an exam once, can only have one attempt at the exam in the corresponding elective course in the CSE Master programme.
- b. Students, who failed an exam twice, cannot attend the corresponding elective course in the CSE Master programme.
- c. Students, who passed an exam, but did not use the corresponding credits to acquire their Bachelor degree, can have these credits recognised to acquire the Master degree.

Art. 31 Case Studies

¹ One course per semester is offered in the category *Case Studies*.

² At least two courses from the category *Case Studies* must be attended. The Director of Studies can approve exceptions in the case of a student exchange.

³ The courses for this category involve carrying out a semester performance.

Art. 32 Semester Paper

¹ The semester paper is carried out on a topic from a core course or from a field of specialisation under the supervision of a lecturer. The Director of Studies can approve exceptions.

² The supervisor of the semester paper defines the task and determines the start and date of submission of the semester paper.

³ The semester paper concludes with a written report and a presentation.

Art. 33 GESS Compulsory Electives

Each course in the category *GESS Compulsory Electives* is evaluated with a performance assessment. The department of ETH Zurich or the university offering the course specifies the type and the timing of the performance assessment.

Art. 34 Master Thesis

¹ Only students, who fulfil the following criteria, are allowed to write up their Master thesis:

- a. They have successfully completed the Bachelor programme.
- b. They have fulfilled any additional requirements necessary to gain admission to the CSE Master programme.

² The Master thesis is supervised by a professor and is written over a period of five months. It is carried out on a topic from a core course or from a field of specialisation. The Director of Studies can approve exceptions.

³ The Master thesis supervisor defines the task and determines the start and date of submission of the Master thesis.

⁴ The Master thesis concludes with a written report.

Art. 35 Results / Repeating Performance Assessments

¹ According to Art. 28 – 30 and Art. 33, a performance assessment in the categories *Core Courses and Compensatory Courses*, *Fields of Specialisation* (excluding the seminar), *Electives*, and *GESS Compulsory Electives* is considered as passed, if it is graded with at least 4 or with “passed”. A performance assessment considered as failed can be repeated once.

² The semester performances for the category *Case Studies* specified in Art. 31 are evaluated with “passed” or “failed”. A semester performance considered as failed cannot be repeated in which case another course from the category *Case Studies* must be attended.

³ The seminar specified in Art. 29, Para. 1 and the semester paper specified in Art. 32 are evaluated with “passed” or “failed”. A seminar and/or a semester paper considered as failed cannot be repeated. Another seminar must be attended and/or another semester paper must be written up.

⁴ The Master thesis specified in Art. 34 is graded. It is considered as passed, if it is graded with at least 4. A Master thesis considered as failed can be repeated once. If the Master thesis is repeated, a new topic must be treated.

Chapter 5: Issuing the Master Degree

Art. 36 Credits in each Category

¹ The 90 credits required to obtain a Master degree must be acquired in the following categories in the minimum number indicated for each category:

a.	Core Courses and Compensatory Courses	12	credits
	1. Core Courses (5 credits)		
	2. Compensatory Courses (0 credits)		
b.	Fields of Specialisation	18	credits
c.	Electives	6	credits
d.	Case Studies	6	credits
e.	Semester Paper	8	credits
f.	GESS Compulsory Electives	2	credits
g.	Master Thesis	30	credits
		<i>subtotal</i>	82 credits

² The sum of the minimum number of credits to be acquired in the categories according to Para. 1 is 82. A maximum of 4 credits can be recognised in the category *GESS Compulsory Electives*.

³ At least 5 of the required 12 credits in the category *Core Courses and Compensatory Courses* must be acquired in the subcategory *Core Courses*.

⁴ Credits for courses that are part of both Bachelor and Master programmes can only be recognised for the Master degree, if they have not already been recognised for the Bachelor degree.

Art. 37 Request to Issue the Degree

¹ Within three years after having begun the Master programme, students can apply to be issued with the Master degree, once the requirements in Art. 36 have been fulfilled. Upon request, the Rector can extend this time limit for compelling reasons.

² The application should indicate the performance assessments passed from the categories specified in Art. 36, Para. 1 to be listed in the final academic record. The total number of credits for each category and subcategory must correspond to the minimum number of credits specified in Art. 36, Para. 1.

³ A maximum of 100 credits are recognised for the Master degree. If requested by the student, additional credits are listed in the addendum to the final academic record.

Art. 38 Interim Academic Record, Final Academic Record,
Grade Point Average

¹ Interim academic records are generally issued at the end of the examination sessions and contain any study performances evaluated since the last interim academic record.

² The final academic record states:

- a. The grades and other performance evaluations in accordance with Art. 37, Para. 2, and the grade point average calculated from the grades.
- b. Additional performance evaluations and a core course that has not been passed (if any) are listed in the addendum to the final academic record in accordance with Art. 37, Para. 3.

³ The grade point average in the final academic record (final grade) is calculated as a weighted mean of the following grades:

a. Grades: Core Courses	for each grade weighted	2
b. Grades: Compensatory Courses (if any)	for each grade weighted	1
b. Four grades: Fields of Specialisation	for each grade weighted	1
c. Grades: Electives	for each grade weighted	1
d. Master Thesis grade	grade weighted	4

⁴ D-MATH/D-PHYS record, check and manage the grades and other performance evaluations, and issue the academic records.

Art. 39 Certificate, Diploma Supplement, Publication

¹ Graduates, who obtain the Master degree, receive a certificate and a diploma supplement.

² The Rectorate publishes the names of Master degree graduates.

Chapter 6: Final Regulations

Art. 40 Exclusion from the Master Programme

Exclusion from the CSE Master programme generally results from not being able to acquire the required number of credits for the Master degree as indicated in Art. 36, due to

- a. having failed the performance assessments twice; or
- b. having exceeded the allowed maximum duration of study.

Art. 41 Transcript of Records

Should a student be excluded from the CSE Master programme before acquiring the Master degree, or drop out of the study programme, he/she receives a transcript of records. This transcript lists all the evaluated study achievements carried out before being excluded from or dropping out of the programme.

Art. 42 *abrogated*⁹

Art. 43 Effective Date

These Programme Regulations come into effect at the beginning of the Winter Semester 2005/2006. These regulations are effective for students who begin the Master programme on or after this date.

On behalf of the ETH Zurich Executive Board

President: Kübler

Delegate: Kottusch

⁹ Art. 42 has been abrogated. The provisions for transferring from the CSE untiered diploma study programme to the CSE Master programme are no longer necessary.

Appendix

To the Programme Regulations 2005 of the
Master's degree programme in Computational Science and Engineering (CSE)

31 August 2010

Applies to students who commence the degree programme in Autumn Semester 2011 or later. For those entering the programme in Autumn Semester 2010 or Spring Semester 2011 the stipulations of the previous Appendix of 24 May 2005 apply.

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.

Contents

1 Profile of requirements

- 1.1 Degree qualifications
- 1.2 Academic prerequisites
- 1.3 Language prerequisites

2 Specific stipulations for admission and entering the degree programme

- 2.1 Bachelor's degree in CSE from ETH Zurich
- 2.2 Bachelor's degree in another discipline
 - 2.2.1 General regulations
 - 2.2.2 Bachelor's degree from ETH Zurich
 - 2.2.3 Bachelor's degree from another university
 - 2.2.4 Bachelor's degree from a Swiss university of applied sciences

3 Application and admission procedure

4 Fulfilling additional admission requirements

- 4.1 General regulations
- 4.2 Candidates with a university Bachelor's degree
- 4.3 Candidates with a Bachelor's degree from a Swiss university of applied sciences

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

¹ For admission to the degree programme one of the following is required:

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

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

² 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

¹ 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.

² 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).

¹ 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.

² 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 KP)

- Physik [Physics] I and II 8 credits)
- Programmier Techniken [Programming Techniques] (5 credits)
- Numerische Mathematik [Numerical Mathematics] (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 [Optimising Techniques] (5 credits)
- Fluidodynamik für RW [Fluid Dynamics for CSE] (5 credits)
- Chemie für RW [Chemistry for CSE] (3 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)
- Parallel Computing for Scientific Simulations (11 credits)
- Software Design (6 credits)

1.2.2 Admission with additional requirements

¹ 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).

² 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).

³ 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

¹ The teaching language of the degree programme is English.

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

³ 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. The admission procedure outlined in Section 3 is dispensed with.

Entering the Master's degree programme

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

³ 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

- 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.

² 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

¹ 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.

² Admission may be subject to additional requirements.

³ 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

¹ 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.

² 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.⁽⁴⁾

⁴ 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).

2.2.3 Bachelor's degree from another university

Admission

¹ 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.

² Admission may be subject to additional requirements.

³ 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

¹ 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.

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

³ 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.

3 Application and admission procedure

¹ 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).

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

³ The admissions committee of the degree programme determines how far the background of the candidate corresponds to the profile of requirements and submits an application for admission/rejection to the Director of Studies.

⁴ The Rector makes the final decision regarding admission without additional requirements, admission with additional requirements, or rejection.

⁵ 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

¹ 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.

² 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.

³ 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

¹ 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 assessment repetitions, must be fulfilled within 18 months of the start of the Master's programme at the latest.

² A pass grade in each individual performance assessment is required.

³ A failed performance assessment may be repeated once.

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

¹ 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.

² 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.

³ 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.