

**Examination and Study Regulations for the  
Master's Programme  
Battery Materials & Technology  
at the University of Bayreuth  
(dated 25 March 2022)**

Article 13 para 1 sentence 2 in conjunction with Article 58 para 1 sentence 1 and Article 61 para 2 sentence 1 of the Bavarian Higher Education Act (*BayHSchG*) forms the framework for the following Examination Regulations issued by the University of Bayreuth.

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## §1

### Purpose of the master's examination

<sup>1</sup>The master's examination as a conclusion of studies in the master's programme Battery Materials & Technology determines whether the candidate has acquired wide-ranging subject-specific knowledge and is able to work independently on the problems of the subject using scientific methods and to present research and corresponding findings in an understandable way.

<sup>2</sup>The master's programme Battery Materials & Technology, including all examinations, is conducted primarily in English. <sup>3</sup>At the same time, it determines whether the candidate possesses the requisite understanding of subject-related and interdisciplinary connections to pursue further independent academic research. <sup>4</sup>Upon the candidate's passing of the examination, the University of Bayreuth, by way of the Faculty of Biology, Chemistry & Earth Sciences, awards the academic degree "Master of Science" (abbreviated as M.Sc.).

## § 2

### Admission to the programme; qualification

(1) Admission prerequisites for the master's programme are as follows:

1. A university degree in one of the following bachelor's programmes at the University of Bayreuth (Chemistry, Polymer and Colloid Chemistry, Biochemistry, Physics, Material Science and Materials Engineering, Engineering Science) or a degree equivalent thereto. In particular, a successfully completed bachelor's degree in a quantitative natural science subject or a successfully completed bachelor's degree in an engineering subject in specialization areas with primarily general engineering, electrical engineering, process engineering, mechatronics, mechanical engineering, or materials science content is recognized as an equivalent degree.

This must include the following academic credits or credits equivalent thereto:

Advanced mathematics plus physics amounting to at least 18 credit points (of which advanced mathematics is at least 8 credits and physics is at least 5 credits) and chemistry amounting to at least 4 credits.

The board of examiners shall determine equivalency under the terms of Article 61 para 4 sentence 2 and Article 63 of the Bavarian Higher Education Act.

2. Proof of English skills at level B2 or better of the Common European Framework of Reference for Languages for applicants who earned neither their higher education entrance qualification nor their school-leaving qualification in English.

3. Proof of German language skills at level A1 or better of the Common European Framework of Reference for applicants who neither earned their higher education entrance qualification nor their initial degree in the German language; applicants who are unable to provide proof of these skills will be enrolled on the condition that they submit the proof by the end of the second semester of study at the latest; and
  4. The subject-specific aptitude assessment process for the degree programme in accordance with Annex 2.
- (2) <sup>1</sup>The qualifications may not differ substantially in terms of the earned competences (learning outcomes) from the qualifications referred to in para 1 number 1. <sup>2</sup>If there are substantial compensable differences, applicants may be admitted subject to the proviso that, in addition to the assessment components to be completed in the master's programme, they also successfully complete coursework and examinations in the amount of up to 20 credit points from the relevant bachelor's programmes at the University of Bayreuth by the end of the second semester of study at latest; otherwise, the prerequisites for admission to the programme are deemed not to have been fulfilled.<sup>3</sup>In such cases, the relevant examination and study regulations for the bachelor's programmes at the University of Bayreuth given in para 1 number 1(as amended) shall apply.<sup>4</sup>Art. 63 BayHSchG applies to determining the eligibility of domestic and foreign degrees.
- (3) Decisions such as those described in paragraph 2 are to be made by the board of examiners established under the terms of § 5.
- (4) If the relevant initial degree certificate is not yet available, confirmation containing the individual grades for all examinations and courses up to the registration deadline must be submitted. <sup>2</sup>Such credit for examinations and coursework must amount to a total of at least 150 ECTS points. <sup>3</sup>Applicants who fulfil the requirements of sentence 2 are to be enrolled on the condition that they submit the relevant degree certificate by the end of the first semester of study.
- (5) Students who are enrolled in the master's programme Battery Materials & Technology are considered *ipso facto* to be admitted to the examinations.

### **§ 3 Structure of studies; standard period of study**

- (1) The standard period of study is four semesters, including the examination periods and the master's thesis.
- (2) A total of 120 credit points must be earned in accordance with the European Credit Transfer System (ECTS).
- (3) New students may begin the programme in the winter semester or the summer semester.

#### **§ 4 Components of the programme of study**

- (1) <sup>1</sup>The master's programme Battery Materials & Technology is divided into modules and consists of the module areas and modules listed in Annex 1.
- (2) With the admission to the master's programme Battery Materials & Technology within the framework of the aptitude assessment process according to Annex 2, the board of examiners individually recommends three alignment modules to be taken in the first year of study.

#### **§ 5 Board of examiners**

- (1) <sup>1</sup>A board of examiners shall be formed to make the necessary decisions with regard to the admission to the master's programme and the organizational execution of the master's examination. <sup>2</sup>The board of examiners shall administer the examination proceedings in accordance with the present regulations and make all decisions with the exception of the examinations and the assessment thereof. <sup>3</sup>It shall consist of five members; each member shall have one substitute representative. <sup>4</sup>Three members of the board of examiners (one of them as chair of examiners) and their substitute representatives shall be elected by the faculty council of the Faculty of Biology, Chemistry & Earth Sciences from among the university professors (Art. 2 para 3 sentence 1 Bavarian University Personnel Act) of the Faculty of Biology, Chemistry & Earth Sciences for a period of three years. <sup>5</sup>Two members of the board of examiners (one of them as deputy chair of examiners) and their substitute representatives shall be elected by the faculty council of the Faculty of Engineering Science from among the university professors (Art. 2 para 3 sentence 1 Bavarian University Personnel Act) of the Faculty of Engineering Science for a period of three years. <sup>6</sup>In the event of the retirement of the chair or the deputy chair of examiners, a decision of the faculty council of the relevant faculty in accordance with sentence 4 or sentence 5 shall be made for the remaining term of office.
- (2) <sup>1</sup>The board of examiners constitutes a quorum if the majority of members are present and entitled to vote after an invitation had been sent to all members at least three days prior to the meeting.

<sup>2</sup>The decisions taken by the board of examiners in its meetings are to be made on the basis of majority vote. <sup>3</sup>Vote abstention, secret voting, and proxy voting are prohibited. <sup>4</sup>If votes are equally divided among its members, the chair's vote shall be decisive.

- (3) <sup>1</sup>The chair of examiners shall ensure that the provisions of these regulations are followed. <sup>2</sup>He or she shall convene the meetings of the board of examiners and shall act as chair of its proceedings and decisions. <sup>3</sup>With regard to matters that cannot be postponed, he or she is authorized to make decisions on behalf of the board of examiners. <sup>4</sup>He or she must promptly inform the other members of any such decision - at the next meeting at latest. <sup>5</sup>In addition, unless otherwise provided by the present regulations, the board of examiners can transfer (until revoked) the right to perform other duties of the board to the chair. <sup>6</sup>The chair can delegate tasks to members of the board of examiners.
- (4) The board of examiners shall regularly report to the faculty council of the Faculty of Biology, Chemistry & Earth Sciences concerning updates to examination schedules and study periods and may make suggestions for reforming the present regulations.
- (5) <sup>1</sup>Any notices the board of examiners issues under the terms of the present regulations are to be published together with a rationale and information concerning how to appeal. <sup>2</sup>Notices of appeal shall be issued by the president of the University of Bayreuth in consultation with the board of examiners.

## § 6

### Examiners and co-examiners

- (1) <sup>1</sup>Any person who is authorized to administer examinations at institutions of higher education according to BayHSchG and HSchPrüferV, as amended, may serve as examiner. <sup>2</sup>Any member of the University of Bayreuth who is a graduate of an equivalent or comparable programme of study may serve as co-examiner.
- (2) <sup>1</sup>If a member of the University of Bayreuth who is an authorized examiner leaves the University, he or she may remain an examiner for a reasonable period. <sup>2</sup>Authorization to administer examinations shall generally remain valid for up to two years.
- (3) <sup>1</sup>Unless otherwise decided by the chair of examiners, the relevant instructor shall also serve as examiner.
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<sup>2</sup>If that instructor is not authorized to administer examinations as laid out in para 1, the chair of examiners shall appoint an examiner at the beginning of the semester in which the examination is to be held.

## § 7

### Disqualification due to personal involvement; confidentiality

- (1) Disqualification from consultation and voting on the board of examiners as well as other activities relating to examinations on the basis of personal involvement is governed by Article 41 para 2 BayHSchG.
- (2) The non-disclosure obligation that holds for members of the board of examiners, as well as examiners, co-examiners, and anyone else involved in the examination process is governed by Article 18 para 2 BayHSchG.

## § 8

### Credit transfer

- (1) Awarding credit for competencies (learning outcomes) is governed by Article 63 para 1 and 2 of the Bavarian Higher Education Act (*BayHSchG*).
  - (2) If credits are awarded for competencies, the grades are to be carried over and included when calculating the final grade, as long as the grading systems are comparable. <sup>2</sup>If the grading system for the competencies to be transferred does not correspond to the grading system given in § 16, the grades received at the other higher education institution are to be converted using the Modified Bavarian Formula:  
$$x = 1 + 3 * (N_{max} - N_d) / (N_{max} - N_{min})$$
where  $x$  is the grade to be calculated,  $N_{max}$  is the highest possible grade,  $N_{min}$  is the highest passing grade, and  $N_d$  is the actual grade; in this calculation, the grade to be calculated is only given to one decimal place and is not adjusted to fit the grading scale given in § 16. <sup>3</sup>If a conversion according to sentence 2 is not possible, the board of examiners shall determine a corresponding key for the grade conversion. <sup>4</sup>If a grade is not available and cannot be determined, the remark "passed" will be entered; in this case, it will not be included in the calculation of the final grade. <sup>5</sup>In consultation with the responsible subject are representative, the board of examiners shall decide on whether the prerequisites for the credit have been met. <sup>6</sup>If the credit transfer is denied, the person concerned may request a review of the decision by the University Governing Board within a period of four weeks after notification of the denial. <sup>7</sup>The University Governing Board shall provide the board of examiners with a recommendation on how to proceed with the request.
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- (3) Credit transfer requests are to be submitted to the in accordance of examiners as soon as possible following enrolment and in any event prior to the start of the examination in the relevant module.

## **§ 9**

### **Times for holding examinations; announcing examination times and examiners**

- (1) <sup>1</sup>The module examinations take place close to the end of the module, and at the latest at the beginning of the following semester. <sup>2</sup>As a rule, the candidate should take the examinations in the programme in the semester in which he or she took the course in the module.
- (2) <sup>1</sup>If not listed in the annex, examination times and the duration of examinations shall be determined by the relevant examiner and announced university-wide at the start of the semester. <sup>2</sup>A change of examiner on short notice shall only take place if there are urgent grounds for doing so.
- (3) Students are to register for examinations by the published deadline, according to the process determined by the board of examiners.

## **§ 10**

### **Elements of the examination**

- (1) The master's examination comprises the module examinations listed in Annex 1 and the master's thesis.
- (2) The examinations serve to demonstrate that the examinee has satisfied the desired learning outcomes of the individual modules.

## **§ 11**

### **Forms of examination**

- (1) <sup>1</sup>Examinations are carried out in the form of written examinations, oral examinations, minutes, graded presentations, or seminar contributions. <sup>2</sup>The possible forms of examination in the modules are given Annex 1.
  - (2) <sup>1</sup>Assessment of examinations is to be carried out according to the procedure determined by the board of examiners. <sup>2</sup>Notifications will not be sent individually. <sup>3</sup>Students are required to familiarize themselves independently with the terms of the present regulations pertaining to repeating examinations; they are responsible for informing themselves of examination results.
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- (3) <sup>1</sup>If an examination is assessed by more than one examiner, the grade shall be determined by taking the average of the grades assigned and truncating (not rounding) the number to one decimal digit. <sup>2</sup>If a written examination is assessed as "failed" or "unsatisfactory", it must be assessed by a second examiner.
  
  - (4) <sup>1</sup>Written examinations are to be held over a period of at least one hour and no longer than three hours; the duration of the examination should be appropriate to the requirements of the corresponding course. <sup>2</sup>Deviations from this are given in Annex 1. <sup>3</sup>The relevant examiner shall decide which resources may be used during the examination. <sup>4</sup>A written record of the examination is to be made. <sup>5</sup>The invigilator shall confirm the accuracy of the record by providing his or her signature. <sup>6</sup>The examination record sheet is to include all aspects of the examination that are relevant to determining the grade. <sup>7</sup>The student may voluntarily take written examinations in several parts, if this is possible for the respective module; this is indicated in the annex for the respective module. <sup>8</sup>When registering for the module examination for the first time, it must be stated whether the examination will be taken in several parts. <sup>9</sup>If a divided module examination is not passed in all parts, it is to be graded as "unsatisfactory".
  
  - (5) <sup>1</sup>If a candidate arrives late for an examination, he or she may not make up the time missed. <sup>2</sup>Leaving the examination room is permitted with the permission of the invigilator. <sup>3</sup>The time and duration of absence are to be noted on the question paper.
  
  - (6) <sup>1</sup>Written examinations are generally graded by the examiner who was appointed by the chair of examiners. <sup>2</sup>The relevant examiner determines the grades for the examinations under the terms of § 16. <sup>3</sup>An assessment of each written examination shall be provided no later than six weeks after the examination. <sup>4</sup>One graded copy of the written examination shall remain in the examination records.
  
  - (7) <sup>1</sup>Oral examinations are to be held over a period of 20 to 50 minutes, depending on the requirements of the particular courses. <sup>2</sup>Oral examinations are conducted in English, and are administered by two examiners or one examiner and one co-examiner. <sup>3</sup>One examiner or the co-examiner shall complete an examination record sheet for the oral examination that includes the location, start time, and duration of the examination; examination subject-matter and results; names of the examiner and co-examiner; name of the candidate; and any noteworthy incidents. <sup>4</sup>The record sheet is to be signed by the two examiners or by the examiner and co-examiner. <sup>5</sup>The examiners are to determine the grades for performance in the oral examinations under the terms of § 16.
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- (8) <sup>1</sup>Minutes are a written presentation or an oral presentation with written documentation of subject-specific content according to specified criteria. <sup>2</sup>The examiner shall communicate the form and scope of the assignment to the students at the beginning of the course. <sup>3</sup>The assignment is to be graded in accordance with § 16.
- (9) <sup>1</sup>Graded presentations assess the candidate's ability to present and discuss in an understandable manner the state of the art in a sub-field of battery materials and technology. <sup>2</sup>The topic is assigned by the responsible examiner. <sup>3</sup>The duration of the talk can be 20 to 45 minutes and is determined by the examiner. <sup>4</sup>Talks are to be graded by two examiners or one examiner and one co-examiner. <sup>5</sup>Assessment by a second examiner may be omitted if none is available. <sup>6</sup>A record sheet is to be filled out for each graded talk including the candidate's name, the names of the examiner(s) and co-examiner, the place, time, duration, subject matter, grade, and any noteworthy incidents during the presentation. <sup>7</sup>The record sheet is to be signed by the two examiners or by the examiner and co-examiner. The grades for the talk are determined in accordance with § 16. <sup>9</sup>Discussion and announcement of the examination results (grade) shall not be conducted in public.
- (10) <sup>1</sup>Seminar contributions are the written or oral presentation of technical content to a scientific discussion according to given criteria. <sup>2</sup>The student must be informed in advance by the examiner of the topic, form, scope, and deadline. <sup>3</sup>The chair of examiners may extend this deadline by up to two weeks at the request of the candidate and after having heard the supervisor in case of reasons beyond the candidate's control. <sup>4</sup>If the candidate demonstrates via a medical certificate that he or she was unable to work on the thesis due to illness, the deadline is to be extended accordingly. <sup>5</sup>Seminar contributions are to be graded in accordance with § 16. <sup>6</sup>Papers that are not submitted by the stated deadline are graded "unsatisfactory".

## § 12

### Master's thesis

- (1) The master's thesis of the candidate should demonstrate that he or she is able to utilize relevant resources and adequately address and write about current issues in the field using scientific methods.
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- (2) <sup>1</sup>The topic of the master's thesis can be issued and supervised by any university lecturer authorized to conduct examinations according to § 6 from the group of lecturers responsible for the courses in the corresponding subject in agreement with the chair of examiners. <sup>2</sup>It may only be carried out outside the Faculty of Biology, Chemistry & Earth Sciences or the Faculty of Engineering Science in other institutes within and outside the University of Bayreuth with the explicit consent of the board of examiners if it is supervised there by an authorized examiner according to sentence 1 and a university lecturer authorized to examine in the relevant subject area at the University of Bayreuth declares in writing his or her agreement to cover the initial assessment according to paragraph 8 when the thesis is assigned. <sup>3</sup>A topic for a master's thesis can only be issued to a candidate if he or she has achieved at least 40 credit points in the degree programme and has completed the module Research Plan; this is to be verified by the supervisor. <sup>4</sup>Record is to be made of the date on which the topic was assigned. <sup>5</sup>It is recommended that the master's thesis be completed in the fourth semester. <sup>6</sup>The candidate must ensure that he or she receives a topic for the master's thesis in good time. <sup>7</sup>If he or she does not succeed in doing so, the chair of examiners shall, at the candidate's request, ensure that the candidate is given a topic for the master's thesis. <sup>8</sup>The choice of the topic is made, if possible, taking into account the wishes of the candidate. <sup>9</sup>There is no legal claim to the assignment of a particular topic.
- (3) <sup>1</sup>The master's thesis is integrated into the course of studies and involves a workload of 900 hours (30 hours per credit point). <sup>2</sup>The time from topic setting to delivery of the master's thesis is six months. <sup>3</sup>The chair of examiners may extend this deadline by up to twelve weeks at the request of the candidate and after having heard the supervisor if there are reasons beyond the candidate's control; the request is to be submitted before the submission deadline for the master's thesis. <sup>4</sup>If the candidate demonstrates via a medical certificate that he or she was unable to work on the thesis due to illness, the deadline is to be extended accordingly. <sup>5</sup>Papers that are not submitted by the stated deadline are graded "unsatisfactory".
- (4) <sup>1</sup>The master's thesis should be written in English; the master's thesis may only be submitted in German upon request and with the consent of the examiner. <sup>2</sup>The master's thesis contains a declaration at the end by the author that he or she has written the thesis independently and has not used any sources or aids other than those specified by him or her and that he or she has not already submitted the thesis for the purpose of obtaining an academic degree. <sup>3</sup>In addition, a summary in German must be added if the master's thesis was written in English, and a summary in English must be added if the master's thesis was written in German.
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- (5) <sup>1</sup>The thesis is to be submitted to the Examinations Office by the deadline given. <sup>2</sup>Record is to be made of the date on which the thesis was submitted.
- (6) <sup>1</sup>Three typewritten, paginated, and bound copies of the master's thesis are to be submitted. <sup>2</sup>The thesis must include a table of contents and a list of sources. <sup>3</sup>An additional copy is to be submitted electronically in PDF format.
- (7) <sup>1</sup>The candidate may return the topic to the board of examiners once within the first four weeks. <sup>2</sup>Paragraphs 1 to 6 apply accordingly to the assignment and work carried out on a new topic. <sup>3</sup>If the master's thesis is being repeated, the topic may not be returned.
- (8) <sup>1</sup>The Examinations Office shall forward the thesis to the assessors. <sup>2</sup>The first assessor should be the person who has assigned the topic of the thesis. <sup>3</sup>An additional assessor shall be appointed by the chair of examiners from among the examiners pursuant to § 6 upon registration of the thesis. <sup>4</sup>The reviews shall be made available no later than two months after submission of the thesis. <sup>5</sup>Each assessor shall provide a recommendation as to whether the thesis is to be accepted or rejected and assign a grade in accordance with § 16. <sup>6</sup>In special cases, the board of examiners may call upon an additional assessor, especially if the grades assigned vary by more than one point or if at least one review assessed the thesis as “unsatisfactory”. <sup>7</sup>If an examination is assessed by more than one examiner, the grade shall be determined by taking the average of the grades assigned. <sup>8</sup>In this calculation the result is truncated (not rounded) to one decimal digit. <sup>9</sup>§ 11 para 2 applies *mutatis mutandis*.
- (9) One copy of the master's thesis is to remain on record.

## § 13

### Credit point system

- (1) <sup>1</sup>A record of credit points for completed modules is to be kept by the University of Bayreuth's Examinations Office for each student who is enrolled in the programme of study. <sup>2</sup>The credit points that appear on the transcript are identical with credit points as stipulated in the European Credit Transfer System (see Annex 1). <sup>3</sup>One credit point corresponds to a workload of 30 hours.
  - (2) The credit points for the modules are given in Annex 1.
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## § 14

### Consideration of extenuating life circumstances

- (1) <sup>1</sup>The use of the protection periods of the Maternity Protection Act (MuSchG) must be guaranteed. <sup>2</sup>Upon request, the claiming of parental leave in accordance with the Federal Parental Allowance and Parental Leave Act (BEEG) as well as periods for the care of a close relative within the meaning of § 7 para 3 of the Nursing Care Act (PflegeZG) who is in need of care within the meaning of § 14 and § 15 of the Eleventh Book of the Social Code (Sozialgesetzbuch, SGB XI) shall be guaranteed.
- (2) <sup>1</sup>Upon request, periods of study during which studying is not possible or only possible to a very limited extent for reasons for which the student is not responsible shall not be counted towards the examination deadlines. <sup>2</sup>The relevant evidence must be provided; in the case of illness, medical certificates must be submitted. <sup>3</sup>Any changes in status are to be reported immediately.

## § 15

### Consideration of the special needs of persons with disabilities or chronic illnesses

<sup>1</sup>For the sake of ensuring equal opportunities, the particular needs of examinees with disabilities or chronic illnesses are to be appropriately accommodated. <sup>2</sup>Upon written request, the board of examiners shall determine on the basis of the degree of disability in what form the examination is to be taken; alternatively, an extension or other reasonable accommodations may be granted. <sup>3</sup>Proof of the examination disability or chronic illness must be furnished in the form of a medical certificate stating that, due to a long-term or permanent disability or chronic illness, the examination cannot be taken in whole or in part in the intended form. <sup>4</sup>The request is to be submitted together with the examination registration. <sup>5</sup>If the request is submitted later, it shall only be valid for subsequent examinations.

## § 16

### Examination grades

- (1) The following grading scale will be used in the assessment of the individual examinations; the digit to the right of the comma enables a more differentiated assessment between the whole-number values.

"sehr gut" (excellent) = 1,0 or 1,3

"gut" (considerably better than average)  
= 1,7 or 2,0 or 2,3

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"befriedigend" (a performance that meets average requirements)	= 2,7 or 3,0 or 3,3
"ausreichend" (fulfils the minimum requirements despite deficiencies)	= 3,7 or 4,0
"nicht ausreichend" (unsatisfactory due to considerable deficiencies = 5,0)	= 5,0.

- (2) <sup>1</sup>If a greater module examination is made up of multiple examinations, the grade for the module shall be established by calculating the arithmetic mean after weighting the components based on credit points. <sup>2</sup>In this calculation, the grade shall only be given to one decimal place; the remaining digits are to be truncated (not rounded). <sup>3</sup>Module grades are as follows:

an average of 1,5 or better	<i>sehr gut</i> [very good]
with an average of 1,6 up to and including 2,5	<i>gut</i> [good]
with an average of 2,6 up to and including 3,5	<i>befriedigend</i> [satisfactory]
with an average of 3,6 up to and including 4,0	<i>ausreichend</i> [sufficient].

## § 17

### Final grade

- (1) <sup>1</sup>The overall grade of the master's examination is calculated from the average of the module grades, weighted by the credit points of the respective module, and the grade of the master's thesis. <sup>2</sup>In this calculation, the grade shall only be given to one decimal place; the remaining digits are to be truncated (not rounded).
- (2) Candidates who pass the master's examination are to receive a final grade as follows: an average grade of 1,2 or better is "ausgezeichnet" ["excellent"], up to 1,5 is "sehr gut" ["very good"], up to 2,5 is "gut" ["good"], up to 3,5 is "befriedigend" ["satisfactory"], up to 4,0 "ausreichend" ["sufficient"].
- (3) The certificate or an attached document shall indicate how the final grade was calculated.
- (4) <sup>1</sup>In addition to the degree certificate, an ECTS grading table will be issued as stipulated in the ECTS guidelines in the version dated 6 February 2009. <sup>2</sup>This table displays what percentage of programme graduates in a given time frame received the same final grade as described in para 2. <sup>3</sup>Those programme graduates who were awarded their diplomas in the previous four semesters shall serve as the reference group as long as it includes at least 30 persons. <sup>4</sup>The date of the last grade is decisive for the assignment to a given semester. <sup>5</sup>If the minimum number of degrees is not reached, the reference group is extended by one semester at a time until this is the case.
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<sup>6</sup>If the programme of study does not have as many graduates as the minimum number required of the reference group, an ECTS grading table will be issued as soon as the minimum number is reached. <sup>7</sup>For degrees awarded before the minimum number is reached, an ECTS grading table will be issued at a later date upon request once the minimum number has been reached. <sup>8</sup>The graduate's own graduating class is also to be included in the reference group. <sup>9</sup>The size of the reference group and the time frame is to be included.

## § 18

### Passing the master's examination

- (1) Passing the master's examination requires a grade of "ausreichend" ["sufficient"] or "bestanden" ["passed"] or better for the master's thesis and each module; in addition, all 120 credit points must be earned and all requirements mentioned in § 2 para 2 must be fulfilled.
- (2) <sup>1</sup>If the candidate has not fulfilled the requirements given in para 1 by the end of his or her sixth semester due to reasons under his or her control, then the candidate shall be considered as having failed the master's examination on the first attempt. <sup>2</sup>Examinations that were taken on time and for which the candidate received a passing grade need not be repeated.
- (3) <sup>1</sup>If the missing examinations are not passed by the student within an additional year after the deadline given in para 2 sentence 1 for reasons under his or her control, or if all possibilities to repeat the examinations have been exhausted, then the candidate shall be considered as having failed the master's examination on the final attempt. <sup>2</sup>The deadline shall not take into account periods of leave and periods during which the candidate withdrew from study. <sup>3</sup>Notice shall be sent to inform the candidate that he or she has failed an examination on the final attempt in accordance with § 5 para 5 in conjunction with Article 41 *BayVwVfG* as amended. <sup>4</sup>The board of examiners may grant the student an extension of the deadline for circumstances beyond his or her control if the student submits a request prior to the deadline described in sentence 1.

## § 19

### Repeating examinations

- (1) <sup>1</sup>Any examination that was failed on the first attempt can be repeated once. <sup>2</sup>The repetition must be carried out no later than the following semester. <sup>3</sup>If an examination is still not passed on the third attempt, the board of examiners may, upon request, decide whether a further examination attempt is possible in a module. <sup>4</sup>Students who fail the last repetition of an examination are to be considered as having failed the master's examination on the final attempt.
  - (2) Voluntarily repeating examinations that were already passed or the master's thesis is not permitted.
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- (3) <sup>1</sup>The master's thesis can be repeated with a new topic if the student receives a failing grade for the thesis. <sup>2</sup>Repeating the master's thesis for a second time is not permitted. <sup>3</sup>If a master's thesis that has been started is not passed due to the maximum duration of study according to § 18 para 3, the master's thesis can be continued as a repetition until the scheduled deadline; the student must notify the Examinations Office in writing by the end of the maximum duration of study according to § 18 para 3. If the master's thesis is then deemed "unsatisfactory", the candidate is considered to have failed the master's examination on the final attempt.
- (4) Administrative measures shall be taken to ensure that it is possible to repeat the failed examinations or a failed master's thesis within six months.

## **§ 20**

### **Notice of failing the master's examination**

If a candidate has failed the master's examination on the final attempt, then a written notice shall be sent to him or her within two weeks upon request; the notice shall include a list of the grades for the individual examinations.

## **§ 21**

### **Access to examination documents**

- (1) Following the conclusion of the examinations process, the candidate may upon request be granted access to his or her graded examination documents including the assessor's report as well as the record sheets for the examination.
- (2) <sup>1</sup>Such requests are to be made no later than one month after the degree certificate is awarded. <sup>2</sup>If the candidate was prevented from meeting the deadline in sentence 1 due to reasons beyond his or her control, Article 32 BayVwVfG shall apply.

## **§ 22**

### **Defects in the examination proceedings**

- (1) If it is shown that there were defects in the examination proceedings which influenced the examination results, the candidate or the board on its own initiative shall request that the relevant examinations be repeated.
  - (2) Any defects in the examination proceedings or examinations preventing the candidate from completing the examination are to be reported to the examiner, as a rule prior to the announcement of the examination results.
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or the chair of examiner, as a rule prior to announcement of the examination results.

- (3) Claims under the terms of paragraph 1 must be made within six months of the examination's conclusion.

## § 23

### **Non-appearance, withdrawal from examinations, cheating, and policy violations**

- (1) <sup>1</sup>Candidates who have registered for an examination may withdraw without providing a rationale by withdrawing by the deadline announced by the board of examiners. <sup>2</sup>If the candidate fails to appear for an examination for which he or she was registered for reasons under his or her control or withdraws subsequent to the deadline stated in sentence 1, he or she will be considered to have failed the examination.
  - (2) <sup>1</sup>The grounds for failing to appear - or as long as paragraph 1 sentence 1 does not apply - for withdrawal must be submitted to the board of examiners without delay and substantiated by *prima facie* evidence. <sup>2</sup>The same applies to incapacity to take the examination before or during the examination. <sup>3</sup>In the event of incapacity due to illness, a medical certificate must be submitted. <sup>4</sup>If the board of examiners accepts the reasons given, a new examination time is to be offered under the terms of § 9 within six months.
  - (3) If withdrawal or failure to appear is caused by reasons beyond the candidate's control, examinations elements completed up to that point are to be recognized.
  - (4) <sup>1</sup>If the candidate attempts to influence the result on an examination by cheating or making use of materials that are not permitted, he or she shall receive the grade "*nicht ausreichend*" ["unsatisfactory"] for the relevant examination. <sup>2</sup>Any candidate who causes considerable disruption to the course of an examination may be removed by the invigilator and barred from continuing the examination. In this case, he or she shall be given the grade "*nicht ausreichend*" ["unsatisfactory"].
  - (5) <sup>1</sup>If cheating in the form of plagiarism is detected, the examination will be graded as "*nicht ausreichend*" ["unsatisfactory"]. <sup>2</sup>The accusation of plagiarism is justified if the examinee has attempted to influence the result of the examination in a way that is favourable to him or her by failing to specifically mark passages taken verbatim from other authors and also explanations of his or her work that are closely based on the thought processes of other authors. <sup>3</sup>The determination shall be made by the relevant examiner or invigilator and shall be recorded in the files. <sup>4</sup>In serious cases or in the case of repetition, the entire module examination can be declared failed, and in particularly serious cases
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the right to repeat the examination may also be revoked and the entire module examination declared to have been failed.<sup>5</sup>The decision on this is taken by the board of examiners.<sup>6</sup>In deciding on the imposition of the sanction, both the quantity of the plagiarism and its significance for the work must be assessed in each individual case.

## **§ 24**

### **Invalidating the master's examination**

- (1) If a candidate cheats during an examination and this fact does not come to light until after the degree certificate is issued, the board of examiners may retroactively change the relevant grades accordingly and declare the master's examination to be failed either in part or entirely.
- (2) <sup>1</sup>If the registration requirements for the examinations were not met by the candidate without this having involved any cheating on the part of the candidate, and if this fact does not come to light until after the degree is issued, then this fault shall be considered rectified via the candidate's passing of the master's examination. <sup>2</sup>If the candidate registered by intentionally providing false information, the board of examiners shall decide whether to revoke any unlawful administrative acts on the basis of the general principles of administrative law.
- (3) The candidate shall be permitted to make a statement prior to the decision.
- (4) The inaccurate degree certificate is to be taken away and, if applicable, replaced with a new one.

## **§ 25**

### **Awarding the master's degree; diploma**

- (1) <sup>1</sup>Upon the student's request, a diploma and a degree certificate for successful completion of the master's examination are to be issued within four weeks of demonstrating completion of the required module credits. <sup>2</sup>The diploma is to include the title of the programme of study. <sup>3</sup>It is to be signed by the dean and stamped with the seal of the University of Bayreuth. <sup>4</sup>Upon issuance of the diploma, the graduate is given the right to bear the title "Master of Science". <sup>5</sup>This title is to be abbreviated "M.Sc." and placed behind the surname.
  - (2) <sup>1</sup>The certificate is to include the title of the programme of study, the final grade, all completed module examinations and module element examinations undertaken (including credit points and grades achieved), as well as the topic of the master's thesis and the grade received for the thesis. <sup>2</sup>The certificate is to be signed by the chair of examiners. <sup>3</sup>The date is to be the day on which the last credit was earned.
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<sup>4</sup>An English translation of the diploma and a Diploma Supplement shall be issued in addition; the Diploma Supplement shall be signed by the chair of examiners. <sup>5</sup>In addition to the certificate, an ECTS grading table is to be issued under the terms of § 17 para 4.

## **§ 26**

### **Academic advising**

- (1) General student advising is offered by the University of Bayreuth's Student Advising Office.
- (2) The programme coordinator for the master's programme Battery Materials & Technology is responsible for questions relating to the master's programme (i.e. structure of the programme, organization of studies, course selection, and questions concerning examinations).
- (3) <sup>1</sup>In the course of the semester, the programme advisor shall offer advising for all students enrolled in the master's programme. <sup>2</sup>Advising is recommended especially for the following persons:
  1. new students,
  2. students who recently failed an examination,
  3. students who have considerably less than 30 credit points per semester,
  4. students transferring from a different degree programme or university,

## **§ 27**

### **Effective date**

<sup>1</sup>These regulations go into effect on 26 March 2022. <sup>2</sup>They shall be valid for students enrolling in this programme in Winter Semester 2022/2023 or later.

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## Annex 1: Modules, Credit Points, and Examinations

### Overview:

	5 LP	5 LP	5 LP	5 LP	5 LP	5 LP
1	Individual alignment module A	Individual alignment module B	Individual alignment module C	Battery systems technology 1	Battery materials 1	Electro-chemistry 1
2	Elective module A	Elective module B	Elective module C	Battery systems technology 2	Battery materials 2	Electro-chemistry 2
3	Research module 1		Research module 2		Research plan	Seminar
4	Master thesis					

The following table provides an overview of the modules and corresponding examinations.

The following forms of examination are possible:

- written examination
- oral examination
- graded minutes
- graded seminar contribution

**Alignment modules**

The alignment modules (Individual Alignment Modules A to C) are determined individually from a catalogue (This arrangement is subject to the approval of the Ministry, which is currently being clarified). Three alignment modules totalling 15 credit points must be taken.

In special cases, other modules from the degree programmes offered by the Faculty of Mathematics, Physics & Computer Science, the Faculty of Biology, Chemistry & Earth Sciences, and the Faculty of Engineering Science may be used as alignment modules by the board of examiners. It should be noted, however, that these may not be modules that were already completed.

Alignment modules from the courses "Battery Materials and Technology" and "Battery Technology" can be mutually credited.

Schrägstriche („/“) zwischen den Prüfungsformen markieren alternative Prüfungsformen.

Area Modules	Credit points	Examination
<b>Alignment</b>		
Individual Alignment Module A	5	Written examination
Individual Alignment Module B	5	Written examination
Individual Alignment Module C	5	Written examination
<b>Total (Alignment):</b>	<b>15</b>	

Module Catalogue Alignment

Module	Credit points
Mathematical foundations of electrochemical energy storage systems	5
Physical foundations of electrochemical energy storage systems	5
Inorganic-chemical foundations of electrochemical energy storage systems	5
Physico-chemical foundations of electrochemical energy storage systems	5
Macromolecular/organic chemistry for electrochemical energy storage systems	5
Inorganic-chemical foundations of electrochemical energy storage systems	5
Foundations of mechanical engineering for electrochemical energy storage systems	5
Physico-chemical foundations of electrochemical energy storage systems	5

**Required modules**

The research modules and the master's thesis must be related to the topic "Battery". The topic is assigned by a professorship involved in the programme.

The research modules (Research Module 1 and 2) can be carried out with any research group involved in the degree programme. Two modules should not be carried out in one working group. A research module can be conducted externally abroad or in industry.

Area	Credit points	Examination
Modules		
<b>Compulsory areas</b>		
Battery systems technology 1	5	Written/ oral examination
Battery materials 1	5	Written/ oral examination
Electrochemistry 1	5	Written/ oral examination
Battery systems technology 2	5	Written/ oral Examination
Battery materials 2	5	Written/ oral Examination
Electrochemistry 2	5	Written/ oral Examination
Seminar	5	graded seminar contribution
Research Module 1	10	graded minutes and graded presentation
Research Module 2	10	graded minutes and graded presentation
Research Plan	5	graded minutes and graded presentation
Master's thesis	30	
<b>Total (required modules)</b>	<b>90</b>	

**Core elective modules**

Three core elective modules totalling five credit points must be taken. Of these, two modules must be chosen from the core elective area "Natural Sciences" and one module from the area "Engineering Science".

Core elective modules are to be selected from an elective module catalogue.

Area Modules	Credit points	Examination
<b>Elective</b>		
Elective Module A	5	Written/ oral Examination
Elective Module B	5	Written/ oral Examination
Elective Module C	5	Written/ oral Examination
<b>Total (core electives):</b>	<b>15</b>	

The **core elective modules** to be selected in the amount of 5 credit points each are **offered by the following research groups:**

<b>Core electives in Engineering Science</b>
[Two core elective modules are to be chosen]
Electronics of electrical energy storage systems
System technology of electrical energy storage systems
Electrode design of electrochemical energy storage systems
Cell design of electrochemical energy storage systems
Electrical energy systems
Functional materials
Material process technology
Battery management methods
Information systems management and sustainable IT management
<b>Core electives in the Natural Sciences</b>
[One core elective module must be chosen]

Electrochemistry
Operando analytics of electrochemical energy storage systems
Inorganic active materials for electrochemical energy storage systems
Polymer materials for electrochemical storage systems
Technical chemistry: sustainability and material cycles
Physical chemistry I-III
Inorganic chemistry I-III
Macromolecular chemistry I-III
Theoretical physics

## Annex 2: Aptitude assessment process

### 1. Purpose of aptitude test

<sup>1</sup>The procedure specified in Art. 43 para 5 sentence 2 BayHSchG is intended to determine the suitability of applicants for the master's programme in Battery Materials & Technology at the University of Bayreuth in accordance with § 2 para 1 number 4. <sup>2</sup>The interdisciplinary nature of the programme requires subject-specific and methodological knowledge in the various fields of chemistry, physics, electrical engineering, materials science, and mathematics. <sup>3</sup>The aim is to assess whether the applicant meets the necessary prerequisites to succeed in the highly demanding master's programme Battery Materials & Technology, and whether he or she is able to achieve an advanced understanding of the fields mentioned in Annex I to carry out independent academic work.

### 2. Board responsible for the aptitude assessment process

<sup>1</sup>A committee is responsible for preparing and conducting the aptitude assessment process. <sup>2</sup>The selection committee is composed of four university lecturers involved in the study programme; two representatives are elected by the faculty council of the Faculty of Biology, Chemistry & Earth Sciences from among the professors of the Faculty of Biology, Chemistry & Earth Sciences for a period of five years; two representatives are elected by the faculty council of the Faculty of Engineering Science from among the professors of the Faculty of Engineering Science for a period of three years. <sup>3</sup>At least one additional university lecturer from each faculty is to be appointed as a substitute. <sup>4</sup>The committee may additionally include one member of the full-time academic staff from each of the two faculties mentioned above. <sup>5</sup>The committee elects a chairperson who is a university lecturer from among its members. <sup>6</sup>The chairperson shall be elected for a term of three years. <sup>7</sup>The committee constitutes a quorum if the majority of are present and entitled to vote after an invitation had been sent to all members at least three days prior to the meeting. Elections and other decisions (especially in the aptitude assessment process) are decided by simple majority. <sup>9</sup>In the event of a tie, the chairperson shall have a casting vote. <sup>10</sup>The committee may consult other members of the full-time academic staff who are authorized to administer examinations.

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### 3. Process for determining aptitude

- 3.1 <sup>1</sup>The aptitude assessment process is administered twice annually, in the summer and winter semesters. <sup>2</sup>The application for admission to the aptitude assessment process must be submitted online to the University of Bayreuth. <sup>3</sup>The online application for admission to the aptitude assessment process must be received electronically by the University of Bayreuth by 15 July of each year for admission to the next winter semester and by 15 January for admission to the next summer semester (cut-off deadline). <sup>4</sup>Documents described in No. 3.2 may be submitted for Winter Semester by 15 August and for Summer Semester by 15 February.
- 3.2 The following are to be enclosed with the completed application as described in number 3.1 sentence 2:
- 3.2.1 a cover letter with a written statement of reasons for the choice of the master's programme Battery Materials & Technology of up to 2 pages, in which it is explained which skills make the applicant particularly suitable for the intended course of studies. <sup>2</sup>Evidence according to No. 3.2.6 is to be enclosed if necessary.
- 3.2.2 <sup>1</sup>The certificate of the relevant initial degree (e.g. bachelor's degree certificate) as well as confirmation including individual grades for the examinations coursework completed during the programme of study. <sup>2</sup>If the relevant degree certificate is not yet available, confirmation containing the individual grades for all examinations and coursework completed up to the registration deadline must be submitted. <sup>3</sup>Such credits must amount to a total of at least 150 ECTS points. <sup>4</sup>The relevant degree certificate is to be submitted by the end of the first semester of study.
- 3.2.3 A list of modules from the applicant's relevant initial degree programme for which evidence of completion cannot yet be submitted.
- 3.2.4. certified copy of higher education entrance qualification,
- 3.2.5 a CV as supplementary information.
- 3.2.6 If available, evidence of special subject-specific additional qualifications such as external internships, activities such as a research assistantship, subject-relevant scholarships and awards.
- 3.2.7 If applicable, a request for reasonable accommodations as described in § 15.
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#### **4. Admission to the aptitude assessment process**

- 4.1 Admission to the assessment process requires that the documents listed in number 3.2 be submitted on time.
- 4.2 The aptitude assessment process (number 5) is to be administered to those applicants who fulfil the requirements.
- 4.3 Applicants who are not admitted are to be sent a notice of denial according to number 6.1 with a rationale and information concerning their right to appeal.

#### **5. Overview of the aptitude assessment process**

- 5.1 <sup>1</sup>Two members of the committee, at least one of whom must be a university lecturer, then examine the application documents submitted to determine whether the applicant is suitable for the master's programme in Battery Materials & Technology on the basis of the proven qualifications and the specific talents and abilities described. <sup>2</sup>The evaluation is made by the committee members according to the following criteria:
  - 5.2 <sup>1</sup>The selection process consists of two steps. <sup>2</sup>The first step is a preliminary selection of the written applications for admission to the aptitude assessment process for the master's programme Battery Materials & Technology that were submitted on time; on the basis of the documents submitted, the following is to be verified:
    - a) whether admission of the applicant to the master's programme without any further examination is justified on the basis of a special qualification or whether
    - b) due to the suitability that cannot be conclusively assessed on the basis of the documents, a decision must be made on the basis of an additional review, or whether
    - c) admission is to be denied due to insufficient suitability that is already apparent from the documents.
  - 5.3 A person is considered to be particularly qualified if he/she has a degree in a course of study according to § 2 para 1 no. 1 or an equivalent programme of study among the best 15% of the relevant cohort at the respective university.
  - 5.4 Suitability is deemed insufficient if
    - a) The applicant did not receive at least a grade of "satisfactory" (3.5) in the initial degree to be proven according to number 3.2.2 sentence 1 (in case final admission was requested), or
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- b) if at least a preliminary grade point average of 3.5, as determined by the examination office of the respective university, has not been achieved in the grades to be proven according to number 3.2.2, sentences 2 and 3, amounting to at least 150 ECTS points (in the case of an application for admission subject to a condition precedent).

5.5 <sup>1</sup>Applicants whose suitability has not yet been conclusively assessed in accordance with number 5.2 letter b) will be invited to a selection interview (second stage of the aptitude assessment process). <sup>2</sup>The date and time of the interview are to be announced at least one week in advance. <sup>3</sup>The duration of the interview is approximately 20 minutes. <sup>4</sup>The interview is intended to provide further information about the applicant's suitability and to show whether he or she meets the requirements of the Battery Materials & Technology master's programme as defined by the criteria listed in number 1. <sup>5</sup>For this purpose, the applicant's current level of competency in the Battery Materials & Technology areas listed in Annex 1 will be reviewed. <sup>6</sup>This is intended to give the applicant the opportunity to demonstrate his or her current level of knowledge in these areas. <sup>7</sup>The selection interview is conducted with the individual applicant by two assessors appointed by the selection committee. <sup>8</sup>The assessors' verdicts are either "suitable" or "not suitable". <sup>9</sup>The aptitude assessment process is only passed if the verdicts of both assessors are "suitable". <sup>10</sup>A record must be made of the course of the selection interview, showing the date and place of the assessment, the names of the assessors, the names of the applicant, the main content of the interview, the assessment of the assessors, and the overall result.

5.6 <sup>1</sup>Anyone who fails to appear on the date and time announced will be denied admission. <sup>2</sup>If a reason beyond the applicant's control prevents him or her from participating in the interview, a new appointment is to be scheduled no later than two weeks prior to the start of lectures upon justified request.

## 6. Determining the Results

6.1 <sup>1</sup>The result of the aptitude assessment process will be communicated to the applicant; at the same time, the selection committee may also pass on a recommendation to the board of examiners regarding alignment modules to be taken. <sup>2</sup>A notice of denial must be accompanied by a rationale and information on the applicant's right to appeal. <sup>3</sup>As part of its supervisory duties in accordance with Article 20 para 3 sentence 1 BayHSchG, the University Governing Board shall check a random sample of 10 % of denials of admission; the corresponding number of processes shall be submitted to the University Governing Board by the chair of examiners.

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- 6.2 Admission based on the aptitude assessment process for the master's programme Battery Materials & Technology shall remain valid for future applications to this programme of study as long as the content and goals of the programme do not change so significantly that aptitude for this programme can no longer be demonstrated by having undergone the aptitude assessment process at an earlier the time.

## **7. Repetition and conditional enrolment**

- 7.1 Applicants who did not provide evidence of aptitude for the master's programme Battery Materials & Technology may register for the aptitude assessment process one more time.
  - 7.2 Applicants who are not yet able to submit a bachelor's certificate or a degree certificate that has been recognized as equivalent and who do not pass the aptitude assessment process may enrol for one semester if it is possible for them to submit the degree certificate by the end of the first semester and to fulfil the requirements given in number 5.3.
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Issued on the basis of a decision made by the University of Bayreuth's Senate on 15 December 2021 and approved by the President of the University of Bayreuth on 24 March 2022, Ref. No. A-3396/20 - 1/1.

Bayreuth, 25 March 2022

UNIVERSITY OF BAYREUTH, THE PRESIDENT

Professor Dr. Stefan Leible

These regulations were enacted at the university on 25 March 2022.

This was announced on 25 March 2022 by posting a notice at the university. The date of the announcement is 25 March 2022.

Bayreuth, 25 March 2022

UNIVERSITY OF BAYREUTH, THE PRESIDENT

Professor Dr. Stefan Leible