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## **Academic and Examination Regulations for the Master's Degree Program Sustainable Resource Management at the Technical University of Munich**

**Dated 29 August 2024**

In accordance with Art. 9 Sentence 1 and 2 in conjunction with Art. 80(1) Sentence 1, Art. 84(2) Sentence 1 and Art. 90(1) Sentence 2 of the Bavarian Higher Education Innovation Act [Hochschulinnovationsgesetz (BayHIG)], the Technical University of Munich issues the following Regulations:

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### **§ 34** **Applicability, Academic Title**

- (1) <sup>1</sup>The Examination and Academic Regulations for the Master's Degree Program Sustainable Resource Management (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. <sup>2</sup>The APSO has precedence.
- (2) <sup>1</sup>Upon successful completion of the master's examination the degree "Master of Science" ("M.Sc.") is awarded. <sup>2</sup>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 Sustainable Resource Management at the Technical University of Munich commences, as a rule, in the winter semester.
- (2) <sup>1</sup>The number of classes in required and elective subjects needed to obtain the master's degree is 90 credits (60 – 82 weekly hours per semester) spread over three semesters. <sup>2</sup>Students will have a maximum of six months (30 credits) to complete their master's thesis in accordance with § 46. <sup>3</sup>The number of coursework units and examinations in required and elective subjects to be completed in the Master's Degree Program Sustainable Resource Management according to Appendix 1 is a minimum of 120 credits. <sup>4</sup>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 Sustainable Resource Management 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 engineering, natural sciences, economics, or social sciences or a comparable degree program,
  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; if, in the undergraduate program, 60 credits were obtained for examinations administered in English-language examination modules, adequate proficiency in the English language is deemed proven,
  3. passing of the Aptitude Assessment according to Appendix 2.
- (2) A degree is considered to be qualified within the meaning of 1(1) if there are no significant differences with regard to the competencies (learning outcomes) acquired in the designated bachelor's degree programs at TUM.
- (3) The comparability of programs, subject-specific aptitude, as well as the equivalence of degrees acquired at foreign institutions will be decided upon by the Selection Committee in compliance with Art. 86 of the Bavarian Higher Education Innovation Act [*BayHIG*].

### **§ 37**

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

- (1) <sup>1</sup>General provisions concerning modules and courses are set out in §§ 6 and 8 of the APSO. <sup>2</sup>For any changes to the stipulated module provisions § 12(8) of the APSO applies.
- (2) The curriculum listing the required and elective modules is included in Appendix 1.
- (3) The following areas of concentration can be selected for the Master's Degree Program Sustainable Resource Management:
  - Climate, Air and Water
  - Economic and Political Dimensions of Sustainability
  - Landscape Management
  - Management and Protection of Forest Ecosystems
  - Material and Waste Management
  - Renewable Resources
  - Soils and Soil Management
  - Sustainable Agricultural Systems and Products
  - Wildlife and Protected Area Management
- (4) <sup>1</sup>The language of instruction in the Master's Degree Program Sustainable Resource Management is English as a rule. <sup>2</sup>Where the language of instruction for a module is specified in Appendix 1 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. <sup>3</sup>In deviation from Sentence 2, the language of instruction should be announced by the beginning of the respective registration period in the case of modules that require registration for individual course offerings, for example, for organizational reasons, in particular seminars.

### **§ 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) <sup>1</sup>At least one of the module examinations listed in Appendix 1 from the required modules listed in Appendix 1 must be successfully completed by the end of the second semester. <sup>2</sup>In the event of failure to comply with this deadline § 10(5) of the APSO applies.

## § 39 Examination Board

In accordance with § 29 of the APSO, the board responsible for all decisions concerning examination matters is the Master's Examination Board Sustainable Resource Management at the TUM School of Life Sciences.

## § 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) <sup>1</sup>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. <sup>2</sup>Details of each module examination and the competencies to be assessed in each examination are set out in the module descriptions. <sup>3</sup>Where the topic permits, the examination can be held either as an individual or group examination; § 18(2) Sentences 2 and 3 of the APSO apply accordingly.
- a) <sup>1</sup>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. <sup>2</sup>The duration of written examinations is regulated in § 12(7) of the APSO.
  - b) <sup>1</sup>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. <sup>2</sup>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. <sup>3</sup>Laboratory assignments may be complemented by presentations designed to demonstrate a student's communication competency in presenting scholarly work to an audience.
  - c) <sup>1</sup>**Practical credit requirements** involve students completing assigned tasks (for example, solving mathematical problems, writing computer programs, preparing models, or preparing designs) using theoretical knowledge to solve application-oriented problems. <sup>2</sup>Exercises are designed to assess a student's factual and detailed knowledge and its application. <sup>3</sup>Practical credit requirements may be administered in writing, orally, or electronically. <sup>4</sup>They may be in the form of homework assignments, practice sheets, programming exercises, (e-)tests, design tasks, posters, tasks assigned within a university internship program, etc.
  - d) <sup>1</sup>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. <sup>2</sup>Students are expected to demonstrate that they have understood all essential aspects and are able to present them in writing. <sup>3</sup>Reports may include excursion reports, internship reports, work reports, etc. <sup>4</sup>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) <sup>1</sup>**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. <sup>2</sup>In addition, project work may include a presentation or a subject-specific discussion in order to assess a student's communication competency in presenting scholarly work to an audience. <sup>3</sup>It may also encompass design sketches, drawings, plans, models, objects, simulations or documentation.
- f) <sup>1</sup>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. <sup>2</sup>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. <sup>3</sup>Research papers, differing in their requirement standards, may take the form of a conceptual framework/theory paper, abstract, term paper, seminar paper, etc. <sup>4</sup>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.
- g) <sup>1</sup>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. <sup>2</sup>For 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. <sup>3</sup>In 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. <sup>4</sup>The presentation may be complemented by a brief written precis.
- h) <sup>1</sup>An **oral examination** is a timed, graded discussion on relevant topics and specific questions to be answered. <sup>2</sup>In oral examinations students are expected to demonstrate that they have understood the central concepts of the subject matter covered by the exam and are able to apply them to specific problems. <sup>3</sup>The duration of the examination is regulated in § 13(2) of the APSO.
- i) <sup>1</sup>A **learning portfolio** is a collection 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. <sup>2</sup>Students are required to explain why they chose the work they have and its relevance for their learning progress and the achievement of the defined learning outcomes. <sup>3</sup>With the learning portfolio, students are expected to demonstrate that they have taken active responsibility for their learning process. <sup>4</sup>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. <sup>5</sup>A subject-specific final oral discussion for the purpose of reflection and based on the content of the learning portfolio may also take place.

- j) <sup>1</sup>The **parcours examination** is made up of several components. <sup>2</sup>Unlike a module examination component, parcours exam components are administered in sequence and completed in a specific time frame and location. <sup>3</sup>Parcours components entail various types of examination, which together evaluate the competency profile of the module as a whole. <sup>4</sup>Possible types of examination in parcours components may include those listed in g) and h) in combination with a practical requirement. <sup>5</sup>The total duration of the parcours examination with all its components is indicated in the module catalog.
- (2) <sup>1</sup>As a rule, module examinations are taken concurrently with the program. <sup>2</sup>The type and duration of module examinations is stipulated in Appendix 1. <sup>3</sup>For any changes to the stipulated module provisions § 12(8) of the APSO applies. <sup>4</sup>The assessment of the module examination is governed by § 17 of the APSO. <sup>5</sup>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.

## **§ 42**

### **Admission to and Registration for the Master's Examination**

- (1) Students who are enrolled in the Master's Degree Program Sustainable Resource Management are deemed admitted to the module examinations of the master's examination.
- (2) <sup>1</sup>Registration requirements for module examinations are stipulated in § 15(1) of the APSO. <sup>2</sup>Registration requirements for repeat examinations are stipulated in § 15(2) of the APSO.

## **§ 43**

### **Scope of the Master's Examination**

- (1) The master's examination consists of:
1. the examinations in the corresponding modules according to § 43(2),
  2. the Master's Thesis module according to § 46,
  3. and the coursework listed in § 45.
- (2) <sup>1</sup>The module examinations are listed in Appendix 1. <sup>2</sup>Students must complete 20 credits in the required modules and at least 70 credits in elective modules. <sup>3</sup>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)**

<sup>1</sup>Instead of the examinations to be taken in elective modules in accordance with § 43(2) Sentence 2, some elective modules may also require the completion of coursework. <sup>2</sup>In these cases, the number of credits to be earned in the electives according to § 43(2) Sentence 2 will be reduced accordingly.

## **§ 45 a**

### **Multiple Choice Tests**

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

## **§ 46**

### **Master's Thesis**

- (1) As part of the master's examination, each student must write a master's thesis according to § 18 of the APSO.
- (2) <sup>1</sup>Completion of the Master's Thesis module, as a rule, is the final examination requirement. <sup>2</sup>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) <sup>1</sup>The period between topic assignment and submission of the completed thesis must not exceed six months. <sup>2</sup>The 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. <sup>3</sup>30 credits are awarded for the Master's Thesis module. <sup>4</sup>The master's thesis should be written in English.
- (4) The completion of the Master's Thesis module consists of a written project proposal (a report as coursework requirement) and the research paper (final thesis).
- (5) <sup>1</sup>If the Master's Thesis module was not graded as at least "sufficient" (4.0), it may be repeated once with a new topic. <sup>2</sup>Students must renew their application to set the topic of the Master's Thesis module within six weeks of receipt of the grade.

## **§ 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) <sup>1</sup>The module grade will be determined according to § 17 of the APSO. <sup>2</sup>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 module. <sup>3</sup>The grade weights of the individual modules correspond to the credits assigned to each module. <sup>4</sup>The overall assessment is expressed by the grading according to § 17 of the APSO.

## **§ 48**

### **Degree Certificate, Diploma, Diploma Supplement**

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.

## **§ 49**

### **Entry into Force**

- (1) <sup>1</sup>These regulations will enter into force on 1 October 2024. <sup>2</sup>They apply to all students who commence their studies at the Technical University of Munich as of the winter semester 2024/2025. <sup>3</sup>As an exception to Sentence 2, Appendix 2 applies: Aptitude assessments for all students who commence their studies at the Technical University of Munich as of the winter semester 2025/2026.
- (2) <sup>1</sup>At the same time, the Academic and Examination Regulations for the Master's Degree Program Sustainable Resource Management at the Technical University of Munich dated 20 August 2015 most recently amended by the regulations of 15 December 2022 cease to apply, unless the provision in § 49(1) Sentence 2 of these regulations apply. <sup>2</sup>Students who commenced their studies at the Technical University of Munich prior to the winter semester 2024/2025 are to complete their studies in accordance with the regulations named in § 49(2) Sentence 1.



## Appendix 1: Examination Modules\*

### 1. Required Modules

Module No.	Module Name	Type of Instruction	Sem.	SWS	Credits	Type of Examination	Duration of Examination (min)	Language of Instruction	Weighting Factor
LS50031	Introduction to GIS and Remote Sensing	VO + UE + VI	1	1 + 1 + 2	5	Written exam	90	en	
WZ1821	Natural Resources – Traits, Management and Theory of Sustainability	VO	1	4	5	Written exam	90	en	
LS50030	Scientific Writing	SE	1	2	5	Research paper		en	
LS50032	Systems Analysis, Terrestrial Sampling and Statistics	VO + VO + VI	1	2 + 2 + 1	5	Written exam	90	en	
	<b>Total</b>				<b>20</b>				

In accordance with § 38(2), at least one of the module examinations from the required modules needs to be successfully completed by the end of the second semester.

### Master's Thesis

Module No.	Module Name	Type of Instruction	Sem.	SWS	Credits	Type of Examination	Duration of Examination (min)	Language of Instruction	Weighting Factor
WZ2754	Master's Thesis	SE	4	1	30	Report (SL) + research paper		en	

### II. Elective Modules

In the section Elective Modules, modules amounting to **at least 70 credits** must be taken from the following list (not final).

The Examination Board regularly updates these lists and publishes the official catalog no later than the start of the semester in TUMonline.

Upon request, students can select discipline-related modules from all course offerings of the Technical University of Munich or other universities amounting to 30 credits alternatively to the elective modules course catalog. The Examination Board decides on the recognition and assignment to the different lists.

## A. Science Topics

**At least 45 credits** are required from the Science Topics.

**In addition, modules totaling at least 15 credits must be completed in at least one Science Topic.**

Module No.	Module Name	Type of Instruction	Sem.	SWS	Credits	Type of Examination	Duration of Examination (min)	Language of Instruction	Weighting Factor
<b>1. Climate, Air and Water</b>									
WZ2730	Climate Change - Science, Impacts and Adaptation, Mitigation	VO + SE	WiSe	2 + 2	5	Oral exam	30	en	
WZ2732	Environmental Monitoring and Data Analysis	VI + VI	WiSe	3 + 2	5	Written exam	180	en	
WZ2731	Hydrometeorology and Management of Water Resources	VO + VO	SoSe	2 + 2	5	Oral exam	30	en	
WZ2722	Mountain Catchments under Changing Climate	VI + VO	SoSe	3 + 2	5	Written exam + Presentation	60 + 15	en	3.5 : 6.5
<b>2. Economic and Political Dimensions of Sustainability</b>									
WI000286	Environmental and Natural Resource Economics	VI	SoSe	4	5	Written exam	90	en	
WZ2936	Sustainable and Environmental Regulations	SE + SE	WiSe	2 + 2	5	Presentation	60	en	
WZ1822	Introduction to Economics and Business Ethics	VO + VO	WiSe	2 + 2	5	Written exam	90	en	
WI001228	Economics of Environmental and Climate Policy	VO	SoSe	4	6	Written exam	90	en	
<b>3. Landscape Management</b>									
WZ4094	Landscape Management – Application Study	VI	WiSe	5	5	Project work		en	
WZ2719	Landscape Planning	VO + SE	SoSe	2 + 2	5	Research paper		en	
WZ2737	Remote Sensing and Image Processing	VI	WiSe	6	5	Project work		en	
LS50026	Spatial Ecology	VO + VI	SoSe	2 + 2	5	Written exam	90	en	
<b>4. Management and Protection of Forest Ecosystems</b>									
WZ2716	Forest Growth and Forest Operations	VO + VO + EX	SoSe	2 + 1.5 + 0.5	5	Written exam	90	en	
WZ4161	Forest Management	VO + UE	SoSe	2 + 3.5	5	Oral exam	30	en	
WZ2717	Genetic Resources Management and Forest Protection	VO + VO	WiSe	2 + 2	5	Written exam	60	en	
WZ4082	Plantation Forestry and Agroforestry	VO + VO	WS	2 + 2	5	Written exam	90	en	

5. Material and Waste Management									
WZ2724	Emission Control in Land-Use and Animal Husbandry	VO	WiSe	3	5	Oral exam or Written exam	20 or 90	en	
WZ4206	Material Flow Management and Applications	VO	SoSe	3	5	Research paper		en	
WZ2723	Utilization and Treatment of Special Materials and Waste	SE	WiSe	2	5	Presentation	10	en	
ED 130092	Waste and Waste Water Treatment	VO + VO	SoSe	2 + 2	5	Written exam	90	en	
6. Renewable Resources									
EI70860	Integration of Renewable Energies	VI	WiSe	4	5	Written exam	60	en	
WZ4098	Forestry Raw Materials and Their Utilization	VO + UE	SoSe	2 + 2	5	Written exam	60	en	
WZ4202	Political and Social Perspectives of Renewable Resources	VO	WiSe	4	5	Research paper		en	
WZ2720	Renewable Energy Technologies	VO	SoSe	4	5	Written exam	60	en	
7. Soils and Soil Management									
WZ2736	Analytical Characterization of Soil Resources	VO + UE	WiSe	1 + 3	5	Research paper		en	
WZ2733	Introduction to Soil Science	VO + UE	SoSe	2 + 3.5	5	Written exam + Laboratory assignment	60	en	
WZ2734	Soil Protection	VO + VO	WiSe	2 + 2	5	Oral exam	30	en	
WZ2735	World Soil Resources	VO + UE	SoSe	2 + 2.8	5	Oral exam + Laboratory assignment	30	en	
8. Sustainable Agricultural Systems and Products									
LS10016	Environment, Agriculture and Food	VI + SE + SE	WiSe	2 + 1 + 1	5	Report		en	
LS10021	Live Stock Production and Global Grasslands	VI + SE	WiSe	2 + 2	5	Report		en	
MGT 001412	Sustainability Assessment of Agri-Food Supply Chains	SE	WiSe	4	6	Report		en	
WZ1561	Value Chain Economics	VI	SoSe	4	6	Project work		en	
9. Wildlife and Protected Area Management									
WZ4189	Fisheries and Aquatic Conservation	VO + UE	WiSe	2 + 2	5	Written exam + Presentation	60 + 15	en	2 : 1
WZ4197	Protected Areas Biodiversity and Management	VO + VO	SoSe	2 + 2	5	Written exam	90	en	
WZ6432	Wildlife and Conservation Biology	VO + UE	WiSe	2 + 3	5	Written exam + Project work	60	en	6 : 4
WZ4198	Wildlife Management and Wildlife-Human Interactions	VO + SE	SoSe	2 + 2	5	Research paper		en	

## B. Free Elective Modules in Sustainable Resource Management

Up to 25 credits can be obtained from the section B. Free Elective Modules in Sustainable Resource Management. Of these, only modules amounting to **up to 4 credits** can be taken from the section “Transferable Skills Training”. Alternatively, all 70 credits for the elective modules can be obtained from the section A. Science Topics.

Module No.	Module Name	Type of Instruction	Sem.	SWS	Credits	Type of Examination	Duration of Examination (min)	Language of Instruction	Weighting Factor
WZ0322	Ecological Colloquium: Scientific Foundations and Applications in Practice	SE + KO	SoSe/ WiSe	2 + 2	5	Report		de/en	
LS50029	Internship		SoSe/ WiSe		10	Report		en	
WZ4225	Concepts and Research Methods in Ecology	VO + UE	WiSe	2 + 4	5	Written exam	180	en	
LS10013	Modelling and Statistical Analysis of Large Arrays	UE	SoSe/ WiSe	4	5	Portfolio		en	
WZ6407	Urban Ecology	VO + SE	WiSe	2 + 2	5	Presentation	15	en	
WZ0528	Urban Forestry	VO + PT	WiSe	2 + 2	5	Project work		en	
	Transferable Skills Training **				4				

\*\* ) This section covers the courses offered by the Kontextlehre WTG (formerly Carl von Linde Akademie) and the TUM Language Center.

### Explanation:

Sem. = semester; SWS = Semesterwochenstunden/weekly hours per semester;

VO = Vorlesung/lecture; UE = Übung/exercise; PR = Praktikum/internship;

VI = Vorlesung mit integrierter Übung/lecture with exercise,

SE = seminar; PT = project; FO = Forschungspraktikum/research internship; EX = excursion;

KO = Kolloquium/colloquium;

SL = Studienleistung/coursework (pass/fail credit requirement); de = German; en = English

For written exams, oral exams, and presentations, the “Duration of Examination” column indicates the examination duration in minutes.

\*) During the transition period to the school structure, module numbers may change; the old and new module numbers will be listed side by side in TUMonline.

## **APPENDIX 2: Aptitude Assessment**

### **Academic and Examination Regulations for the Master's Degree Program Sustainable Resource Management at the Technical University of Munich**

#### **1. Purpose of the Process**

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

- 1.1 ability to do scholarly work and basic, methodologically sound research,
- 1.2 general and interdisciplinary basic knowledge relevant to the master's program with regard to global challenges of resource management,
- 1.3 subject-specific knowledge relevant to the master's program from the applicant's undergraduate studies in the fields of engineering, natural sciences, economics, or social sciences.

#### **2. Aptitude Assessment Process**

- 2.1 <sup>1</sup>Aptitude Assessment is conducted annually. <sup>2</sup>The TUM Enrollment, Student Fees Payment, Leave of Absence and Disenrollment Regulations (ImmatS) of 6 February 2023 as amended, in particular § 6, apply to the Aptitude Assessment process.

- 2.2 <sup>1</sup>Applications for admission to the aptitude assessment process in accordance with § 6 of the ImmatS must be submitted to the Technical University of Munich together with the documents listed under 2.3 and in § 36(1)2 no later than 31 May (absolute deadline) using the online application procedure. <sup>2</sup>The diploma and the graduation certificate must be presented as proof of passing the bachelor's degree program to the TUM Center for Study and Teaching – Admissions and Enrollment five weeks after the first day of classes, at the latest. <sup>3</sup>Otherwise, it will not yet be possible to commence the master's degree program in accordance with § 36 of these regulations.

- 2.3 The application must include:

- 2.3.1 Proof of a university degree in accordance with § 36. If this proof is not presented by the time of the application, complete proof of the coursework and examination achievements in the bachelor's degree (transcript of records) amounting to 180 credits for a six-semester bachelor's degree program, 210 credits for a seven-semester bachelor's degree program, or 240 credits for an eight-semester bachelor's degree program needs to be included. The transcript of records must be issued by the relevant examination authority or academic programs office,
- 2.3.2 Complete (without time gaps) curriculum vitae in English.
- 2.3.3 Optional, to serve as the basis for a potential aptitude assessment interview: a written statement in English (max. 1 A4 page) of the reasons for choosing the Master's Degree Program Sustainable Resource Management at the Technical University of Munich, in which the candidate explains the exceptional motivation that makes him/her particularly qualified for the Master's Degree Program Sustainable Resource Management at the Technical University of Munich; a candidate's exceptional motivation is to be demonstrated, for example, 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.

- 2.3.4 If a written statement is submitted according to 2.3.3, the applicant must submit a declaration that the written statement is the applicant's own work and that the applicant has clearly identified any ideas taken from outside sources.

### **3. Aptitude Assessment Commission, Selection Committees**

- 3.1 <sup>1</sup>Aptitude assessment is administered by the Aptitude Assessment Commission and the Selection Committees. <sup>2</sup> The Aptitude Assessment Commission is responsible for preparing the aptitude assessment process, organizing it, and ensuring a structured and standardized process for determining aptitude within the framework of these Regulations; it bears responsibility, insofar as no other body is specified by these Regulations or through delegation of its authority to another body. <sup>3</sup>Selection Committees are to conduct the assessment process in accordance with No. 5 below, subject to No. 3.2 Sentence 11.

- 3.2 <sup>1</sup>The Aptitude Assessment Commission (henceforth Commission) consists of five members, one of whom is the Academic Program Director. <sup>2</sup>The other four Members of the Commission are appointed by the Dean, in consultation with the Vice Dean of Academic and Student Affairs, from among the authorized examiners of the TUM School of Life Sciences, who are members of the degree program faculty. <sup>3</sup>At least three Commission members must be university educators within the meaning of the Bavarian Higher Education Innovation Act [Hochschulinnovationsgesetz (BayHIG)]. <sup>4</sup>The departmental student council has the right to name a student representative to serve on the Commission in an advisory capacity. <sup>5</sup>A deputy is to be appointed for each member of the Commission. <sup>6</sup>The Commission is chaired by the Academic Program Director; the Commission elects a deputy chairperson from among its members. <sup>7</sup>Procedures are governed by the paragraph on the procedural provisions of the TUM Charter as amended. <sup>8</sup>The term in office of Commission members is 2 years. <sup>9</sup>Extensions of the term of office and reappointments are possible. <sup>10</sup>Urgent decisions that cannot be postponed can be made by the Academic Program Director on behalf of the Commission. He/she must inform the Commission of such decisions without delay. <sup>11</sup>The Campus Office supports the Commission and the Selection Committee; the Commission may delegate to the Office the task of assessing formal admissions requirements in accordance with No. 4, as well as determining points to be awarded based on defined criteria for which there is no freedom of discretion involved. This includes, in particular, the conversion of grades and the calculation of the overall points earned by the applicant. The Office may also be involved in choosing the members of the Selection Committee from among the commissioners and assigning them to applicants.

- 3.3 <sup>1</sup>Each Selection Committee consists of two members of the TUM School of Life Sciences, who are authorized to conduct examinations in the degree program according to Art. 85(1) Sentence 1 of the Bavarian Higher Education Act [BayHSchG] in conjunction with the act governing examiners at institutions of higher education [Hochschulprüferverordnung]. <sup>2</sup>At least one member must be a university educator within the meaning of the Bavarian Higher Education Innovation Act [Hochschulinnovationsgesetzes (BayHIG)]. <sup>3</sup>It is permissible to serve concurrently on both the Aptitude Assessment Commission and the Selection Committee. <sup>4</sup>Members of the Committee are appointed by the Commission for a term of 1 year; No. 3.2 Sentence 9 applies accordingly. <sup>5</sup>Different Selection Committees may be assigned to individual criteria and stages of the assessment process.

#### **4. Admission to the Aptitude Assessment Process**

- 4.1 Admission to the aptitude assessment process requires that all documentation specified in No. 2.2 has been submitted in a timely and complete fashion.
- 4.2 <sup>1</sup>Applicants who have fulfilled the requirements according to No. 4.1 will be assessed according to No. 5. <sup>2</sup>Applicants not suited for 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 <sup>1</sup>As part of the first stage of aptitude assessment, the qualifications acquired in the undergraduate degree program are assessed based on the submitted final grade, and the applicant's subject-specific knowledge is assessed based on an online aptitude test. <sup>2</sup>A maximum of 70 points are awarded.

##### **a) Final Grade**

The applicant will be awarded one point for each tenth that the final grade of the undergraduate degree program is better than 4.0. <sup>2</sup>The maximum number of points is 30. <sup>3</sup>Negative points will not be awarded. <sup>4</sup>Grades of international degrees will be converted by applying the Bavarian Formula.

##### **b) Online Aptitude Test**

<sup>1</sup>The online aptitude test is a 40-minute, written test in English. <sup>2</sup>The purpose of the test is to demonstrate whether it can be expected that the applicant will attain the goal of the degree program and whether he or she has the general level of knowledge corresponding to the fundamentals of the relevant bachelor's degree program so that successful completion of the degree program is to be expected.

<sup>3</sup> The Test covers the following categories in the indicated weighting:

- Basic general and interdisciplinary knowledge related to global resource management challenges, research methods, and general knowledge of sustainability (75%);
- Specific knowledge in one of the fields of engineering, natural sciences, economics or social sciences (25%).

<sup>4</sup>Any subject-specific academic knowledge that is to be taught in the Master's Degree Program Sustainable Resource Management will not affect the decision. <sup>5</sup>Applicants must demonstrate in the test that they are suitable for the master's degree program. <sup>6</sup>Questions are selected by two members of the Commission, who also decide after assessing the results about the possible exclusion of individual questions; at least one member must be a university educator within the meaning of the Bavarian Higher Education Innovation Act [Hochschulinnovationsgesetz (BayHIG)]. <sup>7</sup>The test is multiple choice with only one correct response to each question. <sup>8</sup>For each correct response, the number of points specified in the test for the respective question will be

awarded. <sup>9</sup>The maximum possible number of points in the aptitude test is 40. <sup>10</sup>The date of the test will be announced by the Commission at least one week in advance. <sup>11</sup>Time slots for the test must be scheduled before the expiration of the application deadline. <sup>12</sup>The date set for the test must be observed. <sup>13</sup>The online aptitude test takes place only once per application period. <sup>14</sup>In exceptional cases, a later appointment may be scheduled for well-grounded, documented reasons.

5.1.2 The points total in the first stage will be calculated as the sum of the individual assessments in No. 5.1.1 a) final grade and results of the online aptitude test No. 5.1.1 b), whereby decimal places are rounded up.

5.1.3 <sup>1</sup>Applicants with at least 52 points pass the aptitude assessment.

5.1.4 Applicants who have achieved less than 46 points fail the aptitude assessment.

## 5.2. Second Stage

5.2.1 <sup>1</sup>The remaining applicants will be invited to an assessment interview. <sup>2</sup>In the second stage of the aptitude assessment, the qualifications acquired in the bachelor's degree program and the result of the assessment interview are evaluated, whereby the qualification acquired in the bachelor's is to be weighted equally. <sup>3</sup>Interview appointments will be announced at least one week in advance. <sup>4</sup>Time slots for interviews must be scheduled before expiration of the application deadline. <sup>5</sup>The interview appointment must be kept by the applicant. <sup>6</sup>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. <sup>7</sup>As a rule, the interview is conducted by video conference. <sup>8</sup>If the video or audio transmission is disrupted, the interview can be continued after the disruption has been resolved or a follow-up appointment can be scheduled. <sup>9</sup>In the event of repeated disruption, the aptitude assessment interview may be scheduled as a face-to-face meeting in exception to Sentence 7. <sup>10</sup>Sentences 8 and 9 do not apply if it can be proven that the applicant is responsible for the disruption. <sup>11</sup>In this case, the aptitude assessment interview will be assessed.

5.2.2 <sup>1</sup>The aptitude assessment interview is to be held individually for each applicant. <sup>2</sup>The interview will be held in English and last at least 20 but not more than 30 minutes for each applicant. <sup>3</sup>The interview will focus on the following topics:

1. Exceptional motivation for the Master's Degree Program Sustainable Resource Management in accordance with the criteria named under No. 2.3.3 for the optional written statement.
2. Individual aptitude parameters according to Nos. 1.1 through 1.3
  - Demonstration of previous subject-specific knowledge: Questions from the fields of engineering, natural sciences, economics and/or social sciences,
  - Exposition of a research project (e.g. the final thesis) from the undergraduate degree program.



### 3. Communication skills in English

- Applicants can express themselves very clearly in English and can explain subject-related issues precisely,
- statements are convincingly substantiated through arguments and relevant examples,
- questions on the undergraduate studies are founded using precise terminology and comprehensibly.

<sup>4</sup>The above topics may cover the documentation submitted according to No. 2.3. <sup>5</sup>Any subject-specific academic knowledge that is to be taught in the Master's Degree Program Sustainable Resource Management will not affect the decision. <sup>6</sup>With the applicant's approval, a representative of the student body may sit in on the interview.

5.2.3 <sup>1</sup>Committee members independently assess each of the three areas with equal weighting.

<sup>2</sup>Each member of the Committee will grade the result of the interview on a scale from 0 to 20, 0 being the worst and 20 being the best possible result. <sup>3</sup>The points total from the aptitude interview will be calculated as the arithmetic mean of the individual evaluations.

<sup>4</sup>Non-vanishing decimal places must be rounded up.

5.2.4 <sup>1</sup>The total number of points awarded in the second stage is the sum of the points from No. 5.2.3 and the points from No. 5.1.1 a) Final Grade and b) Online Aptitude Test.

<sup>2</sup>Applicants with 59 or more have passed the aptitude assessment. <sup>3</sup>Applicants with an overall score of less than 59 points have failed the aptitude assessment.

### 5.3 Determination and Notification of Results

<sup>1</sup>Applicants will be informed of the results of the aptitude assessment through official notification. <sup>2</sup>Applicants 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 the aptitude assessment, applies to all subsequent applications for this program.

## 6. Documentation

<sup>1</sup>The aptitude assessment process must be documented, in particular the names of the participating members of the Selection Committee, the evaluation of the first and second stages, as well as the overall results. <sup>2</sup>A record is to be kept about the conduct of the test (date, place, beginning and end of the test, the names of those present, the names of the applicants, as well as any unusual occurrences). <sup>3</sup>The aptitude assessment interview must be documented, including the date, duration, and location of the assessment, the names of the participating Selection Committee members, the applicant's name, and a list of main topics of discussion in bullet points.

## 7. Repeat Aptitude Assessments

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

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Executed following a resolution of the Senate of the Technical University of Munich dated 10 July 2024 and approval of the President of the Technical University of Munich on 29 August 2024.

Munich, 29 August 2024

Technical University of Munich

signed by  
Thomas F. Hofmann

President

These regulations were officially published online on the website <https://www.tum.de/satzungen> on 29 August 2024. In addition, access is available during office hours on the premises of the TUM Center for Study and Teaching - Legal Affairs, Arcisstraße 21, 80333 Munich, Room 0561. The day of proclamation is, therefore, 29 August 2024.