

**These examination regulations have been worded carefully to be up to date; however, errors cannot be completely excluded. The official German text available at the Examinations Office is the version that is legally binding.**

**Note:** For students who started their studies before the latest amendment came into effect: please also note the previous amendments with their transitory provisions.

**Examination Regulations for the  
Bachelor's  
and Master degree programmes Materials Physics  
at the Faculty of Sciences  
of Friedrich-Alexander Universität Erlangen-Nürnberg  
– BMPO/Materialphysik –  
Dated 08 January 2010**

amended by statutes of  
29 September 2010  
08 October 2013  
17 October 2014

Based on Section 13 (1)(2), Section 43 (5)(2), Section 61 (2)(1) of the Bavarian Higher Education Act (Bayerisches Hochschulgesetz, BayHSchG), the University of Erlangen-Nürnberg enacts the following examination regulations:

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## **I: General Conditions**

### **Section 1 Scope, Purpose of the Bachelor's and Master's Examination**

(1) These examination regulations govern the examinations for the Bachelor's and Master's degree programmes in Materials Physics at the Faculty of Sciences resulting in the degrees 'Bachelor of Science' and 'Master of Science'.

(2) <sup>1</sup>The Bachelor of Science is a first university degree that qualifies the graduate for professional work. <sup>2</sup>The Bachelor's examination is supposed to determine whether the students have acquired an overview of the basic knowledge of their subject and the necessary expertise for a subsequent Master's degree programme or an early transition to professional practice.

(3) <sup>1</sup>The Master of Science is a degree that qualifies the student for further research as well as professional work. <sup>2</sup>The Master's examination is supposed to determine whether the students are capable of working independently according to scientific methods and have acquired the necessary expertise for a subsequent doctoral degree programme or transition to professional practice.

### **Section 2 Degree Titles**

(1) Passing the examinations results in the following degrees, depending on the type of degree programme:

1. The degree of Bachelor of Science (abbreviation: BSc) for passing the Bachelor's examination
2. The degree of Master of Science (abbreviation: MSc) for passing the Master's examination

(2) The degree may also be used with the addition '(FAU Erlangen-Nürnberg)'.

### **Section 3 Structure of the Bachelor's Degree Programme and the Examinations, Regular Duration of Studies**

(1) <sup>1</sup>Students shall take a preliminary examination (Grundlagen- und Orientierungsprüfung, GOP) covering the foundations of the Bachelor's degree programme (Orientation phase) by the end of the second semester. <sup>2</sup>The further Bachelor's degree programme (Bachelor's phase) shall comprise the compulsory examinations of the next four semesters, including the modules Bachelor's Thesis and Bachelor's Colloquium. <sup>3</sup>The successful completion of the Bachelor's examination requires 180 ECTS credits.

(2) <sup>1</sup>The regular duration of the degree programme, which includes the examinations and work on the Bachelor's thesis, shall be six semesters. <sup>2</sup>The content of the degree programme can be learned from the degree programme's module descriptions in the module catalogue.

### **Section 4 Structure of the Master's Degree Programme and the Examinations**

(1) <sup>1</sup>The Master's degree programme builds on the contents of the Bachelor's programme; it is more research-orientated. <sup>2</sup>The Master's degree programme has a duration of three semesters and six months for working on the Master's thesis. <sup>3</sup>The first two semesters make up the focus phase, which is based on the Bachelor's programme, and the following two semesters are the research phase. <sup>4</sup>In the research phase, students shall carry out work on a research project that includes both further technical specialisation and the Master's thesis. <sup>5</sup>Students need to achieve a total of 120 ECTS credits to complete the Master's degree, including all required module examinations and the modules Master's Thesis and Master's Colloquium.

(2) The regular duration of the degree programme, which includes the examinations and work on the Master's thesis, shall be four semesters.

(3) <sup>1</sup>The teaching and examination language of the Master's degree programme Materials Physics is English. <sup>2</sup>Examinations for individual students or groups of students may be conducted in German upon request and with the agreement of the chairperson of the Examinations Committee.

### **Section 5 ECTS Credits**

(1) <sup>1</sup>The degree programmes and examinations are organised based on the European Credit Transfer and Accumulation System (ECTS). <sup>2</sup>30 ECTS credits are estimated per semester. <sup>3</sup>One ECTS credit corresponds to 25 to 30 hours of work.

(2) <sup>1</sup>ECTS credits serve as a system to categorise, calculate and confirm the amount of work a student has invested. <sup>2</sup>They are a quantitative indicator of a student's workload.

### **Section 6 Modularisation, Course Credit Certificates**

(1) <sup>1</sup>The degree programme consists of modules for which students are awarded ECTS credits. <sup>2</sup>One module is a chronologically connected and self-contained teaching and learning unit the contents of which can be tested in an examination.

(2) <sup>1</sup>The modules shall be completed with a module examination. <sup>2</sup>This examination shall as a rule consist of one examination achievement or one course achievement. <sup>3</sup>In exceptional cases, this examination can also consist of several parts (portfolio exami-

nation) or a combination of examination and course achievements (portfolio examination) if the subject warrants it. <sup>4</sup>ECTS credits shall only be given for successful participation in modules that can be verified in an individual, separately identifiable performance in a module examination. <sup>5</sup>Module examinations are conducted during the lecture period or following the last lecture/seminar of a module before the start of the next semester's lecture period.

(3) <sup>1</sup>Examination achievements and course achievements measure the student's success. <sup>2</sup>They may be in writing, oral, electronic or in a different form, such as a graded presentation. <sup>3</sup>Examination achievements and partial examinations are graded. <sup>4</sup>Course achievements confirm whether students have successfully participated.

(4) <sup>1</sup>Enrolment in the relevant degree programme at the University of Erlangen-Nürnberg shall be a requirement for participation in module examinations (Paragraph 2 [1]). <sup>2</sup>This shall not apply to resit examinations within the meaning of Section 30 (1)(5).

(5) <sup>1</sup>In addition to the module examinations, voluntary interim examinations (e.g. tutorial achievements or short tests) may be offered during courses as a way of measuring the standard of performance. <sup>2</sup>More detailed information, including the number, types and scope of these examinations, is given in the module catalogue. <sup>3</sup>Interim examination achievements may improve the grade for a module examination or partial examination by a maximum of 0.7.

### **Section 7 Examination Deadlines, Failure to Observe Deadlines**

(1) <sup>1</sup>Examinations shall be sat in such a timely manner as to allow Bachelor's students to obtain 30 ECTS credits in the preliminary examination (GOP) and 180 ECTS credits in the Bachelor's examination and to allow Master's students to obtain 120 ECTS credits by the end of the respective scheduled deadlines. <sup>2</sup>Deadlines shall be the second semester of the degree programme for the preliminary examination (GOP) and the last semester of the respective standard duration for the Bachelor's or Master's examination. <sup>3</sup>The deadline according to Sentence 2 may be exceeded by the following periods (extended deadline):

1. Preliminary examination (GOP) – by one semester
2. Bachelor's examination – by two semesters
3. Master's examination – by two semesters

<sup>4</sup>An examination shall be considered to have been sat and failed for good if the required number of ECTS credits was not obtained within the extended deadline according to Sentence 3, unless the reasons for this are beyond the student's control.

(2) The deadline set forth in Paragraph 1 shall be extended by claiming the periods of protection according to Sections 3, 4, 6 and 8 of the Maternity Protection Act (Mutterschutzgesetz – MuSchG) in the version published on 20 June 2002 (BGBl I S 2318 [German Federal Law Gazette I p. 2318]) as amended from time to time and according to the periods set forth in the Parental Allowance and Parental Leave Act (Bundeselterngeld- und Elternzeitgesetz – BEEG) of 5 December 2006 (BGBl I S. 2748 [German Federal Law Gazette I p. 2748]) as amended from time to time.

(3) <sup>1</sup>The reasons according to Paragraphs 1 and 2 shall be explained in writing and shown credibly to the Examinations Office without delay. <sup>2</sup>If the reasons are acknowledged, the examination shall be sat at the soonest possible time; previous examination and course achievements shall be accredited. <sup>3</sup>In cases where the student is unable to sit an examination due to illness, an official certificate from a medical examiner may be required.

## **Section 8 Examinations Committee**

(1) <sup>1</sup>An Examinations Committee shall organise and carry out the examinations. <sup>2</sup>The Examinations Committee shall have five members that are professors at the Department of Physics at the Faculty of Sciences; they shall be elected by the Faculty Council. <sup>3</sup>The Faculty Council shall elect one of the members as the chairperson and shall elect the deputy representatives. <sup>4</sup>The term of office of the members shall be three years. <sup>5</sup>Re-election shall be permitted.

(2) The chairperson may transfer tasks within their responsibility to a member of the Examinations Committee.

(3) <sup>1</sup>The Examinations Committee shall be tasked with carrying out the examination procedures, especially the planning and organisation of the examinations. <sup>2</sup>Its duties include ensuring that the provisions of these examination regulations are observed. <sup>3</sup>With the exception of the examinations and examination results, all decisions shall be taken by the Examinations Committee. <sup>4</sup>It shall send out the examination notifications in particular, after having verified the examination achievements and their legitimacy. <sup>5</sup>It shall regularly report to the Faculty Council on the development of the examinations and the duration of studies and, where applicable, provide input on amendments to the examination regulations. <sup>6</sup>The members of the Examinations Committee shall have the right to be present during the examinations. <sup>7</sup>The Examinations Committee shall make use of the University's Examinations Office in carrying out its tasks.

(4) <sup>1</sup>The Examinations Committee shall have a quorum when all members are summoned observing a notice period of at least one week and the majority of members is present and eligible to vote. <sup>2</sup>Decisions shall be taken with the majority of votes cast in meetings. <sup>3</sup>Abstentions, ballot votes and delegation of votes shall not be permitted. <sup>4</sup>In case of a tie of votes, the vote of the chairperson shall be decisive.

(5) <sup>1</sup>The chairperson shall call the meetings of the Examinations Committee. <sup>2</sup>She or he shall be entitled to take decisions that cannot be delayed by herself or himself on the Examinations Committee's behalf. <sup>3</sup>The Examinations Committee shall be informed of such cases without delay. <sup>4</sup>Furthermore, unless these examination regulations state otherwise, the Examinations Committee shall have the right to revocably charge the chairperson with carrying out individual tasks.

(6) <sup>1</sup>Official notifications in matters pertaining to examinations that may result in the infringement upon a person's rights shall be made in writing; reasons shall be given and information on legal remedies available to the person shall be included. <sup>2</sup>Students shall be given the opportunity to make a statement before negative decisions are finalised. <sup>3</sup>The Examinations Committee shall have the right to rule that grade notifications may be sent out in electronic form to the individual students. <sup>4</sup>The president shall issue the notification of objection; in questions of examination legislation following consultation with the Examinations Committee and after hearing the examiners.

## **Section 9 Examiners, Exclusion due to Personal Involvement, Obligation to Confidentiality**

(1) <sup>1</sup>The Examinations Committee shall appoint the examiners. <sup>2</sup>All persons eligible to administer examinations according to the Bavarian Higher Education Act (BayHSchG) and the Bavarian Higher Education Examiners Act (BayHSchPrüferV) as amended from time to time shall be eligible for appointment.

(2) A change of examiners shortly before the start of an examination shall be permissible on urgent grounds.

(3) Persons who have completed the degree programme in question or an equivalent degree programme shall be eligible for appointment as observers.

(4) Exclusion from the deliberation and voting process of the Examinations Committee as well as from the positions of examiner and observer due to personal involvement shall be governed by Section 41 (2) BayHSchG.

(5) The obligation to confidentiality of the Examinations Committee and other persons involved in matters pertaining to examinations shall be governed by Section 18 (3) BayHSchG.

### **Section 10 Announcement of Examination Type, Examination Dates and Examiners, Registration, and Withdrawal**

(1) <sup>1</sup>The nature and the extent of the examination and course achievements are shown in the module plan in **Appendices 2 and 3**. <sup>2</sup>The dates of the examinations and the examiners shall be announced by the Examinations Office at least two months before the examination and according to local practice.

(2) <sup>1</sup>Students shall register for the individual module examinations after the start of the lecture period. <sup>2</sup>The registration dates and formalities shall be announced by the Examinations Committee according to local practice four weeks prior.

(3) <sup>1</sup>The periods set forth in Sections 7 and 30 notwithstanding, withdrawal from individual examinations shall be possible without adverse consequences. <sup>2</sup>Students may withdraw from an examination before the beginning of examination at the latest. <sup>3</sup>Students shall not be required to state reasons for such a withdrawal. <sup>4</sup>After this point in time, withdrawal shall only be possible if reasons beyond the student's control according to Section 7 (1)(4) and (3) are given. <sup>5</sup>Such reasons shall be proven to the Examinations Office without delay. <sup>6</sup>Withdrawal shall be effected by absence from the examination or, if the examination achievement has already been completed, by declaring the withdrawal to the examiner or the Examinations Office. <sup>7</sup>An effective withdrawal shall result in the forfeiture of the registration for the examination. <sup>8</sup>The consequences of a delayed or invalid withdrawal shall be governed by Section 13 (1)(1).

### **Section 11 Admissions Committee for the Master's Degree Programme**

(1) The evaluation of the qualification and admission requirements for the Master's degree programme shall be the responsibility of the Admissions Committee.

(2) <sup>1</sup>The Admissions Committee shall consist of three members of full-time research staff who are authorised examiners according to the Bavarian Higher Education Act (Bayerisches Hochschulgesetz) and the Higher Education Examiners Act (Hochschulprüferverordnung). <sup>2</sup>At least two members including the chairperson shall be professors. <sup>3</sup>The members and their respective alternative representatives shall be appointed by the Faculty Council of the Faculty of Sciences for a term of office of three years; re-election shall be permitted. <sup>4</sup>Section 8 (4) and (5)(1) shall apply accordingly.

### **Section 12 Accreditation of Skills**

(1) <sup>1</sup>Study periods, modules, course and examination achievements achieved in degree programmes at other public or state-approved universities in the Federal Republic of Germany, through successful participation in a distance course as part of a degree programme at a public or state-approved university in the Federal Republic of Germany, or in degree programmes at foreign universities shall be accredited according to these examination regulations unless there are significant differences in the skills acquired. <sup>2</sup>The same shall apply to study period, course and examination achievements achieved at a public or state-approved university in Bavaria in the course of other study programmes within the meaning of Section 56 (6)(1) and (2) BayHSchG, in special study programmes within the meaning of Section 47 (3)(1) BayHSchG, or at the Virtual University of Bavaria.

(2) <sup>1</sup>Skills acquired in the course of successfully completed vocational training, courses of secondary education or other specific courses within the meaning of Section 56 (6)(3) BayHSchG, or outside of higher education may be accredited if they are equivalent to skills acquired through university studies. <sup>2</sup>Skills acquired outside the university sector shall replace no more than half of the required skills of which students must provide proof.

(3) <sup>1</sup>The grades achieved in approved modules, examinations and coursework shall be transferred if they were awarded according to Section 20. <sup>2</sup>If the grading system applied in the examinations sat at the university or equivalent institution of higher education and accredited by FAU Erlangen-Nürnberg is not identical to the grading system set forth in Section 20, the grades achieved at other universities shall usually be converted according to the following formula:

$x = 1 + 3 \frac{(N_{\max} - N_d)}{(N_{\max} - N_{\min})}$  with

x = converted grade

$N_{\max}$  = best attainable grade

$N_{\min}$  = lowest grade for passing

$N_d$  = grade attained

<sup>3</sup>Only one decimal place is shown for the grades thus calculated. <sup>4</sup>If this conversion is not possible or demonstrably inadequate, the Examinations Committee determines a system by which to calculate the grades.

(4) <sup>1</sup>The documents needed for this accreditation shall be submitted to the chairperson of the Examinations Committee. <sup>2</sup>If the conditions set forth in Paragraphs 1 to 2 are met, the student shall have a legal claim to accreditation. <sup>3</sup>The decision shall rest with the chairperson of the Examinations Committee after consultation with the department representative appointed by the department in question. <sup>4</sup>The decision shall be issued in writing.

### **Section 13 Fraud, Breach of Regulations**

(1) <sup>1</sup>An examination achievement shall be graded as 'nicht ausreichend' (unsatisfactory; 5.0) if the student withdraws from the examination after the withdrawal period (cf. Section 10 [3]) without good reasons. <sup>2</sup>The reasons for withdrawal or tardiness shall be explained in writing and shown credibly to the Examinations Committee without delay. <sup>3</sup>If the Examinations Committee accepts the reasons, a new date shall be set. <sup>4</sup>In cases where the student is unable to sit an examination due to illness, an official certificate from a medical examiner may be required.

(2) <sup>1</sup>In case of an attempt to commit fraud or to influence the result of an examination through the use of unauthorised materials, the examination in question shall be graded

as 'unsatisfactory' (5.0). <sup>2</sup>Persons who disturb the orderly examination process may be excluded from continuing the examination by the authorised examiner or the supervising person; in this case the examination achievement in question shall be considered to be 'nicht ausreichend' (unsatisfactory; 5.0). <sup>3</sup>Sentences 1 and 2 shall apply to course achievements accordingly.

(3) The decision on exclusion from further participation in the examination shall rest with the Examinations Committee.

### **Section 14 Revocation of Degrees**

The revocation of degrees shall be governed by Section 69 BayHSchG.

### **Section 15 Faults in the Examination Process**

(1) Should it turn out that the examination process was faulty in a manner that influenced the result of the examination, it shall be ordered upon a student's request that a certain student or all students shall resit the examination or parts of the same.

(2) Faults in the examination process shall be reported to the chairperson of the Examinations Committee or the examiner without delay.

(3) Six months after completion of the examination, resit examinations may no longer be ordered ex officio as stipulated in Paragraph 1.

### **Section 16 Compulsory Attendance**

(1) <sup>1</sup>For lectures, which are marked accordingly in the respective module description, in which the qualification goal can only be achieved by regular attendance, compulsory attendance can be made a requirement for admission to the module examination or for obtaining the course achievement. <sup>2</sup>If attendance of the individual student is required for all participants to obtain the subject-specific skills, if the individual student obtaining such skills depends on the attendance of the other participants, or if subject-specific skills can only be obtained by being present at a particular place, or if participation is required for safety reasons, it is permissible to introduce an obligation to attend.

(2) <sup>1</sup>Regular attendance is defined as no more than 15% of the lectures of any given course have been missed. <sup>2</sup>If between 15% and 30% of the lectures have been missed, the lecturer can offer the student the option to obtain a skills-orientated substitute achievement fulfilling the requirement of regular attendance. If no such substitute achievements are offered or the substitute achievements offered are not obtained by the student, attendance is not considered to have been regular. <sup>3</sup>If more than 30% of all lectures have been missed, the course must be taken again. <sup>4</sup>Any positions after the decimal point in the percentage of lectures missed shall be rounded for the benefit of the student.

(3) <sup>1</sup>Paragraph 2 notwithstanding, in the context of excursions and placements attendance is only considered to have been regular if all teaching units have been attended. <sup>2</sup>Appropriate skills-orientated substitute achievements fulfilling the requirement of regular attendance shall be offered in the case of credibly shown periods of absence due to reasons beyond the student's control of up to and including 15% of all lectures. <sup>3</sup>If more than 15% of all lectures have been missed, the course must be taken again. <sup>4</sup>Any positions after the decimal point in the percentage of lectures missed shall be rounded for the benefit of the student.

(4) Attendance is checked in the individual lectures by means of an attendance list in which students must enter their name and signature, or in a comparable manner.

### Section 17 Written Examination

(1) <sup>1</sup>In written examinations (see **Appendices 2** and **3** for types and durations of written examinations) students are required to prove that they are capable of identifying a problem within a limited period, using the conventional methods employed in their field, and to find a solution to this problem. <sup>2</sup>In exceptional cases (in particular due to stays abroad, illness or disproportionate strain on resources), the Examinations Committee may permit a change in the type of examination at the examiner's or examinee's request. <sup>3</sup>All those involved shall be informed of the Examinations Committee's decision without delay.

(2) <sup>1</sup>Written examinations shall have a minimum duration of 60 and a maximum duration of 180 minutes. <sup>2</sup>Details of the lengths of each examination are given in **Appendices 2** and **3**. <sup>3</sup>Written examinations shall generally be evaluated by an examiner. <sup>4</sup>If a written examination is graded as 'nicht ausreichend' (unsatisfactory; 5.0), it shall be presented to a second examiner for evaluation. <sup>5</sup>Section 20 (2)(4) and (2)(5) shall apply accordingly.

(3) <sup>1</sup>Written examinations may take the form of multiple-choice examinations (single or multiple choice), either in full or in part. <sup>2</sup>Detailed information on the modules in which written examinations take the form of multiple choice questions are given in the module catalogue. <sup>3</sup>It must be specified during the design of the examination questions which of the answers shall be accepted as correct. <sup>4</sup>If the question does not allow multiple answers, multiple answers shall be inadmissible and disregarded. <sup>5</sup>Before the evaluation of the examination results, at least two of the authors of the examination shall assess whether the examination questions allow for reliable examination results. <sup>6</sup>Should they determine that individual examination questions are faulty, these shall not be taken into account in the evaluation of the examination result; the number of examination questions shall be considered to have been reduced. <sup>7</sup>This reduction of the number of examination questions may not result in disadvantages for any of the examinees. <sup>8</sup>No minus points may be awarded outside of individual examination questions.

4) <sup>1</sup>The examinations according to Paragraph 3 (1) shall be considered to have been passed if

1. the examinee answered at least 50 percent of the examination questions correctly/achieved at least 50 percent of the attainable points, or
2. the examinee answered at least 40 percent of the examination questions correctly/achieved at least 40 percent of the attainable points and the number of correct answers is no more than 17 percent below the average number of correct answers for all examinees sitting the examination for the first time.

<sup>2</sup>If Sentence 1 (2) is applied, the Dean of Studies shall be notified.

(5) In case of written examinations that are not entirely composed of multiple choice questions, Paragraphs 3 and 4 shall only apply for the respective part.

(6) Section 20 (3) shall apply to grading.

### Section 18 Oral Examination

(1) <sup>1</sup>In oral examinations students are required to prove that they grasp the context of their subject and can handle specific questions in this context. <sup>2</sup>Oral examinations shall be conducted, unless otherwise stated, in the presence of an observer appointed by the examiner. <sup>3</sup>They are individual examinations and shall last between 15 and 45 minutes. <sup>4</sup>Details of the lengths of each examination are given in **Appendices 2 and 3**. <sup>5</sup>Section 17 (1)(2) and (1)(3) shall apply accordingly.

(2) <sup>1</sup>In oral examinations before several authorised examiners every examiner shall determine the grade according to Section 20 (1). <sup>2</sup>Section 20 (2)(4) and (2)(5) shall apply accordingly.

(3) <sup>1</sup>Minutes shall be recorded for oral examinations; they shall include the following: time, date and duration of the examination; subjects and result of the examination; the names of the examiners, the observer and the student; and any special occurrences. <sup>2</sup>The minutes shall be signed by the authorised examiner and the observer. <sup>3</sup>It shall not be necessary to record the questions asked in the examination or the answers given. <sup>4</sup>The minutes shall be kept in the examination records for a minimum of two years.

(4) <sup>1</sup>Students planning to undergo the same examination shall be permitted to be present as listeners during oral examinations within the bounds of feasibility with regard to the examination's location; listeners shall be excluded at the examinee's request. <sup>2</sup>Oral examinations in the form of presentations may be declared as public in these examination regulations, its appendices or in the module catalogue; in this case listeners shall be permitted without restrictions. <sup>3</sup>This permission shall in no case extend to the deliberation process and the announcement of the examination result.

### Section 19 Electronic Examinations

<sup>1</sup>Examinations may be administered in electronic form. <sup>2</sup>Electronic examinations (e-examinations) are examinations which are administered and evaluated via computer-aided or digital media. <sup>3</sup>The authenticity and integrity of the examination results shall be verified. <sup>4</sup>Automatically calculated evaluations of examination achievements shall be verified by one examiner at the request of the examinee or two examiners in case of a failed examination.

### Section 20 Evaluation of Examinations, Final Grade

(1) The evaluation of individual examinations shall be expressed by the examiners with the following ratings and grades:

<b>Sehr gut (very good)</b>	= (1.0 or 1.3)	an outstanding achievement
<b>Gut (good)</b>	= (1.7 or 2.0 or 2.3)	an achievement that exceeds the average requirements considerably
<b>befriedigend (satisfactory)</b>	= (2.7 or 3.0 or 3.3)	an achievement that fulfils average requirements
<b>ausreichend (sufficient)</b>	= (3.7 or 4.0)	an achievement that fulfils the requirements despite flaws
<b>Nicht ausreichend (unsatisfactory)</b>	= (4.3 or 4.7 or 5.0)	an achievement that no longer fulfils requirements due to considerable flaws

(2) <sup>1</sup>An examination (Section 6 [2]) shall have been passed if it has received at least the grade 'ausreichend' (sufficient). <sup>2</sup>For ungraded examinations (Section 6 [3][4]) the rating shall be 'mit Erfolg teilgenommen' (successfully completed) or 'nicht mit Erfolg teilgenommen' (not successfully completed). <sup>3</sup>Except where otherwise stipulated according to Paragraph 11, a module examination shall have been passed when all partial achievements have been passed. <sup>4</sup> If an examination has several examiners or several partial achievements, the total grade shall be calculated from the arithmetic average of the individual grades. <sup>5</sup>Two decimal places shall be shown in the calculation of the grade; further decimal places shall be omitted without being rounded.

(3) <sup>1</sup>Multiple choice examinations shall be evaluated as follows: <sup>2</sup>Students who answer the required minimum of examination questions according to Section 17 (4)(1) correctly shall receive the grade

1.0 (sehr gut/very good) if at least 75 percent of the remaining questions were answered correctly,

2.0 (gut/good) if at least 50 percent but less than 75 percent of the remaining questions were answered correctly,

3.0 (befriedigend/satisfactory) if at least 25 percent but less than 50 percent of the remaining questions were answered correctly,

4.0 (ausreichend/sufficient) if no or less than 25 percent of the remaining questions were answered correctly.

<sup>3</sup>The grades can be increased or decreased by increments of 0.3 according to the percentage; the grade 0.7 shall not be awarded. <sup>4</sup>Students who do not achieve the required minimum shall receive the grade 5.0. <sup>5</sup>Sentence 3 notwithstanding, the grades 4.3 and 4.7 may be awarded in cases in which examinations according to Section 17 (5) partly take the form of a multiple choice examination.

(4) <sup>1</sup>The preliminary examination (GOP) shall have been passed if the required modules for the first two semesters stipulated in Section 32 have been passed.

(5) <sup>1</sup>The overall grade of the Bachelor's examination, the Master's examination and the modules shall be as follows:

at an average of up to 1.50 = sehr gut (very good)

at an average between 1.50 and 2.50 = gut (good)

at an average between 2.50 and 3.50 = befriedigend (satisfactory)

at an average between 3.50 and 4.00 = ausreichend (sufficient)

<sup>2</sup>Students who achieve an overall Bachelor's or Master's grade up to and including 1.20 shall receive the assessment 'mit Auszeichnung' (with distinction).

(6) <sup>1</sup>The module grades shall be calculated from the average of the individual grades achieved in the examinations within the meaning of Section 6 (2)(3). <sup>2</sup>Two decimal places shall be shown in the calculation of the grade; further decimal places shall be omitted without being rounded. <sup>3</sup>If there is only one graded examination in a module, this grade shall be the module grade. <sup>4</sup>If no graded examination is conducted, the module shall be rated as 'erfolgreich teilgenommen' (successfully completed) or 'nicht erfolgreich teilgenommen' (not successfully completed).

(7) The preliminary examination (GOP) shall be ungraded.

(8) <sup>1</sup>The overall grade of the Bachelor's examination shall be calculated from all module grades achieved in the Bachelor's degree programme, the grade of the thesis and the Bachelor's colloquium, unless otherwise stated in Appendix 1; the individual grades shall be weighted according to their ECTS credits. <sup>2</sup>Two decimal places shall be shown in the final grade; further decimal points shall be omitted without being rounded.

(9) <sup>1</sup>The overall grade of the Bachelor's examination shall be calculated from all module grades achieved in the Bachelor's degree programme, the grade of the thesis and the Bachelor's colloquium, unless otherwise stated in **Appendix 1**; the individual grades shall be weighted according to their ECTS credits. <sup>2</sup>Paragraph 8 (2) shall apply accordingly.

(10) <sup>1</sup>If more modules were completed successfully than necessary for passing the Bachelor's or Master's examination, only those grades that are necessary to fulfil the conditions stipulated in Sections 31 and 37 shall be used in the calculation of the final grade. <sup>2</sup>If more than one combination of modules is possible, the combination which produces the better final grade shall be applied. <sup>3</sup>Other combinations can be credited upon the student's request.

(11) <sup>1</sup>**Appendix 1** may stipulate that individual module examinations shall be given half or double weighting or a weighting of zero in the calculation of the grade. <sup>2</sup>Compensatory measures for failed partial examinations

### **Section 21 Invalidity of Examinations**

(1) If fraudulent methods were used during the examination and if this only becomes known after the certificate has been awarded, the Examinations Committee may correct the grade after the fact and declare the examination as having been failed in part or in full.

(2) If the requirements for admission to the examination were not fulfilled while no fraudulent acts were committed wilfully and if this fact only became known after the certificate has been awarded, these circumstances shall be considered remedied by the passing of the examination.

(3) Students shall be given the opportunity to make a statement before a decision is taken.

(4) <sup>1</sup>The incorrect certificate shall be withdrawn; a new certificate shall be issued if applicable. <sup>2</sup>A decision according to Paragraph 1 and Paragraph 2 shall be excluded after a period of five years starting with the certificate's date of issue.

### **Section 22 Inspection of Examination Records**

(1) After the completion of the individual examination procedures, students shall on request be entitled to inspect their written examination papers, the corresponding reviews by the examiners, and the examination minutes.

(2) <sup>1</sup>The request shall be submitted to the chairperson of the Examinations Committee within one month of the notification of grades. <sup>2</sup>Students prevented from observing this deadline without any fault of their own shall be granted restitutio in integrum according to Section 32 of the Bavarian Administrative Procedures Act (BayVwVfG) as amended from time to time. <sup>3</sup>The chairperson of the Examinations Committee shall determine the time and date of the inspection.

### **Section 23 Report, Diploma Supplement, Transcript of Records, Certificate**

(1) Students who have successfully completed a degree programme shall receive a report, a transcript of records, a diploma supplement and a degree certificate, if possible within four weeks.

(2) <sup>1</sup>The report shall include the modules and module grades used in the calculation of the Bachelor's or Master's examination grade as well as the Bachelor's or Master's examination grade itself. <sup>2</sup>The transcript of records lists all successfully completed modules; the report and the transcript of records may be combined into one document. <sup>3</sup>The transcript of records and the diploma supplement shall be issued in English and German. <sup>4</sup>Further details on the diploma supplement, in particular regarding its con-

tent, shall be determined by the Examinations Committee. <sup>5</sup>Information not yet available to the Examinations Office must be submitted together with the required proof by the time of the degree programme's completion at the latest; otherwise this information may no longer be taken into consideration for the documents listed in Paragraph 1.

### **Section 24 Notification on Failed Examinations**

Upon request and submission of the required certificates as well as the de-registration certificate, students who have failed the Bachelor's or Master's examination for good shall receive a written confirmation showing that the examination was failed, which grades were achieved in the individual module examinations and which examination achievements are still missing.

### **Section 25 Adjustments to Examination Arrangements**

(1) <sup>1</sup>The examination procedure shall be adjusted to take into account the nature and extent of a student's disability. <sup>2</sup>Students with a doctor's certificate showing credibly that they are either in part or fully incapable of sitting the examination in the intended manner due to long-term or permanent physical disabilities shall be entitled to have the permission of the chairperson of the Examinations Committee to offset this disadvantage by a corresponding extension of their working time or by the examination process being structured differently.

(2) Paragraph 1 shall apply to pregnant students if the student submits a medical certificate, at least four weeks before the examination date, confirming that she will be at least 30 weeks pregnant by the examination date.

(3) Decisions according to Paragraph 1 and 2 shall only be made upon written request by the chairperson of the Examinations Committee.

## **II: Special Provisions**

### **Part I: Preliminary Examination (GOP) and Bachelor's Examination**

#### **1. General Provisions for the Bachelor's Degree Programme**

##### **Section 26 Admission Requirements for Examinations**

(1) <sup>1</sup>Students enrolled in a Bachelor's degree programme shall be deemed as admitted to the Bachelor's examination and the module examinations of which the Bachelor's examination consists, unless admission is to be refused. <sup>2</sup>If there are elective options for the modules to be completed for the Bachelor's examination, students shall only be admitted to the modules they choose by registering for the examination; the choice shall be binding and students may also choose several modules offered as an alternative. <sup>3</sup>Admission shall be refused if:

1. Requirements stipulated in the special provisions are not met or certificates are not submitted at all or not in due time
2. The preliminary examination (GOP) has been failed for good
3. The Bachelor's examination in the degree programme Materials Physics has been failed for good

4. De-registration of the student resulting in the revocation of the student's right to sit the examination is effected.

(2) If admission to the degree programme's examinations is to be refused, the decision shall be taken without delay, furnished with reasons and information on legal remedies available and announced to the student.

### **Section 27 Preliminary Examination (Grundlagen- und Orientierungsprüfung, GOP)**

(1) In the **preliminary examination (GOP)** (see Section 7 [1]) students are to prove that they

- can fulfil the requirements of an academic course of study in the chosen subject
- have acquired particularly the methodological skills required to continue their studies successfully

(2) The preliminary examination (GOP) shall be evaluated according to Section 32.

### **Section 28 Bachelor's Phase**

(1) <sup>1</sup>The Bachelor's phase shall serve as a phase for expansion and specialisation, conveying expertise that goes beyond the knowledge acquired in the orientation phase and that is necessary for early career entry. <sup>2</sup>It consists of the module examinations of the Bachelor's phase, the Bachelor's examination and a Bachelor's colloquium. <sup>3</sup>The Bachelor's examination shall have been passed if all required module examinations and the Bachelor's thesis module including the Bachelor's colloquium have been passed. <sup>4</sup>The Bachelor's colloquium is an oral examination that consists of a presentation on the Bachelor's thesis that lasts approximately 30 minutes and that is usually public, followed by a discussion.

(2) <sup>1</sup>The fifth semester of the degree programme is intended as a window for a semester abroad. <sup>2</sup>Achievements obtained abroad shall be accredited according to Section 12.

### **Section 29 Bachelor's Thesis**

(1) <sup>1</sup>The Bachelor's thesis is supposed to show that the student is capable of dealing with a problem from their field independently according to scientific methods within a set period and presenting the results in an appropriate form. <sup>2</sup>10 ECTS credits shall be awarded for the Bachelor's thesis.

(2) <sup>1</sup>Full-time lecturers employed at the Department of Physics (supervisors) shall be entitled to assign Bachelor's theses. <sup>2</sup>The Examinations Committee may grant and govern exceptions particularly for university lecturers who represent the elective materials science subject of the degree programme.

(3) <sup>1</sup>Students shall ensure that they are allocated a subject for their Bachelor's thesis within the periods set forth in Section 7, usually at the start of the lecture period of the sixth semester at the latest. <sup>2</sup>The subject and the date of its allocation shall be confirmed by the supervisor and presented to the Examinations Committee. <sup>3</sup>Should a student, despite a genuine effort to that end, not be allocated a subject, the chairperson of the Examinations Committee shall allocate a subject and a supervisor to the student upon request.

(4) <sup>1</sup>The time between the selection of a subject and the submission of the Bachelor's thesis (standard period for work on the thesis including maximal extension period) shall not exceed four months. <sup>2</sup>The scope of the subject shall be such that the workload for the Bachelor's thesis and the preparation of the Bachelor's colloquium does not exceed a total 450 hours and students are able to complete the Bachelor's thesis within the standard period. <sup>3</sup>The standard period for thesis work shall be three months and may be extended by a maximum of one month in justified, exceptional cases. <sup>4</sup>If a student submits a doctor's certificate proving that they are incapable of working on the thesis, the period for thesis work shall be held in abeyance. <sup>2</sup>Upon the student's written request and with the supervisor's agreement, the chairperson of the Examinations Committee may interrupt the period for thesis work if other valid reasons beyond the student's control are given.

(5) The subject of the Bachelor's thesis may only be returned once and with good reason and the approval of the chairperson of the Examinations Committee within the first two weeks of the period for thesis work.

(6) <sup>1</sup>The Bachelor's thesis may be written in English on the student's request and with the supervisor's approval. <sup>2</sup>The chairperson of the Examinations Committee shall decide whether to grant the student's request.

(7) One bound copy and one electronic, machine-readable copy each shall be submitted to the supervisor and the library of the Department of Physics ("Gruppenbibliothek Physik"); confirmations of these submissions and a copy of the title page shall be submitted to the Examinations Office.

(8) <sup>1</sup>The thesis shall be evaluated by two examiners within four weeks of submission. <sup>2</sup>The person who allocated the subject shall generally be the first reviewer. <sup>3</sup>If the supervisor of the thesis is not a member of the Department of Physics, the second reviewer shall be a member of the Department of Physics.

(9) <sup>1</sup>The thesis shall be accepted if it receives at least the grade 'ausreichend' (sufficient) from both reviewers. <sup>2</sup>It shall be rejected if it receives the grade 'nicht ausreichend' (unsatisfactory) from both reviewers. <sup>3</sup>If a reviewer grades the thesis as 'nicht ausreichend' (unsatisfactory) and the other reviewer grades it at least as 'ausreichend' (sufficient), the Examinations Committee shall effect a third review and grading by an examiner according to Section 9. <sup>4</sup>If the third grade is also 'nicht ausreichend' (unsatisfactory), this shall be the grade the thesis receives; otherwise the grade shall be the lower of the two grades that are at least 'ausreichend' (sufficient).

(10) <sup>1</sup>If the thesis has been accepted according to Section 9 (1) and if the evaluations of the two reviewers are no more than two numerical grades apart, the grade of the thesis shall be the arithmetic average of the grades from the two reviewers; two decimal places shall be shown in the final thesis grade. <sup>2</sup>If the grades of the two reviewers are three or more numerical grades apart, the chairperson of the Examinations Committee shall appoint a third reviewer; in this case the Examinations Committee shall determine the grade in consideration of the reviews it received and according to Section 20 (1), or as the average grade from the reviewers' grades; Sentence 1 shall apply accordingly.

(11) <sup>1</sup>If the thesis is rejected or if it is regarded as rejected, it may be repeated once; a second repetition or revision shall not be permitted. <sup>2</sup>The student shall ensure that they receive a new subject for the repetition of the Bachelor's thesis within two months fol-

lowing the announcement of the rejection; otherwise the Bachelor's thesis shall be regarded as having been failed for good; Paragraph 3 (3) shall apply accordingly.  
<sup>3</sup>Paragraphs 1 to 10 shall apply accordingly to the repetition.

(12) Provisions that deviate from Paragraphs 1–11 may be agreed upon within the framework of dual degree agreements or degree programme co-operations.

### Section 30 Resit Examinations

(1) <sup>1</sup>With the exception of the modules of the preliminary examination (GOP), the Bachelor's thesis and colloquium, every failed module examination may be resat twice. <sup>2</sup>The resit examination shall be limited to the failed examination or course achievement. <sup>3</sup>The module examinations of the preliminary examination (GOP) may only be resat once. <sup>4</sup>Resit examinations shall take place at the earliest possible date; the Department must offer such a date within six months. <sup>5</sup>The resit period shall not be interrupted by de-registration or leave. <sup>6</sup>Students who fail an examination shall be considered as registered until their next attempt; withdrawal from an examination according to Section 10 (3) shall be excluded. <sup>7</sup>If a student misses the resit examination or the resit period is not observed, the examination shall be deemed to have been failed unless the Examinations Committee grants the student a respite due to special reasons beyond the student's control. <sup>8</sup>The provisions regarding maternity protection and parental leave (Section 7 (2)) shall apply.

(2) <sup>1</sup>Voluntarily resitting a passed examination of the same module shall not be permitted. <sup>2</sup>Alternative modules may be attended and completed instead of failed modules within the examination periods set forth in Section 7.

(3) Subject to the special provisions in Section 32, students may choose in which order they complete the modules.

## 2. Examination Matter in the Bachelor's Degree Programme

### Section 31 Examination Matter and Degree Programme Structure

(1) <sup>1</sup>Students shall successfully complete modules from the **compulsory modules** of the Bachelor's degree programme worth a minimum of 142.5 ECTS credits to pass the Bachelor's examination. <sup>2</sup>These modules are:

- (a) the modules *Experimentalphysik 1+2*, *Experimentalphysik für Materialphysiker 3* and *Experimentalphysik für Studierende der Materialphysik 4*
- (b) *Grundpraktikum 1 and 2*
- (c) the modules *Werkstoffe: Grundlagen (MWT-B9) und Allg. und Anorganische Chemie (CHE-1)*
- (d) *Theoretische Physik für Studierende der Materialphysik 1, 2 and 3*
- (e) the laboratories *Physikalisches Experimentieren 1 and 2*;
- (f) at least two of the modules *Mathematik B1–B3*;
- (g) *Computerphysik und numerische Methoden*;
- (h) *Kolloquium Experimentalphysik*;
- (i) *Materialphysikalisches Seminar*;
- (j) *the Bachelor's thesis*;
- (k) *the Bachelor's colloquium*

(2) <sup>1</sup>The **elective subjects** are divided into the **elective physics subjects** and the **elective materials science subjects**. <sup>2</sup>Students shall successfully complete modules from the elective subjects worth at least 25 ECTS credits.

(3) <sup>1</sup>In the **elective physics subjects**, students shall acquire specialised and interdisciplinary knowledge on topics of their choosing from the field of materials physics. <sup>2</sup>Students shall successfully complete modules worth at least 10 ECTS credits. <sup>3</sup>The modules that are part of the elective physics subjects can be found in the module catalogue. <sup>4</sup>The scope and ECTS credits of individual modules may deviate from the data given in **Appendix 1**.

(4) <sup>1</sup>Students shall successfully complete modules from the **elective materials physics subjects** worth at least 15 ECTS credits. <sup>2</sup>In this area, students shall choose materials physics-oriented courses/lectures from the course catalogue of the Department of Chemistry and the Faculty of Engineering. <sup>3</sup>A laboratory shall be among the chosen modules. <sup>4</sup>The scope and ECTS credits of individual modules may deviate from the data given in Appendix 1. <sup>5</sup>The Examinations Committee may admit further elective materials science subjects that are associated with materials physics.

(5) <sup>1</sup>In addition to the non-physics elective subjects, students shall complete modules that do not belong to the Materials Physics degree programme worth at least 2.5 ECTS credits from the **Core Skills** area (module Soft Skills) in the University's course catalogue. <sup>2</sup>The Examinations Committee may accept courses as core skills that are not from the University's course catalogue upon written request; the request shall state reasons. <sup>3</sup>Modules from the Core Skills area shall be ungraded.

(6) <sup>1</sup>The minimum of 170 ECTS credits required according to Paragraphs 1, 2 and 5 shall be complemented by the 180 ECTS credits necessary for completion of the Bachelor's degree through additional, freely chosen modules from the compulsory and elective subjects or from the Core Skills area (**free area**). <sup>2</sup>A maximum of half the complementing credits may be from the Core Skills area.

(7) See **Appendix 2** for the study plan.

### **Section 32 Preliminary Examination (Grundlagen- und Orientierungsprüfung, GOP)**

<sup>1</sup>In order to successfully pass the preliminary examination (GOP), students must obtain a minimum of 30 ECTS credits from the modules listed for the first two subject semesters in Appendix 2 within the period set forth in Section 7 (1), particularly from the modules:

- a) *Grundpraktikum 1*;
- b) at least one of the three modules *Mathematik B1*, *Mathematik B2* and *Theoretische Physik 1*.

<sup>2</sup>The module *Soft Skills* may not be accredited for the preliminary examination (GOP).

## **Part II: Master's Examination**

### **1. General Provisions for the Master's Degree Programme**

#### **Section 33 Qualification for a Master's Degree Programme**

(1) <sup>1</sup>Students shall have completed a relevant degree with above-average success to qualify for the Master's degree programme. <sup>2</sup>Certificates for the following may be submitted as proof of qualification:

1. A Bachelor's examination according to these examination regulations or

2. A German or non-German university degree that is equivalent to the qualification specified in point 1  
and
3. A pass in the qualification assessment process according to Appendix 4.

(2) <sup>1</sup>Applicants are to belong to the best 50 percent of their class or shall have completed the degree programme in question with a final grade of at least 2.5 ('gut'; good). <sup>2</sup>Degrees that were graded according to a different grading system are to have received at least a rating equivalent to the grade 'gut' (good).

(3) <sup>1</sup>Bachelor's degrees in physics and materials physics shall generally be considered equivalent. <sup>2</sup>If there are significant differences which can be substituted, the Admissions Committee may grant admission under the condition that proof of further achievements worth up to a maximum of 20 ECTS credits and to be determined by the Admissions Committee be submitted within one year of taking up studies for a Master's degree.

(4) Section 26 shall apply accordingly.

### **Section 34 Master's Examination**

(1) <sup>1</sup>The Master's examination shall consist of the required examinations and the Master's thesis. <sup>2</sup>The Master's thesis shall be complemented with an oral examination (Master's colloquium). <sup>3</sup>The Master's examination shall have been passed if all required module examinations, the Master's thesis module and the Master's colloquium module have been passed.

(2) <sup>1</sup>**Appendix 3** shall specify subjects, type and scope of the Master's examination. <sup>2</sup>Modules that were the subject of a Bachelor's examination may not be included in the Master's examination. <sup>3</sup>The Examinations Committee may grant exceptions.

### **Section 35 Research Phase and Master's Thesis**

(1) <sup>1</sup>The Master's thesis is an examination paper that concludes the Master's degree. <sup>2</sup>The Master's thesis shall show that the student is capable of dealing with a problem from the field of materials physics independently, with scientific methods and within a set period. <sup>3</sup>The Master's thesis may not to any significant degree be identical to a previously submitted Diplom, Bachelor's or Master's thesis, or dissertation. <sup>4</sup>Students are awarded 25 ECTS credits for the Master's thesis. <sup>5</sup>The work on the Master's thesis is preceded by three months of subject specialisation and three months of project planning that prepare the student on the subject of the thesis. <sup>6</sup>Subject specialisation, project planning, Master's thesis and Master's colloquium together make up the year-long research phase.

(2) <sup>1</sup>Students shall ensure that they are allocated a project for the research phase in time to observe the deadlines set forth in Section 7. <sup>2</sup>Should a student, despite a genuine effort to that end, not be allocated a subject, the chairperson of the Examinations Committee shall allocate a subject and a supervisor to the student upon request.

(3) <sup>1</sup>The supervisor shall be a university lecturer employed at the Department of Physics as their main occupation. <sup>2</sup>The Examinations Committee may grant and govern exceptions particularly for university lecturers who represent the non-physics elective subject of the degree programme.

(4) <sup>1</sup>After successfully completing the subject specialisation and project planning stages, students shall be allocated a subject for their Master's thesis. <sup>2</sup>The subject and the date of its allocation shall be confirmed by the supervisor and presented to the Examinations Committee. <sup>3</sup>The time between the selection of a subject and the submission of the Master's thesis shall not exceed six months; the scope of the subject must be such that it can be dealt with within this period. <sup>4</sup>The Examinations Committee shall have the right to extend the period for the Master's thesis by a maximum of three months upon receiving a justified request. <sup>5</sup>Section 29 (4)(4) and (4)(5) shall apply accordingly.

(5) <sup>1</sup>The subject may only be returned once and with good reason and with the approval of the chairperson of the Examinations Committee. <sup>2</sup>Otherwise the Master's thesis shall be graded 'nicht ausreichend' (unsatisfactory; 5.0) when the subject is returned; it shall be regarded as rejected.

(6) <sup>1</sup>The Master's thesis may be written in German on the student's request and with the supervisor's approval. <sup>2</sup>The chairperson of the Examinations Committee shall decide whether to grant the student's request. <sup>3</sup>The Master's thesis shall contain a summary of results at the end. <sup>4</sup>The design of the title page shall follow the template provided by the Examinations Committee. <sup>5</sup>The Master's thesis shall include a declaration by the student confirming that the thesis is an original work and that no other sources or materials than the ones listed were used. <sup>6</sup>One bound copy and one electronic, machine-readable copy each shall be submitted to the supervisor and the library of the Department of Physics ("Gruppenbibliothek Physik"); confirmations of these submissions including the submission date and a copy of the title page shall be submitted to the Examinations Office.

(7) Section 29 (8)—(11) shall apply accordingly.

(8) <sup>1</sup>If the Master's thesis is rejected or if it is regarded as rejected, it may be repeated once; a second repetition shall not be permitted. <sup>2</sup>The student shall ensure that they receive a new subject for the repetition of the Master's thesis within two months following the announcement of the rejection; otherwise the Master's thesis shall be regarded as having been failed for good; Paragraph 2 (2) shall apply accordingly. <sup>3</sup>Paragraphs 4–7 shall apply accordingly for the repetition of the Master's thesis; returning the subject shall not be permitted.

(9) Provisions that deviate from Paragraph 1–8 may be agreed upon within the framework of dual degree agreements or degree programme co-operations.

### **Section 36 Resit Examinations**

For resit examinations Section 30 shall apply accordingly.

## **2. Examination Matter in the Master's Degree Programme**

### **Section 37 Examination Matter and Degree Programme Structure**

(1) <sup>1</sup>During the first two semesters ('focus phase') of the Master's degree programme, students shall acquire specialised knowledge in chosen areas of materials physics. <sup>2</sup>In semesters 3 and 4 ('research phase'), students shall carry out a research project independently, process its results in the Master's thesis and present them in the Master's colloquium. <sup>3</sup>The module Specialisation phase and Project planning and preparation are intended to prepare students for the Master's thesis; their content reflects this.

(2) <sup>1</sup>Students shall successfully complete modules from the **compulsory modules** of the Master's degree programme worth a minimum of 105 ECTS credits to pass the Master's examination. <sup>2</sup>These modules are:

- (a) at least one of the modules *Theoretical physics: solid state physics* or *Advanced theoretical physics*
- (b) *Experimental physics of modern materials Part A*
- (c) *Advanced lab courses and projects 1 and 2*
- (d) *Advanced course in experimental solid state physics*
- (e) *Seminar in materials physics*
- (f) *Specialisation phase*
- (g) *Project planning and preparation*
- (h) *Master's thesis*
- (i) *Master's colloquium*

(3) <sup>1</sup>The **elective subjects** are divided into the **elective materials physics subjects** and the **non-physics elective subjects**. <sup>2</sup>Students shall successfully complete modules from the elective subjects worth at least 15 ECTS credits.

(4) <sup>1</sup>In the **elective materials physics subjects**, students acquire specialised and interdisciplinary knowledge in experimental or theoretical subjects of their choice; they shall successfully complete modules worth 10 ECTS credits. <sup>2</sup>The modules that are part of the elective materials physics subjects can be found in the module catalogue. <sup>3</sup>The scope and ECTS credits of individual modules may deviate from the data given in **Appendix 3**.

(5) <sup>1</sup>In the **non-physics elective subjects**, students acquire knowledge in a non-physics subject that is closely related to materials physics or deepen existing knowledge. <sup>2</sup>Students shall successfully complete modules worth at least 5 ECTS credits.

(6) See **Appendix 3** for the structure of the study plan.

### III. Final Provisions

#### Section 38 Legal Validity

<sup>1</sup>These examination regulations shall come into effect on 01 October 2009. <sup>2</sup>They shall apply to students starting a Materials Physics degree programme from the winter semester 2009/10 onwards.

<sup>3</sup>The amendments of 29 September 2010 shall come into effect on the day after their publication. <sup>4</sup>They shall apply to students starting their studies from the winter semester 2010/2011 onwards. <sup>5</sup>All students who started their studies in the winter semester 2009/2010 may choose whether they want to study under the new or the old examination regulations. <sup>6</sup>Students must declare their choice to the Examinations Office by 10 November 2010. <sup>7</sup>If no choice is declared, the study plan before the winter semester 2010/2011 shall apply. <sup>8</sup>Modules and examinations according to the examination regulations before these amendments that have been replaced with these amendments but continue to be offered for current cohorts shall be offered for the last time in the winter semester 2013/2014.

## Appendices

### Appendix 1:

Calculation of overall grades in the Bachelor's and Master's examinations according to Section 20

(1) In the calculation of final Bachelor's grades the module grades of the modules listed as part of the first two semesters in Table 1 (Appendix 2) are weighted with zero, the module grades of the modules *Kolloquium Experimentalphysik*, *Bachelorarbeit* and *Bachelorkolloquium* are given twice the weighting of their ECTS credits, and all other module grades are given the single weighting of their ECTS credits.

(2) In the calculation of the overall grade of the Master's examination, the module grades of the Master's thesis and Master's colloquium modules shall have the double weighting of their ECTS credits; the modules *Specialisation phase* and *Project planning and preparation* shall be weighted with zero; all other module grades shall receive single weighting according to their ECTS credits.

(3) <sup>1</sup>Section 20 (2)(3) notwithstanding, a module with several partial examinations can be declared passed if the overall grade calculated from the grades of the partial examinations is at least 'ausreichend' (sufficient; 4.0). <sup>2</sup>**Appendix 2** and the module catalogue shall govern this in more detail.

## Appendix 2:

<sup>1</sup>The Bachelor's degree programme in Materials Physics generally comprises the modules listed in the table below. <sup>2</sup>Students shall successfully complete a selection of these according to Section 31. <sup>3</sup>The elective and core skills modules may deviate in ECTS credits, SWS and allocation to semesters from the table below; the Examinations Committee may also admit ungraded modules for the elective subjects.

Module Names and Study Plan BSc Materials Physics							
Module name	Abbreviation	ECTS credits	SWS <sup>(1)</sup>	Area <sup>(2)</sup>	Examination <sup>(3)</sup>	Weighting <sup>(4)</sup>	Note
<b>1st semester</b>							
Experimentalphysik 1+2, Teil 1: Mechanik <sup>(a)</sup>	EP-12		4L+2T	C			Part 2 in the 2nd semester
Rechenmethoden der Physik, Teil 1 <sup>(a)</sup>	RMP		1L+1T	C	U		Optional; part 2 in the 2nd semester
Grundpraktikum 1, Teil 1 <sup>(a)</sup>	GP-1		2P+1T	C	U		Part 2 in the 2nd semester
Mathematik 1 für Studierende der Materialphysik	MMAT-B1	7.5	4L+2T	C	C	0	Portfolio examination: W90 and U (independent solving of tutorial exercises) 2 of the modules MMAT-B1, -B2, -B3 required
Werkstoffe: Grundlagen	MWT-B9	10	7L+2T	C	W 120	0	According to module B9 in the degree programme Materials Science and Engineering
Schlüsselqualifikationen	SQ	2.5	2	CS	U		
<b>2nd semester</b>							
Experimentalphysik 1+2, Teil 2: Wärmelehre und Elektrodynamik	EP-12	15	4L+2T	C	W 120	0	Part 1 in the 1st semester
Rechenmethoden der Physik, Teil 2	RMP	5	1L+1T	C	U		Optional; part 1 in the 1st semester
Grundpraktikum 1, Teil 2	GP-1	5	2P+1L	C	U		Part 1 in the 1st semester
Theoretische Physik 1: Mechanik	TP-1	10	4L+3T	C	W120	0	
Mathematik 2 für Studierende der Materialphysik	MMAT-B2	7.5	4L+2T	C	C	0	See MMAT-B1
<b>3rd semester</b>							
Experimentalphysik 3 für Studierende der Materialphysik: Atom- u. Molekülphysik	EP-MAT3	7.5	4L+2T	C	W90	1	
Grundpraktikum 2	GP-2	5	5P	C	U		
Theoretische Physik 2 für Studierende der Materialphysik: 'Quantentheorie'	TP-MAT2	7.5	3L+2T	C	W120	1	
Mathematik 3 für	MMAT-B3	7.5	4L+2T	C	C	1	See MMAT-B1

Studierende der Materialphysik							
Allg. und Anorganische Chemie f. Nebenfach	CHE-1	5	4L	C	S	1	
<b>4th semester</b>							
Experimentalphysik 4 für Materialphysik: Festkörperphysik	EP-MAT4	7.5	4L+2T	C	W90	1	
Theoretische Physik 3 für Studierende der Materialphysik: Statistische Physik und Thermodynamik	TP-MAT3	7.5	3L+2T	C	W120	1	
Physikalisches Experimentieren 1: Elektronikpraktikum	PE-1	10	1L+5P	C	PE	1	Portfolio examination: presentation of the evaluation of an experiment (50%) and final examination (50%)
Kolloquium Experimentalphysik <sup>(b)</sup>	EP-MAT-K	7.5	-	C	O45	1	
Materialwissenschaftliches Wahlfach	MW	5		E	S	1	SWS according to subject offering module
<b>5th semester</b>							
Physikalisches Experimentieren 2 für Studierende der Materialphysik	PE-MAT2	5	5P	C	PE	1	Conduction of 5 experiments. Preparation/conduction and evaluation/report are assessed. The overall grade is based on the arithmetic average of the 10 individual grades.
Computerphysik und numerische Methoden	CPNM	5	42L+3T	C	W90	1	
Physikalisches Wahlfach für Studierende der Materialphysik	PW-MAT	5	2L+1T	E	S	1	
Materialwissenschaftliches Wahlfach	MW	10		E	S	1	SWS according to subject offering module
<b>6th semester</b>							
Physikalisches Wahlfach für Studierende der Materialphysik	PW-MAT	5	2L+1T	E	S	1	
Physikalisches Seminar für Studierende der Materialphysik	PS-MAT	5	2S	E	P45	1	Presentation time includes discussion
Bachelor's thesis	BA-1	10	-	C	T	2	
Bachelor's colloquium	BA-2	5	-	C	P30	2	Generally a presentation of the results of the Bachelor's thesis in front of an audience <sup>(c)</sup> with subsequent discussion; the time stated is for the presentation not including the discussion.

(1) SWS = semester hours per week, L = lecture, T = tutorial, P = laboratory/project, S = seminar

(2) C = compulsory subjects, E = elective subjects, CS = core skills

- (3) Type and length of examination: W = written examination; O = oral examination; P = presentation; PE = portfolio examination; T = final thesis; U = ungraded course achievement; S = according to the subject offering the module (information available in the course and module catalogues). The numbers indicate the length of the examination in minutes. The composition of portfolio examinations is described in the 'Note' column.
- (4) Weighting of the modules in the calculation of the Bachelor's final grade according to **Appendix 1**, Paragraph 1. Weighting 0 means that the module in question does not count towards the Bachelor's final grade.
- (a) Modules without ECTS credits and examination types listed are completed in the following semester.
- (b) *Kolloquium Experimentelle Physik* is usually held outside the lecture period.
- (c) The audience may be restricted if necessary due to issues of patent law or other obligations to maintain confidentiality.

### Appendix 3:

<sup>1</sup>The Master's degree programme in Materials Physics generally comprises the modules listed in the table below. <sup>2</sup>Students shall successfully complete a selection of these according to Section 37. <sup>3</sup>**Appendix 2** Sentence 3 shall apply accordingly. <sup>4</sup>The degree programme is structured in such a way that it can be started in the summer semester or in the winter semester.

Module Names and Study Plan MSc Materials Physics							
Se me ste r	Module	ECTS credit s	SWS <sup>(1)</sup>	Area <sup>(2)</sup>	Exami nation <sup>(3)</sup>	Weighting <sup>(4)</sup>	Note
1	TFP-MAT Theoretical physics: solid state physics	10	4L+3T	C	W120	1	
	EPM-MAT Experimental physics of modern materials Part A	5	2L+1P	C	W60	1	
	EPM-MAT Experimental physics of modern materials Part B	5	2L+1T	C	W60	1	
	PWM-1-MAT Materials physics elective course	5	2L+1T	E	S	1	
	WP-1-MAT Advanced lab courses and projects 1	5	P	E	S	1	
	NWM-1-MAT Elective course (chemistry or materials science, not physics)	5	4	E	S	1	One of the NWM-MAT modules required; type of examination according to the chosen module
2	TV-MAT Advanced theoretical physics	10	4L+3T	C	W120	1	One of the modules TFP-1-MAT or TV-MAT required
	EV-MAT Advanced course in experimental solid state physics	10	4L+3T	C	W120	1	
	PWM-2-MAT (Materials) Physics elective course	5	2L+1T	E	S	1	
	WP-2-MAT Advanced lab courses and projects 2	5	P	E	S	1	
	NWM-2-MAT Elective course (chemistry or materials science, not physics)	5		E	S	1	One of the NWM-MAT modules required; type of examination according to the chosen module
	PSM-MAT Seminar in materials physics	5	S	E	P45	1	Presentation time includes discussion
3	FO-1-MAT: Specialisation phase	15	5P	C	U	0	
	FO-2-MAT: Project planning and preparation	15	5P	C	U	0	
4	FO-3-MAT: Master's thesis	25		C	T	2	Work on scientific objective and thesis

	FO-4-MAT: Master's colloquium	5		C	P45	2	Presentation of the results from the research phase with subsequent discussion; the time stated is for the presentation not including the discussion.

(1) SWS = semester hours per week, L = lecture, T = tutorial, P = laboratory/project, S = seminar

(2) C = compulsory subjects, E = elective subjects

(3) Type and length of examination: W = written examination; P = presentation; T = final thesis; U = ungraded course achievement; S = according to the subject offering the module (information available in the course and module catalogues). The numbers indicate the length of the examination in minutes.

(4) Weighting of the modules in the calculation of the Master's final grade according to Appendix 1, Paragraph 2. Weighting 0 means that the module in question does not count towards the Master's final grade.

## Appendix 4

### Qualification Assessment Process According to Section 33

(1) <sup>1</sup>The qualification assessment process shall be held as needed but at least once per semester. <sup>2</sup>In the interest of facilitating a speedy continuation of studies, those who are about to complete their Bachelor's degree programme shall also be entitled to participate in this qualification assessment process.

(2) <sup>1</sup>Applications for the qualification assessment process must be submitted to the University's Master's Office by 15 July for the winter semester and 15 January for the summer semester. <sup>2</sup>The application shall contain:

1. University degree certificate (Section 33 [1]) or, in the case of Paragraph 1 (2) a transcript of records
2. In the case of Paragraph 1 (2), a confirmation that the applicant has been admitted to the examinations concluding the Bachelor's degree programme within the current examination period; for Bachelor's students according to these examination regulations, the registration for the Bachelor's thesis shall suffice
3. An application form
4. CV in German or English
5. proof of English language proficiency on the CEFR (Common European Framework of Reference for Languages) level "B2 – Vantage or upper intermediate"; six years of English lessons at a German Gymnasium shall also suffice as proof; applicants whose native language is English need not submit any such proof

<sup>3</sup>An extended deadline for later submission of the documents described in Paragraph 2 (2) may be set.

(3) <sup>1</sup>Applications not submitted in due form or time shall lead to exclusion from the qualification assessment process.

(4) <sup>1</sup>The qualification assessment process shall consist of a preselection and a selection interview with the admitted applicants. <sup>2</sup>The Admissions Committee shall be entitled to task individual members with the preselection.

(5) <sup>1</sup>Particularly qualified applicants shall be admitted to the Master's degree programme based solely on the preselection. <sup>2</sup>In particular, applicants shall be considered as particularly qualified if they have a degree according to Section 33 (1) with a grade of 2.5 ('gut'/good) or better that is equivalent to the degree according to Section 33 (1)(1).

(6) <sup>1</sup>Applicants who cannot be admitted to the Master's degree programme in the course of the preselection and whose previous average grade is between 2.51 and 3.00 shall be invited to a selection interview; the remaining applicants shall not be admitted to the selection interview and shall receive a rejection notification including reasons. <sup>2</sup>The selection interview shall demonstrate that the applicant possesses the required technical and methodological expertise and can be expected to carry out independent scientific work in a more research-oriented degree programme. <sup>3</sup>The following criteria, weighted as indicated, shall be assessed in the selection interview:

- Sound knowledge of the concepts of energy, momentum, angular momentum and physical conservation laws, as well as the ability to apply mathematical methods to describe phenomena in physics (20%)
- Sound knowledge of the properties of atoms, molecules, solid state structures and general many-body systems, how to describe them theoretically and suitable experimental methods (20%)

- Ability to apply concepts in materials physics to common materials (20%)
- Ability to conduct an academic discussion of a previously agreed upon topic in materials physics based on the applicant's experience (40%)

<sup>4</sup>The selection interview shall have a duration of approximately 30 minutes. <sup>5</sup>With the applicant's consent, the selection interview may also be carried out via video call.

<sup>6</sup>Applicants shall be notified of the date of the interview at least one week in advance.

<sup>7</sup>The selection interview shall be carried out by at least two professors from the Department of Physics (Admission Panel) appointed by the Admissions Committee.

<sup>8</sup>The selection interview shall be rated as 'geeignet' (qualified) or 'nicht geeignet' (not qualified). <sup>9</sup>If the applicant passes the selection interview, the Admissions Committee shall decide at the Admission Panel's recommendation whether admission shall be granted with conditions according to Section 33 (3)(3). <sup>10</sup>Minutes of the selection interview shall be produced.

(7) Applicants not admitted to the Master's degree programme after the qualification assessment process shall receive a rejection notification including reasons and information on the legal remedies available; taking part in the qualification assessment process more than once shall be permitted.

(8) Applicants shall bear their own costs incurred as a result of taking part in the selection interview themselves.