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## **Statute on the aptitude assessment for the Bachelor's program Management and Technology at the Technical University of Munich**

**dated April 16, 2024**

According to Article 13 subsection 1 sentence 2 in connection with Article 44 subsection 4 sentence 7 of the Bavarian university regulation (Bayerisches Hochschulgesetz), as well as § 34 subsection 2 of the qualification regulation (Qualifikationsverordnung) (BayRS 2210- 1-1-3 K/WK), the Technical University of Munich releases the following statute:

### **§ 1**

#### **Purpose of the Statute**

(1) <sup>1</sup>Admission of the Bachelor's program Management and Technology in the first or a higher subject semester requires a special set of qualifications. <sup>2</sup>To join in a higher semester, proof of competence corresponding to the basic modules mentioned in § 38 (2) of the Examination and Academic Regulations for the Bachelor's Program in Management & Technology is required. <sup>3</sup>For admission to the second semester, at least one basic module from the mentioned ones in Sentence 2 must be recognized. <sup>4</sup> For admission to the third semester or higher is required proof of at least three modules, corresponding to the modules "Mathematics in Natural and Economic Sciences I", "Operations Research and Decision Analysis", "Economics I - Microeconomics" and "Introduction to Data Science and Statistical Thinking". <sup>5</sup>The aptitude test for the Bachelor's program in Management and Technology can be taken in German and English. <sup>6</sup>The Bachelor's degree program offers a unique program profile, which is elaborated upon in attachment 1. <sup>7</sup>Therefore, in addition to the requirements specified in the examination and study regulation (Fachprüfungs- und Studienordnung, FPSO) the following provisions will be considered during the admission process.

(2) <sup>1</sup>The purpose of the official process is to determine whether, in addition to the qualification proven with the acquisition of the higher education entrance qualification (HZB), the aptitude for the special qualitative requirements of the Bachelor's degree program Management and Technology is met. <sup>2</sup>In addition to holding the university entrance qualifications, the following admission requirements are required:

Program-specific competencies:

1. You have skills in the fields of mathematics and natural sciences
2. You have Mathematical and logical skills, and the ability to apply these skills in the field of the interface between Engineering/natural Science and economics  
In combination, an ability to clearly and precisely argue in the German or in English language.
3. Ability to understand and process economic issues.

<sup>3</sup>In order to acquire scientific and mathematical learning contents in engineering and the natural sciences, students in the qualified interdisciplinary Management and Technology program must possess sound knowledge in the field of mathematics and the natural sciences.

<sup>4</sup>This is particularly important as students on the Bachelor's degree program Management and Technology will be attending undergraduate courses along with students from these related disciplines. <sup>5</sup>Logical and analytical skills, as well as the ability to formulate clear and precise arguments in the languages mentioned in sentence 2 no. 2 are necessary competencies, which facilitate communication with experts in the interdisciplinary fields of economics and engineering/natural sciences.

## § 2 Admission process

- (1) The admission process will be carried out on a semi-annual basis during the summer semester for the subsequent winter semester, as well as during the winter semester for the subsequent summer semester, the latter of which is only available for applicants to higher semesters.
- (2) Applications for admission for the subsequent winter semester can be submitted to the Technical University of Munich in the online application procedure until July 15. Applications for the following summer semester can be submitted until January 15 (exclusion periods).
- (3) <sup>1</sup>Applications can be submitted either in the German or English language.
- (4) Please include the following attachments in your application:
  1. Resume in accordance with the prescribed format,
  2. Proof of university entrance qualifications,
  3. A Letter of motivation totaling a maximum of two pages, in which applicants elaborate on their choice for the program, as well as on their ability to understand and develop situations from an economic context. Applicants should also be able to explain which skills, talents and interests would qualify them for the program, for example through extracurricular activities,
  4. If applicable, certificates of special extracurricular qualifications or additional qualifications relevant to the course of study (e.g. participation in a research competition, course-specific vocational training or other course-specific professional activities, voluntary internships relevant to the course of study),
  5. Documents required in accordance with § 6 subsection 3 Statutes of Technical University of Munich on enrolment, re-enrolment, leave of absence and exmatriculation (ImmatS) as amended,
  6. In the case of an application for a higher semester, a transcript of records with modules from previous studies, as well as the curriculum on which these studies are based must be provided (e.g. module handbook, module descriptions).
  7. Proof that the applicant has written the motivation letter alone, without any external help and that any external sources used, are clearly highlighted. Should we identify any indications that the motivation letter has not been written by the applicant alone, admission may be denied.

### **§ 3**

#### **Aptitude Assessment Committee**

- (1) <sup>1</sup>The admission process is carried out by the committee of aptitude assessment processes (Committee) and the selection committee or committees, unless otherwise stated in these regulations. <sup>2</sup>The Committee is responsible for the preparation, organization of the process, and ensuring a structured and standardized aptitude assessment process as part of these regulations. <sup>3</sup>The selection committee or committees are responsible for carrying out the second stage of the process pursuant to § 6. <sup>4</sup>The formal admission exam according to § 4 as well as the allocation of points in the first stage according to § 5 section 1. Nr. 1 and 2. and section 2 are carried out by the TUM Center for Study and Teaching – application and enrollment.
- (2) The Committee consists of five members. <sup>2</sup>The members of the committee 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 Management involved in the degree program. <sup>3</sup>At least three members of the committee must be an university professor according to the BayHIG. <sup>4</sup>The Student Council has the right to select a representative to sit on the Committee in an advisory capacity. <sup>5</sup>A deputy is appointed to each member of the Committee. <sup>6</sup>The Committee elects a chairperson and a deputy chairperson from among its members. <sup>7</sup> The conduct of business is governed by the current version of the General Regulations of the TUM. <sup>8</sup>The term of office of the members is one year. <sup>9</sup>Extensions of the term of office and reappointments are possible. <sup>10</sup>Urgent decisions which cannot be postponed may be taken by the Chairperson instead of the Commission; he or she shall immediately inform the Commission thereof. <sup>11</sup>The TUM Center for Study and Teaching- Application and Enrollment and the Office of Student Affairs will support the committee in particular with the awarding of points according to § 5 (1) 3.
- (3) <sup>1</sup>An aptitude assessment committee consists of two members from the groups of members of the TUM School of Management who are authorized to take examinations in the degree program in accordance with Art. 85 (1) sentence 1 BayHIG in conjunction with the Hochschulprüferverordnung. <sup>2</sup>The members shall be appointed by the committee. <sup>3</sup>At least one member must be a university teacher according to the BayHIG. <sup>4</sup>The term of office of the members is one year, § 3 (2) sentence 9 shall apply accordingly. <sup>5</sup>The activity as a member of the committee can be exercised in addition to the activity as a member of the selection committee. <sup>6</sup>The second stage according to § 6 can be carried out by one or more selection committees. <sup>7</sup>In particular, the Committee can delegate to the Office of Student Affairs the composition of the selection committee from the members appointed by the Committee and the assignment of applicants. <sup>8</sup>The Office of Student Affairs may assist the Selection Committee or Selection Committees in the implementation of the second stage.

### **§ 4**

#### **Admission requirements**

<sup>1</sup>Admission guidelines require submission of all documents listed in § 2 subsection 4 by the stated deadline in due form and in their entirety to the Technical University of Munich. <sup>2</sup>If this is not the case, admission to the aptitude assessment procedure will not be granted. <sup>3</sup>In the case of an application to a higher semester where it is determined that the required basic modules according to § 1 (1) sentence 2 to 4 are not available, the candidate will not be admitted to the aptitude assessment process.

## **§ 5**

### **Admission process: First stage**

- (1) During the first stage of the admission process, applicants will be assessed on the basis of the following criteria:

1. Grade point average (GPA) of the university entrance qualification
2. Subject-specific grades;

The weighting of the subject specific grades includes the subjects

- Mathematics (weighted double)
- The best science-related subject (weighted double)
- German or English language (weighted single)

The grades listed in the HZB which were acquired in the last four semi-annual grade certificates, up to and including the grade certificates acquired upon graduation will be counted in the evaluation. The grades for the relevant subjects will be summarized according to their weight and divided by the total number of weighted grades. Research papers or other graded performances will not be considered.

Should more than one science-related subject be listed in the final grade certificate, the applicant may choose which subject shall be considered for their evaluation. In the case that the grade certificates were not issued on a semi-annual basis, only subject-specific grades issued with the university entrance qualification will be evaluated. Should the grade certificate not include all relevant subjects listed under point 2, the weighted grade point average will only consider the other relevant grades available; for the missing subject(s), the applicant will be invited to stage two of the admission process to demonstrate possession of the relevant knowledge according to § 5 subsection 3 no. 1 sentence 2 and 3,

3. Extracurricular qualifications or additional qualifications relevant to the course of study: <sup>1</sup>Extracurricular qualifications or additional qualifications relevant to the course of study shall be taken into account for each applicant in the case of a maximum of one relevant vocational training or apprenticeship, a subject-relevant internship of at least twelve months, successful participation in the MINT course (orientation semester at the TUM) and successful participation in the competitions "Jugend forscht", "Jugend gründet", "Mathematik-Olympiade" or comparable competitions relevant to the course of study with at least a distinction at state level.

<sup>2</sup>The qualifications must be verifiable by the applicant and the relevant documents must be attached to the application in accordance with § 2 subsection 4. <sup>3</sup>The Admissions Committee shall decide on the recognition of the above qualifications.

- (2) For the assessment procedure the following applies:

1. <sup>1</sup>The average grade in the HZB is converted into points ("HZB points") on a scale from 0 to 100, 0 being the worst and 100 the best possible evaluation. <sup>2</sup>The scale is constructed such as that a barely passed graduation will be awarded 40 points (see conversion formula in attn. 2). <sup>3</sup>Applicants who can prove that there were reasons beyond their own control, which negatively influenced the outcome of their university entrance qualification may participate in the admission upon presenting a school assessment confirming these disadvantages.

2. <sup>1</sup>The result of the assessment of the subject-specific grades according to subsection 1 point 2 will be converted into points on a 100- point scale (see conversion formula in attn. 2). <sup>2</sup>If this number of points is a decimal, the resulting value will be rounded up to the next larger number.
3. <sup>1</sup>Each relevant extracurricular qualification or additional qualification recognized by the Commission in accordance with subsection 1 No. 3 shall be assessed in accordance with annex 2 No. 4. <sup>2</sup>The applicant may obtain a maximum of 4 points from the area of extracurricular qualifications or additional qualifications.
4. <sup>1</sup>The total score for the first stage of the assessment process stage is comprised of the sum of the HZB points (see point 1.) multiplied by 0.65 and the grade point average under point 2 multiplied by 0.35. <sup>2</sup>If this number of points is a decimal, the resulting value will be rounded up to the next larger number. <sup>3</sup>The maximum achievable score for the Bachelor's degree program in the first stage is 100 points. <sup>4</sup>Results above 100 points are theoretically possible due to no. 3, but are limited to 100 points - and thus already the best possible suitability - for the determination of results according to para. 3.
5. In deviation from point 1 and 2, all graduates of advanced professional trainings provided by a chamber of commerce (Meisterprüfung) will be evaluated based on their grade point average achieved upon completing professional training, as well as on their grade specific grade point average comprising the subjects of mathematics (weighted double), German or English (weighted normally) and a science-related subject (weighted double). In a similar way, graduates of vocational schools or professional academies will be evaluated based on their grade point average achieved upon graduation or, should no grade point average be indicated, based on the weighted average of individual subject grades (excluding optional subjects), as well as on the subject specific grade point average for the subjects mathematics (weighted double), German or English (weighted normally) and a science-related subject (weighted double). Should the grade certificate not include all relevant subjects specified in § 1, the weighted grade point average will only reflect the other relevant grades available. For the missing subject(s), the applicant must prove he or she possesses the relevant knowledge by participating in the second stage of the admissions procedure.

(3) Result of the first stage of the aptitude assessment:

1. <sup>1</sup>If 88 points and more have been achieved in the first stage, the subject-specific aptitude for the study programs TUM-BWL is determined. <sup>2</sup>All subject-specific grades, however have to be listed on the final grade certificate that has been received upon graduation; even if the number of points required according to sentence 1 are achieved, the applicants must demonstrate during the second stage of the admission process that they possess the necessary skillset relevant for the program.
  2. <sup>1</sup>If the score calculated in accordance with paragraph 2 is 66 points or less, applicants are deemed unsuitable. <sup>2</sup>This also applies if applicants lack subject-specific individual grades.
- (4) <sup>1</sup>The remaining candidates continue to the second stage of the aptitude assessment process. <sup>2</sup>In this second stage they are invited for interview. <sup>3</sup>Interview appointments will be announced at least one week in advance.

- (5) Applicants who would have to be rejected in accordance with para. 3 no. 2 will nevertheless take part in the second stage of the aptitude assessment procedure, provided that they can provide evidence of having completed two years of vocational training relevant to the degree program.
- (6) In derogation of paragraphs 1 to 3, applicants who were enrolled in the same or a related degree program and are not directly admitted according to the criteria for the first stage will participate in the second stage of the aptitude assessment procedure as long as they can provide evidence of at least 20 credits per semester already completed.
- (7) <sup>1</sup>In derogation of paragraphs 1 to 3, those applicants who submit a hardship case will also participate in the second stage by way of exception. <sup>2</sup>All documents must be enclosed with the application. <sup>3</sup>The applicant must prove that he or she has such serious health, social or family reasons that it would not be proportionate, applying particularly strict standards, for the applicant to be rejected in the first stage.

## § 6

### Admission Process: Second stage

- (1) <sup>1</sup>Within the second stage of the admission process, the applicant's grade point average, as well as the result of the interview will be equally weighted and evaluated.
- (2) <sup>1</sup>The aptitude interview is not public and is conducted in English or German. <sup>2</sup>It is conducted as a group interview by the selection committee. <sup>3</sup>The selection interview is usually conducted as a video conference. <sup>4</sup>Should the video or sound transmission be disrupted, the interview may resume after the disruption has been fixed, or a follow-up appointment can be scheduled. <sup>5</sup>In the event of a repeated disruption, the aptitude interview can be scheduled as a face-to-face appointment, notwithstanding sentence 3. <sup>6</sup>Sentences 4 and 5 do not apply if it can be proved that the applicant is responsible for the disruption. <sup>7</sup>In this case, the aptitude interview will be evaluated. <sup>8</sup>At the request of the applicant, the aptitude interview will be scheduled as a face-to-face appointment. <sup>9</sup>With the consent of the applicant, a student representative may join the conversation. <sup>10</sup>Interviews will be held for approximately ten minutes per applicant. <sup>11</sup>The interview helps determine whether the applicant is capable in reaching the goals of the study program independently and on a scientific basis. <sup>12</sup>Questions will not relate to knowledge offered through the program. <sup>13</sup>The interview may include questions relating to the documents submitted under § 2 subsection 4. <sup>14</sup>The appointment is to be attended at the date provided. <sup>15</sup>The content of the conversation covers the following topics, which are weighted in the assessment as indicated in the brackets:

#### 1. Mathematical knowledge

The applicant is able to formulate conclusions, analyze problems verbally and in writing (particularly within the interdisciplinary fields of economics and engineering or the natural sciences), perform relevant calculations, apply mathematical laws and concepts and produce viable results within an appropriate time horizon (1/5).

#### 2. Natural Sciences knowledge

The applicant is able to explain the most important concepts in the field of natural sciences, can apply them to current problems (especially at the interface between management and natural sciences), compare alternatives and develop possible solutions (1/5).

#### 3. The ability to combine and apply methods from the interdisciplinary field between economics and engineering or the natural sciences to current issues:

The applicant is able to elaborate on current developments in the field of economics and engineering or the natural sciences. The applicant is further able to formulate precise arguments utilizing relevant terms and argumentative concepts in German or English, and to convincingly justify his/her particular motivation and suitability for the interdisciplinary degree program with its engineering and natural science specializations by means of arguments and meaningful examples. (3/5).

<sup>16</sup>On the basis of the weighting defined in sentence 15, every committee member assesses interviews on a standardized evaluation sheet according to the following scale:

Grade	Points
Excellent	91-100
Good	75-90
Satisfactory	60-74
Sufficient	40-59
Poor	20-39
Not sufficient	0-19

<sup>17</sup> The overall evaluation of the interview is calculated as an arithmetic average of the individual evaluations of committee members which are rounded up to the next larger number, in the case that the resulting numbers are decimal.

- (3) <sup>1</sup> The total score for the second stage of the assessment process is the sum of the HZB points (see § 5 (2) 1.) multiplied by 0.5 and the points from the interview multiplied by 0.5 (see (2)). <sup>2</sup>If this score is a decimal, it will be rounded up in the candidate's favor.
- (4) <sup>1</sup>If the total score according to (3) is 70 or more, the candidate will be deemed suitable on the basis of the second stage of the aptitude assessment process. <sup>2</sup>Such candidates will receive an admission notification (§ 7).
- (5) Candidates with a total score of 69 or fewer points will be deemed unsuitable for the program.

## **§ 7 Notifications**

<sup>1</sup>The result of the aptitude assessment procedure will be disclosed through a written notification. <sup>2</sup>If there is no leeway in the assessment of the individual criteria and in the determination of the overall results of the first and second stage, a decision by the commission is not necessary. <sup>4</sup>Rejection notifications shall include an explanation for the cause of rejection, as well as information about legal remedies.

## **§ 8 Documentation**

<sup>1</sup>The process of the aptitude assessment procedure must be documented; in particular, the names of the persons involved in the decision, the assessment of the selection interview by the commission members as well as the result of the evaluation. <sup>2</sup>A transcript of the selection interview shall be prepared, in which the day, duration and venue of the evaluation, the names of the committee members involved, the names of the applicants as well as the essential topics of the interview shall be presented in key points.

## **§ 9**

## **Resubmission**

Anyone who fails to demonstrate aptitude for the degree programs can repeat the aptitude assessment process again. <sup>2</sup>No further repetition is possible.

## **§ 10 Entry into Force\*)**

<sup>1</sup>This Statute has been put into effect as of May 15, 2024. <sup>2</sup>It applies the first time to the aptitude assessment procedures for the winter semester of 2024/2025. <sup>3</sup>At the same time, the statute on the aptitude assessment for the Bachelor's degree programs Management and Technology at the Munich Campus and Management and Technology at the Heilbronn Campus of the Technical University of Munich dated May 15, 2023 is consequently ineffective.



## **Attachment 1**

### **Profile of the Bachelor Studies Management and Technology**

The Bachelor programs Management and Technology deal with the fundamentals of business administration and its interfaces with various engineering and natural science fields and have a fundamentally quantitative approach. The diverse interdependencies between the individual organizational areas as well as the progressive dissolution of traditional departmental boundaries are changing the nature of the qualifications required and demand qualified interdisciplinary thinking and action from its actors. Particularly at the interface between the economic and the engineering or natural science divisions of a company, communication and know-how barriers repeatedly arise in practice, which result from a lack of knowledge of the respective other discipline and a lack of understanding for the respective other subject culture.

These Bachelor programs provide future graduates with the best prerequisites for mastering these new challenges at the interface between business administration and engineering/natural sciences. The interlocking of business education with an engineering or natural science subject enables students to understand better the differing worlds of thought in both scientific fields and to apply successfully this knowledge to later professional practice.

These Bachelors programs are fundamentally interdisciplinary. Although the focus is on business education, the bridge to technology is built both in the actual business modules and in the engineering or natural science area through the integration of a major focus. Due to this interdisciplinary orientation, the degree programs require qualified interdisciplinary competence in the sense of specific preliminary skills to be combined from methodologically fundamentally different subject cultures.

These Bachelors programs are therefore aimed at school leavers with a university entrance qualification as well as those with vocational qualifications who think logically, have a high affinity for mathematical and quantitative approaches, communicate complex chains of reasoning in a clear and comprehensible manner and show an interest in engineering or natural science issues. The simultaneous development of these skills is crucial in order to be able to implement the business side of the study program on a quantitative and qualitative level on the one hand, and at the same time to muster the enthusiasm and motivation to deal with an engineering or natural science subject.

The subject of engineering and natural science will be attended by the students, as well as the students of the respective undergraduate program, so that interest and skills must be pronounced in order to be able to keep up successfully.

## **Attachment 2**

### Conversion formula

The conversion of different grading scales into points on a scale from Zero to 100 is done according to the regulations 1 to 3. 100 points correspond to the best possible evaluation and 40 points to a performance just rated as passed in the respective initial grading system.

#### **1. German grading system**

With 1 as best and 6 as worst grade

$$\text{Points} = 120 - 20 * \text{Grade.}$$

The marks 1, 2..., 5, and 6 consequently correspond to and 100, 80,..., 20 and 0 points. Grade 4 corresponds to 40 points. Since German grades in university entrance qualification are given up to one decimal place, no rounding to whole numbers is necessary when applying the formula of No. 1.

#### **2. German point system (e.g. college level)**

With 15 as best and 0 as worst score

$$\text{Points} = 10 + 6 * \text{Point value.}$$

#### **3. Any numeric grade system**

With grade N, where  $N_{\text{opt}}$  is the best grade and grade  $N_{\text{best}}$  is just enough to pass.

$$\text{Points} = 100 - 60 * (N_{\text{opt}} - N) / (N_{\text{opt}} - N_{\text{best}}).$$

If the resulting number of points is a decimal, it is rounded up to the next whole number in the candidate's favor.

E.g.: In the Bulgarian grading system applies:  $N_{\text{opt}} = 6$ ,  $N_{\text{best}} = 3$  and 1 is the worst possible grade. The formula given simplifies to:  $\text{Points} = 100 - 20 * (6 - N)$ .

#### **4. If applicable, additional points for extracurricular qualifications or additional qualifications relevant to the degree program**

Points are awarded for the extracurricular qualifications and additional qualifications shown in the overview, which can be added together. A maximum of 4 points can be included in the calculation. The commission decides on the recognition of the specified qualifications.

Type of qualification	Duration					
	Degree	Full-time (35 hours/week or more)			Part-time	
		1-12 months	13-24 months	>2 years	>1 year	>2 years
Training	4					
Internship		0	1	2	0,5	1

Studies MINT at TUM		2
Competition according to § 5 subsection 1 no. 3 sentence 1		2

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Issued on the basis of the resolution of the Academic Senate of the Technical University of Munich on March 20, 2024 and the approval of the President of the Technical University of Munich on April 16, 2024.

Munich, April 16, 2024  
Technical University of Munich

signed.  
Thomas F. Hofmann  
President

These statutes were officially published digitally on the website "<https://www.tum.de/satzungen>" on April 16, 2024. It is also available for inspection during office hours at the office of the TUM Center for Study and Teaching - Arcisstraße 21, 80333 Munich, Room 0561. The date of publication is therefore April 16, 2024.