

Departments of Mathematics and Physics

Programme Regulations 2006

Master Programme in Mathematics

16 August 2006

(English Translation – The original German version is the legally binding document)

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Master Programme in Mathematics

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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 following Master degrees can be acquired at the Departments of Mathematics and Physics of ETH Zurich (hereafter referred to as D-MATH/D-PHYS) in the field of study common to both departments:

- a. Master degree in Mathematics;
- b. Master degree in Applied Mathematics.

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

Art. 2 Academic Titles

¹ The Master degree in Mathematics entitles its holders to bear the following academic title:

Master of Science ETH in Mathematik
(abbreviated title: MSc ETH Math.).

² The Master degree in Applied Mathematics entitles its holders to bear the following academic title:

Master of Science ETH in Angewandter Mathematik
(abbreviated title: MSc ETH Angew. Math.).

¹ RSETHZ 201.021 (available in German only)

³ The titles in English are:

- a. Master of Science ETH in Mathematics
(abbreviated title: MSc ETH Math).
- b. Master of Science ETH in Applied Mathematics
(abbreviated title: MSc ETH Appl Math).

⁴ Holders of these Master degrees can also use the abbreviated title “MSc ETH”.

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 courses for the Master programme in Mathematics for each semester, listing them in the course catalogue which is binding. This catalogue is submitted to the Rector for approval within the period stipulated. Specific details are outlined under Art. 28 AVL ETHZ and in the corresponding implementation provisions.

Art. 5 Language of Instruction

¹ Teaching is normally in English or German. The language used in any particular course is given in the course catalogue.

² Students may complete a performance assessment in either German or English even if the assessment is normally conducted in the other language. Students wishing to complete the assessment in the other language must inform the responsible examiner in writing at the latest when they register for the assessment. Courses not organised by ETH Zurich may be excluded from this provision.

³ Students who wish to complete a performance assessment in French or Italian must obtain the agreement of the responsible examiner. An official request must be submitted within the deadline indicated under Para. 2.

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

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

Section 2: Credit System

Art. 6 Principle

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

² The implementation of ECTS at ETH Zurich is defined in the Guidelines on the Credit System⁴.

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 following consultation with the departments concerned. In the case of disagreement, the Rector decides.

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 The full amount of credits is always issued for the course in question, once the pre-requisites under Para. 1 have been fulfilled. Partial issuing of credits is not allowed.

³ The number of credits to be issued is determined by the course catalogue valid at the time at which the performance assessment is completed.

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

Art. 11 Registering, Managing and Checking Credits

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

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

Section 1: Content, Extent and Duration of the Programme

Art. 12 Content of the Programme

¹ The Master programme in Mathematics serves to broaden the basic knowledge acquired during the ETH Zurich Bachelor programme in Mathematics. It offers the possibility to focus on a particular direction of the many mathematical fields, leading to a Master degree in either Mathematics or Applied Mathematics. The programme concludes with a Master thesis which allows students to show their ability to work independently as a mathematician. With the knowledge gained, graduates are able to use and adapt mathematical methods, to recognise and analyse mathematical structures, and approach other areas of knowledge by reading the literature. Optional general education courses from Humanities, Social and Political Sciences allow students to complement their knowledge. The Master degree enables graduates to take up employment or to pursue doctoral studies.

² The Master programme in Applied Mathematics comprises specialising in Applied Mathematics, as well as courses in an application area outside of Mathematics and an application-related project. Graduates subsequently acquire the ability to apply mathematical methods to other disciplines outside the field of Mathematics.

Art. 13 Master Degree in Mathematics or in Applied Mathematics

¹ Students following the Master programme in Mathematics can decide whether they wish to acquire a Master degree in Mathematics or in Applied Mathematics. At the latest, students must decide on which title they wish to acquire at the time they request to be issued with one of these Master degrees (cf. Art. 37). The number of credits required for each Master degree is outlined under Art. 35 (Mathematics) and Art. 36 (Applied Mathematics), respectively.

² Persons who acquire/have acquired one of these two Master degrees are not allowed to have the same credits recognised to acquire the other Master degree.

³ Persons who wish to acquire both Master degrees must register for the second Master degree programme once they have acquired the first Master degree.

Art. 14 Study Procedure, Study Guide, Study Advisory Service

¹ The Study Guide to the Master programme in Mathematics provides explanations on the course of study.

² The D-MATH study advisor advises students on planning their course of study.

Art. 15 Extent and Duration of the Programme; Limitation on the Duration of Studies

¹ It is necessary to obtain 90 credits, as indicated under Art. 35 (Mathematics), or Art. 36 (Applied Mathematics) to acquire the Master degree. At least 60 of the required 90 credits must be acquired at ETH Zurich.

² The Master programme in Mathematics 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 Master programme in Mathematics 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. 16 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 another university (e.g. student exchange) during the Master programme. Performance evaluations are handled in accordance with Art. 12 AVL ETHZ⁵.

Art. 17 Student Exchange

¹ During the Master programme, students can choose to acquire credits at another university. Of these credits, a maximum of 30 can be recognised to obtain the Master degree. Upon request by the student, any additional credits are listed on a separate page of the final academic record.

⁵ SR 414.135.1, RSETHZ 322.021

² Students, who wish to spend an exchange semester at another university, must first prepare a written study plan in collaboration with the D-MATH student exchange advisor. This study plan, which specifies the credits to be acquired at the host university, must be approved by the Director of Studies.

Section 2: Subjects and Grouping according to Category

Art. 18 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 under Art. 35 (Mathematics), or Art. 36 (Applied Mathematics).

- a. Core Courses and Electives
 1. from the fields of Pure Mathematics,
 2. from the fields of Applied Mathematics and other application oriented areas;
- b. Application Area (only necessary for MSc in Applied Mathematics);
- c. Seminars and Semester Papers;
- d. Compulsory Electives in Humanities, Social and Political Sciences;
- e. Master Thesis

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

Art. 19 Category Overview

¹ **Core Courses:** They serve as a foundation in specific areas of Pure or Applied Mathematics and in other application oriented areas such as Physics or Computer Science. Students can individually select courses. Core courses are divided into two subcategories of which one essentially consists of core courses on Pure Mathematics, while the other essentially consists of core courses on Applied Mathematics, and other application oriented areas. Further details are specified in Art. 29.

² **Electives:** They serve to broaden the students' knowledge of specific subject areas. Students can individually select courses. They are divided into the same subcategories as the core courses. Students can also attend other core courses instead of taking electives. Further details are specified in Art. 29.

³ **Application Area:** This category is only required for the Master degree in Applied Mathematics and includes courses run by other departments of ETH Zurich. These courses serve to impart knowledge in technology and science in areas in which Mathematics has an essential role. Further details are specified in Art. 29.

⁴ **Seminars and Semester Papers:**

- a. During the **Seminars**, each student works independently on certain material and makes a presentation for the other participants. Seminars serve to broaden basic knowledge, or to specialise in specific subject areas, in addition to practising making presentations. Students can individually select seminars. Further details are specified in Art. 30.
- b. **Semester Papers** help to deepen the students' knowledge of a specific subject area. Students are offered a selection of topics. These papers serve to develop the students' ability for independent mathematical work as well as to enhance skills in presenting mathematical results in writing. Further details are specified in Art. 30.

⁵ **Compulsory Electives in Humanities, Social and Political Sciences:** Students can choose from general education courses in Humanities, Social and Political Sciences (GESS). Details are specified in the Rector's directives on GESS compulsory electives and in Art. 31 of these Programme Regulations.

⁶ **Master Thesis:** It concludes the study programme. Writing up the Master thesis allows students to independently produce a major piece of work on a mathematical topic. It generally involves consulting the literature, solving any ensuing problems, and putting together the results in writing. Further details are specified in Art. 32.

Chapter 3: Admission to the Master Programme

Art. 20 Admission Prerequisites

¹ To be eligible for admission to the Master programme in Mathematics, candidates must normally fulfil one of the following criteria:

- a. They hold a Bachelor degree in Mathematics from ETH Zurich or the University of Zurich.
- b. They hold a Bachelor degree that corresponds to at least 180 credits ECTS, an equivalent university degree, or evidence of academic achievements at university level⁶ in a scientific discipline qualifying for the Master programme in Mathematics. The level of knowledge required (requirement profile) is listed in the Appendix under Item 1. The following also applies:
 1. Candidates must be able to produce evidence that they would be admitted to the consecutive Master programme of the corresponding discipline at their home university, should such a programme be available.
 2. They must be able to produce evidence that their knowledge of German and/or English is adequate.
 3. Admission is subject to the regulations in Art. 23.

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

Art. 21 Admission Procedure

¹ The way in which applications are managed is based on 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 Bachelor programme in Mathematics (cf. Para. 2); or
- b. Candidates who are enrolled in the University of Zurich Bachelor programme in Mathematics, or already hold an ETH Zurich or University of Zurich Bachelor degree in Mathematics (cf. Para. 3); or
- c. Candidates who do not fulfil the prerequisites listed under Lit. a and b, but are enrolled at a university in a scientific discipline qualifying for the Master programme in Mathematics, or who hold a corresponding Bachelor degree or at least an equivalent degree, or have evidence of corresponding academic achievements (cf. Para. 4).

⁶ Graduates from a University of Applied Sciences are not eligible for admission to the ETH Zurich Master programme in Mathematics. Graduates from a Swiss University of Applied Sciences are granted admission to the ETH Zurich Bachelor programme in Mathematics, and, where applicable, previously acquired study achievements can be recognised. In accordance with the ETH Zurich Admissions Ordinance (SR 414.131.52, RSETHZ 310.5), additional regulations apply for graduates from a University of Applied Sciences outside of Switzerland.

² Students following the ETH Zurich Bachelor programme in Mathematics can directly enrol for the Master programme in Mathematics once they only need to acquire a certain number of credits for the Bachelor degree. The permitted number of credits still to be acquired, and their allocation to the course categories of the Bachelor programme, are listed in the Appendix under Item 2. 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 conditional admission is revoked, if the Bachelor degree
 1. has not been acquired, or
 2. it cannot be acquired due to examination failure, or the maximum allowed duration of study for the Bachelor programme has been exceeded.
- c. The Rector decides on any exceptions on the request of the Director of Studies.

³ Candidates, who come under Para. 1, Lit. b, can enrol for the Master programme in Mathematics at the Rectorate of ETH Zurich. The following applies for students of the University of Zurich who have not yet completed the Bachelor degree in Mathematics:

- a. They can register for the Master programme before they have acquired the Bachelor degree.
- b. They can only matriculate in the ETH Zurich Master programme once they have acquired the Bachelor degree.

⁴ Candidates, who come under Para. 1, Lit. c, should send their applications for admission to the Master programme in Mathematics to the Rectorate of ETH Zurich. They can submit their application before they have acquired the degree or can produce evidence of academic achievements required for admission. The way in which applications are managed is determined by the Rector. The following procedures apply:

- a. The responsible Admissions Committee evaluates the candidates' applications in terms of their academic qualifications and aptitude for the Master programme. The committee then makes a recommendation to the Director of Studies on whether to accept or reject the applications. If the recommendation is positive, the committee will state how many credits are needed, and how many credits can be recognised from previous studies.
- b. Upon the request of the Director of Studies, the Rector decides on admission or rejection, as well as determining the recognition of credits, or the number of credits still to be acquired.
- c. The candidates can matriculate in the Master programme only once the required degree has been acquired, or evidence of academic achievements can be produced.

Art. 22 Admission without Additional Requirements

¹ A Bachelor degree in Mathematics from ETH Zurich or the University of Zurich qualifies for admission to the Master programme in Mathematics without having to fulfil any additional requirements.

² Other university degrees or evidence of academic achievements at university level that qualify for admission to the Master Programme in Mathematics without having to fulfil any additional requirements are listed under Item 3 in the Appendix.

Art. 23 Rejection of Admission

¹ Candidates required to take additional courses (additional requirements) of more than 60 credits, are not admitted to the Master programme in Mathematics.

² Such candidates can submit an application for admission to the Bachelor programme. Details on the admission procedure are provided in the ETH Admissions Ordinance⁷.

Chapter 4: Performance Assessment Regulations

Section 1: General Regulations

Art. 24 Types of Performance Assessment, Performance Evaluation

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

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

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

Art. 25 Conditions of Admission to Performance Assessments

¹ Conditions of admission to performance assessments can be implemented. The conditions for each course are specified in the course catalogue and are made known at the beginning of each course.

⁷ SR 414.131.52, RSETHZ 310.5

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

Art. 26 Registration for End-of-Semester Examinations and Examinations in the Examination Sessions

¹ The AVL ETHZ regulations⁸ and the Rector's directives apply with respect to registration for end-of-semester examinations and for examinations in the examination sessions, as well as to carrying out performance assessments.

² D-MATH/D-PHYS verify that registration for an examination is complete and has been correctly processed.

Art. 27 Performance Assessments relating to Additional Requirements

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

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

³ Students may complete a performance assessment in either German or English even if the assessment is normally conducted in the other language. Students wishing to complete the assessment in the other language must inform the responsible examiner in writing at the latest when they register for the assessment.

⁴ Should the additional requirements not be completely fulfilled due to the student having twice failed performance assessments, admission to the Master programme in Mathematics is revoked. Should such candidates apply and be admitted to a Bachelor programme at ETH Zurich, the following rules apply for performance assessments 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 or examination blocks that have not been passed.
- c. The Rector decides on the recognition of credits upon the request of the responsible department.

⁸ SR414.135.1, RSETHZ 322.021

Art. 28 Dishonest Behaviour

Details on dealing with dishonest behaviour with respect to performance assessments are specified in the ETH Zurich Order of Discipline of 2 November 2004⁹.

Section 2: Performance Assessments

Art. 29 Core Courses, Electives, Application Area

¹ Each course of the categories Core Courses, Electives and Application Area is evaluated by means of a performance assessment. The type and the timing of the performance assessments are specified in the course catalogue.

² One of the application areas specified must be selected for the category 'Application Area' for the Master degree in Applied Mathematics. Upon request, the Director of Studies can approve other course combinations run by other departments as an 'Application Area'.

Art. 30 Seminars and Semester Papers

¹ Every seminar involves a performance assessment, the type and timing of which is specified in the course catalogue.

² Semester papers are carried out under the supervision of a lecturer of D-MATH/D-PHYS, or a professor associated with D-MATH/D-PHYS. Upon request, the Director of Studies can approve exceptions. If the semester paper is on one of the selected application areas, a lecturer from this specific field can co-supervise the paper.

³ The supervisor of the semester paper defines the task, determines the beginning of the semester paper and the date of submission.

⁴ Semester papers are concluded with a written report and, if applicable, a presentation.

Art. 31 GESS Compulsory Electives

Each course pertaining to the category GESS Compulsory Electives is evaluated with a performance assessment. The type and timing of the performance assessments are determined by the ETH Zurich department or the university offering the course.

⁹ SR 414.138.1, RSETHZ 361.1 (available in German only)

Art. 32 Master Thesis

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

- a. have successfully completed the Bachelor programme;
- b. have fulfilled any additional requirements necessary to gain admission to the Master programme in Mathematics.

² The Master thesis is written over a period of five months.

³ The Master thesis is supervised by a D-MATH/D-PHYS professor or a professor associated with D-MATH/D-PHYS. Upon request, the Director of Studies can approve exceptions. If the Master thesis is on one of the selected application areas, a lecturer from this specific field can co-supervise the thesis.

⁴ The thesis supervisor defines the task, determines the beginning of the Master thesis and the date of submission.

⁵ The Master thesis concludes with a written report and, if applicable, a presentation.

Art. 33 Results and Repetition of the Performance Assessments

¹ A performance assessment in the categories Core Courses, Electives, Application Area, and GESS Compulsory Electives is considered as passed if it is graded with at least 4 or 'passed'. Performance assessments considered as failed can be repeated once, provided that the university offering the performance assessment does not have any other regulations about repeating performance assessments.

² Performance assessments for a seminar or a semester paper are evaluated with "passed" or "failed". A failed seminar or semester paper cannot be repeated; the student is required to attend another seminar or to write another semester paper.

³ The Master thesis is graded. It is considered as passed with a grade of at least 4. In the case of failure, a Master thesis can be repeated once. In the case of repetition, a new topic must be chosen.

Chapter 5: Issuing the Master Degree

Section 1: Credits for each Category

Art. 34 Special Regulations for the Credits in each Category

¹ Students who acquire one of the two Master degrees cannot have the credits acquired recognised to obtain the other Master degree.

² 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. 35 Master Degree in Mathematics

¹ The 90 credits required to obtain a Master degree in Mathematics must be acquired in the following categories in the minimum number indicated below for each category. Further details are specified in Para. 2.

a.	Core Courses and Electives – a minimum of 16 of the required 36 credits must be for Core Courses	36 credits
b.	Seminars and Semester Papers – a minimum of 6 of the required 12 credits must be for Seminars	12 credits
c.	GESS Compulsory Electives	2 credits
d.	Master Thesis	30 credits
	<i>subtotal</i>	80 credits

² The remaining credits to make up a total of 90 must be acquired in the categories *Core Courses and Electives* and/or *Seminars and Semester Papers*.

Art. 36 Master Degree in Applied Mathematics

¹ The 90 credits required to obtain a Master degree in Applied Mathematics must be acquired in the following categories in the minimum number indicated below for each category. Further details are specified in Para. 2.

a. Core Courses and Electives	28 credits
<ul style="list-style-type: none"> – a minimum of 16 of the required 28 credits must be for Core Courses – a minimum of 15 of the required 28 credits must be in the fields of Applied Mathematics and other application oriented areas 	
b. Application Area	8 credits
c. Seminars and Semester Papers	14 credits
<ul style="list-style-type: none"> – a minimum of 8 of the required 14 credits must be for Semester Papers – at least one Semester Paper must be relevant to the selected Application Area 	
d. GESS Compulsory Electives	2 credits
e. Master Thesis	30 credits
<i>subtotal</i>	82 credits

² The remaining credits to make up a total of 90 must be acquired in one or more of these categories: *Core Courses and Electives, Application Area, Seminars and Semester Papers.*

Section 2: Request to Issue the Degree, Academic Record, Certificate and Diploma Supplement

Art. 37 Application to Issue the Degree

¹ Once the requirements in accordance with Art. 35, or Art. 36 have been fulfilled, students can apply within three years after having begun the Master programme to be issued with the Master degree. Upon request, the Rector can extend this time limit for compelling reasons.

² The application should specify:

- a. The desired Master degree (Mathematics or Applied Mathematics).
- b. The performance assessments passed from the categories specified under Art. 35, or Art. 36, respectively, to be listed in the final academic record. The total number of credits for each category must correspond to the minimum number of credits specified under Art. 35 or Art. 36.

³ A maximum of 100 credits are recognised for the Master degree. Exceptions remain reserved. Upon request by the students, additional credits are listed on a separate page attached 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 following are listed in the final academic record:

- 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 are listed on a separate page attached to the final academic record in accordance with Art. 37, Para. 3.

³ The grade point average in the final academic record is calculated as a weighted mean of the grades of the performance assessments listed in the application. Any grades for the category GESS Compulsory Electives are not considered for the grade point average of the final academic record.

⁴ The weighting of a grade corresponds to the number of credits allocated to the corresponding course. The grade for the Master thesis is weighted as 30.

⁵ D-MATH/D-PHYS record, manage and check 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 graduates who acquire a Master degree.

Chapter 6: Final Regulations

Art. 40 Exclusion from the Master Programme

Exclusion from the Master programme in Mathematics generally results from not being able to acquire the required number of credits for the Master degree 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 Master programme before he/she acquires the Master degree, or drops out of the study programme, he/she is given 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 Transitional Regulations

¹ The Director of Studies individually assesses the study performance of students who have followed the diploma studies in Mathematics as outlined in the 1994 curriculum and Diploma Examination Regulations¹⁰, and who want to transfer to the Master programme in Mathematics. The Director of Studies recommends admission or rejection in writing, specifying how many credits can be recognised or still have to be acquired.

² Upon the request of the Director of Studies, the Rector decides on admission or rejection, as well as determining the recognition of credits or the number of credits still to be acquired.

Art. 43 Effective Date

These programme regulations come into effect at the beginning of the winter semester 2006/2007. 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: Hafen

Delegate: Bretscher

¹⁰ RSETHZ 321.1.0900.2 und 322.1.0900.2

Appendix

to the Programme Regulations 2006 for the
Master Programme in Mathematics

approved by the Rector on 16 August 2006

1. Requirements for admission to the Master programme in Mathematics (Requirement Profile)

(Ref: Art. 20, Para. 1, Lit. b of the Programme Regulations)

- 1.1** To gain admission to the Master programme in Mathematics, candidates must produce evidence of their scientific knowledge and abilities. The following requirement profile provides information on the minimum standards that must be fulfilled to gain admission to the programme, and serves as a guideline for candidates who do not hold academic qualifications according to Item 3 of this Appendix.
- 1.2** The requirement profile is based on knowledge and abilities imparted by the ETH Zurich Bachelor programme in Mathematics, and corresponds to 144 ECTS credits, i.e. 80% of the study achievements required for the ETH Zurich Bachelor degree in Mathematics. The requirement profile is divided into the following two parts:

Part 1 corresponds to 84 credits comprising the fundamental knowledge and skills that constitute the mandatory essential basis for the Master programme. This knowledge is acquired from the compulsory courses taken during the ETH Zurich Bachelor programme in Mathematics, but does not include Physics and Computer Science. The courses listed in the table below are a guideline, and include the allocated number of credits as specified in the course catalogue for the ETH Zurich Bachelor programme in Mathematics¹¹. To a certain extent, the courses can be replaced with other equivalent courses:

Subject Area	credits
- Analysis I and II	20
- Linear Algebra I and II	14
- Numerical Methods	7
- Complex Analysis	6
- Measure and Integration	6
- Algebra I and II	12
- Topology	6
- Numerical Analysis	6
- Probability and Statistics	7

¹¹ The course catalogue can be accessed online at: www.courses.ethz.ch

Part 2 corresponds to 60 credits, and comprises basic knowledge of one or more of the following subject areas: Mathematics, including subject areas from both Pure Mathematics and Applied Mathematics, Physics and Computer Science. The following examples illustrate eligible subject areas:

- areas of Pure Mathematics, e.g. Algebra, Analysis, and Geometry
- areas of Applied Mathematics e.g. Probability Theory, Statistics, Numerical Methods, Theoretical Physics, and Theory of Computing.
- Physics, e.g. course content of Physics I-III of the ETH Zurich Bachelor programme in Mathematics. The content of each course is listed in the ETH Zurich course catalogue¹².
- Computer Science, e.g. course content of Computer Science I of the ETH Zurich Bachelor programme in Mathematics. The content of each course is listed in the ETH Zurich course catalogue.

2. Direct registration for the Master programme for students of the ETH Zurich Bachelor programme in Mathematics

(Ref: Art. 21, Para. 2 of the Programme Regulations)

Students pursuing the ETH Zurich Bachelor programme in Mathematics can register for the Master programme in Mathematics once they have:

- a. successfully finished the first year and the second year compulsory subjects;¹³
- b. only to acquire **a maximum of 45 credits** for the Bachelor degree.

3. University degrees or evidence of academic achievements from universities, which qualify for admission to the Master programme without any further study requirements

(Ref: Art. 22 of the Programme Regulations)

3.1 Persons, holding one of the following Bachelor degrees, qualify for admission to the Master programme without having to fulfil any further study requirements:

- Bachelor degree in Mathematics of ETH Zurich
- Bachelor degree in Mathematics of the University of Zurich

Degrees from other universities are being clarified.

3.2 Holders of university degrees, or evidence of academic achievements, not listed under Item 3.1 must follow the admission procedure based on an individual evaluation of their dossier in accordance with Art. 21, Para. 4 of the programme regulations.

¹² The course catalogue can be accessed online at: www.courses.ethz.ch

¹³ See the Regulations for the Bachelor Programme in Mathematics.