

Programme Regulations 2020
of the Master's degree programme in
Biomedical Engineering
Departments of
Information Technology and Electrical Engineering⁽¹⁾ (D-ITET)
Mechanical and Process Engineering (D-MAVT)
Health Sciences and Technology (D-HEST)
Physics (D-PHYS)

29 October 2019

*This English translation is for information purpose only.
The original German version is the legally binding document.*

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Version: **29.10.2019 – 0**

¹ Leading department, pursuant to Art. 33, Para. 1 of the ETH Zurich Organisational Ordinance (*Organisationsverordnung ETH Zürich*) of 16.12.2003 (RSETHZ 201.021).

Programme Regulations 2020 of the Master's degree programme in Biomedical Engineering

Departements:

- Information Technology and Electrical Engineering
- Mechanical and Process Engineering
- Health Sciences and Technology
- Physics

29 October 2019

(Version: 29 October 2019)

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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,⁽²⁾

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 Biomedical Engineering at the departments of Information Technology and Electrical Engineering (D-ITET), Mechanical and Process Engineering (D-MAVT), Health Sciences and Technology (D-HEST) and Physics (D-PHYS) may be acquired.

² D-ITET, D-MAVT, D-HEST and D-PHYS are joint sponsors of the specialised⁽³⁾ Master's degree in Biomedical Engineering (subsequently 'the degree programme'). D-ITET is in charge of the programme (leading house)⁽⁴⁾.

³ The Appendix is a part of these Programme Regulations.

⁴ Any changes to these Programme Regulations or the appendix are undertaken only on the request of or in consultation with D-ITET, D-MAVT, D-HEST and D-PHYS.

² RSETHZ 201.021

³ A specialised Master's degree programme in the sense of Art. 3, Para. 3 of the *Bologna-Richtlinien des Hochschulrates* of 28 May 2015 (SR 414.205.1).

⁴ Leading department, pursuant to Art. 33, Para. 1 of the ETH Zurich Organisational Ordinance (*Organisationsverordnung ETH Zürich*) of 16 December 2003 (RSETHZ 201.021).

Art. 2 Steering committee

¹ In addition to the normal D-ITET, D-MAVT, D-HEST and D-PHYS bodies, a steering committee oversees academic matters relating to the degree programme. This committee also determines

- a. the professors and other lecturers who may be selected as study advisors (see Art. 21) or as supervisors of papers and/or Master's theses (see Art. 32 and 35);
- b. the members of the admissions committee.

² The steering committee comprises

- a. the director of studies of D-ITET; she/he can be represented by the D-ITET study programme coordinator;
- b. one or two representative each from D-ITET, D-MAVT, D-HEST and D-PHYS; each department select their representatives according to departmental procedures.

Art. 3 Academic title

¹ Graduates of the degree programme are awarded the academic title

Master of Science ETH in Biomedical Engineering
(abbreviation: MSc ETH BME)

² This title may also be used in the abbreviated form 'MSc ETH'.

Art. 4 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 of 22 May 2012⁵ (ETH Zurich Ordinance on Performance Assessments)
- b. Ordinance on Admission to Studying at ETH Zurich of 30 November 2010⁶ (*Zulassungsverordnung ETH Zürich*)

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).

⁵ RSETHZ 322.021en (in English), SR 414.135.1 (in German)

⁶ (only available in German) SR 414.131.52, RSETHZ 310.5

² ETH Zurich deploys the ECTS in accordance with the Rector's Credit System Guidelines (*Richtlinien zum Kreditsystem*)⁷.

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.

Art. 7 Allocation of credits

¹ D-ITET, D-MAVT, D-HEST and D-PHYS allocate a certain number of credits to each course unit they offer.

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-ITET records, checks and registers the credits acquired.

⁷ See www.weisungen.ethz.ch (in German only)

Chapter 2: Content, structure and scope of the Master's degree programme

Part 1: Course description, structure and scope

Art. 10 Course description and structure

¹ Biomedical Engineering (BME) is an interdisciplinary area in which procedures and methods from the technical sciences, mathematics and physics are used to address and solve important current problems of biology and medicine. The degree programme deepens knowledge in biomedical technology corresponding to one of five specialisation tracks selected by students. With the semester project and the Master's thesis students gain experience in interdisciplinary research projects. Scientific training is complemented by freely chosen general electives from the humanities and social and political sciences.

² The specialisation tracks available for selection and further details regarding these and the individual curriculum are set out in Art. 19 – 22.

Art. 11 Course progression, study advice

¹ Details of the progression of the programme are published on the degree programme website.

² Study advisors (see Art. 21), professors in the selected specialization track or the degree programme coordinator help students to design a curriculum, i.e. to select course units and themes for the semester project and Master's thesis. Further details regarding study advisors are found in Art. 20 and 21.

Art. 12 Scope, duration, limits on duration of studies

¹ As stipulated in Art. 36, 120 credits are required to obtain a Master's degree.

²The normal duration of the degree programme is two years.

³ The maximum permitted duration of studies is four years. The Rector may extend this if cogent grounds are provided in a request submitted by the specific deadline.

⁴ If admission to the degree programme is granted subject to the acquisition of additional credits (admission with additional requirements) 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. 13 Course Catalogue

¹ Every semester, after consulting with the steering committee, D-ITET lists the course units of the degree programme in the Course Catalogue. This list is binding.

² The details of the entries in the Course Catalogue are set out in Art. 4 of the ETH Zurich Ordinance on Performance Assessments⁽⁸⁾ and in the corresponding implementation stipulations⁽⁹⁾ of the Rector.

Art. 14 Language of instruction

Course units and the corresponding performance assessments are normally conducted in English. The language of instruction of ETH course units is also subject to the pertaining Rector's directives⁽¹⁰⁾.

Art. 15 Admission to course units

Special admission prerequisites may apply to a course unit. If these are not specified in these Programme Regulations, they are specified by that ETH Zurich department or the university which offers the respective course unit.

Art. 16 Student exchange (ETH Master's degree students)

¹ During the Master's degree programme credits may be acquired at other universities (mobility credits). Of these mobility credits a maximum of 30 may be recognised towards the Master's degree. The stipulations of Para. 3 and 4 below still apply.

² Credits from course units of other universities do not qualify as mobility credits if said course units belong to the degree programme curriculum.

³ Students who did not complete the preceding (Bachelor's) degree at ETH Zurich may not take part in ETH Zurich exchange programmes. Individual exchange stays are possible, but the recognition of mobility credits towards the Master's degree is not possible. These provisions do not apply to the semester project or the Master's thesis (see Para. 5).

⁴ If admission to the degree programme is subject to the acquisition of additional credits (admission with additional requirements) an exchange stay is only possible after all additional requirements have been fulfilled. Mobility credits may not be counted towards fulfilment of additional requirements.

⁵ The semester project or the Master's thesis may be undertaken at another university and be recognised towards the Master's degree provided that the written approval of the study advisor of the selected specialisation track is secured in advance.

⁸ RSETHZ 322.021en (*in English*), SR 414.135.1 (*in German*)

⁹ See www.directives.ethz.ch

¹⁰ See www.directives.ethz.ch

⁶ For an exchange stay the student draws up a written study plan in advance with the help of the study advisor of the selected specialisation track. This plan includes the credits to be acquired at the host university. It must be approved by the D-ITET Student Exchange Coordinator.

⁷ The Director of Studies of D-ITET decides whether mobility credits will be recognised. Art. 16 of the ETH Zurich Ordinance on Performance Assessments⁽¹¹⁾ and the pertaining implementation stipulations⁽¹²⁾ of the Rector set out how proof of academic achievement is handled.

⁸ Questions regarding student exchange may be referred to the D-ITET Student Exchange Coordinator.

Part 2: Grouping by category

Art. 17 Categories

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. 36.

- a. Major courses
 1. Track core courses,
 2. Track electives,
 3. Biology courses;
- b. Projects and Laboratory courses
 1. Semester project,
 2. Additional projects and Laboratory courses;
- c. Science in Perspective;
- d. Master's thesis.

² In consultation with the steering committee, D-ITET assigns course units to the categories in Para. 1 and publishes them in the Course Catalogue.

Art. 18 Overview of categories

¹ Major courses

Every specialisation track involves a group of courses structured into core courses, electives and biology courses. Their allocation to individual specialisation tracks is set out in the Course Catalogue. Specialisation subjects impart specific knowledge regarding the respective specialisation and generally comprise a lecture and practicals. The biology courses are only meant for those students who have no basic knowledge in the areas of

¹¹ RSETHZ 322.021en (in English), SR 414.135.1 (in German)

¹² See www.directives.ethz.ch

biology, anatomy and physiology. Further details are found Art. 19 – 22; for stipulations regarding performance assessments see Art. 31.

² Projects and Laboratory courses

In a mandatory semester project, students use the disciplinary and social competences they have acquired to gain initial experience of solving a technical problem independently and working on an interdisciplinary scientific research project.

Further voluntary projects and practicals may also be completed. These provide practice in using scientific (laboratory) methods (e.g. in group research projects) or are professionally oriented, allowing an insight into the future world of work (internship in industry). Further details, including details of performance assessments, are set out in Art. 32 – 34.

³ Science in Perspective

Students are required to complete course units from the “Science in Perspective” programme. Details are set out in the pertaining directive¹³; stipulations regarding performance assessments are listed in Art. 31 below.

⁴ Master’s thesis

The Master’s thesis generally concludes the degree programme and is supervised by a professor. With the Master’s thesis students demonstrate their ability to conduct independent, scientifically structured work. Further details are given in Art. 35.

Part 3: Specialisation tracks, study advisor and individual curriculum

Art. 19 Specialisation tracks, selection of specialisation track

¹ The degree programme offers the following specialisation tracks. Students must select one of them at the time of application to the Master’s degree programme.

- a. Bioimaging;
- b. Bioelectronics;
- c. Biomechanics;
- d. Medical Physics;
- e. Molecular Bioengineering.

² Detailed descriptions of the individual tracks are published on the degree programme website.

¹³ See www.directives.ethz.ch

Art. 20 Change of specialisation track

¹ Students may change their specialisation track during the course of their studies. A change requires the written agreement of the new study advisor and the Director of Studies of D-ITET (see also Art. 24, Para. 4).

² If credits have already been earned in the original specialisation track, these may only be recognised towards the new specialisation track if the latter also requires the corresponding subjects. The stipulations of Art. 22, Para. 3 also apply here.

³ A change does not entitle the respective student to an extension of the maximum permitted duration of studies.

Art. 21 Study advisor

¹ Every specialisation track has at least one study advisor. This person must be a professor at D-ITET, D-MAVT, D-HEST or D-PHYS.

² The study advisors monitor students during the entire Master's degree programme and are available to provide guidance.

³ If more than one study advisor is available in a specialisation track, students select one of them at the beginning of their Master's studies. It is not possible to pursue Master's degree studies without a study advisor.

Art. 22 Individual curriculum

¹ At the beginning of the Master's degree programme the study advisor, in consultation with the student, determines the individual curriculum. This curriculum contains the required major courses, and is binding. Only those major courses listed in the curriculum may be recognised towards the Master's degree programme.

² The curriculum should guarantee solid, wide-ranging training and at the same time accord with the talents and expectations of the respective student. In particular, students with little knowledge of biology, anatomy and physiology should complete the biology courses.

³ On request, the study advisor of the chosen specialisation track may also approve course units other than those offered for selection as major courses.

⁴ Disagreements between a student and the study advisor regarding choice of courses are settled by the Director of Studies of D-ITET.

⁵ D-ITET determines the deadlines and other procedures for compiling and adjusting the individual curriculum.

Chapter 3: Admission to the Master's degree programme

Art. 23 Prerequisites for admission

¹ Admission to the degree programme presupposes a university Bachelor's degree comprising at least 180 ECTS credits, an equivalent university degree, or a Bachelor's degree from a Swiss university of applied sciences in a discipline which qualifies the holder for the degree programme. The qualifying disciplines are listed in the Appendix.

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

Art. 24 Application, admission procedure and entry to the Master's degree programme

¹ All candidates should apply to the ETH Zurich Admissions Office for admission to the degree programme.

² The admissions committee of the degree programme investigates candidates' academic backgrounds and suitability for the Master's degree programme and submits a recommendation for admission/rejection to the Director of Studies of D-ITET.

³ The Rector decides whether to admit/reject the candidate on the basis of the recommendation of the Director of Studies of D-ITET.

⁴ Admission always proceeds for a specific specialisation track; this is noted in the admissions decision. Students admitted for a specific specialisation track have no associated right to admission to a different specialisation.

⁵ 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).

⁶ Details regarding 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. 25 Performance evaluation

Performance in examinations is graded. Performance in other forms of performance assessment is either graded or evaluated on a pass/fail basis.

Art. 26 Admission to performance assessments

Admission to performance assessments may be subject to conditions. If these are not specified in these Programme Regulations, they are specified by that ETH Zurich department or the university which offers the respective course unit.

Art. 27 Registering for / deregistering from performance assessments

¹ The following provisions apply to registration for / deregistration from performance assessments at ETH Zurich:

- a. If the performance assessments in question are end-of-semester examinations or session examinations, registration and deregistration are governed by the stipulations of the ETH Zurich Ordinance on Performance Assessments⁽¹⁴⁾ and the associated implementation stipulations of the Rector⁽¹⁵⁾.
- b. If the performance assessments fall into another category, registration and deregistration are generally handled by the respective lecturer in person.

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

Art. 28 Absence, interruption, breaking off, late submission or non-submission

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

- a. ETH Zurich performance assessments are governed by the stipulations of the ETH Zurich Ordinance on Performance Assessment⁽¹⁶⁾ and the associated implementation stipulations of the Rector⁽¹⁷⁾;
- b. Performance assessments of another university are subject to the rules of the respective university.

¹⁴ SR 414.135.1, RSETHZ 322.021

¹⁵ See www.weisungen.ethz.ch

¹⁶ SR 414.135.1, RSETHZ 322.021

¹⁷ See www.weisungen.ethz.ch

Art. 29 Issuing of results, disputes

¹ Students may view all of their performance results online via the corresponding ETH Zurich application. They are informed periodically by email as to which performance assessment results are now viewable.

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

Art. 30 Dishonest conduct

The sanctions for dishonest conduct in the context of performance assessments are outlined in the Disciplinary Code of ETH Zurich (Disziplinarordnung ETH Zürich) of 2 November 2004⁽¹⁸⁾.

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

Art. 31 Major courses and Science in Perspective

¹ Every course unit in the categories 'Major courses' and 'Science in Perspective' 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.

⁶ A performance assessment, once passed, may not be repeated.

Art. 32 Projects and Laboratory courses: Semester project

¹ The semester project may be undertaken at ETH Zurich, in industry, at a research institution or in a laboratory (even outside the ETH domain).

¹⁸ SR 414.138.1, RSETHZ 361.1

² Semester projects are supervised and evaluated by one or more professors and sometimes other persons. At least one professor must belong to one of the departments participating in the degree programme. This is also true of semester projects undertaken outside ETH Zurich.

³ The supervisor of the semester project

- a. defines the theme of the semester project in consultation with the student;
- b. defines the task to be addressed;
- c. sets out the starting and submission dates of the project and the pertaining evaluation criteria in writing.

⁴ The semester project may take a maximum of 14 weeks if it is undertaken during the semester alongside lectures. This means that half of the total time allotted for full-time studies may be used. If all of the total time allotted for full-time studies is used, the project may take a maximum of 7 weeks. The Director of Studies of D-ITET may approve an extension if cogent grounds are given.

⁵ The semester project concludes with the submission of results, a final written report and a presentation. It is graded.

⁶ If the semester project is a group project the performance of each group member is graded individually.

⁷ The semester project is passed if it is awarded a grade of at least a 4.

⁸ A failed semester project may only be repeated once.

Art. 33 Projects and Laboratory courses: Internship in industry

¹ The internship in industry is optional. It lasts at least 12 weeks if the work is full-time, and normally takes place in an industrial firm in Switzerland or abroad. It may be conducted either before or during Master's degree studies, but must be completed before the student registers for the Master's thesis.

² The internship is officially verified via a written confirmation (internship confirmation) from the firm or institution where it took place. It is up to the student to make sure that the internship confirmation is issued.

³ The Director of Studies of D-ITET decides whether the internship will be recognised on the basis of the internship confirmation. A recognised internship receives a "pass" grade.

⁴ Only approved internships may be recognised towards the Master's degree or listed on the separate sheet of the academic record. The recognition or listing of internships which have already counted towards a degree is not permitted.

⁵ Further details regarding the internship in industry are provided in the pertaining D-ITET guidelines.

Art. 34 Projects and Laboratory courses: Research projects

¹ Research projects are optional. They last at least 12 weeks if the work involved is full-time. Larger-scope practicals may also be offered.

² Research projects may be conducted in a research group at ETH Zurich, or at a research institution / laboratory (which may also be outside the ETH domain or abroad). Research projects must be conducted during Master's degree studies and completed before the student registers for the Master's thesis.

³ The approval of the study advisor is required if a research project is to be conducted in the same research group as the Master's thesis. If the research group in question is the research group of the study advisor, the Director of Studies of D-ITET makes the final decision.

⁴ Research projects may be conducted in groups (group work). If a research project is graded, the performance of each group member is graded individually.

⁵ The research project concludes with the submission of its results; a final written report; and a presentation. It is considered passed if it receives a grade of at least "4" or a "pass".

⁶ A failed research project may only be repeated once.

⁷ Further details concerning research projects are set out in the corresponding D-ITET guidelines.

Art. 35 Master's thesis

¹ Students are 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;
- c. the 12 credits for the semester project have been acquired;
- d. any industrial or research internships have been completed.

² The Director of Studies of D-ITET rules on any exceptions to Para. 1 (c) and (d). Exceptions require a well-grounded request from the Master's thesis supervisor and the consent of the study advisor. Exceptions to Para. 1 (a) and (b) are not permitted.

³ The Master's thesis project may be undertaken at ETH Zurich, in industry or at a research institution (even outside the ETH domain).

⁴ Master's theses are supervised and evaluated by one or more professors and sometimes other persons. At least one professor must belong to one of the departments offering the degree programme. This also applies to Master's theses undertaken outside ETH Zurich.

⁵ The Master's thesis normally addresses a theme from the selected specialisation track. The Master's thesis supervisor

- a. defines the theme of the Master's thesis project in consultation with the student;
- b. defines the task to be addressed;
- c. sets out the starting and submission dates of the project and the pertaining evaluation criteria in writing.

⁶ The Master's thesis project lasts six months (full-time). The Director of Studies of D-ITET may, on request, grant an extension if cogent grounds are given.

⁷ The Master's thesis must be innovative in a technical-scientific sense. It concludes with the submission of results, a final written report and a presentation. It is graded.

⁸ Wird die Master-Arbeit als Gruppenarbeit ausgeführt, so wird die Leistung jedes Gruppenmitglieds einzeln mit einer Note bewertet.

⁹ The Master's thesis is passed if the grade it receives is at least a 4.

¹⁰ A failed Master's thesis project may only be repeated once. If it is repeated, a new theme must be addressed. The repetition may be conducted with a new supervisor.

¹¹ A Master's thesis, once passed, may not be repeated.

Chapter 5: Issuing of the Master's degree

Part 1: Credits by category and degree request

Art. 36 Credits by category

¹ The 120 credits required for the Master's degree must be earned in the following categories in at least the numbers given. Further details are set out in Para. 2 – 4.

a. Major courses	52 credits
1. Track core courses (at least 12 credits)	
2. Track electives (-- credits)	
3. Biology courses (-- credits)	
b. Projects and Laboratory courses	12 credits
1. Semester project (at least 12 credits)	
2. Additional projects and Laboratory courses (-- credits)	
c. Science in Perspective	2 credits
d. Master's thesis	30 credits
	<hr/>
	sum 96 credits

² Credits still to be earned to make up the required sum of 120 credits must be acquired in the categories "Major courses" and/or "Projects and Laboratory courses" (Para. 1 (a) and (b)).

³ In the category "Major courses" (Para. 1 (a)) at least 52 credits must be earned. Of these, at least 12 credits must come from specialisation track core courses.

⁴ In the category "Projects and Laboratory courses" (Para. 1 (b)) at least 12 credits must be earned. Of these, at least 12 must come from a semester project.

Art. 37 Degree request

¹ When they have fulfilled the requirements set out in Art. 36 students may request the issue of the Master's degree. The degree request must be submitted within four years of commencing the Master's degree programme. The Rector may extend this deadline if cogent grounds are provided by the respective request deadline.

² The request should contain all those study achievements with pass grades in the categories and sub-categories listed in Art. 36 which are to be listed in the final academic record. The sum of credits in each category and sub-category must reach the minimums designated in Art. 36.

³ The following points also apply to recognition of study achievements for the Master's degree:

- a. In the categories 'Specialisation tracks courses', only course units listed in the individual study plan can be recognised. Further details are provided in Art. 22.
- b. A maximum of 130 credits may be recognised towards the Master's degree in the final academic record. All other study achievements are listed on a separate sheet of the academic record.
- c. A maximum of 30 mobility credits may be recognised towards the Master's degree. The stipulations of Art. 16 apply.

⁴ The credits earned by completing a course unit may not be recognised more than once, or divided up.

⁵ Recognition of study achievements or credits from preceding studies is not possible. The exceptions are:

- a. Credits earned at ETH Zurich before taking up Master's degree studies may be recognised as long as the knowledge and skills acquired thereby are integral to the degree programme and the credits in question have not already been recognised towards a degree. Recognition of credits is only possible in the categories 'Specialisation track courses' or 'Science in Perspective'.
- b. An internship in industry undertaken before Master's degree studies began may be recognised if the conditions set out in Art. 33 have been met and the internship has not already counted towards a degree.
- c. The Director of Studies of D-ITET decides whether credits mentioned in (a) and (b) will be recognised. There is no automatic entitlement to recognition.

Part 2: Academic record, degree certificate and Diploma Supplement

Art. 38 Documents

Graduates of the degree programme receive three documents: an academic record, a degree certificate and a Diploma Supplement.

Art. 39 Academic record

¹ The academic record verifies the successful completion of the Master's degree.

² The academic record lists:

- a. The study achievements listed in the degree request as per Art. 37, Para. 2, including grades and other measures of performance
- b. The final grade, computed as the weighted average of all the grades listed in the degree request, with the corresponding credits as weighting.

³ A separate sheet of the academic record lists:

- a. Any additional admission requirements
- b. All further study achievements as set out in the pertaining implementation stipulations⁽¹⁹⁾ of the Rector.

⁴ D-ITET records, checks and administers the grades and other measures of performance, and issues the academic records.

Art. 40 Degree certificate and Diploma Supplement

¹ Details regarding the degree certificate are set out in Art. 28 of the ETH Zurich Ordinance on Performance Assessments⁽²⁰⁾.

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

Chapter 6: Final clauses

Art. 41 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. 36, or any other conditions) can no longer be satisfied due to failure of performance assessments or failure to respect programme deadlines⁽²¹⁾.
- 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.

¹⁹ See www.weisungen.ethz.ch

²⁰ RSETHZ 322.021 (*in English*), SR 414.135.1 (*in German*)

²¹ Academic deadlines are deadlines for conducting performance assessments, additional individual deadlines, and the maximum permitted duration of studies.

Art. 42 Transcript of records after exclusion or abandonment of studies

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

Art. 43 Special cases

The Director of Studies of D-ITET rules on cases which are not or are not sufficiently addressed by these Programme Regulations, their Appendix, or other relevant ordinances and directives.

Art. 44 Entry into effect

¹ These Programme Regulations enter into effect at the beginning of Autumn Semester 2020.

² They apply to students who

- a. enter the degree programme from Autumn Semester 2020 onwards;
- b. entered the degree programme before Autumn Semester 2020. Such students may, on request, complete their studies according to the provisions of these Programme Regulations 2020. The Director of Studies rules on changes of programme regulations in consultation with Academic Services. If there is a change of programme regulations the maximum permitted duration of studies is extended by two semesters for the affected student.
- c. re-enter the degree programme from Autumn Semester 2020 onwards.

³ The Director of Studies of D-ITET, in consultation with Academic Services, rules on special cases relating to programme regulation assignment.

On behalf of the Executive Board

President: Joël Mesot

General Secretary: Katharina Poiger Ruloff

Appendix

To the Programme Regulations 2020 of the
Master's degree programme in Biomedical Engineering

29 October 2019 (Version: 29 October 2019)

Applies to students who commence or re-enter the degree programme in Autumn Semester 2020 or later.

For those entering the degree programme before Autumn Semester 2020 the stipulations of the previous Appendix apply.

This English translation is for information purposes only. The German version is the legally binding document.

Subject and scope

This appendix sets out the academic, language and performance prerequisites for and further details regarding admission to the Master's degree programme in Biomedical Engineering. It supplements the stipulations of the Admission Regulations of ETH Zurich and the Directive on Admission to Master's degree programmes.

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2 Specific stipulations for admission and entry to the Master's degree programme

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- 4.1 General regulations
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- 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 Biomedical Engineering (sub-sequently 'the degree programme') all of the following prerequisites must be satisfied.

1.1 Degree qualifications

¹ Admission to the degree programme presupposes a university Bachelor's degree comprising at least 180 ECTS⁽¹⁾ credits, an equivalent university degree, or a Bachelor's degree from a Swiss university of applied sciences⁽²⁾ in a technical or natural sciences discipline the content of which – also with regard to any additional academic requirements within the given framework – satisfies the pertaining academic and performance admission prerequisites.

² Said technical and natural science disciplines include, in particular (listed alphabetically):

- a. for admission to the specialisations in Bioelectronics and Bioimaging:
 - Biomedical Engineering
 - Biotechnology
 - Chemical Engineering
 - Computational Science and Engineering
 - Computer Science
 - Electrical Engineering
 - Materials Science
 - Mathematics
 - Mechanical Engineering
 - Physics
- b. for admission to the specialisation in Biomechanics:
 - all disciplines listed in Subpara. a and
 - Health Sciences and Technology
 - Human Movement Sciences
 - Life Sciences and Technology
- c. for admission to the specialisation in Molecular Bioengineering:
 - all disciplines listed in Subpara. a and
 - Biology
 - Chemistry
 - Health Sciences and Technology
 - Human Movement Sciences
 - Life Sciences and Technology
 - Medicine

¹ ECTS: European Credit Transfer System. Credits describe the average time expended to achieve a learning goal. One credit corresponds to ca. 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.

d. for admission to the specialisation in Medical Physics:

- all disciplines listed in Subpara. a and
- Biology
- Chemistry
- Health Sciences and Technology
- Life Sciences and Technology
- Medicine

³ A Bachelor's degree qualifies its holder for admission to an ETH Master's degree programme only if it also qualifies said holder to enter, without additional requirements, the desired Master's degree programme within the university system where the Bachelor's degree was acquired. The Rector may also demand proof of this, determining whether such proof must come from the home university or from another university in the country where the Bachelor's degree was acquired.

1.2 Academic prerequisites

¹ Attendance of the degree programme presupposes basic knowledge and competences in technical and natural sciences which must in content, scope, quality and skill level be equivalent to those covered in the ETH Zurich Bachelor's degree programmes in the disciplines listed in Section 1.1 (discipline requirements profile).

² The **discipline requirements profile** comprises **110 ECTS credits (credits)** in total and is based on knowledge and skills covered in the ETH Zurich Bachelor's degree programmes in the disciplines listed in Section 1.1. This includes training in the relevant methodological scientific thinking. Details are set out in Para. 5 below.

³ If the academic prerequisites for admission 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). Details regarding the fulfilment of these additional requirements are set out in Section 4 below.

⁴ Admission to the degree programme is not possible if the academic gaps in the candidate's background are too extensive. For further details, see the Sections below.

⁵ The **discipline requirements profile** is structured in two parts, as follows (see next page). Details regarding the content of the corresponding course units are published in the ETH Zurich Course Catalogue (www.vvz.ethz.ch).

Part 1: Basic knowledge and competences

Part 1 comprises up to **30 credits** and covers basic knowledge and competences in the disciplines of Mathematics and Physics. The substance of the following course units is required:

- a. for admission to the specialisations in Bioelectronics and Bioimaging:
at least 30 credits based upon the following course units from the ETH Bachelor's degree programme in Electrical Engineering and Information Technology:
 - Analysis I and II
 - Lineare Algebra [Linear Algebra]
 - Physik [Physics] I and II
- b. for admission to the specialisations in Biomechanics and Medical Physics:
at least 22 credits based upon the following course units from the ETH Bachelor's degree programme in Health Sciences and Technology:
 - Mathematik (Mathematics) I, II, and II
 - Physik [Physics] I and II
- c. for admission to the specialisation in Molecular Bioengineering:
at least 10 credits based upon the following course units from the ETH Bachelor's degree programme in Health Sciences and Technology:
 - Mathematik (Mathematics) II
 - Physik [Physics] II

Part 2: Subject-specific knowledge and competences

Part 2 comprises **80 credits** and covers subject-specific knowledge and competences in areas of technology and the natural sciences (Engineering, Mathematics, Physics, Computer Science, Natural Sciences) as presented in the Bachelor's degree programmes of those disciplines listed in Section 1.1.

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 2.2, Subsection 2), also supply proof of sufficient knowledge of German (level C1).

⁴ The required language certificates must be submitted by the application deadline. The ETH Zurich publishes a list of the language certificates accepted.

³ The required language level is measured according to the Common European Framework of Reference for Languages scale: *Common European Framework of Reference for Languages (CEFR)*

1.4 Performance prerequisites

Admission to the degree programme presupposes a very good study performance record in the preceding course of studies, in particular with regard to Part 1 of the profile of requirements specifications.

2 Specific stipulations for admission and entry to the Master's degree programme

2.1 Application with a university Bachelor's degree

¹ Holders of a university Bachelor's degree or an equivalent university qualification must satisfy all of the prerequisites set out in Section 1.

² Admission may be subject to additional requirements.

³ Admission is not possible if

- a. the language prerequisites set out in Section 1.3 are not satisfied, or
- b. the performance prerequisites set out in Section 1.4 are not satisfied, or
- c. the scope of the additional requirements necessary to satisfy academic prerequisites exceeds 30 credits in total.

2.2 Application with a Bachelor's degree from a Swiss university of applied sciences

¹ Holders of a Bachelor's degree from a university of applied sciences must satisfy all of the prerequisites set out in Section 1.

² Admission is always subject to the acquisition of the missing academic and methodological knowledge and skills in the form of additional studies comprising at least 40 credits from Parts 1 and 2 of the academic prerequisites (see Section 1.2).

³ Admission is not possible if

- a. the language prerequisites set out in Section 1.3 are not satisfied, or
- b. the performance prerequisites set out in Section 1.4 are not satisfied, or
- c. the scope of the additional requirements necessary to satisfy academic prerequisites exceeds 60 credits.

2.3 Entering the Master's degree programme

¹ To students from an ETH Bachelor's degree programme who have been granted admission, the following applies:

- a. Said students can enrol in the Master's degree 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
- b. The normal ETH enrolment dates and deadlines apply.
- c. 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 All other candidates who have been granted admission may only enrol in the Master's degree programme when they have completed the preceding (Bachelor's) degree.

3 Application and admission procedure

¹ All interested parties must submit an application for admission to the degree programme to the ETH Zurich Admissions Office. 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 Applications will not be considered if

- a. they are submitted late or not in the correct form, or
- b. the relevant fees have not been paid.

⁴ 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.

⁵ On the request of the Director of Studies the Rector makes the final decision regarding admission or rejection.

⁶ The candidate receives a written admissions decision which includes relevant information concerning any additional admission requirements.

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).

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 skills 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 below).

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 only 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 Session examinations may be combined in examination blocks. The examinations belonging to one examination block must always be undertaken during the same examination session.

³ A pass grade in the examination block is achieved if the average of the individual grades is at least a 4.

⁴ A failed performance assessment or a failed examination block may be repeated once. Repeating an examination block entails repeating all of the examinations belonging to it.

Appendix 2

To the Programme Regulations 2020 für den
Master-Studiengang Biomedical Engineering

Qualification profile

Introduction

Graduates with a Master of Science ETH in Biomedical Engineering have a thorough training in the area of specialisation chosen which includes knowledge of its theoretical principles and state-of-the-art methodologies, and hands-on experience in conducting biomedical engineering-related research projects.

Graduates

- can apply an engineering approach with a rigorous mathematical/physical basis to solve interdisciplinary problems related to human health;
- have working knowledge of anatomy, physiology, cell biology, molecular biology, and other biology-based courses which enables effective communication and collaboration with biologists and clinicians;
- are qualified to enter a PhD programme in Biomedical Engineering or a related field;
- are qualified to work in responsible positions in biotech companies and related industries.