The officially published GERMAN text alone has binding force

Academic and Examination Regulations for the Master's Degree Program Matter to Life at the Technical University of Munich

dated 1 August 2019

In accordance with Art. 13(1) Sentence 2 in conjunction with Art. 58(1) Sentence 1, Art. 61(2) Sentence 1 and Art. 43(5) of the Bavarian Higher Education Act [Bayerisches Hochschulgesetz (BayHSchG)] the Technical University of Munich issues the following Regulations:

Table of Contents:

§ 34
Applicability, Academic Titles

(1) [1]The Academic and Examination Regulations for the Master's Degree Program Matter to Life (FPSO) complement the General Academic and Examination Regulations for Bachelor's and Master's programs at the Technical University of Munich (APSO) dated 18 March 2011 as amended. [2]The APSO has precedence.

(2) [1]Upon successful completion of the Master's examination the degree "Master of Science" ("M.Sc.") is awarded. [2]The academic title may also be used with the name of the university "(TUM)".

§ 35
Commencement of Study, Standard Duration of Study, ECTS

(1) The Master's Degree Program Matter to Life at the Technical University of Munich commences, as a rule, in the winter semester.

(2) [1]The number of classes in required and elective subjects needed to obtain the Master's degree is 90 credits (60 weekly hours per semester) spread over three semesters. [2]Students will have a maximum of six months to complete their Master's thesis in accordance with § 46, as well as the Master's Colloquium according to § 46 a (30 credits in total). [3]The number of coursework units and examinations in required and elective subjects to be completed in the Master's Degree Program Matter to Life according to Appendix 1 is a minimum of 120 credits. [4]The standard duration of study for the Master's program is a total of four semesters.

§ 36
Eligibility Requirements

(1) Eligibility for the Master's Degree Program Matter to Life is demonstrated by

1. a qualified bachelor's degree obtained after a program of at least six semesters from a domestic or foreign institution of higher education, or at least an equivalent degree related to Engineering or Natural Sciences;

2. adequate knowledge of the English language; students whose native language or language of instruction is not English must demonstrate proficiency through an acknowledged language test such as the Test of English as a Foreign Language (TOEFL) (with a minimum of 88 points), the International English Language Testing System (IELTS) (with a minimum of 6.5 points), or the "Cambridge Main Suite of English Examinations";

3. job-related knowledge and skills in the Natural Sciences; for this purpose, students must provide proof by passing the GRE (Graduate Record Examinations) Subject Test with a focus on "Biology", "Chemistry", "Mathematics" or "Physics"; the applicant must have achieved a score of at least 700 in the GRE Subject Test; at the time of application for admission, the test result must not be older than two years;

4. passing of the aptitude assessment according to Appendix 2.

(2) A degree is considered a qualified degree within the meaning of (1) if there are no significant differences with regard to the competences (learning outcomes) acquired in the scholarly oriented corresponding Bachelor's degree programs at TUM or in degree programs with comparable qualifications, and if these competences correspond to the subject-specific requirements of the Master's degree program.

(3) The professional qualifications listed in Appendix 2 No. 5.1 will be used for the aptitude assessment according to (2).

(4) The comparability of programs, subject-specific aptitude, as well as the equivalence of degrees acquired at foreign institutions will be decided upon by the Aptitude Assessment Commission in compliance with Art. 63 of the Bavarian Higher Education Act [BayHSchG].

§ 37
Modular Structure, Module Examination, Courses, Areas of Specialization, Language of Instruction

(1) [1]General provisions concerning modules and courses are set forth in §§ 6 and 8 of the APSO. [2]For any changes to the stipulated module provisions § 12(8) of the APSO applies.

(2) [1]The Master's Degree Program Matter to Life follows a modular structure. [2]Of the 120 credits, 42 credits are to be earned in subject-based courses (required and elective modules), and 48 credits in research internships in the Matter to Life modules: Explorative Research(18 credits) and Matter to Life: Collaborative Research Practicum (30 Credits) and another 30 credits for the Master's Thesis.

(3) [1]The curriculum listing the required and elective modules is included in Appendix 1. [2]The required module Synthetic Biology 1 and the practical module Matter to Life: Explorative Research collectively form the foundation of the Master's program. Students will be introduced to cutting-edge research questions and exploratory research related to Matter to Life. [3]In the practical module Matter to Life: Exploratory Research, students work on a research project of exploratory and innovative design, which is carried out in groups of three to four students, at one of the Biophysics chairs. [4]Through supervised, collaborative work on the exploratory research project, including the preparation of a proposal for the implementation of a more long-term research project and a presentation of their work to the rest of the cohort, students will be introduced to scientific work in teams in the area of exploratory research approaches as well as the development and presentation of scientific projects over a longer period of time. [5]For 2 credits, students also take elective modules from the field of Ethics in order to develop an ethical approach to their own field of work and conduct. [6]The corresponding modules are to be selected from the catalog offered by the Examination Board (see Appendix A2.1). [7]Furthermore, ethical reflection in scientific work is included in all required modules. [8]Students are still required to put together an individualized curriculum for the semester, totaling 35 credits, which enables them to pursue their interests and expand on their various previous knowledge in order to develop an individual specialized profile in the domain of Matter to Life. [9]The corresponding modules are to be selected from the catalog offered by the Examination Board (see Appendix A2.2). [10]During this process, the students are to seek the advice of a mentor appointed by the Examination Board. [11]Any person in the Department of Physics who is authorized to conduct examinations in accordance with the act governing examiners at institutions of higher education [Hochschulprüferverordnung] may be appointed as a mentor.
[12]In the final year of the Master's program, students work on current issues from the domain of Matter to Life with increasing independence, developing their specialized profile into an individual skills set. [13]In the Collaborative Research Practicum (30 credits), students acquire expertise at the current level of international research during the third semester and gain the specific experimental and theoretical skills needed to design and complete a sophisticated research project in the context of a scientific collaboration. [14]Through participation in group seminars and academic discussions, students become actively involved in the multidisciplinary research

culture of Matter to Life which prepares them to independently conduct a research project as part of their Master's Thesis. [15]To this end, students have the option of continuing with their Collaborative Research Practicum project, if possible, or to start an unrelated research project in another research group and use the formally independent format of the module "Matter to Life: Collaborative Research Practicum" for guidance or to acquire further skills from the domain of Matter to Life. [16]The Master's Thesis (30 credits) takes up the fourth semester. [17]The Master's Thesis is defended in a concluding Master's Colloquium.

(4) [1]The language of instruction in the Master's Degree Program Matter to Life is English. [2]Students who have not verified their knowledge of German in the application process will be conditionally admitted with the stipulation that they complete at least one module in which they acquire integrative knowledge of German by the end of the second semester of enrollment in the degree program. [3]The offer will be announced by the Examination Board accordingly. [4]Optional credits completed in extracurricular courses, e.g. German courses offered by the Language Center, will also be recognized. [5]Modules taught entirely or partly in English are identified in Appendix 1. [6]Where the language of instruction for a module is specified in the Appendix as either English or German, the examiner will announce, in a suitable manner no later than the first day of classes, which will be the official language of instruction.

§ 38
Examination Deadlines, Academic Progress Checks, Failure to Meet Deadlines

Examination deadlines, progress monitoring, and failure to meet deadlines are governed by § 10 of the APSO.

§ 39
Examination Board

[1]In accordance with § 29 of the APSO, the board responsible for all decisions concerning examination matters is the Master's Examination Board Matter to Life. [2]The Master's Examination Board consists of six members elected by the Departmental Council of the Physics Department.

§ 40
Recognition of Periods of Study, Coursework and Examination Results

The recognition of periods of study, coursework and examination results is governed by § 16 of the APSO.

§ 41
Continuous Assessment Procedure, Types of Assessment

(1) In addition to written and oral examinations, types of assessment in accordance with § 12 and § 13 of the APSO may include (but are not limited to) laboratory assignments, exercises (tests, where applicable), reports, project work, presentations, learning portfolios, research papers, or parcours examinations.

a) [1]A **written examination** is a supervised examination, in which students are expected to demonstrate, within a limited amount of time and using predefined methods and resources, their ability to identify problems, find solution strategies and, if required, implement them. [2]The duration of written examinations is regulated in § 12(7) of the APSO.

b) [1]Depending on the discipline, **laboratory assignments** may include experiments, measurements, field work, field exercises, etc., with the goal of students conducting such work, evaluating results, and gaining knowledge. [2]These may consist of, for example, process descriptions and the underlying theoretical principles including studying the relevant literature; preparation and practical implementation; calculations, if required, and documentation, evaluation, and interpretation of the results in the context of the knowledge to be gained. [3]Laboratory assignments may be complemented by presentations designed to demonstrate a student's communication competency in presenting scholarly work to an audience. [4]Details of each laboratory assignment and the competencies to be assessed in each examination are set out in the module descriptions.

c) [1]Practical credit requirements **(tests where applicable)** involve students completing assigned tasks (for example, solving mathematical problems, writing computer programs, preparing models etc.) using theoretical knowledge to solve application-oriented problems. [2]Exercises are designed to assess a student's factual and detailed knowledge and its application. [3]Practical exercises may be administered in writing, orally, or electronically. [4]They may be in the form of homework assignments, practice sheets, programming exercises, (e-)tests, tasks assigned within a university internship program, etc. [5]Details of each practical credit requirement and the related competencies to be examined are set out in the module descriptions.

d) [1]A **report** is a written record and summary of a learning process for the purpose of presenting the acquired knowledge in a structured way and analyzing the results in the context of a module. [2]Students are expected to demonstrate that they have understood all essential aspects and are able to present them in writing. [3]Reports may include excursion reports, internship reports, work reports, etc. [4]The written report may be complemented by a presentation for the purpose of assessing the student's communication competency in presenting scholarly work to an audience.

e) [1]**Project work** is designed to reach, in several phases (initiation, problem definition, role assignment, idea generation, criteria development, decision, implementation, presentation, written evaluation), the defined objective of a project assignment within a given period of time and using suitable instruments. [2]In addition, project work may include a presentation in order to assess a student's communication competency in presenting scholarly work to an audience. [3]Details of the respective project work and the competencies to be assessed in each examination are set out in the module descriptions. [4]Project work may be group work. [5]The aim is to demonstrate that tasks can successfully be solved as part of a team. [6]The contribution to be assessed as part of the examination has to be clearly recognizable and assessable for each individual. [7]This also applies to the individual contribution to the group's result.

f) [1]A **research paper** is a written assignment in which students work independently on solving complex scholarly or scholarly/application-oriented problems, using the scientific methods of the related discipline. [2]Students are expected to demonstrate that they are able to solve problems corresponding to the learning results of the module in question in compliance with the guidelines for scholarly work – from analysis and conception to implementation. [3]Research papers, differing in their requirement standards, may take the form of a conceptual framework/theory paper, abstract, term paper, seminar paper, etc. [4]The research paper may be complemented by a presentation and/or a colloquium for the purpose of assessing the student's communication competency in presenting scholarly work to an audience. [5]Details of each research paper and the related competencies to be examined are set out in the module descriptions.

g) [1]A **presentation** is a systematic and structured oral performance supported by suitable audio-visual equipment (such as projector, slides, posters, videos) for the purpose of demonstrating and summarizing specific issues or results and paring complex problems down to their essential core. [2]For the presentation, the student is expected to demonstrate that they are

capable of preparing a certain topic within a given time frame in such a way as to present or report it in a clear and comprehensible manner to an audience. [3]In addition, the student is expected to demonstrate that they are able to respond competently to any questions, suggestions, or discussions brought by the audience and relating to their subject area. [4]The presentation may be complemented by a brief written precis. [5]The presentation can be held either as an individual or group examination. [6]The contribution to be assessed as part of the examination has to be clearly recognizable and assessable for each individual. [7]This also applies to the individual contribution to the group's result.

h) [1]An **oral examination** is a timed, graded discussion on relevant topics and specific questions to be answered. [2]In oral examinations students are expected to demonstrate that they have achieved the qualification objectives documented in the module descriptions and have understood the central concepts of the subject matter covered by the exam and are able to apply them to specific problems. [3]The oral exam can be held either as an individual or group examination. [4]The duration of the examination is regulated in § 13(2) of the APSO.

i) [1]A **learning portfolio** is a written account of completed work compiled by the student according to predefined criteria that exhibits the student's progress and achievements in defined content areas at a given time. [2]Students are required to explain why they chose the work they have and its relevance for their learning progress and for reaching the qualification objectives. [3]With the learning portfolio, students are expected to demonstrate that they have taken active responsibility for their learning process and that the qualification objectives documented in the module description have been met. [4]Depending on the module description, types of independent study assessment in a learning portfolio may include, in particular, application-oriented assignments, web pages, weblogs, bibliographies, analyses, conceptual framework/theory papers, as well as the graphic representation of facts or problems. [5]Details of the respective learning portfolio and the competencies to be assessed in each examination are set out in the module descriptions.

j) [1]The **parcours examination** is made up of several components. [2]Unlike a module examination component, parcours exam components are administered in sequence and completed in a specific time frame and location. [3]Parcours components entail various types of examination, which together evaluate the competency profile of the module as a whole. [4]Possible types of examination in parcours components may include those listed in a) to i). [5]The total duration of the parcours examination with all its components is to be indicated in the module catalog, the type of examination and the duration of the individual parcours elements are to be specified in the module description.

(2) [1]As a rule, module examinations are taken concurrently with the program. [2]The type and duration of module examinations is stipulated in Appendix 1. [3]For any changes to the stipulated module provisions § 12(8) of the APSO applies. [4]The assessment of the module examination is governed by § 17 of the APSO. [5]The grade weights of module examination components correspond to the weighting factors assigned to them in Appendix 1.

(3) Where Appendix 1 provides that a module examination is either in written or oral form, the examiner will inform the students officially and in appropriate form, no later than the first day of classes, of the type of examination to be held.

(4) At the request of the students and with the consent of the examiners, examinations in English may be taken for modules in German.

§ 42
Registration for and Admission to the Master's Examination

(1) Students who are enrolled in the Master's Degree Program Matter to Life are deemed admitted to the module examinations of the Master's examination.

(2) [1]Registration requirements for required and elective module examinations are stipulated in § 15(1) of the APSO. [2]The registration requirements for repeat examinations for failed required modules are stipulated in § 15(2) of the APSO.

§ 43
Scope of the Master's Examination

(1) The Master's examination consists of:

1. the module examinations in the corresponding modules according to § 43(2),
2. the Master's Thesis in accordance with § 46, including the Master's Colloquium according to § 46 a.

(2) [1]The module examinations are listed in Appendix 1. [2]Students must complete 53 credits in the required modules, and at least 37 credits in elective modules. [3]The selection of modules must comply with § 8(2) of the APSO.

§ 44
Repeat Examinations, Failed Examinations

(1) The repetition of examinations is governed by § 24 of the APSO.

(2) Failure of examinations is governed by § 23 of the APSO.

§ 45
Coursework (Pass/Fail Credit Requirements)

Apart from examinations, the Master's Degree Program Matter to Life does not require the completion of any pass/fail modules.

§ 45 a
Multiple Choice Tests

The conduct of multiple choice tests is governed by § 12 a of the APSO.

§ 46
Master's Thesis

(1) [1]As part of the Master's examination, each student must write a Master's thesis in accordance with § 18 of the APSO. [2]The master's thesis topic may be determined and supervised by expert examiners (Themensteller) of the TUM Department of Physics at the Technical University of Munich. [3]Expert examiners as stipulated in Sentence 2 are appointed by the Examination Board.

(2) [1]Completion of the Master's Thesis module, as a rule, is the final examination requirement. [2]Upon request students may be granted early approval to commence work on the Master's thesis if the objective of the thesis in the sense of § 18(2) APSO can be fulfilled under consideration of the progression of studies to date.

(3) [1]The period between topic assignment and submission of the completed Master's thesis must not exceed six months. [2]The Master's thesis is considered presented and not passed if the student fails to submit it on time without valid reasons as specified in § 10(7) of the APSO. [3]The Master's thesis must be written in English.

(4) [1]The completion of the Master's thesis consists of a written composition and the Master's Colloquium according to § 46 a. [2]30 credits are awarded for the Master's Thesis module.

(5) [1]If the Master's Thesis was not graded with at least "sufficient" (4.0), it may be repeated once with a new topic. [2]Students must renew their application to prepare the Master's Thesis module within six weeks of receipt of the grade.

§ 46 a
Master's Colloquium

(1) [1]In the Master's Thesis module, students are deemed registered for the Master's Colloquium if they have successfully completed the written composition (thesis). [2]The examination is to take place no later than two months after the registration date in accordance with Sentence 1.

(2) The Master's Colloquium is to be carried out by the thesis supervisor of the Master's thesis and a competent observer.

(3) The Master's Colloquium is to be held in English.

(4) [1]As a rule, the duration of examination in the Master's Colloquium is 60 minutes. [2]The students have about 30 minutes to present their Master's Thesis. [3]This is followed by an oral defense, which starts from the thesis topic and extends to the wider subject area of the Master's thesis.

§ 47
Passing and Assessment of the Master's Examination

(1) The Master's Examination is deemed passed when all examinations required for the Master's examination in accordance with § 43(1) have been passed and a plus credits account of at least 120 credits has been achieved.

(2) [1]The module grade will be determined according to § 17 of the APSO. [2]The overall grade for the Master's examination will be calculated as the weighted grade average of the modules according to § 43(2) and the Master's Thesis. [3]The grade weights of the individual modules correspond to the credits assigned to each module. [4]The overall assessment is expressed by the designation according to § 17 of the APSO.

§ 48
Degree Certificate, Diploma, Diploma Supplement

[1]If the Master's examination was passed, a degree certificate, a diploma, and a diploma supplement including a transcript of records are to be issued in compliance with § 25(1) and § 26 of the APSO. [2]The date of the diploma is the date on which all examinations and coursework has been completed.

§ 49
Entry into Force

[1]These regulations enter into force on 1 April 2019. [2]They apply to all students who commence their studies at the Technical University of Munich as of the winter semester 2019/2020.

Appendix 1: Examination Modules

Explanation:
Sem. = semester; SWS = Semesterwochenstunden/weekly hours per semester; V = Vorlesung/lecture; UE = Übung/exercise; P = Praktikum/internship; SE = seminar; E = English; D = Deutsch/German

The Duration of Examination column gives the examination duration in minutes for written and oral exams.

***** These modules with their corresponding module examination components extend over at least two semesters.

A1.1 Required Modules

No.	Module title	Type of Instruction SWS	Sem.	SWS	Credits	Type of Examination	Duration of Examination	Weighting	Language o Instruction
PH2228	Synthetic Biology 1	2 V	1	2	5	Oral	25		E
PH1033	Matter to Life: Exploratory Research*	P	1+2	12	18	Laboratory Assignment Presentation Paper		20% 20% 60%	E
PH1079	Matter to Life: Collaborative Research Practicum	P	3	20	30	Laboratory Assignment Presentation Paper		70% 15% 15%	E
	Total				**53**				

A1.2 Elective Modules

A1.2.1 Elective Modules From the Field of Ethics

Modules of at least 2 credits must be selected from the following sample list. This catalog lists sample courses from the field of Ethics and Society offered by the Carl von Linde Academy. The Examination Board regularly updates the elective modules course catalog. Any changes will be communicated no later than the beginning of the semester by the Examination Board in an appropriate manner.

No.	Module name	Type of Instruction SWS	Sem.	SWS	Credits	Type of Examination	Duration of Examination	Weighting Factor	Language Instructio
CLA20230	Ethics and Responsibility	2SE	1	2	2	Presentation	2530		E/D
CLA30230	Ethics and Responsibility	2SE	1	2	3	Presentation	2530		E/D

A1.2.2 Elective Modules From the Natural Sciences

Modules of at least 35 credits must be selected from the following sample list. This catalog lists sample interdisciplinary courses offered by the Departments of Physics, Chemistry, Mathematics, and the TUM School of Life Sciences. The Examination Board regularly updates the elective modules course catalog. Any changes will be communicated no later than the beginning of the semester by the Examination Board in an appropriate manner.

No.	Module Name	Type of Instruction SWS	Sem.	SWS	Credits	Type of Examination	Duration of Examination	Language o Instruction
PH2013	Physical Biology of the Cell 1	2V + 2UE	1	4	5	Oral	25	E/D
PH2013	Physical Biology of the Cell 2	2V + 2SE	2	4	5	Oral	25	E/D
PH2019	Molecular Dynamics Simulations	2V + 2UE	2	4	5	Oral	30	E/D
PH2181	Image Processing in Physics	2V + 1UE	1, 2	3	5	Oral	25	E/D
PH2235	Synthetic Biology 2	2V	2	2	5	Oral	25	E/D
CH3181	Biological Chemistry	2V + 1SE	1	3	5	Written exam	90	E/D
CH3042	Protein and Nucleic Acid Chemistry	2V + 1UE	2	3	5	Written exam	90	E
CH3187	Cell Biology	2V+1UE	2	3	5	Written exam	90	E/D
CH0437	Cellular Biochemistry 2	2V + 2UE	2	4	6	Written exam	90	E/D
CH3216	Supramolecular Chemistry	2V + 1UE	2	3	5	Written exam	90	E
WZ0402	Structural Bioinformatics	2V + 2UE	1	4	5	Written exam	90	D
MA5607	Basics in Computational Biology	2V + 2 UE	1	4	6	Written exam	90	E

A1.3 Master's Thesis

No.	Module Name	Type of Instruction	Sem.	SWS	Credits	Type of Examination	Weighting	Language Instructio
PH1090	Master's Thesis		4		30			
	Master's Colloquium					Oral	30%	E
	Master's Thesis					Research Paper	70%	E

A1.4 Credit Total per Semester

Semester	Credits Required Modules	Credits Elective Modules	Credits Master's Thesis	Total Credits	Number of Exams
1	10-15	15-20		30	5-6
2	10-15	15-20		30	4-6
3	30			30	1
4			30	30	1

Appendix 2: Aptitude Assessment

Aptitude Assessment for the Master's Degree Program Matter of Life at the Technical University of Munich

1. Purpose of the Process

[1]Eligibility for the Master's Degree Program Matter to Life, in addition to the requirements pursuant to § 36(1) 1 to 3, requires proof of aptitude pursuant to § 36(1) 4 in accordance with the following provisions. [2]The special qualifications and skills of the candidates should correspond to the professional field Basic Research in Matter to Life. [3]Individual aptitude parameters are:

1.1 Ability to do scholarly work and basic, methodologically sound research,

1.2 specialist knowledge gained in undergraduate degrees in Physics, Computer Science, Chemistry, Biochemistry, Bioengineering or comparable disciplines,

1.3 aptitude and interest for the pursued degree program and a scientific career in Basic Research, with a particular affinity for biophysical, biochemical, and biomathematical questions in the area of Matter to Life, as well as a general understanding of the Natural Sciences.

2. Aptitude Assessment Process

2.1 Aptitude assessment is conducted twice annually by the Department of Physics.

2.2 [1]Applications for admission to the aptitude assessment process for the winter semester must be submitted to the Technical University of Munich together with the documents listed in 2.3.1. through 2.3.5. and in § 36(1) 2 no later than 1 December of the year prior to commencement of the program (absolute deadline) using the online application process. [2]The diploma and the graduation certificate must be presented as proof of passing the Bachelor's degree program to the Application and Enrollment Office of the Technical University of Munich five weeks after the first day of classes, at the latest. [3]Otherwise, it will not yet be possible to commence the Masters degree program in accordance with § 36 of these regulations.

2.3 The application must include:

2.3.1 a transcript of records containing modules amounting to at least 120 credits; the transcript of records must be issued by the relevant examination authority or academic programs office,

2.3.2 the curriculum on which the first degree program was based, indicating the respective contents of the module and the competences acquired (e.g. module handbook, module descriptions),

2.3.3 curriculum vitae in English (formatted as a table),

2.3.4 a written statement in English of a maximum of 6,000 characters (approx. three DIN A4 or US Letter pages, Helvetica or Arial font, font size 12, line spacing 1.5), in which the applicant explains those specific talents and interests that make them particularly qualified for the Master's degree program at the Technical University of Munich and indicates which research goals they would like to pursue in the area of Matter to Life; further reference points for the written statement are the aptitude parameters listed in 5.1.1 c); the applicant's suitability and willingness to perform is to be demonstrated by providing details on program-related vocational training, internships, stays abroad, or program-related further education beyond the attendance and course requirements of the Bachelor's program, or similar; if necessary supported by appropriate documentation,

2.3.5 a declaration that the essay is the applicant's own work, and that the applicant has clearly identified any ideas taken from outside sources.

3. Aptitude Assessment Commission

3.1 [1]The aptitude assessment is administered by a Commission that, as a rule, consists of the Dean of Studies in charge of the Master's Degree Program Matter to Life, at least two members of the professorial faculty and at least one research associate (wissenschaftlicher Mitarbeiter,

wissenschaftliche Mitarbeiterin). [2]At least half of the Commission members must be members of the professorial faculty, as well as fellows of the Max Planck School Matter to Life.

3.2 [1]The members of the Commission are appointed by the Department Council in consultation with the Dean of Studies. [2]At least one member of the professorial faculty is appointed as deputy member of the Commission. [3]As a rule, the Commission is chaired by the Dean of Studies. [4]Procedural regulations will be in accordance with Art. 41 of the BayHSchG as last amended.

3.3 [1]Once the Commission acts in accordance with these regulations, it is permissible to delegate certain duties to individual members of the Commission on a revocable basis. [2]If, pursuant to Sentence 1, only one member of the Commission acts in the performance of certain duties, they must be a member of the professorial faculty. [3]If, pursuant to Sentence 1, two or more members of the Commission act in the performance of certain duties, at least half of them must be members of the professorial faculty. [4]The Commission is to ensure the proper allocation of duties. [5]If there is a scoring margin for one of the evaluation criteria of the aptitude assessment and if at least two members of the Commission are involved in the evaluation of that criterion, the members of the Commission shall make their evaluations independently according to the indicated weighting, unless otherwise specified; The points total will be calculated as the arithmetic mean of the individual assessments, rounded up to the nearest full point.

4. Admission to the Aptitude Assessment Process

4.1 Admission to the aptitude assessment process requires that all documentation specified in No. 2.3 has been submitted in a timely and complete fashion.

4.2 Applicants who have fulfilled the requirements will be assessed according to No. 5.

4.3 Applicants who are not accepted will receive a letter of rejection stating the grounds for rejection and informing them of legal remedies.

5. The Aptitude Assessment Process

5.1 <u>First Stage:</u>

5.1.1 [1]The commission will assess, on the basis of the written application documents required under No. 2.3, whether or not an applicant is suitable for a program pursuant to No. 1 (First stage of the aptitude assessment process). [2]For this purpose, the commission evaluates and scores the candidate’s application documents on a scale ranging from 0 to 100 points, 0 being the worst and 100 the best possible result.

The following criteria will be applied to the evaluation:

a) **Discipline-Specific Skills and Qualifications**
[1]In accordance with 2.3.1, the Commission assesses the existing expertise gained in a Bachelor's degree as defined in No. 1.2 on the basis of the documentation submitted. [2]The curricular analysis is conducted on the basis of competences, rather than a schematic comparison of modules. [3]The analysis is based on the fundamental subject groups listed in the following table. [4]The benchmark for the competences to be demonstrated in each subject group are the modules from one of the Bachelor's degree programs in Engineering or the Natural Sciences at the Technical University of Munich listed in the table.

Subject Group	Points
1 Introduction to Physics (Mechanics, Electrodynamics, Thermodynamics, Oscillations, Waves and Optics, Quantum Mechanics) Benchmark: The following required modules of the TUM Bachelor's Degree Program Chemistry • PH9002 Experimental Physics 1 for Chemistry and • PH9003 Experimental Physics 2 for Chemistry or PH9018 Experimental Physics 2 for Biochemistry	10
2 Introduction to Mathematics (Fundamentals of Linear Algebra, Introduction to Analysis) Benchmark: • CH0105 Mathematical Methods in Chemistry 1 • CH0112 Mathematical Methods in Chemistry 2	10
3 Introduction to Chemistry (Fundamentals of General, Inorganic, and Organic Chemistry, Core Concepts of Biochemistry) Benchmark: The following required modules of the TUM Bachelor's Degree Program Physics • CH1104 Chemistry for Physicists	10
4 Introduction to Biology (Biochemistry, Molecular Biology, Cell Biology) Benchmark: The following required modules of the TUM Bachelor's Degree Program Bioinformatics • IN5113 Biology • IN5167 Fundamentals of Biochemistry	10

[5]If it is established that there are no significant differences in the competences acquired (learning outcomes), a maximum of 40 points will be awarded (10 points max. in each subject group). [6]If some of the equivalent competences are missing, points are deducted according to the percentage that the missing competences contribute to the overall content of the respective subject group, as measured by the indicated benchmark modules. [7]Only whole points are awarded. [8]The resulting points are used as the base score in the subsequent aptitude assessment.

b) **Final Grade**

[1]The applicant will be awarded 1.5 points for each tenth that the average calculated from examinations in the amount of 120 credits is better than 3.0. [2]The maximum number of points is 30. [3]Negative points will not be awarded. [4]Grades of international degrees will be converted by applying the Bavarian formula. [5]If the candidate has submitted a degree certificate containing more than 120 credits with the application, the assessment will be made on the basis of the best graded modules in the amount of 120 credits. [7]The applicant needs to submit a list of the results together with the application and confirm its accuracy in writing. [8]The average is calculated from graded module examinations amounting to 120 credits. [9]The overall grade average is calculated as a weighted grade average. [10]The grade weights of the individual modules correspond to the credits assigned to each module. [11]In the process of determining grades, only the first digit after the decimal point is taken into account. All other digits are dropped without rounding.

c) **Letter of Motivation**

[1]The applicant's written statement will be evaluated by two members of the Commission and graded on a scale of 0 – 30 points. [2]The content of the written statement will be assessed using the following criteria:

1. Discussion of the qualification with respect to the requirements of the degree program and the admission requirements as set out in point 5.1.1 a) (15 points max.),
2. discussion of the objectives in the chosen program (Master's Study Phase); Applicants are to demonstrate that they have already familiarized themselves with the chosen degree program and have at least made a rough selection of which areas from the wide range of choices are of particular interest to them (max. 5 points),
3. discussion of possible research goals in the prospective doctoral phase of the Matter to Life program, ideally in the form of a short proposal (maximum 10 points).

[3]Commission members independently assess each of the three criteria, weighting the criteria according to the number of maximum points achievable. [4]The number of points will be calculated as the arithmetic mean of the individual evaluations by the members of the Commission.

5.1.2 [1]The points total in the first stage will be calculated as the sum of the individual evaluations. [2]Decimal places must be rounded up.

5.1.3 [1]Applicants who have achieved at least 70 points will be invited to an assessment interview via videoconference as specified in 5.2.

5.1.4 [1]Unsuitable applicants with a total score less than 70 points in stage one of the assessment process will receive a rejection letter stating the grounds for rejection and informing them of legal remedies. The letter is to be signed by the president. [2]The authority to sign can be delegated.

5.2 Second Stage: Assessment Interview via Videoconference

5.2.1 [1]The remaining applicants will be invited to an assessment interview, which will usually involve a videoconferencing tool. [2]During the second stage of the aptitude assessment, both the skills acquired during the applicant’s Bachelor’s studies, the final grade, the letter of motivation and the result of the videoconference-based assessment interview will be assessed. [3]Interview appointments will be announced at least one week in advance. [4]Time slots for interviews must be scheduled before the application deadline ends, usually they take place in January and February. [5]The interview appointment must be kept by the applicant. [6]If the applicant is unable to attend an aptitude assessment interview due to reasons beyond his/her control, a later appointment may be scheduled upon a student’s well-grounded request, but no later than two weeks before the beginning of classes.

5.2.2 [1]The aptitude assessment interview is to be held individually for each applicant. [2]The interview lasts at least 15 but not more than 30 minutes for each applicant. [3]The interview will focus on the following topics:

1. exceptional motivation for the Master’s Degree Program Matter to Life according to the criteria for assessing the written letter of motivation/statement of purpose mentioned in No. 2.3.3 (5 points max.),
2. discussion of the qualification with respect to the requirements of the degree program and the admission requirements as set out in point 4.2, in particular, experience with relevant experimental and theoretical methods (maximum 10 points),
3. general knowledge in the area of Matter to Life and an understanding of the relevant issues and interrelationships to be demonstrated by outlining the solution to an exemplary problem, e.g. using the letter of motivation/statement of purpose submitted by the applicant (10 points max.),
4. ability to communicate in English (10 points max.).

[4]The above topics may cover the documentation submitted according to 2.3. [5]Any subject-specific academic knowledge that is to be taught in the Master's Degree Program Matter to Life will not affect the decision.

5.2.3 [1]The aptitude assessment interview will be conducted by at least two members of the Commission. [2]Commission members independently assess each of the four criteria, weighting the areas according to the number of maximum points achievable. [3]Each member of the Commission will grade the result of the interview on a scale from 0 to 35, 0 being the worst and 35 being the best possible result. [4]The number of points will be calculated as the arithmetic mean of the individual evaluations by the members of the Commission. [5]Non-vanishing decimal places must be rounded up.

5.2.4 [1]The total number of points awarded in stage two with a maximum number of points of 135 is the sum of the points from 5.2.3 and 5.1.1 a) - c) (subject-specific qualification, final grade, letter of motivation/statement of purpose). [2]Applicants who have achieved at least 101 points will be invited to an assessment interview as specified in 5.3.

5.2.5 [1]Unsuitable applicants with a total score less than 101 points will receive a rejection letter stating the grounds for rejection and informing them of legal remedies. The letter is to be signed by the president. [2]The authority to sign can be delegated.

5.3 Third Stage: Personal Aptitude Assessment Interview

5.3.1 [1]The remaining applicants will be invited to a personal assessment interview . [2]During the third stage of the aptitude assessment, both the skills acquired during the applicant's Bachelor's studies, the final grade and the result of the assessment interview will be assessed. [3]The exact date for the assessment interview will be scheduled by the Commission in consultation with the applicants. [4]Time slots for interviews must be scheduled before the application deadline ends, usually they take place in January, February and March. [5]The interview appointment must be kept by the applicant. [6]If the applicant is unable to attend an aptitude assessment interview due to reasons beyond his or her control, a later appointment may be scheduled upon a student's well-grounded request, but no later than two weeks before the beginning of classes.

5.3.2 [1]The aptitude assessment interview is to be held individually for each applicant. [2]The aptitude assessment interview takes about 30 minutes and will be conducted by at least two members of the Commission. [3]Applicants will be provided with a technical text at least three days before the interview, the contents of which will be discussed during the interviews. [4]The interviews will focus on the following topics:

1. Ability to participate in academic discussions (15 points max.),
2. ability to reflect on research questions (15 points max.),
3. aptitude for scientific work (20 points max.),
4. communication skills/ ability to work in a team (15 points max.).

5.3.3 [1]Commission members independently assess each of the topics, weighting the areas according to the number of maximum points achievable. [2]Each member of the Commission will grade the result of the interview on a scale from 0 to 65, 0 being the worst and 65 being the best possible result. [3]The points total will be calculated as the arithmetic mean of the individual evaluations. [4]Non-vanishing decimal places must be rounded up.

5.3.4 [1]The total number of points awarded in stage three with a maximum number of points of 135 is the sum of the points from 5.3.3 and the points from 5.1.1.a (subject-specific qualification) and 5.1.1.b (grade). [2]Applicants who score 101 or more points will be deemed suitable.

5.3.5 [1]The applicant will receive the Commission's result for the aptitude assessment in writing. [2]The letter is to be signed by the president. [3]The authority to sign can be delegated. [4]Rejection letters shall state the grounds for rejection and inform the applicant of legal remedies.

5.3.6 Admissions to the Master's Degree Program Matter to Life apply to all subsequent applications for this program.

6. Documentation

[1]The aptitude assessment process must be documented. [2]A record is to be kept about the conduct of the assessment interview (date, place, beginning and end of the interview, the names of the Commission members present, the names of the applicants, as well as any unusual occurrences). [3]The record of the assessment interview must furthermore include the main topics and results of the interview; these can be listed as keywords.

7. Repeat Aptitude Assessments

If candidates fail to receive the proof of suitability for the Master's Degree Program Matter to Life they can register for the aptitude assessment process one more time.

Executed following a resolution of the Senate of the Technical University of Munich dated 20 March 2019 and approval of the President of the Technical University of Munich on 1 August 2019.

Munich, 1 August 2019

Technical University of Munich

Wolfgang A. Herrmann
President

These Regulations were made available for inspection at the Technical University of Munich on 1 August 2019, following their announcement on 1 August 2019. Day of proclamation is therefore 1 August 2019.