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**Academic and Examination Regulations
for the Master's Program in Agricultural Biosciences
at the Technical University of Munich**

dated 11 February 2020

Engrossed version

as amended by the Fourth amending statute from 8 February 2021

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 *Bayerisches Hochschulgesetz (BayHSchG)* [Bavarian Higher Education Act] the Technical University of Munich issues the following regulations:

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§ 34

Applicability, Academic Titles

- (1) ¹The Examination and Academic Regulations for the Master's Degree Program Agricultural Biosciences (FPSO) complement the General Academic and Examination Regulations for Bachelor's and Master's Degree Programs at the Technical University of Munich (APSO) dated 18 March 2011 as amended. ²The APSO shall have precedence.
- (2) ¹Upon successful completion of the master's examination the degree "Master of Science" ("M.Sc.") is awarded. ²The academic title may also be used with the name of the university "(TUM)".

§ 35

Commencement of Studies, Standard Duration of Study, ECTS

- (1) The Master's Degree Program in Agricultural Biosciences at the Technical University of Munich commences, as a rule, in the winter semester.
- (2) ¹The number of credits in required and elective subjects needed to obtain the master's degree is 90 (70-75 weekly hours per semester) spread over three semesters. ²Students will have a max. of six months to complete the master's thesis, pursuant to § 46, as well as the master's colloquium § 46a (30 credits in total). ³The number of coursework units and examinations in required and elective subjects to be completed in the Master's Degree Program in Agricultural Biosciences according to Appendix 1 is a minimum of 120 credits. ⁴The standard duration of study for the master's program will be a total of four semesters.

§ 36

Eligibility Requirements

- (1) Eligibility for the Master's Degree Program Agricultural Biosciences 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 in Life Sciences, preferably including plant and/or animal science content, such as programs in Agricultural Sciences, Horticultural Sciences, Life Sciences Biology and Molecular Biotechnology or a comparable degree program,
 2. an 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 "Test of English as a Foreign Language" (TOEFL) (with a minimum of 88 points), "International English Language Testing System" (IELTS) (with a minimum of 6.5 points), or "Cambridge Main Suite of English Examinations"; if, in the undergraduate program, 30 credits were obtained for examinations administered in English language examination modules, or the thesis (at least 12 credits) was written in English, adequate proficiency in English is deemed proven.

passing of the Aptitude Assessment pursuant to Appendix 2.

- (2) A degree is considered a qualified degree within the meaning of Section 1 if such degree requires the successful completion of examinations that are equivalent to the examinations in the scholarly oriented bachelor's program at the Technical University of Munich specified in Section 1, No. 1, and correspond to the subject-specific requirements of the Master's Degree Program in Agricultural Biosciences.

- (3) For Aptitude Assessment in accordance with Section 2, required modules of the relevant bachelor's program at TUM named in Section 1, No. 1 or an equivalent institution of higher education, will be considered.
- (4) The comparability of programs, the subject-specific aptitude, as well as the equivalence of degrees acquired from foreign institutions will be decided upon by the Examination Board in compliance with Art. 63 of the *Bayerisches Hochschulgesetz* [Bavarian Higher Education Act].
- (5) ¹Notwithstanding Section 1 No. 1, students enrolled in a bachelor's program specified in Section 1 No. 1 may be admitted to the master's program in justified cases. ²An application to the master's program by students enrolled in a bachelor's program may only be submitted if it can be verified that, in the case of a six-semester bachelor's program, module examinations amounting to at least 120 credits; in the case of a seven-semester bachelor's program, module examinations amounting to at least 150 credits; and, in the case of an eight-semester bachelor's program, module examinations amounting to at least 180 credits have been completed at the time of submission of the application. ³Verification of the awarding of the bachelor's degree must be provided within one year of commencement of the master's program.

§ 37

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

- (1) ¹General provisions concerning modules and courses are set forth in §§ 6 and 8 of the APSO. ²For any changes to the stipulated module provisions § 12(8) of the APSO shall apply.
- (2) The curriculum listing the required and elective modules is included in Appendix 1.
- (3) The language of instruction in the Master's Degree Program Agricultural Biosciences is English. ²Students 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 by the end of the second semester of enrollment in the degree program, in which they acquire integrative knowledge of German. The offer will be announced by the Examination Board accordingly. Completed optional extracurricular courses e.g. German courses offered by the language center, will also be recognized.

§ 38

Examination Deadlines, Academic Progress Checks, Failure to Meet Deadlines

- (1) Examination deadlines, progress monitoring, and failure to meet deadlines are governed by § 10 of the APSO.
- (2) ¹At least one of the basic module examinations listed in Appendix 1 must be successfully completed by the end of the second semester. ²In the event of failure to comply with these deadlines, § 10(5) of the APSO will apply.

§ 39

Examination Board

Pursuant to § 29 of the APSO, the board responsible for all decisions concerning examination matters shall be the Examination Board of the Master's Degree Program in Agricultural Biosciences of the Technical University of Munich.

§ 40

Recognition of Periods of Study, Coursework, and Examination Results

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

§ 41

Continuous Assessment Procedure, Types of Assessment

- (1) In addition to written examinations (*Klausuren*) and oral examinations, types of assessment pursuant to § 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) ¹A *Klausur* is a supervised written examination. In these written examinations, 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. ²The duration of *Klausuren* is provided for in § 12(7) of the APSO.
- b) ¹Depending on the discipline, **laboratory assignments** may include tests, measurements, field work, field exercises, etc. designed for evaluating results and gaining knowledge. ²These may consist of, for example, process descriptions and the underlying theoretical principles including the relevant literature; preparation and practical implementation; calculations, if required; documentation, evaluation, and interpretation of the results in the context of the knowledge to be gained. ³Laboratory assignments may be complemented by presentations designed to demonstrate a student's communication competency in presenting scholarly work to an audience. ⁴Details of each laboratory assignment and the related competencies to be examined are set out in the module descriptions.
- c) ¹**Exercises (tests where applicable)** are administered to assess a student's ability to complete assigned tasks (for example, solving mathematical problems, writing computer programs, designing models, etc.) using theoretical knowledge to solve application-oriented problems. ²Exercises are designed to assess a student's factual and detailed knowledge and its application. ³Practical exercises may be administered in writing, orally, or electronically. ⁴They may be in the form of homework assignments, practice sheets, programming exercises, (e-)tests, tasks assigned within a university internship program, etc. ⁵Details of each practical exercise and the related competencies to be examined are set out in the module descriptions.
- d) ¹A **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. ²Students are expected to demonstrate that they have understood all essential aspects and are able to present them in writing. ³Reports may include excursion reports, internship reports, work reports, etc. ⁴The 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) **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. ²In addition, project work may include a presentation in order to assess a student's communication competency in presenting scholarly work to an audience. ³The specific components of each project work assignment and the related competencies to be assessed are delineated in the module description. ⁴Project work may include group work. ⁵Students are expected to demonstrate that they are able to complete the tasks in a team environment. ⁶A student's contribution to group work which is to be assessed as a component of an examination must be clearly identifiable and gradable. ⁷This also applies to each individual's contribution to the group result.
- f) **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. ²Students 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. ³Research papers, differing in their requirement standards, may take the form of a conceptual framework/theory paper [Thesenpapier], abstract, term paper, seminar paper, etc. ⁴The 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. ⁵Specific details on each research paper and the related competencies to be assessed are set out in the module description.
- g) **presentation** is a systematic and structured oral performance supported by suitable audio-visual equipment (such as beamer, slides, posters, videos) for the purpose of demonstrating and summarizing specific issues or results and paring complex problems down to their essential core. ²For the presentation, the student is expected to demonstrate that he or she is 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. ³In addition, the student is expected to demonstrate that he or she is able to respond competently to any questions, suggestions or discussions brought by the audience and relating to his or her subject area. ⁴The presentation may be complemented by a brief written precis. ⁵The presentation may be prepared either individually or in groups. ⁶A student's contribution to group work which is to be assessed as a component of an examination must be clearly identifiable and gradable. ⁷This also applies to each individual's contribution to the group result.
- h) **oral examination** is a timed, graded discussion on relevant topics and specific questions to be answered. ²In oral examinations students are expected to demonstrate that they have reached the qualification objectives laid out in the module descriptions, understood the central concepts of the subject matters covered by the exam, and are able to apply them to specific problems. ³The oral examination will be held either as an individual or group examination. ⁴The duration of the examination is provided for in § 13 (2) of the APSO.
- i) **learning portfolio** is a collection of written materials compiled by the student according to predefined criteria that exhibits the student's progress and achievements in defined content areas at a given time. ²Students are required to explain according to which criteria they have chosen the materials and their relevance for their learning progress and the achievement of the qualification objectives. ³With the learning portfolio, students are expected to demonstrate that they have taken active responsibility for their learning process and have reached the qualification objectives set out in the module description. ⁴Depending 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. ⁵The specific components of each learning portfolio and the related competencies to be assessed are set out in the module description.

- j) ¹The **parcours examination** is made up of several components. ²Unlike a module examination component, parcours exam components are administered in sequence and completed in a specific time frame and location. ³Parcours components entail various types of examination, which together evaluate the competency profile of the module as a whole. ⁴Possible types of examination in parcours components include those listed in a) through i). ⁵The total duration of the parcours examination with all its components is indicated in the module catalogue; type and duration of individual components is specified in the module description.
- (2) ¹The module examinations will, as a rule, be taken concurrently with the program. ²The type and duration of module examinations is stipulated in Appendix 1. ³The selection of modules must comply with § 12(8) of the APSO. ⁴The assessment of the module examination is governed by § 17 of the APSO. ⁵The 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 in appropriate form, at the commencement of classes at the latest, of the type of examination to be held.

§ 42

Registration for and Admission to the Master's Examination

- ¹Students who are enrolled in the Master's Degree Program in Agricultural Biosciences are deemed admitted to the module examinations of the master's examination. ² Also considered admitted to individual module examinations are those students who take additional examinations within the scope of the bachelor's program Horticultural and Agricultural Science at the Technical University of Munich, according to § 46 b of the Academic and Examination Regulations for the above bachelor's degree program of the Technical University of Munich dated 4 June 2019. ³If, pursuant to Appendix 2 No. 5.1.3, the taking of fundamentals exams has been made a requirement, the Examination Board must inform the student in writing for which module examination, in deviation from Sentence 1, proof of passing the fundamentals exams is a prerequisite for admission. ⁴If admission to individual modules is contingent upon successful completion of certain other modules this will be specified in Appendix 1.
- (2) ¹Registration requirements for required and elective module examinations are stipulated in § 15(1) of the APSO. ²Registration requirements for repeat examinations for failed required and required elective 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 pursuant to Section 2,
 2. the master's thesis pursuant to § 46,
 3. the master's colloquium pursuant to § 46 a
 4. and the coursework listed in § 45.

- (2) ¹The module examinations are listed in Appendix 1. ²Students must successfully complete 25 credits of required modules and at least 65 credits of elective modules. ³Of these, at least two elective modules must be completed in the amount of at least 10 credits in the area of Research Tools and elective modules in the amount of at least 5 credits in the area of Lab Courses. ⁴The 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)

¹Elective modules may require the completion of coursework instead of the examinations set out in § 43(2), Sentence 2. ²In this case, the number of credits to be earned through examinations according to § 43(2), Sentence 2, will be reduced accordingly.

§ 45 a

Multiple Choice Test

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

§ 46

Master's Thesis

- (1) ¹As part of the master's examination, each student must write a master's thesis pursuant to § 18 of the APSO. ²The master's thesis topic may be determined and the master's thesis supervised by expert examiners (*Themensteller*innen*) of the TUM School of Life Sciences. ³Expert examiners as stipulated in Sentence 2 are appointed by the Examination Board of the Master's Degree Program Agricultural Biosciences.
- (2) ¹Completion of the master's thesis module, as a rule, is the final examination requirement. ²Upon request students may be granted early admission to commence 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) ¹The period of time between topic determination and submission of the completed master's thesis must not exceed 6 months. ²The 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.
- (4) ¹The master's thesis must be written in English. ²The completion of the master's thesis consists of a written paper and the master's colloquium pursuant to § 46 a. ³30 credits are awarded for the master's thesis module.
- (5) ¹If the master's thesis was not graded with at least "sufficient" (4.0), it may be repeated once with a new topic. ²Students must renew their application for admission within six weeks from receipt of the grade.

§ 46 a Master's Colloquium

- (1) ¹In the master's thesis module, students are considered to be registered for the master's colloquium if they have achieved at least 75 credits in the master's program and have successfully completed their master's thesis. ²The examination should take place no later than two months after the registration date specified in sentence 1.
- (2) The master's colloquium will be conducted by the master's thesis supervisor (*Themensteller*in*) together with a competent observer.
- (3) The master's colloquium is to be held in English.
- (4) ¹The master's colloquium will, as a rule, last 60 minutes. ²Students have approx. 25 minutes to present their master's thesis. ³This will be followed by an oral defense extending from the subject of the master's thesis to the broader discipline to which the master's thesis belongs.

§ 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 pursuant to § 43(1) have been passed and a plus credits account of at least 120 credits has been achieved.
- (2) ¹The module grade will be determined according to § 17 of the APSO. ²The 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. ³The grade weights of the individual modules correspond to the credits assigned to each module. ⁴The overall assessment is expressed by the designation pursuant to § 17 of the APSO.

§ 48 Degree Certificate, Diploma, Diploma Supplement

¹If 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. ²The date to be entered on the degree certificate is the day when all examination and course work requirements have been fulfilled.

§ 49 Entry into Force*)

¹The Statute will enter into force on 1 April 2020. ²They shall apply to all students who commence their studies at the Technical University of Munich as of the winter semester 2020/2021.

*) This provision concerns the entry into force of the original version of these regulations dated 11 February 2020. The date on which the amendments enter into force is set out in the Amending Statutes.

APPENDIX 1: Examination Modules

I Required modules:

Module number	Module name	Type of instruction SWS	ZV	Sem.	SWS	Credits	Type of Examination	Duration of examination (min) ¹⁾	Weighting Factor	Language instruction Language(s) of Instruction
WZ0626	Genetics and Genomics	V+S		2. Sem.	2 + 2	5	Written exam + Presentation	60	3 : 2	en
WZ0625	Immunology: Crop and Livestock Health and Disease	V+S		1. Sem.	2 + 2	5	Written exam	90		en
WZ0623	Physiology	V		2. Sem.	4	5	Written exam	120		en
WZ0624	Plant and Animal Cell Biology	V+S		1. Sem.	2 + 2	5	Written exam	90		en
MA9613	Statistical Computing and Data Analysis	V + U		1. Sem.	2 + 1	5	Written exam	60		en
	Total:					25				

II Elective modules

65 credits must be obtained from the following three lists:

Credit requirements acquired at another university within the scope of a master's program (e. g. semester abroad) can be credited and counted as elective modules (in section II of Appendix 1) in the master's examination. Decisions about the recognition of these modules are reached by the Examination Board of the Master's Degree Program Agricultural Biosciences.

The three lists of elective modules are continuously updated by the Examination Board. Any changes will be communicated on the web pages of the Examination Board no later than at the beginning of the semester.

1. Lab Courses

At least 5 credits must be selected from the following list.

Module number	Module name	Type of instruction SWS	ZV	Sem.	SWS	Credits	Type of examination	Duration of examination (min) ¹⁾	Weighting Factor	Language instruction Language(s) of Instruction
WZ0628	Lab Course Immunology	U		WiSe	4	5	Written exam	90		en
WZ0636	Lab Course Introduction to Mammalian Cell Culture	U + S		WiSe, SoSe	3 + 2	5	Written exam	90		en
WZ0637	Lab Course Methods for Analysis of Next Generation Sequencing	U		SoSe	4	5	Report			en

WZ0627	Lab Course Physiology	U		WiSe	4	5	Lab assignment (coursework) + oral exam	30		en
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2. Research Tools

At least 2 modules and 10 credits must be selected from the following list.

Module number	Module name	Type of instruction SWS	ZV	Sem.	SWS	Credits	Type of examination	Duration of examination (min) ¹⁾	Weighting-Factor	Language instructor Language instructor Language(s) of Instruction
WZ0630	Analysis of Epigenomic Data	FP		WiSe, SoSe	10	10	Report			en
WZ6428	Analytical Methods in Horticulture, Agriculture and Plant Biotechnology	U		WiSe	4	6	Lab			en
WZ6429	Biotechnology in Horticulture	U		SoSe	4	5	Lab			en
WZ0631	Data Processing and Visualization in R	U		SoSe	4	5	Exercise	60		en
WZ2400	Practical Course: Computing for Highthroughput Biology	FP		WiSe, SoSe	10	10	Research paper			de/en
WZ1578	Project Management in Molecular Plant Biotechnology	S		WiSe, SoSe	4	5	presentation			en
WZ0632	Research Internship Plant Immunology	FP + Ü		WiSe, SoSe	7 + 3	10	Report			en
WZ1577	Research Project 'Biotechnology of Horticultural Crops'	FP		WiSe, SoSe	10	10	Report			en
WZ1575	Research Project 'Chemical Genetics'	FP		WiSe, SoSe	10	10	Report			en
WZ1697	Research Project 'Metabolite Analyses in Crops'	FP		WiSe SoSe	10	10	Report			en
WZ2401	Research Project 'Molecular Plant Breeding'	FP		WiSe, SoSe	10	10	Report			de/en
WZ2481	Research Project 'Plant Developmental Genetics 2'	FP		WiSe, SoSe	10	10	presentation			de/en
WZ1576	Research Project 'Plant Growth Regulation Regulation'	FP		WiSe, SoSe	10	10	Report			en
WZ2380	Research Project 'Plant Systems Biology'	FP		WiSe, SoSe	10	10	Report			de/en

3. Elective Modules: Agricultural Biosciences

As an alternative to this list, modules of up to 15 credits can be selected from TUM's total offerings, provided that the requirements of the modules correspond to those of the master's program Agricultural Biosciences. The decision is the responsibility of the Examination Board for the master's program Agricultural Biosciences.

Module number	Module name	Type of instruction SWS	ZV	Sem.	SWS	Credits	Type of Examination	Duration of examination (min) ¹⁾	Weighting-Factor	Language instruction Language instruction Language(s) of Instruction
WZ2620	Applications of Evolutionary Theory in Agriculture: Pathogen Population Genomics and Disease Management	V+S		SoSe	3.3 + 0.7	5	oral exam	30		en
WZ1720	Crop Breeding	VI		WiSe	4	6	Written exam	120		en
WZ1696	Crop Genomics	V + U		SoSe	3 + 1	5	Written exam	90		en
WZ1037	Crop Physiology – Ertragsphysiologie	V + U		WiSe	2 + 2	5	oral exam	30		de/en
WZ1588	Evolutionary Genetics of Plants and Microorganisms	V + U		WiSe	2 + 2	5	oral exam	30 ²⁾		en
WZ0634	General Education			WiSe, SoSe		3 - 5 ³⁾	as offered ³⁾	as offered ³⁾		
WZ0635	Genetic Engineering of Livestock	V ; S+ U		WiSe	2 + 1+ 1	5	oral exam	20		en
WZ0629	Genomics of Livestock Populations	V + U		SoSe	2 + 2	6	Written exam	120		en
WZ1589	Marker-assisted Selection	V + U		WiSe	3 + 1	5	oral exam	30		en
WZ1033	Molecular Genetics of Crop Plants	V + U		SoSe	3 + 1	5	oral exam	30		en
WZ2581	Plant Biotechnology	V+S		WiSe, SoSe	2 + 2	5	Written exam	90		en
WZ2480	Plant Developmental Genetics 2	V+S		SoSe	2 + 2	4	oral exam	30		en
WZ1185	Plant Epigenetics and Epigenomics	V + PR		WiSe, SoSe	3 + 2	5	Presentation			en
WZ0047	Plant Stress Physiology	V U P		SoSe	2 + 2 + 1	5	Written exam	90		en
WZ1584	Quantitative Genetics and Selection	V + U		SoSe	2 + 2	5	oral exam	30		en
WZ1044	Reproductive Biotechnology and Basic Molecular Developmental Biology	V ; S+ U		SoSe	2 + 2 + 1	5	oral exam	20		en
WZ0638	Research Internship Agricultural Biosciences	PR		WiSe, SoSe	8	5	Report Coursework			en
WZ2763	Transcriptional and Posttranscriptional Regulation in Eukaryotes	V+S		WiSe	2 + 2	5	Written exam + Presentation	60	3 : 2	en

III Master's Thesis

Module number	Module name	Type of instruction SWS	ZV	Sem.	SWS	Credits	Type of Examination	Duration of examination	Weighting-Factor	Language instruction Language
WZ0633	Master's Thesis					30				
	Master's Thesis					27	research paper			en
	Final colloquium					3	Colloquium	60		en

Explanation:

S	seminar	V	lecture
Sem.	= Semester	VI	= lecture with exercise
SWS	= weekly hours per semester	SoSe	= summer semester
FP	practical course in research	WiSe	= winter semester.
PR	= practical course	de	= German
U	= exercise	en	= English

¹⁾In the column Duration of examination the duration of written and oral examinations is specified in minutes.

²⁾30 min. preparation time and 30 min. oral examination

³⁾Students can choose from the courses offered by the TUM Language Center, the Carl von Linde Academy and UnternehmerTUM. Type and duration of the examination will be determined by the institutions offering the selected module.

Credit total for each semester:

Semester	Credits Required modules	Credits elective modules	Credits Master's Thesis	Total Credits	Number of exams
1	15	15		30	6
2	10	20		30	6
3		30		30	6
4			30	30	2

APPENDIX 2: Aptitude Assessment

Academic and Examination Regulations for the Master's Program in Agricultural Biosciences at the Technical University of Munich

1. Purpose of the Process

¹Eligibility for the Master's Degree Program in Agricultural Biosciences, in addition to the requirements pursuant to § 36(1) Nos. 1 and 2, requires proof of aptitude pursuant to § 36(1) No. 3 in accordance with the following provisions. ²The special qualifications and skills of the candidates should correspond to the field of Agricultural Biosciences. ³Individual aptitude parameters are:

- 1.1 ability to do research work and/or basic research and methodological work;
- 1.2 specialist knowledge from a bachelor's degree program in
 - the natural sciences with a focus on bioscientific fundamentals & methods
 - applied plant and animal sciences
 - mathematics, statistics and data science,
- 1.3 knowledge of agricultural and bioscientific matters,
- 1.4 knowledge of English specialist terminology.

2. Aptitude Assessment Process

- 2.1 Aptitude assessment is conducted annually by the Campus Office of the TUM School of Life Sciences.
- 2.2 ¹Applications 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) No. 2 no later than 31 May (absolute deadline) using the online application procedure.
- 2.3 The application must include:
 - 2.3.1 a transcript of records containing modules amounting to at least of 120 credits; the transcript of records must be issued by the relevant examination authority or academic programs office,
 - 2.3.2 curriculum vitae formatted as a table,
 - 2.3.3 a curricular analysis based on the transcript of records must be completed as part of the online application process and uploaded with the application materials,
 - 2.3.4 an English-language written statement (one A4 page) of the reasons for choosing the Master's Degree Program in Agricultural Biosciences at the Technical University of Munich in which the candidate explains those specific abilities and interests that make him/her particularly qualified for the program; a candidate's exceptional motivation and commitment 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, if necessary by appropriate documentation. This is to be supported by attachments, as necessary.
 - 2.3.5 a declaration that both the statement of the reasons for choosing the program and the essay are the candidate's own work, and that the candidate has clearly identified any ideas taken from outside sources.

3. Aptitude Assessment Commission

- 3.1 ¹Aptitude assessment is administered by a Commission that, as a rule, consists of the Study Program Director in charge of the Master's Degree Program in Agricultural Biosciences, at least two members of the professorial faculty and at least one research associate (*wissenschaftliche*r Mitarbeiter*in*). ²At least half of the Commission members must be members of the professorial faculty. ³A representative of the student body will be a part of the Commission, in an advisory capacity.
- 3.2 ¹The members of the Commission are appointed by the Dean in consultation with the Study Program Director. ²At least one member of the professorial faculty is appointed as deputy member of the Commission. ³As a rule, the Commission is chaired by the Study Program Director. ⁴Procedural regulations will be in accordance with Art. 41 of the *BayHSchG* as last amended.
- 3.3 ¹If the Commission acts in accordance with these regulations, the revocable delegation of certain duties to individual members of the Commission is permissible. ²If, pursuant to the Sentence 1, only one member of the Commission acts in the performance of certain duties, he or she must be a member of the professorial staff. ³If, pursuant to the 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 staff. ⁴The Commission is to ensure the proper allocation of duties. ⁵If there is a scoring margin for one of the evaluation criteria of the aptitude assessment and if at least two Commissioners are involved in the evaluation of that criterion, the Commissioners shall make their evaluations independently according to the indicated weighting, unless otherwise specified; the number of points to be awarded shall be the arithmetic mean of the individual evaluations, rounded up to the nearest whole number.

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 ¹Applicants who have fulfilled the requirements according to No. 4.1 will be assessed according to No. 5. ²Applicants not suited the program will receive a letter of rejection stating the grounds for rejection and informing them of legal remedies.

5. The Aptitude Assessment Process

5.1 First Stage

- 5.1.1 ¹The 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). ²For this purpose, the Commission evaluates and grades the candidate's application documents on a scale ranging from 0 to 60 points, 0 being the worst and 60 the best possible result.

The following criteria will be applied to the evaluation:

a) **Discipline-Specific Skills and Qualifications**

¹For the purpose of curricular analysis, a schematic comparison of modules, as well as of competencies is conducted. ²This analysis is focused on the academic subjects listed in the table below

Academic subject area	Credits
mathematics, statistics and data science	10

chemistry	5
natural science with a bioscientific focus	45
including a minimum number of credits	
- Fundamentals of Bioscience (e.g. cell biology, genetics, microbiology, physiology)	5
- Methods of Bioscience (e.g. laboratory course, methods of biotechnology, bioinformatics)	5
- applied plant and animal sciences	5
Total	60

³If it is established that there are no significant differences in the competencies acquired (learning outcomes), a maximum of 30 points will be awarded. ⁴Two credits is equal to one point. ⁵If this value is not a whole number, it will be rounded up. ⁶In the subject areas of natural science with a bioscientific focus, modules of at least 5 credits each must be demonstrated, otherwise 0 points will be awarded in the respective area. ⁷A total of up to 45 credits can be awarded in this subject area.

b) Final Grade

¹The applicant will be awarded one point for each tenth that the average calculated from examinations in the amount of 120 credits is better than 4.0. ²The maximum number of points is 30. ³Negative points will not be awarded. ⁴Grades of international degrees will be converted by the Bavarian formula.

⁵If 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. ⁶The applicant needs to submit a list of the results together with the application and confirm their accuracy in writing.

⁷The average is calculated from graded module examinations in the amount of 120 credits.

⁸The overall grade average is calculated as a weighted grade average. ⁹The grade weights of the individual modules correspond to the credits assigned to each module.

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

5.1.3 ²Applicants with at least 50 points will be deemed suitable.

5.1.4 Applicants who have achieved less than 40 points fail the aptitude assessment.

5.2 Second Stage:

5.2.1 ¹The remaining applicants will be invited to an aptitude assessment interview. ²During the second stage of the aptitude assessment, both skills acquired during the applicant's bachelor's studies and the result of the assessment interview will be assessed. ³Interview appointments will be announced at least one week in advance. ⁴Time slots for interviews must be scheduled before expiration of the application deadline. ⁵The interview appointment must be kept by the applicant. ⁶If the request is justified and approved by the Commission, the assessment interview may be held via video conference. ⁷The applicant bears the risk in the event of any technical problems, unless these are attributable to the Technical University of Munich. ⁸If 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 ¹The aptitude assessment interview is to be held individually for each applicant. ²The interview lasts at least 20 but not more than 30 minutes for each applicant. ³The written statement as described in 2.3.4 will be provided to members of the commission and will serve as the basis for the discussion. ⁴The statement itself will not be evaluated. ⁵The interview will focus on the following topics:

1. Basic and application-related questions concerning

- bioscientific fundamentals
- applied plant and animal sciences
- mathematics, statistics and data science,

2. practical laboratory experience and/or other experience with methods relevant to the degree program,
3. evaluation and discussion of research methods used to answer questions of horticultural science,
4. bachelor's thesis: Applicant can competently discuss the theoretical context and the key results of the bachelor's thesis or comparable academic work.

⁶The above topics may cover the documentation submitted pursuant to 2.3. ⁷Any subject-specific academic knowledge that is to be taught in the master's degree program Agricultural Biosciences will not affect the decision. ⁸With the applicant's approval, a representative of the student body may sit in on the interview.

5.2.3 ¹The aptitude assessment interview will be conducted by at two members of the Commission. ²Commission members shall independently assess each of the four topics named in 5.2.2 Sentence 1 Nos. 1- 4, each of which is equally weighted. ³Each member will assign points for each of the five interview topics on a scale from 0 to 60, 0 being the worst and 60 being the best possible result. ⁴The points total will be calculated as the arithmetic mean of the individual evaluations. ⁵Non-vanishing decimal places must be rounded up.

5.2.4 ¹The total number of points awarded in stage 2 is the sum of the points from 5.2.3 and the points from 5.1.1.a (subject-specific qualification) and 5.1.1.b (overall grade). ²Applicants with 70 or more points will be deemed suitable. ³Applicants with an overall grade of less than 70 points have failed the aptitude assessment.

5.3 Notification of Results

Applicants will be informed of the results of the aptitude assessment through official notification. ²If there is no scoring margin in the evaluation of the individual criteria and in the determination of the overall scores of the first and second stages, a resolution by the Commission is not required. ³Applicants not suited for the program will receive a letter of rejection stating the grounds for rejection and informing them of legal remedies.

5.4 Candidate's suitability for the program, once determined in aptitude assessment, shall apply to all subsequent applications for this program.

6. Documentation

¹The aptitude assessment process must be documented, in particular, the the names of participating commission members, the evaluation of the first and second stages, as well as the overall results. ²The assessment interview must be documented, including the date, duration and location of the assessment, the names of participating commission members, the applicant's name, and a list of main topics of discussion in bullet points.

7. Repeat Examinations

Applicants who have failed aptitude assessment may apply once to repeat the aptitude assessment process.