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Examination and Study Regulations

for the

International Master´s (M.Sc.)

Degree Program

in Advanced Materials Analysis

This is a translation of the regulations, which is not legally binding. For legal purposes, please refer to the original German document.

Examination Regulations for the Master's Degree Program in Advanced Materials Analysis at the Technische Universität Bergakademie Freiberg

As per § 13 sub-paragraph 4, in conjunction with § 36 sub-paragraph 1 clause 2 and § 35 of the Higher Education Act of the Free State of Saxony (SächsHSG) of May 31st 2023 (SächsGVBl. p. 329) (most recently changed by Act from January 31st, 2024, SächsGVBI. p. 83), the Faculty Council of the Faculty of Chemistry, Physics and Biosciences and the Faculty Council of the Faculty of Materials Science and Technology at the Technische Universität Bergakademie Freiberg, in consultation with the Senate, agreed on the following regulations for the Master's degree program in Advanced Materials Analysis:

Comment on language usage: references to persons refer to both genders.

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§ 1
Purpose of the Master's Examination

The Master's examination should ascertain that the candidates

- have deepened and broadened their knowledge that they acquired within their first (bachelor) university degree;
- possess the ability to work independently, to apply scientific methods for solving complex problems, to develop the scientific methods further, and to critically evaluate the current knowledge and the results of their own work;
- are able to identify new problems and scientific developments, and incorporate them into their work and
- are able to organize and lead complex projects, as based on their interdisciplinary and social skills.

§ 2
Terms and Definitions

(1) Modules, as defined by these regulations, are subject areas with defined topics and time budget, which form self-contained units that can be examined and for which credit points can be awarded. Modules can contain various teaching and learning methods, such as lectures, tutorials, practical courses (laboratories, field work, internships etc.), assignments and self-study. A module usually takes one semester. In exceptional cases, it can be extended to two or three semesters. Modules are finished by module examinations. For successfully completed modules, credit points (CP) are awarded. There are three kind of modules:

1. Obligatory modules (Pflichtmodule, PM), which are compulsory for students.
2. Elective modules (Wahlpflichtmodule, WPM), which are modules specified in the Examinations Schedule (s. Appendix) that are to be chosen to a certain amount.
3. Optional modules (Freie Wahlmodule, FWM), which are modules that can be chosen from the entire list of the modules offered at the TU Bergakademie Freiberg.

(2) A credit point is a unit of the expected student's workload. One credit point corresponds to a workload of 30 hours. The workload includes the time scheduled for lectures, tutorials and practical courses, and the time for self-study. The expected overall workload of a full-time student in one academic year is 1800 hours. Still, this workload does not guarantee passing examination.

(3) Module examinations are examinations that complete the modules.

(4) Examinations (§ 7) describe the specific examination events. Examinations are assessed and usually graded (§ 11).

(5) Course achievements are achievements within the courses. They are attained through seminar work, research papers, reports, written or oral tests or can have other forms. They are assessed but not necessarily graded.

(6) Prerequisites are course achievement that are a precondition for taking a module examination. A module examination can only be taken, if the prerequisites are fulfilled.

Prerequisites are assessed with regard to the fulfilment of requirements but not necessarily graded. If they are graded, then the grade does not influence the module grade. There is no limit regarding the number of attempts.

§ 3
Prescribed Period of Study and Extent

(1) The regular time of study (the time, in which the study is expected to be finished) is 4 semesters. This includes time for study and examinations including the Master's thesis and the colloquium (thesis defence) (§19).

(2) The total workload of the module examinations and of the Master's thesis including the colloquium (thesis defense) necessary for graduating on the Master's program equates to 120 credit points (CP).

(3) Credit points can be achieved in obligatory modules, elective modules and optional modules that are intended for this Master’s program. Modules from Bachelor courses can be taken as elective modules or as optional modules, if they differ from the courses that the students listened during their previous study and as long as these modules do not exceed 20 % of the total amount of CPs of the Master's degree program. Still, the modules from Bachelor courses can always be taken as additional modules (§ 20).

§ 4
Examination Structure

(1) The Master's examination consists of module examinations and the Master's thesis and colloquium (§ 19 sub-paragraph 10).

(2) Module examinations consist of one or more examination in a module. Module examinations are taken throughout studies.

§ 5
Deadlines

(1) The Master's examination should be taken during the regular study time. The latest date is within four semesters after the regular study time. The details are regulated in § 13 sub-paragraph 3.

(2) Module examinations can be taken, after the necessary admission requirements (§ 6) were achieved. Module examinations should be taken until the end of the semester, in which the modules were taught.

(3) The candidates are informed early about the prerequisites for examinations, about the arrangement of the examinations including the dates, on which they will be offered, and (after the examinations) about the results. The dates for written examinations are announced by the Student Services Office. The results are available in the self-service portal.

(4) Deadlines for issuing the topics of the Master’s thesis and the deadlines for the Master’s thesis submission are regulated in § 19 sub-paragraphs 3 and 6.

(5) It is assumed that students acquire an average of 30 credit points in each semester. Students, who have not passed any module examination until the beginning of the third semester, should consult a Student Advisory Service in the third semester.

(6) During the maternity leave, the deadlines are automatically postponed in accordance with § 3 of the Maternity Protection Act. In the case of parental leave (in accordance with the “Bundeselterngeld- und Elternzeitgesetz”), § 12 enrolment regulations of the TU Bergakademie Freiberg applies. Expectant mothers, parents of minors, disabled students and chronically ill students can make an application to the Examination Board for deadline extensions, as far as the student does not have a leave of absence for the same reason. For this, a doctor's certificate can be requested.

§ 6
General Admission Requirements

(1) A module examination can only be taken by a person, who

1. is registered as a student at the TU Bergakademie Freiberg,
2. has achieved the prerequisites and fulfilled the special admission requirements for the respective module and
3. has not finally failed the respective module examination.

Decisions on exceptions are made by the Examination Board.

(2) The issuing of a topic for the Master's thesis (§ 19 sub-paragraph 3) requires the candidate to be registered on the Master's degree program in Advanced Materials Analysis at the TU Bergakademie Freiberg and, in accordance with § 4 of the study regulations for this degree program, that the candidate have fulfilled, when necessary, requirements defined by the Examination Board.

(3) The students apply for admission for examinations in the Student Services Office. Application deadlines are announced timely. The Student Services Office verifies the existence of the admission requirements and compiles admission lists. The admission is announced by the Student Services Office through the Self-Service IT-Portal. Students are obligated to check the registration in the Self-Service IT-Portal. Before starting an examination, students have to identify themselves with a valid photo ID, e.g., student ID card, Identity card, or passport.

(4) If the candidates cannot provide evidence for prerequisites achieved in accordance with the valid study regulations for the respective enrolled course within the registration period for examination, they will be provisionally admitted for examination. Still, the evidence for prerequisites must be submitted at least two working days before the examination to the Student Services Office or directly to the examiner before the examination. The latter can be an online information from the Student Services Office.

(5) Admission to an examination is denied if

1. candidates do not fulfill the requirements set out in sub-paragraph 1 or the procedural regulations of sub-paragraphs 3 and 4,
2. the documentation is incomplete and the candidate is to blame for this,
3. candidates definitively failed a Master's examination in the same or, in accordance with federal state law, in a related degree program or are in a pending examination procedure for the examination in question or

4. candidates, in accordance with federal state law, have lost their examination entitlement due to exceeding deadlines for the registration for or taking of the examination.

(6) Along with the application for admission to the first examination, candidates must enclose a declaration

1. that they are familiar with these examination regulations and
2. of whether the requirements of sub-paragraph 5 N. 3 and 4 have been met.

§ 7
Types of Examinations

(1) Examinations are

1. oral examinations (§ 8),
2. written examinations (§ 9) and
3. alternative assessments (§ 10).

All types of examinations can be carried out as digital examinations, if the examination is appropriate for digital formats and if a non-discrimination of the candidates is ensured. The TU Bergakademie Freiberg can use help of external providers for carrying out digital examinations.

(2) If candidates can show credibly that they are, owing to long-lasting or permanent disability or illness or as a result of pregnancy or because they are the parent of a minor, unable to take examinations, partially or in their entirety or in the prescribed form or period, then they are requested in writing to take the examinations within an extended period or to take equivalent examinations in another form. This usually requires submission of a doctor's certificate. This applies accordingly to the course achievements, prerequisites and the Master's thesis including the colloquium.

(3) In general, English is the language used for coursework, course achievements, prerequisites and examinations. With the approval of the examination board and in agreement with all parties involved in the examination, prerequisites and examinations may also be taken in another language.

§ 8
Oral Examinations

(1) In the oral examination, candidates should prove that they have a contextual understanding of the subject area and are capable of putting specialized problems into context. Furthermore, it should be ascertained whether the candidates have a fundamental knowledge appropriate to the level of the degree program or not.

(2) Oral examinations are taken in the presence of at least two examiners (examination by panel) or one examiner in the presence of an expert observer (§ 17) as a group examination or as an individual examination. In the case of digital examination, candidates are obligated to ensure that the camera and microphone functions of the communication devices intended for use during the examination are working and to activate them if necessary (video surveillance). Video surveillance must be set up in such a way that the personal rights and privacy of the candidate are not restricted any more than is necessary for the legitimate purposes of surveillance. Automated evaluation of

image or sound data from video surveillance is not permitted. No further room monitoring takes place.

(3) The duration of the examination is stated in the module description and is, for one individual examination, at least 20 minutes and at most 60 minutes.

(4) As part of the oral examination, written tasks of reasonable length can be set, as long as the oral character of the examination is preserved.

(5) The first examiner decides, which materials and aids students are able to use during the oral examination. A list of applicable materials and aids allowed is duly published.

(6) The essential items of the oral examination are recorded in a report, which is signed by the examiner and the observer. The candidate is informed of the result and grade at the end of the oral examination. The report is to be retained for a duration of five years.

(7) Students wishing to take the same module examination at a later date can, if space allows, be present as a listener, as long as the candidate does not make an objection to an examiner. The listener must leave before the candidate is consulted and notified of the examination result. Any listener attempting to influence or interrupt the examination will be excluded from the examination.

§ 9
Written Examinations

(1) In written examinations, candidates should demonstrate that they can solve problems using the relevant fundamental knowledge and that they are able to deal with issues using the current methods of their field in a limited amount of time and with limited aids. The candidate can be given a choice of topics.

(2) § 8 sub-paragraph 5 applies accordingly.

(3) Written examinations are supervised to prevent cheating. Written examinations are supervised to prevent cheating. In the case of digital examination, candidates are obligated to ensure that the camera and microphone functions of the communication devices intended for use during the examination are working and to activate them if necessary (video surveillance). Video surveillance must be set up in such a way that the personal rights and privacy of the candidate are not restricted any more than is necessary for the legitimate purposes of surveillance. Automated evaluation of image or sound data from video surveillance is not permitted. No further room monitoring takes place.

(4) Written examinations, the passing of which is a requirement for continuing on the program, are generally assessed by two examiners. The grade is calculated from the mean average of the individual evaluations. The period of evaluation should not last longer than four weeks.

(5) The duration of an examination is set in the module description and may not be less than 60 minutes or more than 240 minutes.

(6) The candidate will be informed about the result and grade of the examination.

§ 10
Alternative Assessments

(1) Alternative assessments are generally carried out in seminars, laboratories and projects. The assessments can be written compositions (papers, laboratory reports etc.), oral presentations (with written composition or handouts) or write-ups of practical work relating to work carried out in one or several courses or in another form. The assessments must be individually attributable.

(2) For predominantly written assessments, § 9 sub-paragraph 4 applies accordingly, with the proviso that the examiner is the person responsible for the course underlying the alternative assessment. For predominantly oral assessments, § 8 sub-paragraph 2 applies accordingly.

(3) On submission of an assessment as relating to sub-paragraph 1, the candidates must ensure, in writing, that their work – in the case of group work, their labelled section of the work – was carried out independently, using only the stated sources and materials specified.

(4) The type and size of an alternative examination is set in the module description.

(5) The candidate will be informed of the result and grade of the assessment.

§ 11
Evaluation of Examinations, Formation and Weighting of Grades

(1) The grades for the individual examinations are determined by the respective examiner.

(2) The following system of grades is used for the evaluation of examinations:

1 = very good (sehr gut)	=	outstanding performance
2 = good (gut)	=	considerably above average performance
3 = satisfactory (befriedigend)	=	average performance
4 = sufficient (ausreichend)	=	poor yet acceptable performance
5 = not sufficient (nicht ausreichend)	=	unacceptable performance with considerable faults

(3) In order to differentiate between examination performances, individual grades can be increased or decreased by 0.3 points to an intermediate value; the grades 0.7, 4.3, 4.7 and 5.3 are excluded. Individual grades can be separately weighted to make up the overall grade.

(4) If a module examination consists of more than one examination, then the module grade is the weighted arithmetic mean of the individual examinations. Only the first decimal place is considered; grades are never rounded up. The respective weighting of examinations is set in the Examination Schedule.

The degree classes are as follows:

- for an average of up to and incl. 1.5	= very good
- for an average from 1.6 up to and incl. 2.5	= good
- for an average from 2.6 up to and incl. 3.5	= satisfactory
- for an average from 3.6 up to and incl. 4.0	= sufficient
- for an average of 4.1 and above	= not sufficient

(5) For the Master's examination, an overall grade is formed. This consists of the arithmetic mean of the module grades, weighted by credit points, and the overall grade of the Master's thesis including the colloquium in accordance with § 19 sub-paragraph 11. Sub-paragraph 4 clauses 2 and 4 apply accordingly.

(6) In addition to the overall grade according to § sub-paragraph 5, a grade distribution table is provided. The overall grades of graduates of at least eight semesters, although not on those of the respective final semester graduates (reference group), are recorded and their numerical and percentage distribution across the grades (percentage of each grade with respect to the total passing grades awarded and cumulative percentage of passing grades awarded) is presented in a table (grade distribution table). The reference group must comprise at least 30 graduates. If the required group size is not reached, the period is extended by one additional semester until the required group size is reached. A grade distribution table will not be generated if within the previous ten semesters, fewer than 30 students have graduated from this degree programme.

§ 12
Retraction of Application, Default, Withdrawal, Deceit, Breach of Regulations, Disruptions

(1) An examination counts as ″not sufficient″ (5.0), if the candidates miss an examination date binding to them without valid reason or if they withdraw from an examination. The same applies, if a written examination is not completed within the time designated.

(2) Candidates can retract their application for an examination without giving any reasons, as long as they inform the Student Services Office at least one week in advance. The candidates have to check the correct retraction of their application in the self-service portal.

(3) An examination date is binding for the purposes of sub-paragraph 1 if the deadline for the retraction (sub-paragraph 2) of the application for an examination has passed.

(4) The reason given for defaulting or withdrawing from an examination must be immediately communicated in writing to the Student Services Office and shown to be credible. In the case of illness or maternity leave, presentation of a doctor's certificate is required and in cases of doubt, an official medical report. As far as keeping the deadline for the first application for examination, the repetition of examinations, the reasons for defaulting the examination and the timely completion of examinations is concerned, the illness of a minor that is predominantly cared for by the candidate alone is equivalent to the candidate themselves being ill. If the reason is accepted, a new date will be set. The examination results already existing should in this case be offset.

(5) If candidates attempt to influence the result of their examinations by deceit or through the use of unauthorized aids, the examination in question will be graded "failed".

(6) Candidates breaching regulations concerning procedure of an examination can be excluded from the examination by the respective examiner or head invigilator; in such cases, the examination is graded "failed". In severe cases, the Examination Board can exclude the candidate from further examinations.

(7) Significant disruptions during an examination, not rectified or not sufficiently compensated, requires the candidate to repeat this examination.

(8) If during digital examinations the transmission of the examination task, the completion of the examination task, the transmission of the examination performance or the video surveillance is technically not feasible at the time of the examination or interrupted for more than a short period of time, the examination must be terminated immediately for the candidate and the examination is not to be assessed. The examination attempt is deemed not to have taken place. This does not apply, if the student is verifiably responsible for the disruption.

§ 13
Passed and Failed

(1) Module examination is considered passed, when the module is graded at least "sufficient" (4.0). A module examination counts as definitely failed, if a module examination is not graded at least “sufficient” (4.0) and a repetition is no longer possible.

(2) If a module examination consists of a number of examinations, passing the module examination can be made dependent on specific examinations being graded at least "sufficient" (4.0). This is set in the examination schedule (Appendix).

(3) The Master's examination is passed, when the respective module examinations are passed and the Master's thesis as well as the colloquium (§ 19 sub-paragraph 10) have been graded "sufficient" (4.0) or better. A module examination that has not been taken within four semesters after the end of the regular period of study is regarded as failed. A module examination failed at the first attempt can be repeated within a year of completion of the first attempt. It counts as failed upon expiry of that period of time. A second repeat examination can only be taken at the next possible examination date. Further details are regulated in § 14.

(4) If a module examination, the Master's thesis or the colloquium are graded worse than "sufficient" (4.0), the candidate is informed if and, where applicable, to what extent and by what deadline the module examination, the Master's thesis or the colloquium can be repeated.

(5) If candidates have not passed the Master's examination, they can request a summary of achievement. This states which examinations have been rendered, their grades and, if applicable, the examinations still missing. It states that the Master's examination has not been passed and whether candidates are entitled to take further examinations.

§ 14
Repeating Module Examinations

(1) Failed module examinations can only be repeated once within a period of one year after the first examination attempt of the last examination. Examinations can only be repeated if they are graded worse than "sufficient" (4.0).

(2) The third examination attempt can only be taken at the next possible examination date. Applications have to be submitted at the Student Services Office. Upon examiner’s agreement, the second repetition of a written examination can also be taken orally instead of in written form. More than three attempts are not permitted.

(3) The repetition of a passed module examination is not permitted.

§ 15
Recognition and Accreditation of Periods of Study, Course achievements, Examinations and Examination Attempts

(1) Course achievements and examinations, including failed examination attempts, which have been achieved in degree programmes at a university in the Federal Republic of Germany or foreign university, are recognized with application unless there are substantial differences with respect to the acquired competencies. For the recognition, the equivalence agreements, the equivalence protocols for existing agreements concerning joint degree awards, passed by the Conference of the Ministers for Education and Cultural Affairs and the German Rectors' Conference (HRK), agreements ratified by the Federal Republic of Germany as well as agreements within the framework of university cooperations should be followed. The Master's thesis is excluded from recognition, except in the case of double degree programmes.

(2) Applications for recognition of course achievements and examinations, according to sub-paragraph 1, achieved before the enrolment in this degree programme can only be submitted until the next exam registration period after enrolment. Applications for recognition of course achievements and examinations, according to sub-paragraph 1, achieved after the enrolment in this degree programme can only be submitted if no examinations have been taken, which are to be accredited.

(3) Qualifications acquired outside the Higher Education System, particularly relevant professional activities, can be accredited on application if they are deemed to be equivalent. The qualifications are equivalent if their content, scope and requirements essentially correspond to those of this degree program. This comparison is not schematic but rather an overall consideration and evaluation.

(4) If course achievements and examinations are recognized or qualification outside the Higher Education System are acquired, the period of study is also accredited. The grades, where grading systems are comparable, are transferred and incorporated into the calculation of the overall grade. For non-compatible grading systems, the entry "passed" may be used. A remark of the recognition on the certificate is permissible. The relevant number of credit points, in accordance with these regulations, is given. Course achievements and examinations can be recognized up to 60 credit points.

(5) With resumption of studies in the same degree programme after a deferral, the student is enrolled in the continuing semester. The achieved course achievements and examinations of the degree programme are recognized.

(6) Failed module examinations, the passing of which is necessary for the degree programme, are recognized without application.

(7) Applications for recognition or accreditation are reviewed by the Examination Board. With the application, the students have to submit the required documents. After all documents have been submitted, the recognition and accreditation decision shall not exceed 2 months. Certified translations can be required for all documents presented in a language other than German. The documents required are usually descriptions of modules including learning outcomes, types of teaching, contents, workload and pre-requisites as well as the formation and weighting of grades of the modules.

§ 16
Examination Board

(1) For the organization of the examinations and the administration of the duties assigned in these regulations, an Examination Board is appointed by the Faculty Council of the Faculty of Chemistry, Physics and Biosciences and by the Faculty Council of the Faculty of Materials Science and Technology. The Examination Board, with the cooperation of the Student Services Office, makes decisions on all matters concerning examinations, in particular on

1. exceptions to the admission to examinations (§ 6),
2. mitigation of examination conditions (§ 7 sub-paragraph 2) and deadline extensions (§ 5 sub-paragraph 6),
3. the consequences of breaches of regulations (§ 12 sub-paragraph 5),
4. the issuing of notification of passing and failing (§ 13),
5. the recognition and accreditation of periods of study, course achievements and examination credits (§15),
6. the appointing and announcing of examiners (§ 17),
7. the issuing of the Master's thesis (§ 19 sub-paragraph 3) including the approval to work externally (§ 19 sub-paragraph 2),
8. deadline extensions for submitting the Master's thesis (§ 19 sub-paragraph 6),
9. the enlisting of a third examiner to evaluate the Master's thesis (§ 19 sub-paragraph 9),
10. the invalidity of the Master's examination (§ 23) and
11. the objections against the decisions of the Examination Board (§ 25).

The Examination Board also makes decisions on

1. the imposition of conditions for the admission to the Master's degree program as well as exceptions of the admission requirements within the Study Regulations for the Master's degree Program and
2. the appointing of members of the commission for determining eligibility in accordance with Appendix 2 of the Study Regulations for the Master's degree program in Advanced Materials Technology.

Any decisions of the Examination Board, which are detrimental to the students, have to be communicated to the student in writing and reasons for the decisions have to be given with instruction on right to deny.

The Examination Board is also to be included in the consultations of the Commission of Studies concerning the updating of the program in accordance with the study regulations of the Master's degree program in Advanced Materials Technology.

(2) The Examination Board has five members and consists of three professors, one research associate as well as one student. The term of office of the members is three years and one year for the student member. Repeated appointments are allowed.

(3) The chairperson of the Examination Board is the dean of the Advanced Materials Analysis programme. His/her deputy and the other members of the Examination Board and their deputies are appointed by the Faculty Council of the Faculty of Chemistry,

Physics and Biosciences and by the Faculty Council of the Faculty of Materials Science and Technology. The appointment of the student takes place in consultation with the student representatives of the Faculty of Chemistry, Physics and Biosciences and of the Faculty of Materials Science and Technology.

(4) The Examination Board is quorate, when a meeting has been duly called and when a majority of members are present. A meeting has been duly called, when all members are informed of the date a week in advance. In urgent cases, if this period of notice cannot be kept, the reasons for the shortened notice are to be written in the minutes. The Examination Board makes decisions based on the majority of the votes of the voting members present. Written consent in a circulation procedure in lieu of a meeting is allowed.

(5) The Examination Board makes sure that the rules of the examination regulations are followed. The Examination Board proposes reforms of the study regulations/study schedules and examination regulations.

(6) The chairperson leads the business of the Examination Board. The Examination Board can delegate duties to the chairperson.

(7) The members of the Examination Board have the right to attend the examinations. They cannot be involved in the decisions of the Examination Board, if they are involved in the examined matter.

(8) The meetings of the Examination Board are not open to the public. The members of the Examination Board and their deputies are under the pledge of official secrecy. If they are not government employees, they are bound to secrecy through the chairperson.

§ 17
Examiner and Observer

(1) The Examination Board appoints the examiners and informs the Student Services Office about the appointments. Examiners appointed should only be members or associates of the Technische Universität Bergakademie Freiberg or another University, which is authorized to educate independently in the relevant field of the examination. An examiner that is authorized to teach independently only in a partial area of the examination subject can also be appointed, as long as this is appropriate to the object of the examination. In exceptional cases, teachers for specific tasks as well as people experienced in both professional and educational contexts can be appointed as examiners, as long as it is appropriate for the examination. As observer or examiner, only a person can be appointed, who has at least the qualification to be assessed or an equivalent one.

(2) The examiners and observers are independent in their decision.

(3) In special and justified cases, the candidate can nominate the examiner or examiners for the evaluation of oral examinations (§ 8). The nomination is not mandatory for the Examination Board. The candidate will be informed about the names of the examiners in time. For the evaluation of the Master's thesis, § 19 sub-paragraph 7 applies.

(4) For the examiners and observers, § 16 sub-paragraph 8 clauses 2 and 3 apply accordingly.

§ 18
Components and Object of the Master's Examination

The components of the Master's examination are the module examinations specified in the Appendix to these regulations, the written Master's thesis and the defence (the colloquium). The object of examinations and the prerequisites assessments are the subject matters of the modules named in the Appendix of these regulations. Details can be found in the module descriptions. The number and type of the particular examinations and prerequisites assessments are regulated in the Appendix to these regulations.

§ 19
Registration, Topic, Submission, Evaluation and Resubmission of the Master's Thesis, Colloquium (Defence)

(1) In the Master's thesis and in colloquium, the candidates should demonstrate their ability to solve a defined complex problem from their field independently with appropriate scientific methods within given time period and to present both the problem and their own work in writing and orally.

(2) The Master's thesis can only be supervised by a professor or by another person, who is authorized to examine according to the Saxony state law and who is employed at the TU Bergakademie Freiberg or another university in an area relevant for the degree program. If the Master's thesis is intended to be carried out externally, i.e., outside of the TU Bergakademie Freiberg), then the approval of the chairperson of the Examination Board is required.

(3) The topic of the Master's thesis must be related to the content of the degree program. The topic must be defined in such a way that the Master’s thesis can be finished within the specified timeframe. The topic is timely issued by the supervisor, after the student has registered for the Master’s thesis at the Student Services Office, and approved by the Examination Board. The topic and date are to be put on record. Candidates can express their wishes with respect to the topic and propose a supervisor. Upon the candidate's request, the chairperson of the Examination Board will punctually issue the topic of the Master’s thesis. The topic of the Master's thesis can only be issued if all modules with the exception of the module "Master Thesis" and another module have been completed. The other pending module must not be the module "Research Project". The registration for the Master's thesis should take place at the latest one month after completion of the last module examination required by these examination regulations.

(4) The topic of the Master’s thesis can be rejected only once within four weeks after issuing. In a second attempt (in case of repetition), the topic of the Master's thesis can only be rejected, if the candidate did not reject the topic in the first attempt.

(5) The Master's thesis can also be carried out and submitted in form of a group thesis, if the contributions of individual candidates are clearly distinguishable and assessable on the basis of sections, page numbers or other objective criteria that enable an unambiguous differentiation and if it meets the requirements of sub-paragraph 1.

(6) Two bound copies of the Master's thesis must be submitted to the Student Services Office of the TU Bergakademie Freiberg 6 months after the date on record of the issue of the topic at the latest. A further copy has to be submitted in the electronic, machine-readable PDF file format. In individual cases, a substantiated request for an extension

of up to three months can be made. The submission date is to be put on record. On submitting, the candidates must make a written oath that they carried out their work independently and only with the use of the sources and aids stated. In the case of a group work, the contributions of individual authors must be specified clearly.

(7) The Master's thesis is generally evaluated and graded in the form of a written report by at least two independent examiners. One of them should be the issuer of the topic (supervisor). The evaluation procedure should not exceed four weeks.

(8) For procedures based on international agreements of joint degree awards with partner universities, an examiner with equal rights will be appointed from the partner university.

(9) The Master's thesis is passed, when both examiners grade it at least "sufficient" (4.0). § 11 sub-paragraphs 2 and 3 apply accordingly. In the case of different evaluations, the grade is calculated by arithmetic mean. In exceptional cases, the Examination Board can appoint a third examiner. A third examiner is to involve, when the difference between first two evaluations exceeds 1.7. Sub-paragraph 3 applies accordingly. If one of the two examiners gives the grade "not sufficient" (5.0), while the other one grades the thesis by 3.3, 3.7 or 4.0, a third examiner is appointed. He/she decides, whether the Master's thesis is to be graded "sufficient" (4.0) or "not sufficient" (5.0). A Master's thesis submitted after the deadline will be graded "not sufficient" (5.0).

(10) The Master's thesis is defended in a Colloquium, where the supervisor must be present. The requirement for admission to Colloquium is the Master's thesis being graded at least "sufficient" (4.0). The candidate has the right to inspect the evaluation report one day before the Colloquium at the latest. The Colloquium should take place within four weeks after the submission of the Master's thesis. The colloquium presentation should take 20 minutes and the subsequent discussion should not exceed 40 minutes. The colloquium is evaluated as an oral examination (§ 8).

(11) The grade of the Master's thesis including the colloquium is calculated from the grade of the Master's thesis as per sub-paragraph 9 with a weighting of 2 and from the grade of the colloquium with a weighting of 1, whereby the colloquium must be graded at least "sufficient" (4.0). § 11 sub-paragraph 4 applies accordingly.

(12) For the resubmission (repetition) of the Master's thesis and the colloquium, § 14 applies accordingly. § 14 sub-paragraph 2 applies with the proviso that for a second repetition of the Master's thesis can be submitted within a month of receipt of the ruling of failure.

(13) For the successful completion of the Master's thesis and colloquium, 30 credit points are awarded in total.

§ 20
Additional Modules

The candidate can take an examination in modules (additional modules) other than those planned in the examination schedule (Appendix). These modules can be voluntarily rendered from the entire range of modules offered at the TU Bergakademie Freiberg or at the cooperating universities. They are not considered in the calculation of a student's workload. They are not included in the overall grade of the Master's examination, but they can be recorded in the transcript upon request.

§ 21
Academic Degree

If the Master's examination is passed, the TU Bergakademie Freiberg awards the candidate with the academic degree

"Master of Science" (abbreviated "M. Sc.").

§ 22
Transcript, Master's Degree Certificate and Diploma Supplement

(1) After successful completion of the Master's examination, the candidate generally receives a transcript within 4 weeks after having defended the Master's thesis (in a colloquium) or after the announcement of the result of the last examination. In the transcript, the module grades, the credit points, the topic and grade of the Master's thesis, the overall grade as well as the method of calculation of the ECTS grade are included. Where applicable, the specialization and – at the candidate's request – the results of the module examinations in modules other than prescribed (additional modules) can be included in the transcript.

(2) The date on the Master's transcript, which refers to the date of the last examination, is concurrently the date of the issue.

(3) The TU Bergakademie Freiberg issues a Diploma Supplement (DS) in English in accordance with the "Diploma Supplement Model" of the European Union/Council of Europe/UNESCO.

(4) In addition to the transcript of the Master's examination, the candidate receives a Master's degree certificate with the date of the transcript as per sub-paragraph 2. Therein, the conferral of the Master's degree is certified.

(5) The Master's degree certificate and the transcript are signed by the Dean of the Faculty of Chemistry, Physics and Biosciences and by the Dean of the Faculty of Materials Science and Technology and by the chairperson of the Examination Board and furnished with the seal of the TU Bergakademie Freiberg. An English translation of the Master's degree certificate and, upon the candidate's request, of the transcript is appended.

§ 23
Invalidity of the Master's Examination

(1) If the candidate has cheated during an examination and this fact is only discovered after the handing over of the transcript, the grade of the examination is amended as per § 12 sub-paragraph 5 clause 1. In this case, the module examination is declared "not sufficient" (5.0) and the Master's examination "failed". This applies accordingly to the Master's thesis and colloquium.

(2) If the requirements for the approval of a module examination were not fulfilled without wilful deceit on the part of the candidate, and if this fact was discovered after the handing over of the transcript, then this flaw was erased by the passing of the module examination. If the candidate deliberately unjustly obtained admission to the module

examination, then the module examination is declared "not sufficient" (5.0) and the Master's examination "failed".

(3) The candidate should be heard before the decision.

(4) The incorrect transcript is confiscated by the Student Services Office and, if applicable, a new one is issued. Along with the incorrect transcript, the Master's degree certificate, the Diploma Supplement and the English translations of the certificate and transcript are also to be confiscated if the Master's examination has been declared as "failed" on the basis of the deceit.

(5) A decision as per sub-paragraphs 1 and 2 clause 2 is excluded after a period of five years from the date of the official copy of the transcript.

§ 24
Inspection of Examinations Files

Within one year after completion of the examination procedure, the candidates are allowed, upon request and within a reasonable time period, to inspect their written theses, the evaluation thereof and their examination reports.

§ 25
Appeals Procedures

(1) Appeals against decisions that were made in accordance with these regulations must be presented to the TU Bergakademie Freiberg in writing or by recorded declaration within a month of the student being informed of the decision. The Student Services Office receives the appeals.

(2) The reasons for the appeals ruling must be given with instruction on right to appeal and sent to the appealing party. The appeal ruling also determines who pays the costs of the procedure.

§ 26
Entry into Force, Expiry and Transitional Provisions

(1) These regulations take effect the day after their publication in the official notices of TU Bergakademie Freiberg. They apply to students, who start their studies in the winter semester 2023/24 and later.

(2) At the same time, the examination regulations for the Master's degree programme Advanced Materials Analysis at TU Bergakademie Freiberg from June 28, 2018 (Official Announcements of TU Bergakademie Freiberg No. 9, Issue 1 from July 3, 2018), supplemented by the amendment statutes from February 10, 2020 (Official Announcements of TU Bergakademie Freiberg No. 3 from February 17, 2020) expire by subject to subsection 3.

(3) For students, who began their studies in the Master's programme Advanced Materials Analysis before these examination regulations came into force, the examination regulations of the Master's programme Advanced Materials Analysis from June 28, 2018, supplemented by the amendment statutes from February 10, 2020, apply.

(4) Students of the Master's programme Advanced Materials Analysis, who started their studies before these examination regulations came into force, may continue their studies according to the old examination regulations upon written application addressed to the Student Service Office. The application is irrevocable. The application must be submitted by the end of the registration period of the next examination period after these regulations come into force.

(5) Masculine personal designations in these regulations apply equally to all persons regardless of gender.

Freiberg, 17th November 2025

Prof. Dr. Jutta Emes

Appendix: Examination Schedule

Module	Type of Exams and Prerequisites	Weighting within the Module	Special Requirements for Admission	CP
Obligatory modules				
Introduction to Atomic and Solid State Physics	MP/KA (KA if 10 students or more)	1		9
Semiconductor Physics & Semiconductor Process Technology	KA PVL (Preparation of student talks and discussions)	1 0		7
Functional Nanomaterials	MP/KA* (KA if 20 students or more) AP* (Oral presentation) PVL (Active participation in seminar)	2 1 0		7
Quantum Theory I	MP/KA (KA if 12 students or more) PVL (Written test)	1 0		6
Fundamentals of Crystallography	KA	1		4
Structure and Microstructure Analysis	MP PVL (practical course structure analysis) PVL (practical course ESMA / REM)	1 0 0		9
Research Project (AMA)	AP* (Term Paper) AP* (Oral presentation and defence of the term paper)	2 1		7
Spectroscopy	MP/KA (KA if 15 students or more)	1		6

Module	Type of Exams and Prerequisites	Weighting within the Module	Special Requirements for Admission	CP
Master Thesis (AMA)	AP* (Written Thesis) MP* (Oral defence on the Topic of written thesis)	2 1	Bis auf ein Modul Abschluss aller anderen Module. Dabei darf es sich nicht um das Modul "Research Project" handeln. (All modules have to be passed, except of one module. This may not be the module "Research Project".)	30
Specialisations You have to choose one of two specialisations: 1. Semiconductor Technology and Devices or 2. Solid State Analytics. Depending on the specialisation chosen, students must take one of the following two modules.				
Semiconductor Surfaces and Interfaces: Physics and Engineering	MP/KA* (KA if 16 students or more) PVL (Preparation of student talks and discussion) AP* (Practical course incl. submission of a lab course protocol)	3 0 1	for Students of AMA, specialisation "Semiconductor Technology and Devices", only; passed exam of the module “Semiconductor Physics & Semiconductor Process Technology”	7
Coatings Technology	KA PVL (Practical courses)	1 0	for Students of AMA, specialisation "Solid State Analytics", and Students of MWT, specialisation "Materials Science"	6
Specialisation Solid State Analytics - Obligatory modules				
Materials Research with Free-Electron X-Ray Lasers	KA	1		3
Laser Physics	MP/KA (KA if 16 students or more)	1		4
Analysis of the Real Structure of Matter	MP PVL (Practical courses)	1 0		9

Module	Type of Exams and Prerequisites	Weighting within the Module	Special Requirements for Admission	CP
Specialisation Solid State Analytics - Elective modules Students must select modules totalling 9 credit points from the compulsory modules in the Semiconductor Technology and Devices specialisation, as well as from the list of compulsory-elective modules.				
Specialisation Semiconductor Technology and Devices - Obligatory modules				
Wide Bandgap Semiconductors & Power Electronic Devices	AP (Analysis of data including presentation of the results in oral or written form)	1		4
Silicon Materials Chemistry	AP (Presentation (oral or visual) about an analytical method in silicon (compound) processing, including discussion)	1	for Students of AMA, specialisation "Semiconductor Technology and Devices", only	4
Modelling of Semiconductor Devices	AP (Talk about a simulation project, including discussion)	1		3
Photovoltaics and Renewable Energies	MP/KA* (KA if 16 students or more) AP* (Oral presentation and discussion)	3 1		5
Specialisation Semiconductor Technology and Devices – Elective modules Students must select modules totalling 8 credit points from the compulsory modules in the Solid State Analytics specialisation and from the list of compulsory electives.				
List of compulsory elective modules**				
Compulsory elective modules I				
Thermodynamics of Materials without Lab Course	MP/KA (KA if 6 students or more)	1		3
Stochastic Methods for Materials Science	MP/KA (Oral or written exam; KA if 21 students or more) PVL (Programming Project)	1 0		5
Analytical Methods of Electron Backscatter Diffraction in Scanning Electron Microscopy	KA	1		3

Module	Type of Exams and Prerequisites	Weighting within the Module	Special Requirements for Admission	CP
Modern X-ray Optics	MP/KA (KA if 11 students or more)	1		3
Surface Chemistry	MP/KA* (KA if 10 students or more) AP* (Lab (entrance test + protocol))	4 1		5
Advanced Methods of in situ Characterization	KA	1		3
Advanced Electron Microscopy	MP PVL (practical course)	1 0		4
Diagnosing short-lived transient States of Matter	MP/KA (KA if 11 students or more)	1		3
Compulsory elective modules II The following compulsory elective modules may also be taken, but are not included in the timetable.				
Mechanics of Materials	KA PVL (Home work assignments)	1 0		5
Numerical Analysis of Differential Equations	KA	1		4
Continuum Mechanics	MP/KA (KA if 10 students or more) Possible in German.	1		4
Fundamentals of Microstructures	MP/KA (KA if 6 students or more) PVL (Home work assignments)	1 0		5
Fracture Mechanics Computations	MP/KA (KA if 12 students or more) Possible in German.	1		5

Module	Type of Exams and Prerequisites	Weighting within the Module	Special Requirements for Admission	CP
Plasticity	PVL (Mid-Term Exam) MP/KA (Final Exam (Oral/Written); KA if 10 students or more)	0 1	1: Continuum Mechanics or equivalent	4
Optional Modules Modules in total amount of 4 credit points have to be chosen from the offer by the TU Bergakademie Freiberg or a cooperating university. The type, the specific admission requirements, the weighting of the examinations and, if applicable, prerequisites (PVL), the number of credit points (CP) as well as the type and the size of the courses of the chosen module (examination modalities and course modalities) are specified by the regulations of the degree programs, in which the chosen module is a defined component (not as an optional module). The examination modalities and course modalities of modules not covered by the regulations of a degree programme, e.g., language modules of the IUZ, is published at the start of the semester. The following modules are particularly recommended for students, whose native language is not German:				
German A 1/ 1st Semester	KA PVL (Aktive Teilnahme an mindestens 80% des Unterrichts)	1 0		4
German A2/ 1st Semester	KA PVL (Aktive Teilnahme an mind. 80% d. Unterrichts)	1 0	1: German A1/ 2nd Semester oder äquivalente Sprachkenntnisse	4
German A1/ 2nd Semester	KA PVL (Aktive Teilnahme an mind. 80% des Unterrichts)	1 0	1: German A 1/ 1st Semester oder äquivalente Sprachkenntnisse	4
German A2/ 2nd Semester	KA PVL (Aktive Teilnahme an mind. 80% d. Unterrichts)	1 0	1: German A2/ 1st Semester oder äquivalente Sprachkenntnisse	4
German B2/ 1st Semester	AP (Portfolioprüfung bestehend aus 4 Teilen zum Nachweis aller Sprachfertigkeiten (Hörverstehen, Leseverstehen, Sprechen, Schreiben)) AP (Aufgaben und aktive	1 0	Deutsch B1/ 2.Semester oder äquivalente Sprachkenntnisse	4

Module	Type of Exams and Prerequisites	Weighting within the Module	Special Requirements for Admission	CP
	Teilnahme an mind. 80% d. Unterrichts)			
German for Engineers	AP (Portfolioprüfung bestehend aus 4 Teilen) AP (Aufgaben und aktive Teilnahme an mind. 80% d. Lehrveranstaltungen)	1 0	Sprachniveau C1, z.B. DSH-2 oder äquivalente Sprachkenntnisse, in Ausnahmefällen Sprachniveau B2	4
German B1/ 1st Semester	KA PVL (Aktive Teilnahme an mind. 80% d. Unterrichts)	1 0	1: German A2/ 2nd Semester oder äquivalente Sprachkenntnisse	4
German B2/ 2nd Semester	AP (Portfolioprüfung bestehend aus 4 Teilen zum Nachweis aller Sprachfertigkeiten (Hörverstehen, Leseverstehen, Sprechen, Schreiben)) AP (Aufgaben und aktive Teilnahme an mind. 80% d. Unterrichts)	1 0	1: German B2/ 1st Semester oder äquivalente Sprachkenntnisse	4
German B1/ 2nd Semester	KA PVL (Aktive Teilnahme an mind. 80% d. Unterrichts)	1 0	1: German B1/ 1st Semester oder äquivalente Sprachkenntnisse	4

Legend:

MP = Mündliche Prüfungsleistung (oral exam)
KA = Klausurarbeit (written examination)
AP = Alternative Prüfungsleistung (alternative assessment)
PVL = Prüfungsvorleistung (prerequisite)
MP/KA = mündliche oder schriftliche Prüfungsleistung (abhängig von Teilnehmerzahl) / written or oral exam (dependent on number of students)

* In modules requiring more than one exam, this exam has to be passed or completed with at least "ausreichend" (4,0), respectively.

** The range of compulsory elective modules can be changed by the Faculty Council of the Faculty of Chemistry, Physics and Biosciences and the Faculty Council of the Faculty of Materials Science and Technology on the proposal of the Study Commission. The changed offer of compulsory elective modules is to be announced by notice at the beginning of the semester.

In the case of MP/KA (written or oral exam depending on number of students), the number of students (if not otherwise regulated in the examination schedule above) are determined on the basis of the number of students attending the course by the fifth week of the semester at the latest and accordingly the type of examination is announced.

As per § 14 sub-paragraph 4 in conjunction with § 37 sub-paragraph 1 of the Higher Education Act of the Free State of Saxony (SächsHSG) of May 31st 2023 (SächsGVBl. p. 329) (most recently changed by Act from July 6st, 2023, SächsGVBI. p. 467) the Faculty Council of the Faculty of Chemistry, Physics and Biosciences and the Faculty Council of the Faculty of Materials Science and Technology at the Technische Universität Bergakademie Freiberg, in consultation with the Senate, agreed on the following study regulations for the Master's degree program in Advanced Materials Analysis:

Study Regulations for the Master's Degree Program in Advanced Materials Analysis at the Technische Universität Bergakademie Freiberg

Contents: **§§**

Appendix 1: Study Schedule
Appendix 2: Procedure for Determining Eligibility
Appendix 3: Module Descriptions

§ 1
Scope

The existing study regulations regulate the aim, content and structure of the Master's degree program in Advanced Materials Analysis on the basis of the examination regulations of the international Master's degree program in Advanced Materials Analysis at the TU Bergakademie Freiberg.

§ 2
Aims of the Degree Program

The targeted development of new materials, the materials design and the manufacturing of components with desired properties and functionality require a combination of knowledge-based approaches and application-oriented research that always rely on the understanding and utilization of the structure-property relationships. Consequently, academia and industry look permanently for specialists with in-depth knowledge in the solid-state analytics and in the semiconductor technology.
The Master’s programme in Advanced Materials Analysis is aimed at graduates of Bachelor’s programmes in physics, materials science, electrical engineering and/or chemistry, who aspire to extend their skills towards an advanced use of instrumented methods of materials analysis and/or in the semiconductor technology.
The Master’s programme Advanced Materials Analysis teaches the principles of the structure-property relationships in particular for functional materials and components. Following a joint introductory phase comprising courses in crystallography, quantum mechanics, solid-state and semiconductor physics, students choose one of two specialisations – Solid State Analytics or Semiconductor Technology and Devices. In these specialisations, students are provided with up-to-date knowledge in the fields of the semiconductor device manufacturing technologies, instrumental methods for analysis of the structure and microstructure of functional materials, in the materials design, and in the characterisation of the physical properties of materials, components and devices. During the programme, students learn how the properties of functional materials and devices can be influenced during the technological process and which criteria are important from a quality control perspective. Through their Master’s thesis, the students apply relevant skills that they acquired in the field of their specialisation and develop them further in a creative way to achieve new insights into the materials and/or technologies.

Solid State Analytics
The specialisation in ‘Solid State Analytics’ focuses on the physical background and practical utilization of the microscopic, diffraction and spectroscopic techniques that are employed for the structure and microstructure analysis of primarily inorganic materials such as semiconductors, electronic and sensor materials, materials for optical applications, materials for energy systems, as well as metals and their alloys. Unique features of the programme are lectures and practical courses devoted to the use of the synchrotron radiation and free electron lasers for the analysis of fast processes in modern materials.

Semiconductor Technology and Devices

The specialisation ‘Semiconductor Technology and Devices’ focuses, on the one hand, on imparting knowledge of semiconductor process technology, i.e., how semiconductors are processed in order to manufacture devices from them. On the other hand, it teaches the physical background/principles of the functionality of various devices from the fields of electronics, optoelectronics and photovoltaics in theory, simulation and practice. Furthermore, the course introduces advanced electrical and optical methods for analysis of the point defects providing information required for understanding the effect of the point defects on the behaviour of the devices.

§ 3
Type of Degree Program

The Master's degree program in Advanced Materials Analysis is a consecutive Master's degree program with an emphasis on research.

§ 4
Admission Requirements

(1) Only students can be enrolled in the Master's degree programme Advanced Materials Analysis,

1. who have completed at least six semesters of their first professional degree at a higher education institution
   a) in a degree programme with a focus on materials science
   b) in a degree programme with a focus on engineering science with proof of knowledge in materials science, or
   c) in a physical, electrical engineering or chemical study course.

   The modules taken in the previous study course should have dealt with problems of hard condensed matter (e.g. inorganic chemistry, solid state chemistry, solid state physics, semiconductor physics, materials science, semiconductor technology, ceramics) to a sufficient extent.

2. who have a proof of English language skills through a recognised language test such as the Test of English as a Foreign Language (TOEFL) with at least 90 points (internet-based test) or the International English Language Test System (IELTS) with a score of at least 6.5 or an equivalent test with a corresponding score. This does not apply to international applicants who, on the basis of their academic qualifications as assessed against the uni-assist reference framework, are exempt from the requirement to provide proof.

   and

3. who have demonstrated the requisite professional competence in a qualification assessment procedure in accordance with Annex 2.

(2) The examination board may require that the candidates completed certain (additional) achievements and examinations within a certain period of time, but at the latest by the time the topic of the Master's thesis is issued.

(3) In addition, the enrolment regulations of the TU Bergakademie Freiberg apply.

§ 5
Duration of the Study, Study Volume and Commencement of Studies

(1) The expected period of study is 4 semesters.

(2) In the Master's degree program Advanced Materials Analysis, 120 credit points must be acquired.

(3) Studies commence in the winter semester.

§ 6
Student Advice

(1) In addition to the general study advice by the Central Student Advisory Service, a Departmental Advisory Service is provided by the Dean of Studies or the education coordinator for the Master's degree program in Advanced Materials Analysis. This contains, among other things, advice on study requirements, study schedules, examination issues, changing university, periods of study abroad and career entry opportunities.

(2) Students that have not passed a module examination by the beginning of the third semester should take part in a consultation at the Departmental Student Advisory Service during the third semester.

§ 7
Program Structure

(1) The degree program is scheduled for 4 semesters and is finished by the Master's examination.

(2) The Master's thesis is scheduled for the 4th semester. Further details concerning the Master's thesis and colloquium are regulated in the examination regulations of the international Master's degree program Advanced Materials Analysis.

(3) Individual subject or topic related areas are integrated into self-contained modules. These encompass subject-related courses of various types (§ 8 sub-paragraph 1) and are concluded with module examinations, for which, if passed, credit points are acquired. Module examinations lead, together with the Master's thesis including the colloquium, to graduation. The modules, along with their workload and assigned credit points, are presented in the module descriptions.

§ 8
Methods of Instruction and Assessment

(1) Courses (Lehrveranstaltungen, LV) can be lectures (Vorlesungen, V), workshops (Übungen, Ü), seminars (Seminaren, S), practical courses (Praktika, P) including work in laboratories, fieldwork, internships etc., and other types of courses. In lectures, theoretical background is taught. In workshops, material from the lectures and background knowledge necessary for understanding the lectures is reviewed, practised and consolidated. Seminars guide the students to independent scientific work through discussions and their own presentations. The aim of practical courses, besides the consolidation of theoretical knowledge, is to learn methods and other practical skills.

(2) The size of courses is measured in semester hours per week (Semesterwochenstunden, SWS). One SWS corresponds to a unit of time of 45 minutes per week throughout the entire lecture period of a semester (about 15 weeks). Courses can also be carried out in blocks.

(3) Supplementary to attending courses, students must work independently to consolidate material from the modules and especially in the cases of practical courses, workshops and seminars, prepare and follow up. To attain the necessary knowledge, additional independent (self-organized) reading is generally indispensable.

(4) Assessments can be oral presentations, papers, reports, written or oral tests or something else. They are evaluated but not necessarily graded. Details are given in the module descriptions.

§ 9
Provision of Courses

(1) The university ensures through its course program that the module examinations, in accordance with the examination regulations for Advanced Materials Analysis, can be taken within the deadlines stipulated. The study schedule (Appendix 1) enables graduation within the prescribed period of study.

(2) Module examinations usually take place in the semester, in which the module courses finish. For modules that run over several semesters, examinations take place in the semester stated in the examination schedule. Repeated examinations, as far as possible, can be taken in the following semester.

(3) At the end of each academic year, the Examination Board, along with the Study Commission, checks if the education according to the study schedule needs to be updated. This should take place so that the necessary changes in the program planning can be in place in time for the new academic year.

§ 10
Course Program

(1) The modules and their recommended sequence, as well as the type and size of their courses, are stated in the study schedule of the respective fields of study (Appendix 1). The courses aim to cover the material needed for these modules. Details of this can be found in the module descriptions.

(2) Students can take additional optional modules. Further details can be found in the examination regulations.

§ 11
Entry into Force, Expiration and Transitional Regulations

(1) These regulations enter into force on the day after publication in the official notices of TU Bergakademie Freiberg. They are valid for students, who begin their studies in the winter semester 2023/24 or later.

(2) At the same time, the examination regulations for the Master's degree programme Advanced Materials Analysis at TU Bergakademie Freiberg from June 28, 2018 (Official Announcements of TU Bergakademie Freiberg No. 9, Issue 1 from July 3, 2018), supplemented by the amendment statutes from February 10, 202 (Official Announcements of TU Bergakademie Freiberg No. 3 from February 17, 2020), expire as subject to subsection 3.

(3) For students, who began their studies in the Master's programme Advanced Materials Analysis before these examination regulations came into the force, the examination regulations of the Master's programme Advanced Materials Analysis from June 28, 2018, supplemented by the amendment statutes from February 10, 2020, apply.

(4) Students of the Master's programme Advanced Materials Analysis, who started their studies before these examination regulations came into force, may continue their studies according to these examination regulations upon written application addressed to the Student Office. The application is irrevocable. The application must be submitted by the end of the registration period of the next examination period after these regulations come into force.

(5) Masculine personal designations in these regulations apply equally to all persons regardless of gender.

Freiberg, 17th November 2025

Prof. Dr. Jutta Emes

Appendix 1: Study Schedule

Module	1. Sem. V/Ü/S/P	2. Sem. V/Ü/S/P	3. Sem. V/Ü/S/P	4. Sem. V/Ü/S/P	LP
Obligatory modules					
Introduction to Atomic and Solid State Physics	3/0/0/0	3/0/0/0			9
Semiconductor Physics & Semiconductor Process Technology	5/0/1/0				7
Functional Nanomaterials	2/0/0/0	2/0/2/0			7
Quantum Theory I	2/2/0/0				6
Fundamentals of Crystallography	2/1/0/0				4
Structure and Microstructure Analysis		5/0/1/2			9
Research Project (AMA)			6 months		7
Spectroscopy			4/0/0/0		6
Master Thesis (AMA)				6 Mon	30
Specialisations You have to choose one of two specialisations: 1. Semiconductor Technology and Devices or 2. Solid State Analytics. Depending on the specialisation chosen, students must take one of the following two modules.					
Semiconductor Surfaces and Interfaces: Physics and Engineering (for the specialisation 'Semiconductor Technology and Devices')		3/0/1/2			7
or					
Coatings Technology (for the specialisation 'Solid State Analytics')		3/0/0/3			6
Specialisation Solid State Analytics - Obligatory modules					
Materials Research with Free-Electron X-Ray Lasers		2/0/0/0			3
Laser Physics			2/1/0/0		4
Analysis of the Real Structure of Matter			5/0/1/1		9
Specialisation Solid State Analytics - Elective modules Students must select modules totalling 9 credit points from the compulsory modules in the Semiconductor Technology and Devices specialisation, as well as from the list of compulsory-elective modules.					

Module	1. Sem. V/Ü/S/P	2. Sem. V/Ü/S/P	3. Sem. V/Ü/S/P	4. Sem. V/Ü/S/P	LP
Specialisation Semiconductor Technology and Devices - Obligatory modules					
Wide Bandgap Semiconductors & Power Electronic Devices		2/0/1/0			4
Silicon Materials Chemistry			2/1/0/0		4
Modelling of Semiconductor Devices			1/0/1/0		3
Photovoltaics and Renewable Energies			3/0/1/0		5
Specialisation Semiconductor Technology and Devices – Elective modules Students must select modules totalling 8 credit points from the compulsory modules in the Solid State Analytics specialisation and from the list of compulsory electives.					
List of compulsory elective modules*					
Compulsory elective modules I					
Stochastic Methods for Materials Science	2/1/0/0				5
Thermodynamics of Materials without Lab Course	2/0/0/0				3
Surface Chemistry		2/0/0/2			5
Modern X-ray Optics		1/0/1/0			3
Advanced Methods of in situ Characterization			2/0/0/0		3
Advanced Electron Microscopy			2/0/0/2		4
Diagnosing short-lived transient States of Matter			1/0/1/0		3
Compulsory elective modules II The following compulsory elective modules may also be taken, but are not included in the timetable.					
Mechanics of Materials	2/2/0/0				5
Numerical Analysis of Differential Equations	2/1/0/0				4
Continuum Mechanics		2/1/0/0			4
Fundamentals of Microstructures			2/2/0/0		5
Fracture Mechanics Computations			2/2/0/0		5
Plasticity			2/1/0/0		4
Optional Modules Modules in total amount of 4 credit points have to be chosen from the offer by the TU Bergakademie Freiberg or a cooperating university. The type, the specific admission requirements, the weighting of the examinations and, if applicable, prerequisites (PVL), the number of credit points (CP) as well as the type and the size of the courses of the chosen module (examination modalities and course modalities) are specified by the regulations of the degree programs, in which the chosen module is a defined component (not as an optional module). The examination modalities and course modalities of modules not covered by the regulations of a degree programme, e.g., language modules of the IUZ, is published at the start of the semester. The following modules are particularly recommended for students, whose native language is not German:					

Module	1. Sem. V/Ü/S/P	2. Sem. V/Ü/S/P	3. Sem. V/Ü/S/P	4. Sem. V/Ü/S/P	LP
Deutsch A1/ 1. Semester	0/4/0/0				4
Deutsch A2/ 1. Semester	0/4/0/0				4
Deutsch A1/ 2. Semester		0/4/0/0			4
Deutsch A2/ 2. Semester		0/4/0/0			4
Deutsch B2/ 1. Semester			0/4/0/0		4
Fachsprache Deutsch für Ingenieure			0/4/0/0		4
Deutsch B1/ 1. Semester			0/4/0/0		4
Deutsch B2/ 2. Semester				0/4/0/0	4
Deutsch B1/ 2. Semester				0/4/0/0	4

* The list of compulsory elective modules can be modified by the Faculty Council of the Faculty of Chemistry, Physics and Biosciences and the Faculty Council of the Faculty of Materials Science and Technology on the proposal of the Study Commission. The changed offer of compulsory elective modules is to be announced by notice at the beginning of the semester.

Appendix 2: Procedure for Determining Eligibility

1. General

1.1 The purpose of the eligibility assessment is to evaluate the applicant's specific qualification and motivation for the Master's programme in Advanced Materials Analysis. The aim is to assess whether the applicant is likely to be able to successfully complete the programme.

1.2 The assessment of qualifications for the Master's programme in Advanced Materials Analysis is carried out by the Qualifications Assessment Committee in the form of an evaluation of the supporting documents submitted in accordance with section 2.2 and the results of the online test as per section 4.

2. Application

2.1 The assessment of qualifications is generally requested as a part of the application procedure for admission to the Master's programme in Advanced Materials Analysis.

2.2 The following must be submitted prior to taking part in the assessment of qualifications for the Master's programme in Advanced Materials Analysis:

1. certificate and diploma of the relevant professional qualification,
2. a transcript of records showing the grades achieved in the professional qualification,
3. proof of English language proficiency through a recognised language test such as the Test of English as a Foreign Language (TOEFL) with a score of at least 90 points (internet-based test) or the International English Language Testing System (IELTS Academic) with a score of at least 6.5 or an equivalent test with a corresponding score. This does not apply to international applicants who are exempt from the requirement to provide evidence, based on their academic qualifications as assessed against the uni-assist reference framework,
4. a letter of motivation (less than one page), setting out the reasons for applying to study on the Advanced Materials Analysis Master's programme.

2.3 The complete application documents must be submitted to the University's Admissions Office by 15 April of the current year.

3. Qualifications Assessment Committee

3.1 The selection of candidates is the responsibility of the Qualifications Assessment Committee, which, along with its chair, is appointed by the Examination Board of the Master's programme in Advanced Materials Analysis.

3.2 The Qualifications Assessment Committee consists of three members. Two of them are appointed from the lecturers teaching the courses in the Master's programme 'Advanced Materials Analysis'. For each member, a deputy is appointed providing staffing availability. The mandate of the members is three years. Reappointments are permitted.

3.3 The Qualifications Assessment Committee is responsible for implementing the decisions of the Examination Board regarding the entry requirements in accordance with Section 4 of the Study Regulations for the Master's programme in Advanced Materials Analysis.

4. Online test

4.1 The online test is an essential part of the selection process. Applicants are allowed to sit the online test once only.

4.2 In the online test, applicants are asked questions on subject-specific content (mathematics, physics). The questions are set at Bachelor's degree level.

4.3 The online test is passed, if at least 60% of the maximum possible marks have been achieved.

4.4 Applicants are excluded from the selection process, if they fail the online test.

4.5 Based on the results of the online test, supplementary modules may be imposed.

5. Selection process

5.1 The selection process takes place on an ongoing basis throughout the application period, and is completed no later than six weeks after the application deadline.

5.2 The following procedure is:
5.2.1 Applicants are asked to take an online test (once only in the current application period).
5.2.2 If the online test is passed and the formal entry requirements are met (academic qualifications, proof of language proficiency), the academic record of the applicant (in context of the relevant content) will be reviewed. Based on this, a decision will be made as to whether an applicant should be admitted to the international Master's programme in Advanced Materials Analysis.

5.3 Minutes must be taken of the qualification assessment process, the names of the applicants and the assessment by the qualification assessment committee.

6. Assessment and Validity of the Selection Decision

6.1 The eligibility assessment procedure ends with the applicant's admission or rejection.

6.2 The Admissions Office issues a written notification of the outcome of the selection procedure to the applicant, stating whether she/he has been admitted to or rejected from the study programme. The notification must include information on the right of appeal.

6.3 Admission to the Master's programme in Advanced Materials Analysis is valid for two years. In this time, the student has to enrol.

Appendix 3: Module Descriptions

Adaptation of Module Descriptions

The following components in the module descriptions can be modified upon agreement by the Dean of Studies:

1. Level of the module
2. Responsible teacher (Verantwortlich)
3. Lecturer(s) (Dozent(en))
4. Institute(s) (Institut(e))
5. Competencies (Qualifikationsziele/Kompetenzen)
6. Contents (Inhalte), if it goes beyond the necessary description of the subject of the examination
7. Recommended literature (Typische Fachliteratur)
8. Pre-requisites (Voraussetzungen für die Teilnahme), if only recommendations are included here (thus not necessarily fulfilled)

The changed module descriptions are announced at the beginning of the semester. The Deans of Studies of the degree programmes, in which the module is an obligatory module, elective module or specialization module, have to be informed immediately.

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