Programme Regulations 2012
of the Master's degree programme in
Computational Science and Engineering
Departments of Mathematics and Physics

2 July 2012

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

Articles

Chapter 1: General regulations 1 – 9
Chapter 2: Content, structure and scope of the Master’s degree programme 10 – 17
Chapter 3: Admission to the Master’s degree programme 18 – 19
Chapter 4: Performance assessments 20 – 32
Chapter 5: Issuing of the Master’s degree 33 – 37
Chapter 6: Final clauses 38 – 41

Appendix

Version: 02.07.2012 – 0
Programme Regulations 2012 of the
Master’s degree programme in Computational Science and Engineering
Departments of Mathematics and Physics

2 July 2012 (Version: 2 July 2012)

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

The ETH Zurich Executive Board,
pursuant to Art. 4, Para. 1, Subpara. a of the ETH Zurich Organisational Ordinance (Organisationsverordnung ETH Zürich) of 16 December 2003,¹ decrees:

Chapter 1: General regulations

Part 1: General

Art. 1 Subject and scope, Appendix

¹ These Programme Regulations set out the requirements according to which the Master’s degree in Computational Science and Engineering (CSE) at the ETH Zurich Departments of Mathematics and Physics (D-MATH/D-PHYS) may be acquired.

² The Appendix is a part of these Programme Regulations. Any changes to the Appendix are subject to the approval of the Rector.

Art. 2 Academic title

¹ Graduates of the ETH Zurich Master’s degree programme in Computational Science and Engineering are awarded the academic title

   (in German) Master of Science ETH in Rechnergestützten Wissenschaften
   (abbreviation: MSc ETH RW)

² The English form of this title is

   Master of Science ETH in Computational Science and Engineering
   (abbreviation: MSc ETH CSE)

³ This title may also be used in the abbreviated form ‘MSc ETH’.

¹ RSETHZ 201.021
Art. 3 Legal basis

These Programme Regulations are based upon the stipulations set out in the following legal documents:

a. Ordinance on Course Units and Performance Assessments at ETH Zurich (Verordnung über Lerneinheiten und Leistungskontrollen an der ETH Zürich; hereafter VLK ETH Zürich) of 10 September 2002

b. Ordinance Concerning Admission to Study Programmes at ETH Zurich (Verordnung über die Zulassung zu den Studien an der ETH Zürich; hereafter Admissions Ordinance ETH Zurich) of 30 November 2010

Art. 4 Course Catalogue

1 D-MATH/D-PHYS lists the course units of the degree programme in the Course Catalogue. This list is binding.

2 Details of the course information to be listed in the Course Catalogue are set out in Art. 4 of the ETH Zurich Ordinance on Performance Assessments (VLK ETH Zurich) and in the corresponding implementation rules issued by the Rector.

Part 2: Credit system

Art. 5 Policy

1 The degree programme follows a credit system which is aligned with the European Credit Transfer System (ECTS).

2 ETH Zurich deploys the ECTS in accordance with the Credit System Guidelines (Richtlinien zum Kreditsystem).

Art. 6 Credits, basis for calculation

1 Credits describe the average time expenditure required to achieve a learning goal.

2 One credit corresponds to a workload of 30 hours. This workload comprises all of the study-related activities required to obtain said credit.

3 The curriculum is designed such that full-time students may obtain an average of 30 credits per semester.

---

2 SR 414.135.1, RSETHZ 322.021
3 SR 414.131.52, RSETHZ 310.5
4 SR 414.135.1, RSETHZ 322.021
5 See www.rektorat.ethz.ch/directives.
Art. 7  Allocation of credits

1 D-MATH/D-PHYS allocates a certain number of credits to each of the course units it offers.

2 If an ETH Zurich course unit is found on the curriculum of more than one ETH Zurich degree programme, the department offering the course unit assigns it a standard number of credits in consultation with those integrating it into a programme. The Rector of ETH Zurich settles any cases of disagreement.

3 If a course unit is offered by another university that university is responsible for allocating it a certain number of credits.

Art. 8  Issuing of credits

1 Credits are issued for satisfactory performance. Performance is considered satisfactory if it has been awarded a grade of at least a 4, or a ‘pass’.

2 No credits are issued for unsatisfactory performance.

3 The full number of credits are always issued if the prerequisites of Para. 1 have been satisfied. Partial issue of credits is not permitted.

4 The number of credits issued is that number published in the Course Catalogue valid at the time the respective performance assessment was undertaken.

Art. 9  Recording, checking, registration

D-MATH/D-PHYS records, checks and registers the credits acquired.
Chapter 2: Content, structure and scope of the Master’s degree programme

Part 1: Content, structure and scope

Art. 10 Programme content

This degree programme builds upon the foundation provided by the ETH Zurich Bachelor’s degree programme in CSE. It covers both interdisciplinary training in applied areas of the natural and engineering sciences and the mathematical methods and computer science tools important for these areas. The Master’s thesis concludes the degree programme. With the Master’s thesis students demonstrate their ability to produce independent, structured scientific work. The Master's degree serves as a foundation for entry to the labour market or for a doctoral programme. Subject knowledge and methodology are complemented by freely-selected general electives from the humanities, social and political sciences.

Art. 11 Scope, duration, limits on duration of studies

1 As stipulated in Art. 33, 90 credits are required to obtain a Master’s degree.

2 The normal duration of the degree programme is one and a half years.

3 The maximum permitted duration of studies is three years. The Rector may extend this if cogent grounds are given.

4 If admission to the degree programme is granted subject to the acquisition of additional credits the maximum permitted duration of studies may be extended by half a year for required extra credits in the range of 21 – 30 and by one year for required extra credits in the range of 31 – 60. For fewer than 21 required extra credits no extension is granted.

Art. 12 Language of instruction

Course units and the corresponding performance assessments are normally conducted in English. The language of instruction is subject to the pertaining Rector’s directives.

Art. 13 Admission to course units

Course unit attendance may be subject to particular admission requirements. These are determined by the department at ETH Zurich or the university offering the course unit.
Art. 14  Study procedures, programme advisory service

1 Programme procedures are explained in the degree programme Study Guide.

2 A designated study advisor from Computer Science and Engineering helps students to design a curriculum, and answers questions regarding student exchange.

Art. 15  Student exchange (outgoing students)

1 During the Master’s degree programme credits may be acquired at other universities (mobility credits). Of these a maximum of 30 may be counted towards the Master’s degree. The stipulations set out in Para. 2 and 3 still apply.

2 The following applies to students who did not complete their Bachelor’s degrees at ETH Zurich:
   a. They may not take part in an ETH Zurich exchange programme.
   b. Individual exchange stays are possible, but no credits from said stays towards the Master’s degree will be recognised.

3 If admission to the degree programme was granted subject to the acquisition of additional credits (admission with additional requirements) an exchange stay is only possible once said additional requirements have been completely fulfilled. Mobility credits are not recognised towards those needed to fulfil the additional requirements.

4 Credits from course units of other universities do not qualify as mobility credits if said course units belong to the degree programme curriculum.

5 Before a period of student exchange the respective student, with the help of the study advisor CSE, draws up a written study plan which includes the credits to be acquired at the host university. The study plan must be approved by the Director of Studies.

6 The Director of Studies decides on recognition of mobility credits. Surplus or not recognised mobility credits are listed on a separate sheet of the academic record at the request of the student. Performance evaluations are handled in accordance with Art. 16, VLK ETH Zürich\(^6\).

7 Further details regarding exchange stays or the recognition of mobility credits are published in suitable locations, in particular on the degree programme website.

---

\(^6\) SR 414.135.1, RSETHZ 322.021
Part 2: Categories

Art. 16 Grouping by category

1 To obtain a Master’s degree study achievements are required in the following categories. The minimum number of credits required in each category is set out in Art. 33.
   a. Core subjects 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’s thesis

2 D-MATH/D-PHYS assigns course units to the categories in Para. 1 and publishes them in the Course Catalogue.

Art. 17 Overview of categories

1 Core subjects and compensatory courses:
   a. Core subjects: Core subjects cover mathematical methods relevant to computer science, and advanced computer science knowledge. They are of central importance for computer science and engineering. Details regarding examinations are given in Art. 26.
   b. Compensatory courses: If the required number of credits in core subjects cannot be obtained due to failure of the respective performance assessments these missing credits may be earned via compensatory courses. The number of credits which may be compensated is limited. Further details, also regarding examinations, are given in Art. 26.

2 Fields of specialisation: Specialisations deepen knowledge in applied areas of computer-supported natural and engineering sciences. The fields of specialisation available for selection, which each comprise a number of courses, are listed in the Course Catalogue. Details regarding possible course compositions and performance assessments are given in Art. 27.

3 Electives: Electives extend and deepen theoretical and methodological knowledge. Further details, also regarding performance assessments, are given in Art. 28.

4 Case studies: In ‘Case studies’ courses speakers from ETH and other institutions present case studies from application areas ranging from modelling to solving problems with the computer. Further details, also regarding performance assessments, are given in Art. 29.
 Semester paper: The semester paper (project) deepens knowledge in a particular subject area. Students also learn to work within an existing scientific group and, by coming into contact with applications, to address problems associated with these with computer support. Further details, also regarding performance assessments, are given in Art. 30.

Compulsory electives in humanities, social and political sciences: Students are required to select general course units from the offering of electives in humanities, social and political sciences (compulsory GESS electives). Further details are provided in the directives regarding compulsory GESS electives and in Art. 31 of these Programme Regulations.

Master's thesis: The Master’s thesis concludes the degree programme. With the Master’s thesis students demonstrate their ability to produce independent, structured scientific work. Further details are given in Art. 32.

Chapter 3: Admission to the Master's degree programme

Art. 18 Prerequisites for admission

1 For admission to the degree programme one of the following is required:
   a. a university Bachelor’s degree comprising at least 180 ECTS credits or an equivalent university degree in Computational Science and Engineering or another qualifying discipline listed in the Appendix; or
   b. a Bachelor’s degree in a qualifying discipline listed in the Appendix of a Swiss university of applied sciences comprising at least 180 ECTS credits.

2 Details of the academic and language prerequisites for admission (profile of requirements) are provided in the Appendix.

Art. 19 Enrolment, admission procedure and entry to the Master's degree programme

1 Students of the Bachelor’s degree programme in Computational Science and Engineering already matriculated at ETH Zurich may enrol directly in the Master’s degree programme.

2 All other interested parties should apply to the ETH Zurich Rectorate for admission to the degree programme.

3 The Computational Science and Engineering admissions committee of D-MATH/ D-PHYS investigates candidates’ academic backgrounds and suitability for the Master’s degree programme. The chairperson of the admissions committee formulates and submits to the Rector a request for admission/rejection.

7 The chairperson of the admissions committee must be an ETH Zurich professor.
The Rector decides whether to admit/reject the candidate on the basis of the recommendation of the chairperson of the admissions committee.

The Rector may, depending on the candidate’s qualifications and previous knowledge, make admission conditional upon the acquisition of additional knowledge and competences during the Master’s degree programme (admission with additional requirements).

Details regarding enrolment or application, the admission procedure and entry to the Master’s degree programme are determined by the Rector. They are set out in the Appendix.

Chapter 4: Performance assessments

Part 1: General regulations

Art. 20 Performance evaluation

Performance in examinations and the Master’s thesis is graded. Performance in other forms of performance assessment is either graded or evaluated on a pass/fail basis.

Art. 21 Admission to performance assessments

Admission to performance assessments may be subject to conditions. These are specified by the department of ETH Zurich or the university offering the respective course unit.

Art. 22 Registering/deregistering for performance assessments

1 The following applies to registration/deregistration for performance assessments at ETH Zurich:

a. If the performance assessments in question are session examinations or end-of-semester examinations, registration and deregistration are governed by the stipulations of VLK ETH Zürich\(^8\) and the directives of the Rector.

b. If the performance assessments fall into another category, registration and deregistration are handled directly by the respective lecturer.

2 If the performance assessments concerned are those of another university, registration and deregistration are subject to the rules of that university.

\(^8\) SR 414.135.1, RSETHZ 322.021
Art. 23   Absence, interruption, abandonment, late submission or non-submission

The following stipulations apply to absence from, interruption or abandonment of, and late submission or non-submission of performance assessments:

a. For ETH Zurich performance assessments the stipulations of VLK ETH Zürich\(^9\) and the directives of the Rector apply.

b. For performance assessments of other universities the rules of the respective university apply.

Art. 24   Issuing of results, cases of disagreement

1 Students may view all performance evaluations on the internet via the corresponding ETH Zurich application. They are notified periodically by email when their results are viewable.

2 The procedure in cases of disagreement regarding newly documented results is outlined each time results are issued.

Art. 25   Unethical behaviour

Sanctions imposed in cases of unethical behaviour in the context of performance assessments are governed by the ETH Zurich Disciplinary Code (*Disziplinarordnung ETH Zürich*) of 2 November 2004.\(^{10}\)

Part 2:   Performance assessments in the Master’s degree programme

Art. 26   Core subjects and Compensatory courses

1 Every course unit in the category ‘Core subjects and Compensatory courses’ is subject to an examination.

2 The respective mode of each examination is listed in the Course Catalogue if the course unit is offered by ETH Zurich.

3 If a course unit is offered by another university that university determines the examination mode of said course unit.

4 An examination is passed if it is awarded a grade of at least a 4.

5 A failed examination may be repeated once unless the ETH Zurich department or the university offering the respective course unit stipulates otherwise.

\(^9\) SR 414.135.1, RSETHZ 322.021
\(^{10}\) SR 414.138.1, RSETHZ 361.1
The following additional stipulations apply to the category ‘Core subjects and Compensatory courses’:

a. To obtain the Master’s degree, students must attend both core subjects, and sit the corresponding examinations.

b. If an examination is failed once, it must be repeated if the student is to acquire the credits necessary for the Master’s degree.

c. If an examination is failed twice, credits may no longer be acquired for the respective course unit. In such cases credits may be acquired towards the Master’s degree in Compensatory courses.

d. The number of compensatory credits is restricted as follows: of the minimum 12 credits required in ‘Core subjects and Compensatory courses’, 5 must stem from Core subjects.

e. If cogent grounds are given the Director of Studies may approve as ‘Compensatory courses’ course units other than those listed.

Art. 27 Fields of specialisation

1 Every course unit in the category ‘Fields of specialisation’ is subject to an examination. Exceptions are seminars evaluated according to semester performance.

2 The respective mode of each examination and semester performance is listed in the Course Catalogue if the course unit is offered by ETH Zurich.

3 If a course unit is offered by another university that university determines the examination mode of said course unit.

4 An examination is passed if it is awarded a grade of at least a 4. Performance in the seminar is evaluated on a pass/fail basis.

5 The following stipulations apply in cases of failure:

a. A failed examination may be repeated once unless the ETH Zurich department or the university offering the respective course unit stipulates otherwise.

b. A failed seminar may not be repeated; a different seminar must be selected.

6 The following additional stipulations apply to the category ‘Fields of specialisation’:

a. To acquire the Master’s degree five course units, one of them a seminar, must be completed.

b. Variation 1 applies to graduates of degree programmes other than the ETH Zurich Bachelor’s degree programme in Computational Science and Engineering. In their case the five course units to be recognised in this category, including the seminar, must stem from the same field of specialisation.

c. Variation 2 applies to graduates of the ETH Zurich Bachelor's degree programme in Computational Science and Engineering. These students may choose one of the following two possibilities:
1) They may choose all five courses, including the seminar, from within one specialisation if they did not study said specialisation during the Bachelor’s degree programme.

2) They may choose three courses, including the seminar, from the specialisation which they studied during the Bachelor’s degree programme, and the other two courses from a further specialisation.

d. Students who attended courses from the specialisations during the ETH Zurich Bachelor’s degree programme and sat the respective examinations are subject to the following stipulations:

1) A student who failed one of the respective examinations once is only allowed to sit said examination once in the Master’s degree programme.

2) A student who failed one of the respective examinations twice may not attend the respective course again in the Master’s degree programme.

3) A student who passed an examination but did not count the corresponding credits towards the Bachelor’s degree may have said credits recognised towards the Master’s degree, as follows:

- in the category ‘Fields of Specialisation’, if the conditions set out in Subpara. c have been fulfilled; or
- in the category ‘Electives’.

e. In exceptional cases the Director of Studies may, on request, approve attendance of courses from outside the specialisations offered.

Art. 28 Electives

1 Every course unit in the category ‘Electives’ is subject to an examination.

2 The respective mode of each examination is listed in the Course Catalogue if the course unit is offered by ETH Zurich.

3 If a course unit is offered by another university that university determines the examination mode of said course unit.

4 An examination is passed if it is awarded a grade of at least a 4.

5 A failed examination may be repeated once unless the ETH Zurich department or the university offering the respective course unit stipulates otherwise.

6 The following additional stipulations apply to the category ‘Electives’:

a. To acquire the Master’s degree at least two course units must be completed.

b. Courses from the category ‘Fields of specialisation’ may be recognised as electives.

c. Courses from the category ‘Core subjects and Compensatory courses’ are not recognised as electives.

d. On request the Director of Studies may approve courses as electives which are not on the standard list of choices.
e. Students who sat examinations in electives during the ETH Zurich Bachelor’s degree programme are subject to the following stipulations:

1) A student who failed an examination in an elective once is only allowed to sit said examination once in the Master’s degree programme.

2) A student who fails an examination in an elective twice may not attend the respective elective again in the Master's degree programme.

3) A student who passed an examination but did not count the corresponding credits towards the Bachelor’s degree may have said credits recognised towards the Master’s degree.

Art. 29  Case studies

1 Every course unit in the category ‘Case studies’ is subject to a semester performance.

2 Performance in a case study is evaluated on a pass/fail basis.

3 A failed case study may not be repeated; a different case study must be selected.

4 The following additional stipulations apply to the category ‘Case studies’:
   a. One course per semester is offered.
   b. To acquire the Master’s degree at least two course units must be completed. The Director of Studies may approve an exception if a student is away on an exchange programme.

Art. 30  Semester paper

1 The semester paper is supervised by a lecturer and addresses a theme from a core subject or a specialisation. The Director of Studies may approve exceptions.

2 The semester paper supervisor defines the task to be addressed and determines the paper’s start date and deadline for submission.

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

4 The semester paper is evaluated on a pass/fail basis.

5 A failed semester paper may not be repeated; a different semester paper must be selected.

Art. 31  Compulsory electives in humanities, social and political sciences

1 Every course unit in the category ‘Compulsory electives in humanities, social and political sciences’ is subject to a performance assessment.
2 The respective mode of each performance assessment is listed in the Course Catalogue if the course unit is offered by ETH Zurich.

3 If a course unit is offered by another university that university determines the performance assessment mode of said course unit.

4 A performance assessment is passed if it is awarded a grade of at least a 4 or a ‘pass’.

5 A failed performance assessment may be repeated once unless the ETH Zurich department or the university offering the respective course unit stipulates otherwise.

Art. 32 Master’s thesis

1 A student is only permitted to commence the Master’s thesis if
   a. the Bachelor’s degree programme has been completed;
   b. any additional requirements for admission to the degree programme have been fulfilled;

2 The Master’s thesis project is supervised by an ETH Zurich professor. It addresses a theme from a core subject or the selected specialisation. The Director of Studies may approve exceptions.

3 The duration of the Master’s thesis project is five months. The Director of Studies may extend this if cogent grounds are given.

4 The Master’s thesis supervisor defines the task to be addressed and determines the Master’s thesis start date and deadline for submission. The Master’s thesis project concludes with a written report.

5 The Master’s thesis is graded. It is passed if it is awarded a grade of at least a 4.

6 A failed Master’s thesis project may be repeated once. If it is repeated, a new theme must be addressed. The repetition may be conducted with a new supervisor.
Chapter 5: Issuing of the Master’s degree

Part 1: Credits by category and the degree request

Art. 33 Credits by category

1 The 90 credits required for the Master's degree must be acquired in the following categories in at least the numbers given. Further details are set out in Para. 2.

a. Main areas 44 credits
   1) Core subjects and Compensatory courses (at least 12 credits)
      − Core subjects (at least 5 credits)
      − Compensatory courses (0 credits)
   2) Fields of specialisation (at least 18 credits)
   3) Electives (at least 6 credits)

b. Case studies 6 credits
c. Semester paper 8 credits
d. Compulsory GESS electives 2 credits
e. Master’s thesis 30 credits

2 Of the 44 credits required in the category ‘Main areas’ (Para. 1, Subpara. a) at least 12 must be earned in ‘Core subjects’ (and ‘Compensatory courses’), at least 18 must stem from ‘Fields of specialisation’ and at least 6 must be acquired in ‘Electives’. In addition:

a. Of the 12 credits required in the sub-category ‘Core subjects and Compensatory courses’ (Para. 1, Subpara. a, no. 1) at least 5 must be earned in ‘Core subjects’.

b. In the sub-category ‘Fields of specialisation’ five course units, one of them a seminar, must be completed. It is not permissible to have more than five course units recognised in this category. Any additional course units may be recognised in the sub-category ‘Electives’.

Art. 34 Degree request

1 When they have fulfilled the requirements set out in Art. 33 students may request the issue of the Master's degree. This request must be submitted within three years of commencing the Master’s degree programme. The Rector may extend this deadline if cogent grounds are given.
The request should contain all the performance achievements with pass grades in the categories listed in Art. 33, Para. 1 which are to be listed in the final academic record. In each category the sum of the minimum number of credits set out in Art. 33, Para. 1 must be acquired.

A maximum of 100 credits are recognised towards the Master’s degree.

A maximum of 30 mobility credits are recognised towards the Master’s degree (see Art. 15).

Credits acquired by completing a course unit may not be divided up or counted more than once.

Study achievements accrued prior to the Master’s degree programme may not be counted towards the Master’s degree. Exceptions are listed in Para. 7.

If a student obtained credits at ETH Zurich prior to commencing the Master’s degree programme, these may be recognised as long as the knowledge and skills thereby acquired are part of the subject matter of the degree programme and said credits have never been recognised towards a degree. At the request of the Director of Studies, the Rector makes the final decision on recognition. There is no automatic right to recognition.

Part 2: Academic record, degree certificate and Diploma Supplement

Art. 35 Documents

Students who complete the degree programme receive three documents: an academic record, a degree certificate and a Diploma Supplement.

Art. 36 Academic record

The academic record serves as verification of the completed Master’s degree.

The academic record contains

a. the grades and other performance evaluation indicators (e.g., ‘pass’) listed in the request according to Art. 34, Para. 2
b. the final grade, calculated according to Para. 4.

A supplementary sheet of the academic record lists

a. all additional grades, including those pertaining to any additional requirements for admission;
b. (at the request of the student) any additional or unrecognised mobility credits.
The final grade is calculated as a weighted mean of the following grades:

a. core subject grades according to grade weighting 2
b. compensatory subject grades, if any according to grade weighting 1
c. the 4 Fields of Specialisation grades according to grade weighting 1
d. elective grades according to grade weighting 1
e. The Master’s thesis grade grade weighting 4

D-MATH/D-PHYS records, checks and registers the grades and other performance evaluation indicators and issues the academic record.

Art. 37 Degree certificate, Diploma Supplement

1 Details regarding the degree certificate are provided in Art. 28 VLK ETH Zürich\(^{11}\).

2 The Diploma Supplement comprises a standardised explanation of the degree.

Chapter 6: Final clauses

Art. 38 Definitive failure, exclusion from the degree programme

1 The degree programme is regarded as definitively failed if one of the following applies:
   a. The conditions for obtaining the Master’s degree (acquisition of the required number of credits for the Master’s degree according to the stipulations of Art. 33, or any other conditions) can no longer be satisfied due to failure of performance assessments or failure to respect programme deadlines.\(^{12}\)
   b. In cases of admission with additional requirements said additional requirements have not been fulfilled due to failure of performance assessments or failure to respect the deadlines set for them.

2 Definitive failure results in exclusion from the degree programme.

---

\(^{11}\) SR 414.135.1, RSETHZ 322.021

\(^{12}\) The term ‘programme deadlines’ comprises performance assessment deadlines, individual requirement deadlines and the maximum permitted duration of studies.
Art. 39 Transcript of records for non-graduating students

Students who are excluded from the degree programme or withdraw from it before obtaining the Master's degree receive a transcript of records which lists all the study achievements generated and evaluated before exclusion or withdrawal.

Art. 40 Special cases

The Director of Studies settles cases which are not addressed or insufficiently addressed by these Programme Regulations (and their Appendix) or other relevant ordinances and directives.

Art. 41 Entry into effect

1 These Programme Regulations enter into effect at the beginning of Autumn Semester 2012.

2 They apply to students who enter the degree programme from Autumn Semester 2012 onwards, including students who are re-entering the degree programme.

On behalf of the Executive Board
President: Ralph Eichler
General Secretary: Hugo Bretscher
Appendix

To the Programme Regulations 2012 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.

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.

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

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.

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

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.

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 credits)
- Physik [Physics] I and II (8 credits)
- Programmiertechniken [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)
- Fluidynamik 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
Part 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

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) 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.

---

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
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:
   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.¹⁴

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.

---

¹⁴ 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

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. The Chair of the admissions committee formulates and submits an application for admission/rejection to the Rector.

4 On the basis of this application 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

5 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.

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.