

Statute on the study orientation procedure for the bachelor's degree program in life sciences biology at the Technical University of Munich

From 17 April 2019

On the basis of Art. 13 Para. 1 Sentence 2 in conjunction with Art. 44 Para. 5 Sentence 3 Bavarian University Act (BayHSchG), the Technische Universität München enacts the following statutes:

§ 1

Purpose of the study orientation process

- (1) Admission to the first or higher semester of the Bachelor's degree program in Life Sciences Biology at the Technical University of Munich requires participation in the study orientation procedure.
- (2) The purpose of the study orientation process is to enable applicants to determine for themselves whether the degree program they are pursuing is actually the right one for them. The aim of the study orientation process is also to reduce the number of dropouts.
- (3) In the course of the study orientation procedure, applicants can determine whether they have the study program-specific competencies required for successful study. The following study program-specific competencies are required for the Bachelor's degree program in Life Sciences Biology:
 1. Ability to combine the natural sciences: Broad science background, willingness to continue education, and ability to combine issues in biology with other sciences (especially chemistry and physics) and mathematics.
 2. Observational skills, research orientation, and interest in gaining knowledge: ability to make analytical observations and develop questions that can be investigated on complex biological systems.
 3. Ability to think analytically, deductively, and systems-oriented: skill in solving theoretical and laboratory practical problems, sensitivity to appropriate analytical approaches, and interest in theoretical or experimental validations of hypotheses based on scientific data.
 4. Ability to analyze complex systems: Ability to complexly link biological processes, from the molecular to the systemic level, and to understand these relationships as a unit.

§ 2 Procedure

- (1) The study orientation procedure is conducted semi-annually once in the summer semester for the following winter semester and in the winter semester, but only for applications for higher semesters for the following summer semester.
- (2) The application for admission to the study orientation procedure must be submitted to the Technical University of Munich in the online application procedure by July 15 for the following winter semester and by January 15 for the following summer semester (cut-off deadline).
- (3) The application and the implementation of the study orientation procedure are in German.
- (4) The application must be accompanied by:
 1. Complete curriculum vitae in tabular form;
 2. documents (including those relating to the university entrance qualification (HZB)) required in accordance with Section 7 (3) of the statutes of the Technical University of Munich on enrollment, re-registration, leave of absence and exmatriculation (ImmatS), as amended;
 3. Justification of a maximum of two pages for the choice of the Life Sciences Biology program at the Technical University of Munich, in which the applicants explain the skills, talents and interests that make them particularly suitable for the intended program; their general personal background, e.g. extracurricular activities, can also contribute to this;
 4. assurance that the justification for the choice of the course of study was prepared independently and without outside help and that the thoughts taken from outside sources are marked as such;
 5. Additional subject-specific qualifications, if applicable (e.g., participation in a research competition, professional training specific to the course of study, voluntary internships).
- (5) Section 16 of the APSO applies to the crediting of periods of study, coursework and examinations.

§ 3 Judging persons

The study orientation procedure is carried out by the university professors in the sense of Art. 2 Para. 3 Sentence 1 BayHSchPG as well as by the scientific staff of the Faculty of Life Sciences.

§ 4 Admission requirement

Admission to the study orientation procedure requires that the documents mentioned in § 2 Para. 4 have been submitted to the Technical University of Munich in due form and time and in their entirety. If this is not the case, admission to the study orientation procedure will not be granted.

§ 5 Implementation: First stage

- (1) During the first stage of the study orientation process, an evaluation is carried out from the criteria:
1. Average grade of the HZB
 2. Subject-specific individual grades
The grades listed in the HZB in mathematics (double), German (single), English (single) and - if available - up to three continued sciences (single in each case), which were acquired in the last four semesters before acquisition of the HZB, including final grades in these subjects listed in the HZB, if applicable, are taken into account as subject-specific individual grades. The grades for the subject-specific thesis or a comparable achievement shall not be taken into account. The subject-specific grades weighted by the factors specified in sentence 1 in each case shall be added together and divided by the number of factors. If no grade is shown in the HZB for a subject mentioned in sentence 1, the divisor shall be reduced by the corresponding number. The divisor must also be reduced by a corresponding number if no individual half-year grades are shown for one or more of the subjects named in sentence 1, but only collective grades.
 3. Departing from No. 1 and No. 2, in the case of graduates of the master craftsman's examination and of the further vocational training examinations equated to the master craftsman's examination by the Ministry of State, the criterion according to No. 1 shall be replaced by the criterion of the arithmetic mean of the individual grades of the respective examination parts and the criterion according to No. 2 shall be replaced by the criterion of the named subject-specific individual grades in the subjects mathematics (double), German (single), English (single) and - if available - up to three continued natural sciences (each single) of this examination. In the case of graduates of technical colleges and technical academies, in deviation from No. 1 and No. 2, the criterion according to No. 1 shall be replaced by the criterion of the overall examination grade or, if no overall examination grade is shown, by the criterion of the arithmetic mean of the individual grades of the subjects (with the exception of elective subjects) of the final examination certificate and the criterion according to No. 2 shall be replaced by the criterion of the subject-specific individual grades in the subjects mathematics (double), German (single), English (single) and - if available - up to three continued natural sciences (each single) in the final report. If no grade is shown for a subject mentioned in sentence 1 or sentence 2 for the criterion according to no. 1, the divisor shall be reduced by the corresponding number.

- (2) The following applies to the performance of the evaluation:
1. The average grade of the HZB is converted into points (HZB points) on a scale from 0 to 100, where 0 is the worst conceivable grade and 100 is the best possible grade. The scale is to be chosen in such a way that a just passed HZB is evaluated with 40 points (conversion formula see appendix). Whoever claims that he/she was prevented from achieving a better average grade in the HZB for reasons for which he/she is not responsible, will, upon application, be involved in the procedure with the average grade, as evidenced by school reports.
 2. The result of the evaluation of the subject-specific individual grades in accordance with Para. 1 No. 2 shall be converted into points on a scale of 0 to 100 in accordance with No. 1 (for conversion formula, see Appendix). If this value is not a whole number, it shall be rounded up to the next larger whole number.
 3. The total evaluation of the first stage is the sum of the HZB points multiplied by 0.5 (see No. 1) and the points from No. 2 multiplied by 0.5. If this value is not an integer, it is rounded up to the next larger integer.
- (3) Result of the first stage of the study orientation process
1. Those who have achieved 54 points or more in the first stage do not participate in the second stage of the study orientation procedure and receive a notification of university admission, which is deposited in TUMonline.
 2. Those who score 53 points or less are required to participate in the second stage of the study orientation process.
- (4) In the second stage of the study orientation procedure, the student is invited to an interview. The date of the interview shall be announced by the commission at least one week in advance.

§ 6

Implementation: Second stage

- (1) During the second stage of the study orientation process, the result of the interview is evaluated.
- (2) The interview is not public. It shall be conducted as an individual interview with at least two members of the commission, one of whom shall be a university lecturer within the meaning of Art. 2 Para. 3 Sentence 1 BayHSchPG. A student may participate in the interview with the consent of the applicant. The interview shall last approximately 20 minutes. It is to be determined whether the applicant can be expected to achieve the goal of the course of study independently and responsibly on a scientific basis. In the interview, no special knowledge will be tested which will only be acquired in the course of the studies. The subject of the interview may also be the documents submitted in accordance with § 2 Para. 3. The date set for the interview must be observed. The following topics are examined in the interview:
 1. Knowledge of the structure of the intended degree program and the job description of a biologist (15 percent):
The applicant has informed himself or herself about the structure of the study program and knows, for example, the proportion of non-biological subjects; he or she knows which professional fields of employment are available to graduates of the program.
 2. Ability to think analytically, deductively, and in a systems-oriented manner and to make possible application references (50 percent):

The candidate demonstrates, on the basis of tasks from everyday life or school experience, that he or she can analyze problems and develop bioscientific questions from them via correct conclusions and formally outline them orally or in writing.

3. Additional qualifications specific to the course of study (15 percent):
The applicant deals with mathematical, scientific or technical topics beyond the school subject matter, for example through involvement in working or project groups or through participation in competitions.
4. Precise argumentation skills in German and English (20 percent):
In the course of the interview, the candidate demonstrates that he or she can both understand and precisely formulate arguments on issues of bioscientific, scientific and technical content.

On the basis of the weighting regulated in sentence 9, each assessing person shall evaluate the selection interview on a scale from 0 (unsatisfactory) to 100 (very good). The overall evaluation of the interview results from the arithmetic mean of the individual evaluations by the evaluating persons and, if necessary, is rounded up to the next larger whole number.

- (3) If the total score formed according to paragraph 2 is 70 or higher, the applicant is suitable for the study program based on the result of the second stage of the study orientation procedure.
- (4) Those with an overall score of 69 or less are considered unsuitable for the program.

§ 7

Result of the study orientation procedure, confirmation of participation

- (1) The result of the study orientation procedure has no effect on university admission.
- (2) The determined result of the study orientation procedure after the implementation of the second stage is communicated to the participants in the study orientation procedure within the framework of the confirmation of participation.
- (3) The confirmation of participation contains the name of the study program, a date of issue, surname, first name and date of birth of the participant. Furthermore, the confirmation of participation contains the result of the study orientation procedure.

§ 8

Documentation

The course of the study orientation procedure shall be documented in a suitable manner. The documentation shall in particular show the day, duration and place of the specific study orientation procedure, the names of the persons involved according to § 3 as well as the names of the participants.

§ 9**Validity of the confirmation of participation**

The confirmation of attendance remains valid until the program profile changes or the program is cancelled.

§ 10**Entry into force**

These bylaws shall enter into force with effect from April 1, 2019. It shall apply from the winter semester 2019/20.

Only the German version is legally binding

Attachment 1

The bachelor's program in Life Sciences Biology at the Technical University of Munich is a challenging, initially basic and in higher semesters also research-oriented program that, on the basis of an early broad education in the natural sciences, serves both the fundamentals of the classical biological disciplines of botany, zoology, microbiology and genetics as well as those of the modern molecular, cell physiological, biochemical and physiological disciplines as well as those of ecology or bioinformatics. In individually selected sub-areas, more in-depth specialist knowledge is imparted and state-of-the-art methodological competence is gained. Thus, analytical skills are sharpened and a resilient basis for research and application-oriented bioscientific projects is laid.

Precise observation skills, analytical abilities and the ability to proceed systematically and methodically are just as important as the ability to make judgments and decisions, coupled with sound bioscientific knowledge and methodological competence. Prospective students bring with them a strong interest in natural and, of course, bioscientific issues. They are interested in basic research as well as in application-related challenges of related life science disciplines, e.g. manufacturing, and in solving practical problems in the laboratory. The prospective students bring with them the motivation and ability to have an overview of complex systems - from molecules to ecosystems.

Therefore, in addition to the university entrance qualification, special study program-specific competences such as

1. broad scientific background, willingness to continue education, and ability to link issues in biology with associated sciences, especially chemistry, physics, and mathematics,
2. Ability to make analytical observations and develop investigable questions on complex biological systems,
3. Skill in solving theoretical and laboratory practical problems, flair for appropriate analytical approaches, and interest in theoretical or experimental validations of hypotheses based on scientific data,
4. Ability to link biological processes, from the molecular to the systemic level, in a complex manner and to understand these interrelationships as a unit

indispensable and form an important basic prerequisite.

These special qualitative requirements are not evidenced by the overall grade of the university entrance qualification alone. Instead, a special weighting must be given to the performance of the relevant school subjects.

Enclosure 2

Conversion formulas

The conversion of different grading scales into points on a scale from 0 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

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

Grades 1, 2, ..., 5 and 6 consequently correspond to 100, 80, ..., 20 and 0 points. Grade 4 corresponds to 40 points.

Since HZB grades are given to one decimal place in German certificates, no rounding to whole numbers is required when applying the formula of No. 1.

2. German point system (e.g. Kollegstufe)

with 15 as best and 0 as worst point value

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

3. Any numeric staff

with grade N, where Nopt is the best score and grade Nbest is just enough to pass.

$$\text{Points} = 100 - 60 * (\text{Nopt} - \text{N}) / (\text{Nopt} - \text{Nbest}).$$

If the score calculated according to the given formula is not an integer, it shall be rounded up to the nearest whole number.

Example: In the Bulgarian grading system, Nopt = 6, Nbest = 3 and 1 is the worst possible grade. The given formula simplifies to: Points = 100 - 20 * (6 - N).

Issued on the basis of the resolution of the Academic Senate of the Technical University of Munich dated March 20, 2019 and the approval by the President of the Technical University of Munich dated April 17, 2019.

Munich, April 17, 2019

Munich University of Technology

Wolfgang A. Herrmann
President

These bylaws were filed at the college on April 17, 2019; notice of the filing was posted at the college on April 17, 2019. The date of announcement is therefore April 17, 2019.