

## **Special Regulations on the Access and Admission to the Consecutive Master's Degree Programme „Battery and Hydrogen Technology“ at Technische Universität Braunschweig**

On December 17, 2025, the Dean's Office of the Faculty of Mechanical Engineering of Technische Universität Braunschweig with power to act in urgent matters decided on the following regulations in accordance with § 18 (8) of the Niedersächsisches Hochschulgesetz [Lower Saxony Higher Education Act] (NHG) and § 7 of the Niedersächsisches Hochschulzulassungsgesetz [Lower Saxony Higher Education Admission Act] (NHZG):

### **§ 1**

#### **Scope of Application**

- (1) Supplementing the Allgemeine Zulassungsordnung für Masterstudiengänge an der Technischen Universität Braunschweig [General Admission Regulations for Master's Programmes at Technische Universität Braunschweig] (Allg. ZO-MA), published on March 21, 2024 (TU Bulletin No. 1552) or in the currently valid version, these regulations govern admission to and enrollment in the consecutive Master's degree programme "Battery and Hydrogen Technology".
- (2) The admission requirements are based on § 2.
- (3) If admission to the Master's degree programme „Battery and Hydrogen Technology“ is restricted, the following applies: If, in a degree programme with restricted admission, more applicants meet the admission requirements than there are places available, the places will be allocated according to the results of the university's own selection process (§ 4). If the number of applicants who meet the admission requirements does not exceed the number of places available, no selection process will take place.

### **§ 2**

#### **Access Requirements**

- (1) The access requirement for admission to the consecutive Master's degree programme "Battery and Hydrogen Technology" is that the applicant
  - a) has obtained a Bachelor's degree or equivalent qualification in one of the following subjects: "Battery and Hydrogen Technology," "Process Engineering," "Mechanical Engineering," "Electrical Engineering" (or "Electrical Engineering and Information Technology") or "Chemistry" or in a relevant scientific or technical degree programme, either at a German university or at a university belonging to one of the Bologna signatory states.  
  
or
  - has obtained an equivalent degree at another foreign university in one of the following degree programmes: "Battery and Hydrogen Technology," "Process Engineering," "Mechanical Engineering," "Electrical Engineering" (or "Electrical Engineering and Information Technology") or "Chemistry," or in a relevant scientific or technical degree programme; equivalence is determined in accordance with the assessment proposals of the Zentralstelle für ausländisches Bildungswesen beim Sekretariat der

Kultusministerkonferenz/Central Office for Foreign Education within the Standing Conference of the Ministers of Education, Science and Cultural Affairs (<https://anabin.kmk.org>),

and

b) has acquired the knowledge and skills listed in Appendix 1a and Appendix 1b.

If the knowledge and skills required in Appendix 1b are not available by the end of the application period in accordance with § 3 (1) sentence 3 letters a) and b), admission may be subject to a secondary provision stipulating that the requirements can be made up in accordance with the provisions of § 4 (5). The application has to be accompanied by a certificate from the university confirming that the applicant is expected to acquire the missing knowledge and skills within the period specified in § 4 (5).

- (2) The selection committee will decide whether the previous degree programme is academically suitable.
- (3) Notwithstanding paragraph 1, sentence 1, letter a), applicants whose Bachelor's degree (or equivalent) has not yet been awarded at the time of application, are also provisionally eligible for admission if they have earned at least 150 credit points (83.3%) in the case of a degree programme with a total of 180 credit points, or at least 180 credit points (85.7%) in the case of a degree with programme a total of 210 credit points, and it is expected that the Bachelor's degree (or an equivalent degree) will be obtained by March 31 of the respective winter semester or by September 30 of the respective summer semester at the latest. An average grade has to be calculated from the grades achieved by the end of the application period, which will be taken into account in the selection process in accordance with § 4 (4), regardless of whether the result of the Bachelor's examination (or final examination) deviates from this.
- (4) Applicants who do neither have a German university entrance qualification nor have successfully completed at least two years of study in German have to demonstrate German language skills at least at level A2 of the Gemeinsamer Europäischer Referenzrahmen (GER)/Common European Framework of Reference for Language skills (CEFR) by means of a corresponding language certificate or comparable evidence.
- (5) Applicants who have not obtained the necessary academic qualifications — i.e., either university entrance qualification or a Bachelor's degree (or equivalent) in accordance with § 18 (8) NHG — at an English-speaking institution must have sufficient knowledge of the English language. Sufficient English language skills have to be demonstrated by achieving the minimum scores specified below in the following internationally recognized tests or equivalent tests:

<b>English Exam</b>	<b>Minimum Testing Performance</b>
Test of English as a Foreign Language (TOEFL), online test/IBT <a href="http://www.ets.org">www.ets.org</a>	88 points
International English Language Testing System (IELTS) <a href="http://www.ielts.org">www.ielts.org</a>	Tape 6,5 or higher
Language Certificate (English Language Proficiency Report) of the Language Centre of TU Braunschweig.	At least two skills at level B2 and two skills at level C1, Language Centre (English Language Proficiency Report)
Equivalent language certificates may be recognized after comparative examination.	

Successful completion of one of the tests must not have taken place more than three years prior to submitting the application for admission to the Master's degree programme. Upon request, applicants who have successfully completed at least two years of study in an exclusively English-language degree programme are exempt from the obligation to provide proof of a test.

- (6) Applicants who have obtained a Bachelor's degree or equivalent qualification in one of the following degree programmes: "Battery and Hydrogen Technology," "Process Engineering," "Mechanical Engineering," "Electrical Engineering" (or "Electrical Engineering and Information Technology") or "Chemistry" or in a relevant scientific or technical degree programme and who cannot fully demonstrate the knowledge and skills listed in Appendix 1a will be admitted with the proviso that they have to make up for this by taking the corresponding compulsory elective module listed in Appendix 1a, column 4. Alternatively, if offered, a knowledge test can be taken within the first year of study.

### **§ 3**

#### **Start of Degree Programme, Application for Admission, Application Deadline**

- (1) The Master's degree programme in "Battery and Hydrogen Technology" begins in both the winter and summer semesters. Applications for admission to the Master's degree programme in "Battery and Hydrogen Technology" are subject to the provisions of § 3 and § 4 of the General Admission Regulations (Allg. ZO-MA).

The following deadlines apply for the submission of documents to the university:

a) for the winter semester

- by March 15 of each year for applications from foreign nationals and stateless persons who are not subject to the same admission requirements as German citizens and persons from EU/EEA countries,
- by July 15 of each year for applications from all other persons,

b) for the summer semester

- by September 15 of the previous year for applications from foreign nationals and stateless persons who are not subject to the same admission requirements as German citizens and persons from EU/EEA countries,
- by January 15 of each year for applications from all other persons.

The applications referred to in sentence 2 will only apply to the allocation of places for the relevant application date. The university is not obliged to verify the information provided by applicants ex officio.

(2) If admission to the Master's degree programme is restricted, the following also applies: For applications for admission outside the place allocation procedure and the specified admission numbers, the following exclusion periods apply, deviating from § 4 (2) sentence 1 Allg. ZO MA, the following exclusion periods apply, by which the documents must be received by the university

a) for the winter semester by October 10 of each year

and

b) for the summer semester, by April 10 of each year.

These applications also apply to the allocation of places for the relevant application date. Here too, the university is not obliged to verify the information provided by applicants ex officio.

(3) The application referred to in paragraph 1, sentence 2, has to be accompanied by the following documents, as certified German or English translations if the originals are not in English or German:

- a) the degree certificate for the degree programme that qualifies the applicant for admission (or other equivalent degree) in accordance with § 2 (1) (a) or, if this is not yet available, a certificate of academic achievement, credit points, total credit points, and average grade,
- b) the tabular curriculum vitae,
- c) where applicable, proof of examination registrations in accordance with § 2 (1) sentence 3,
- d) Proof of the required English language skills in accordance with § 2 (5) at the time of application,
- e) Proof of the required German language skills in accordance with § 2 (4) at the time of application,
- f) Proof of knowledge and skills in accordance with Appendixes 1a and 1b (e.g., excerpts from module handbooks) pursuant to § 2 (1) (b).

In the event of admission restrictions, the requirements set out in sentence 1 will also apply to applications that exceed capacity, but will not affect the more extensive requirements applicable in these procedures. Prerequisite for applying outside of capacity is that the applicants have already applied for a place on the same degree programme within the specified admission quota for the relevant semester in due time and form and have proven that they meet the admission requirements. In particular, an affidavit has to be submitted stating that no final or provisional full or partial admission to the master's programme "Battery and Hydrogen Technology" or a relevant degree programme at a university in the Federal Republic of Germany or in a member state of the European Union has been obtained to date. The affidavit must indicate the nationalities.

- (4) Applications that are incomplete or are not submitted in the correct form or by the deadline will be excluded from further consideration. The submitted documents will remain at the university.

#### **§ 4**

##### **Selection and Admission Process**

- (1) If an internal university selection process is held in accordance with § 1 (3) sentence 2, this will be carried out by a selection committee (§ 5) in accordance with paragraphs 2 – 4. Admission is generally granted for the Master's degree programme "Battery and Hydrogen Technology."
- (2) For foreign nationals and stateless persons who are not entitled to the same admission rights as German citizens and persons from EU/EEA countries, a preliminary quota of 50 percent of the available places will be set aside.
- (3) The places in the preliminary quota pursuant to paragraph 2 and the additional quota (applicants from EU/EEA countries) will be allocated in each case according to the results of a university-specific selection process in accordance with the following provisions.
- (4) The selection committee (§ 5) will make its selection decision as follows: Taking into account the final grade pursuant to § 2 (1) (a) or the average grade pursuant to § 2 (3), a respective ranking list will be drawn up for both application groups/quotas pursuant to paragraph 3, with the best grade being awarded first place on the list. In the event of identical final or average grades, the ranking will be decided by lot.
- (5) In all other respects, the provisions of the university's enrollment regulations that apply generally to enrollment remain unaffected. Applicants who, pursuant to § 2 (1) sentences 2 and 3, still need to make up for missing knowledge and skills listed in Appendix 1b will lose their admission if they do not provide the necessary evidence by September 30 for the winter semester or by March 31 for the summer semester before commencing their studies in the first semester of the degree programme and are demonstrably responsible for this.

Applicants whose qualifying degree was not yet available at the time of application in accordance with § 2 (3) will be disenrolled upon expiry of the deadline if they have not submitted the relevant degree certificate by March 31 of the respective winter semester if they are starting in the winter semester, or by September 30 of the respective summer semester, unless the applicants can prove that they are not responsible for this.

## **§ 5**

### **Selection Committee for the Master's Degree Programme „Battery and Hydrogen Technology“**

- (1) The Faculty of Mechanical Engineering will establish a selection committee for the selection decision and the preparation of admission.
- (2) The selection committee will consist of four voting members from the group of university teachers or academic staff and one member of the student group with an advisory vote. At least one member has to belong to the group of university teachers. The members and alternate members are appointed by the Faculty Council of the Faculty of Mechanical Engineering. The term of office for members is two years, and one year for the student member; reappointment is possible. The selection committee has a quorum if at least two voting members — including at least one member of the university teaching staff group — are present.
- (3) The Student Office or the International Office checks the incoming applications for admission to ensure that they are formally correct and complete with regard to the admission requirements. The selection committee then proceeds as follows:
  - a) The selection committee will decide in accordance with § 2 (1) sentence 1 letter a) whether the previous degree programme is academically suitable and will check the admission requirements in accordance with § 2 (1) sentence 1 letter b) and § 2 (4) and (5).
  - b) The selection committee will decide on ancillary provisions in accordance with § 2 (1) sentence 2 and § 2 (6).
  - c) In the event of a selection procedure being necessary in accordance with § 4, the selection committee will draw up rankings of the applicants in accordance with § 4 (4).
  - d) The selection committee forwards the decisions under a), b), and c) to the Student Office or the International Office, which then prepares and sends the notification of admission or rejection.
- (4) After completing the award procedure, the selection committee will report to the Faculty Council of the Faculty of Mechanical Engineering on the experiences gained and, if necessary, submit proposals for the further development of the admission procedure.

## **§ 6**

### **Notification, Succession Procedure, Conclusion of Procedures**

- (1) Applicants who are eligible for admission will receive an electronic or written admission letter from the university. This letter will specify a deadline by which the applicants have to declare in writing or electronically whether they accept the place at the university. If this declaration is not submitted in due time and form, the admission letter will become invalid. This legal consequence has to be pointed out in the admission letter.
- (2) Applicants who do not meet the admission criteria set out in § 2 and therefore cannot be admitted will receive a rejection notification by electronic or written means, including information on their legal rights. If a selection procedure pursuant to § 4 has been conducted, the ranking achieved within the selection procedure in the respective group and the ranking of the last applicant admitted to this procedure have to be stated. Eligible applicants who were not admitted to the previous selection process will participate in a replacement procedure. Further notifications will only be issued in the event of admission.
- (3) The respective replacement procedure will also be carried out on the basis of the ranking list formed in accordance with § 4 (4).
- (4) After completion of the admission procedure, any remaining places will be allocated by lottery upon application. Provided that the “Battery and Hydrogen Technology degree programme” is not subject to admission restrictions and that, after enrollment has closed, there are still places available within the specified capacity, the university is free to conduct a lottery. The application has to be submitted electronically via the application portal (TUconnect); the admission requirements pursuant to § 2 have to be met. The application period begins one month before the start of the semester and ends with the conclusion of the lottery process, but no later than the start of lectures; the university reserves the right to end the process earlier.

## **§ 7**

### **Admission to Higher Semesters**

- (1) Applicants for degree programmes with restricted admission must prove that they have the academic performance required for study in the higher semester.
- (2) Admission to a higher semester requires completion of a degree programme in accordance with § 2 (1) (a) and proof of knowledge and skills in accordance with § 2 (1) (b), as well as the other requirements specified in § 2 (3) to (6).

- (3) The available places in a higher semester with restricted admission are allocated to applicants in the following order:
- a) for whom rejection of admission would constitute a particular hardship for reasons relating to their personal circumstances,
  - b) who are or were enrolled in the same or a comparable degree programme
    - aa) at another German university or a university in another member state of the European Union or another signatory state to the Agreement on the European Economic Area
    - or
    - bb) are enrolled or were enrolled at a foreign university and have German citizenship or are treated as German citizens for admission purposes
    - or
    - cc) have been admitted for the first semester and can be placed in a higher semester,
  - c) who can claim other reasons.
- (4) Within each of the three categories specified in paragraph 3, admission will be determined by the social, in particular family and economic, reasons relevant to the choice of location; in the event of equal ranking, the average grade will be decisive; in cases where the ranking is still equal, the decision will ultimately be made by lot. The average grade is calculated based on the performance achieved so far.
- (5) Deviating from paragraph 2, applicants who do not yet have their qualifying degree in accordance with § 2 (3) at the time of application may also be admitted to the second semester if they can prove that they meet the other admission requirements in accordance with § 2. The Bachelor's degree or final certificate have to be presented upon enrollment. If the Bachelor's degree (or other equivalent degree) has not yet been completed at the time of enrollment, admission will expire.
- (6) If admission to the Master's programme in "Battery and Hydrogen Technology" is restricted, students who change locations may only be admitted to the next higher semester. The requirements of paragraph 1 have to be met accordingly. However, if the standard period of study has already been exhausted, admission is not possible.

## **§ 8** **Entry Into Force**

This regulation will enter into force on February 1, 2026. It will first govern the application and admission procedure for the 2026/27 winter semester.

Appendix 1a

Field of Study	Required knowledge from the fields of study in the Bachelor's degree programme	Skills from the fields of study in the Bachelor's degree programme	Mandatory Master's degree - compulsory elective modules without prior knowledge in the Bachelor's degree programme
Fluid process engineering	<ul style="list-style-type: none"> <li>• Fundamentals of material behavior and vapour/liquid phase equilibria</li> <li>• Fundamentals of heat transfer, including evaporation and condensation</li> <li>• Crystallization</li> <li>• Rectification</li> <li>• Absorption</li> <li>• Extraction</li> </ul>	<p>Applicants can select and evaluate the thermodynamic pure substance and phase equilibrium information required to solve a given separation problem. They know how to obtain missing information. They are able to select and apply calculation models for ideal and real mixtures to describe experimental data on vapour/liquid phase equilibrium. Based on the information, they can select a suitable operation and design it in terms of process engineering. They are familiar with alternative design variants for the realization of equipment. Taking operational and economic aspects into account, they can select suitable equipment and dimension it according to requirements.</p>	Computer-aided process engineering I

<b>Field of Study</b>	<b>Required knowledge from the fields of study in the Bachelor's degree programme</b>	<b>Skills from the fields of study in the Bachelor's degree programme</b>	<b>Mandatory Master's degree - compulsory elective modules without prior knowledge in the Bachelor's degree programme</b>
Basic principles of the circular economy	<ul style="list-style-type: none"> <li>• Life cycle thinking, holistic view of all phases of the product life cycle</li> <li>• Definition of objectives and scope, determination of functional units and system boundaries</li> <li>• Recording of all material, energy, and emission flows</li> <li>• Assignment to environmental indicators (e.g., global warming potential)</li> <li>• Sensitivity and scenario analyses, examination of critical parameters and alternatives</li> <li>• Integration of ecological and economic control variables</li> </ul>	<p>Applicants can identify relevant global economic and environmental challenges within the context of life cycle management, name key elements of sustainable development, and analyse these using appropriate reference frameworks. They are able to apply life cycle-oriented concepts and use them to design sustainable product life cycles, think in complex dynamic systems, and outline models of viable systems. They distinguish disciplinary perspectives across all phases of life, reproduce the process of an ecological balance with the definition of objectives, functional units, and system boundaries, and discuss these results. In addition, they independently conduct an economic impact analysis.</p>	Life cycle assessment for sustainable engineering

Field of Study	Required knowledge from the fields of study in the Bachelor's degree programme	Skills from the fields of study in the Bachelor's degree programme	Mandatory Master's degree - compulsory elective modules without prior knowledge in the Bachelor's degree programme
Electrochemical fundamentals	<ul style="list-style-type: none"> <li>• How fuel cells, batteries, and electrolyzers work</li> <li>• Thermodynamics (potential, voltage, Gibbs energy)</li> <li>• Reaction kinetics and transport processes</li> <li>• Structure and types of electrochemical cells</li> <li>• Application of dynamic measurement methods</li> <li>• Analysis using fundamental physical equations</li> <li>• Operational strategies and deployment decisions</li> </ul>	<p>Applicants have the ability to thoroughly analyze and evaluate electrochemical energy systems such as fuel cells, batteries, and electrolyzers. They can explain the underlying thermodynamic principles, reaction kinetics, and transport processes and apply dynamic measurement methods to characterize these processes. In addition, they are able to use basic physical equations to optimally design electrochemical cells, select the appropriate cell type for specific applications, and develop corresponding operating strategies.</p>	<p>Methods and systems of electrochemistry</p>

## Appendix 1b

Field of Study	Knowledge	Skills
Mathematics	<ul style="list-style-type: none"> <li>• Real and complex numbers, sequences and series, differential and integral calculus for real functions of a real variable, Taylor expansion</li> <li>• Analytical geometry in two- and three-dimensional space, vectors, matrices and determinants, eigenvalues, eigenvectors and their use in solving linear differential equations</li> <li>• Differential calculus for real functions of several variables, extrema with constraints, curve integrals, potential calculation, two- and three-dimensional integrals, Fourier series</li> <li>• Simple first-order differential equations, sketches on existence and uniqueness, higher-order differential equations, systems of differential equations, exact differential equations, special solution methods, Laplace transform.</li> </ul>	<p>Applicants have knowledge of the mathematical fundamentals of their academic subject and are able to calculate using the relevant mathematical methods and apply them to problems in engineering.</p>
Thermodynamics	<ul style="list-style-type: none"> <li>• Basic concepts of thermodynamics</li> <li>• Balances and conservation laws</li> <li>• Thermodynamic relations</li> <li>• Fundamental equations and equations of state</li> <li>• Fundamental thermodynamic changes of state and processes</li> <li>• Steady state conditions</li> <li>• Work capacity and exergy</li> <li>• Ideal gas</li> <li>• Real substances</li> <li>• Thermodynamic processes</li> <li>• Humid air</li> </ul>	<p>Applicants have fundamental physical and technical knowledge for calculating important energy conversion processes. They are able to balance open and closed systems based on mass, energy, and entropy balances as well as thermal and caloric equations of state, and to calculate changes of state and cyclic processes.</p>
Programming and information processing	<ul style="list-style-type: none"> <li>• Fundamentals and methods of automatic information processing, such as computer architectures, operating systems, algorithms, data structures, and networks</li> <li>• Basic programming skills in a higher-level programming language</li> </ul>	<p>Applicants are familiar with the basics of automatic information processing and programming.</p>

<b>Field of Study</b>	<b>Knowledge</b>	<b>Skills</b>
Materials	<ul style="list-style-type: none"> <li>• Properties of materials for mechanical engineering: <ul style="list-style-type: none"> <li>• Metallic construction materials</li> <li>• Non-metallic construction materials (plastics, fiber composites, ceramics)</li> </ul> </li> <li>• Material properties, elastic and plastic material behavior</li> <li>• Stress and stress capacity</li> <li>• Determination of material properties through materials and component testing (destructive and non-destructive testing methods)</li> <li>• Influencing materials properties through modifications (alloying, heat treatment)</li> </ul>	<p>Applicants understand the relationship between materials structure and materials characteristics. They have a basic understanding of the processes involved in the creation of materials and the resulting properties. They are able to select suitable metallic and non-metallic materials for mechanical engineering and use them for applications in structural engineering.</p>
Fundamentals of process engineering	<ul style="list-style-type: none"> <li>• Fundamentals of material and energy balances and thermodynamics</li> <li>• Knowledge of heat, material, and momentum transfer, as well as fluid dynamics</li> <li>• Understanding reaction kinetics and chemical conversion processes</li> <li>• Introduction to typical unit operations (e.g., distillation, absorption, filtration)</li> <li>• Basic knowledge of measurement, control, and process control technology</li> <li>• Aspects of occupational safety and environmental protection in technical processes</li> </ul>	<p>Applicants have in-depth expertise in analyzing and optimizing technical processes. They are able to draw up materials and energy balances, have a command of thermodynamic contexts, and are skilled in the use of modern measurement technology systems. They also have knowledge of transport, reaction, and flow mechanisms, as well as the planning of typical unit operations. Occupational safety and environmental protection are also an integral part of their expertise.</p>