Examination and Study Regulations

for the international

Master's (M. Sc.)

Degree Programme in

Mathematics for Data and Resource Sciences

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

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Examination Regulations for the Master's Degree Programme in Mathematics for Data and Resource Sciences at the Technische Universität Bergakademie Freiberg

As per § 14 sub-paragraph 4 clause 2, 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 July 6th, 2023, SächsGVBI. p. 467) the Faculty Council of the Faculty of Mathematics and Computer Science at the Technische Universität Bergakademie Freiberg, in consultation with the Senate, agreed on the following regulations for the Master's degree programme in Mathematics for Data and Resource Science:

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§ 1
Purpose of the Master's Examination

The Master's examination should ascertain whether,

- candidates have deepened and broadened the specialist knowledge gained within the framework of their first university degree;
- they possess the ability to independently develop solutions to complex problems and topics with scientific methods and to further develop them, as well as to critically question the facts;
- they are able to identify new problems and scientific developments and incorporate them accordingly into their work and
- beyond that, as a result of interdisciplinary and social skills, they are able to organize and lead complex projects.

§ 2
Terms and Definitions

(1) In these regulations, grammatical masculine forms referring to persons apply equally to all persons regardless of their gender.

(2) Modules as defined by these regulations are composite subject areas rounded off thematically and in time to form self-contained units that can be examined and for which credit points can be awarded. Modules can consist of various teaching and learning methods, such as lectures, tutorials, practicals (laboratories, field work, internships etc.), assignments and private study. A module usually takes one semester. In exceptional circumstances, it can be extended to two or three semesters. Modules are completed by module examinations. For successfully completed modules, credit points (CP) are awarded. Modules are distinguished as follows:

1. Obligatory modules (Pflichtmodule, PM) are compulsory for students.
2. Elective modules (Wahlpflichtmodule, WPM) are modules covering a certain breadth that are chosen from among alternatives determined in the Examinations Schedule (Appendix).
3. Specialization modules (Schwerpunktmodule, SPM) are elective modules that belong to a specialization and define the student’s study specialization of their studies.
4. Optional modules (Freie Wahlmodule, FWM) are modules covering a certain breadth that are chosen from all modules offered at the TU Bergakademie Freiberg or at a cooperating Institute of Higher Education.

(3) A credit point is the unit of measurement for the student's expected workload. A credit point corresponds to a workload of 30 hours of study. In addition to attendance, workload includes private study. The overall workload of a full-time student in one academic year is assumed to be 1800 hours. This does not require a student to carry out a certain workload in order to be able to pass certain examinations.

(4) Module examinations are examinations that complete modules.

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

(6) Coursework are rendered in conjunction with courses. They are rendered in the form of seminar papers, research papers, reports, written or oral tests or have other forms. They are assessed but not necessarily graded.

(7) Prerequisites consist of coursework that are a precondition for taking a module examination. A module examination can only be taken if the prerequisites are satisfied. Prerequisites are assessed with regard to the fulfillment of requirements but are not necessarily graded. They do not influence the module grade. There is no limit to the number of times they can be repeated.

§ 3
Prescribed Period of Study and Extent

(1) The prescribed period of study is 4 semesters. The prescribed period of study relates to the time in which the course can be completed. This includes time for study and examinations including the Master's thesis and the colloquium (§ 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 programme equates to 120 credit points (CP).

(3) Credit points can be gained in obligatory modules, elective modules and optional modules that are scheduled in the course plan. Modules from Bachelor courses can be taken as elective modules or optional modules, as long as they do not come to more than 20 % of the total of the Master's degree programme in Mathematics for Data and Resource Sciences and students are able to verify that they did not take the module in question during their Bachelor studies. Even in the case of non-identical modules, the content of Bachelor modules taken as part of the Master's studies may not overlap substantially with previously taken Bachelor modules. The possibility to take additional modules (§ 20) is unaffected.

(4) Completing a professional internship lasting at least four months is strongly encouraged. If a professional internship lasting at least four months has been completed while pursuing studies, students may choose the Master’s Thesis with Professional Internship option within the Master’s Thesis (Mathematics for Data and Resource Sciences) module upon submission of an internship report. In this case the scope of the research project will be reduced correspondingly.

§ 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 are made up 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 prescribed period of study, although it can be taken at the latest within four semesters of the prescribed period of study ending. The details are regulated in § 13 sub-paragraph 3.

(2) Module examinations should be taken in the semester in which the courses of the module finish, as scheduled in the study schedule. As long as proof of the necessary admission requirements (§ 6) is produced, module examinations can also be taken beforehand.

(3) The candidate is duly informed about the arrangement of the prerequisites and examinations to be rendered and about the dates on which they should be rendered as well as informed of their 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 of the topic of the Master' thesis as well as its 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 that by the start of the third semester have not passed any module examinations should take part in a consultation at the Departmental Student Advisory Service in the third semester.

(6) Deadlines do not start during the periods of maternity leave in accordance with § 3 of the Maternity Protection Act and these periods extend ongoing deadlines. In the case of parental leave (in accordance with the “Bundeselterngeld- und Elternzeitgesetz”), § 12 enrollment 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 someone who

1. is registered at the TU Bergakademie Freiberg,
2. has rendered the prerequisites and fulfilled the special admission requirements for the module in question and
3. has not definitively failed the module examination in question.

Decisions on exceptions are made by the Examination Board.

The possibility of taking an examination in an external procedure in accordance with the regulations is unaffected by this.

(2) The issuing of the topic of the Master's thesis (§ 19 sub-paragraph 3) requires the candidate to be registered on the Master's degree programme in Mathematics for Data and Resource Sciences at the TU Bergakademie Freiberg and, in accordance with § 4 of the study regulations for this degree programme, to have fulfilled, where necessary, requirements of the Examination Board.

(3) Admission for an examination is applied for by the student in the Student Services Office. Application deadlines are duly announced. The Student Services Office verifies the existence of the admission requirements and compiles the data for the 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 candidates cannot produce evidence for rendered prerequisites in accordance with the valid study regulations for an ongoing course they are participating in, they will be admitted subject to the presentation of evidence before the examination takes place. If the evidence is in the form of physical documentation, it must be submitted at least two working days before the examination to the Student Services Office or directly before the examination to the examiner if it is online information from the Student Services Office for the examiners.

(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 programme 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 declare

1. that they are familiar with these examination regulations and
2. that no reasons of refusal of sub-paragraph 5 N. 3 and 4 have been met.

(7) Rejected applications in the case of sub-paragraph 5 N. 3 and 4 are given to the candidate duly before the start of the examination stating reasons and with instructions on right to appeal.

§ 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 method of the examination is appropriate for digital formats and if equal treatment of the candidates is ensured. The TU Bergakademie Freiberg can use external help 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. Other appropriate measures to ensure equal opportunities are also permitted. This usually requires submission of a doctor's certificate. The examination board may also require a medical certificate from a specialist. This applies accordingly to coursework, prerequisites and the Master's thesis including the colloquium.

(3) In general, English is the language used for coursework, prerequisites and examinations. In courses for which the module description in the appendix to the academic regulations is written exclusively in German, coursework, exam preparation, and exams may be required to be completed in German.

§ 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 or not candidates have a fundamental knowledge appropriate to the level of the degree programme.

(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 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 prove that they can, using the fundamental knowledge necessary, solve problems and 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 programme, 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 of 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 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". In particularly severe cases, the Examination Board will exclude the candidate from further examinations.

(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). A module examination that has not been taken within four semesters after the end of the regular period of study counts 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) A second repeated examination can only be taken at the next possible examination date. Applications have to be submitted at the Student Services Office. Another repetition examination is not permitted.

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

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

(1) Coursework 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 recognision requires that a sufficient number of examinations (§ 36 (7) of the Saxon Higher Education Act) remains to be taken in this degree programme to justify the award of the academic degree in accordance with § 21.

(2) Applications for recognition of coursework 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 coursework 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 programme. This comparison is not schematic but rather an overall consideration and evaluation.

(4) If coursework 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.

(5) With resumption of studies in the same degree programme after a deferral, the student is enrolled in the continuing semester and the achieved coursework 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 organisation 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 Mathematics and Computer Science. 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 examination (§ 6),
2. relaxation 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, coursework 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. appeals against its decisions (§ 25).

The Examination Board also makes decisions on

1. the imposition of conditions for the admission to the Master's degree programme as well as exceptions of the admission requirements within the Study Regulations for the Master's Degree Programme Mathematics for Data and Resource Sciences 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 programme in Mathematics for Data and Resource Sciences.

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 appeal.

The Examination Board is also to be included in the consultations of the Commission of Studies concerning the updating of the programme in accordance with the study

regulations of the Master's degree programme in Mathematics for Data and Resource Sciences.

(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. Repeat appointments are allowed.

(3) The chairperson, his/her deputy, the other members of the Examination Board and their deputies are appointed by the Faculty Council of the Faculty of Mathematics and Computer Science. The appointment of the student takes place in consultation with the student representatives of the Faculty of Mathematics and Computer Science.

(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. If, in urgent cases, this period of notice cannot be kept, the reasons for the shortened notice are to be written in the minutes. The Examination Board makes rulings on the basis of majority voting of the voting members present. Written consent in lieu of a meeting is allowed.

(5) The Examination Board makes sure that the rules of the examination regulations are kept. 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 assign to the chairperson duties to be carried out.

(7) The members of the Examination Board have the right to be involved in examinations. They cannot exercise responsibilities of the Examination Board if they themselves are participants in matters concerning an examination.

(8) The meetings of the Examination Board are not open to the public. The members of the Examination Board and their deputies are subject to official secrecy. If they are not civil servants 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 of this. Examiners appointed should only be members and associates of the Technische Universität Bergakademie Freiberg or of another institute of higher education who are authorized to teach 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 examiners, as long as the character of the examination is appropriate. An observer or examiner can only be appointed if they themselves have at least the qualification that the examination in question leads to or an equivalent qualification.

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

(3) The candidate can, in specially justified cases, nominate the examiner or examiners for the evaluation of oral examinations (§ 8). The nomination does not constitute entitlement. The candidate will be duly informed of the names of the examiners. 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

(1) The components of the Master's examination are the module examinations named in the appendix to these regulations and the Master's thesis including the colloquium. The object of examinations and prerequisites assessments is the subject matter of the modules named in the appendix of these regulations. Details of this are given in the module descriptions. The number and type of the particular examinations and prerequisites assessments are regulated in the Appendix to these regulations.

(2) As soon as the students have attempted the module examination for the first time, an elective module (Wahlpflichtmodule, WPM) is considered as chosen, in principle. The choice can be cancelled within the prescribed period of study by written statement by the student to Student Services Office. Outside of the prescribed period of study, the chronological sequence of the first complete module examinations attempt counts as a binding choice. The change of elective modules outside of the prescribed period of study requires the approval of the Examination Board. If more elective modules are taken than required for the volume of Credit Points, the chronological sequence (first complete module examinations attempt) is the determining factor for counting as an elective module, unless a written statement according to clauses 2 or the approval of the Examination Board according to clauses 4 is existent. Credit Points of modules above the required volume of Credit Points count as additional modules.

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

(1) Through the Master's thesis and colloquium, candidates should show that they are able, within a prescribed period, to independently process a defined complex problem from their field with appropriate scientific methods 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 authorized for examinations by federal state law, as long as they are employed at the TU Bergakademie Freiberg in an area relevant for the degree programme. If the Master's thesis is to be undertaken in an institution other than 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 relate to the content of the degree programme and be defined such that deadlines for its completion can be met. The topic is issued, after registration in the Student Services Office, by the supervisor via the Examination Board. The topic and date are to be put on record. Candidates can express their wishes with regards to the topic and nominate 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 modules totalling at least 60 credit points from the Master's degree programme in Mathematics for Data and Resource Sciences have been rendered. 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 can only be returned once and this within four weeks of its issue. For resubmission of the Master's thesis, the returning of the topic by the mentioned deadline is only admissible if the candidate did not make use of this possibility for preparing the first thesis.

(5) The Master's thesis can also be rendered in the form of a group thesis if the examined contribution of the individual candidate is 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, without a professional internship, must be submitted to the Student Services Office of the TU Bergakademie Freiberg 9 months after the date on record of the issue of the topic at the latest. The master's thesis, including the professional internship, must be submitted in two bound copies to the Student Office at TU Bergakademie Freiberg no later than 6 months after the date on record for the assignment of the topic. A further copy has to be submitted in a 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 candidates must make a written declaration that they carried out their work – in the case of group work, their marked section of the work – independently and only with the use of the sources and aids stated.

(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 differing evaluations, the grade is calculated from the arithmetic mean. The Examination Board can, in exceptional cases, enlist a third examiner. A third examiner is enlisted when the difference between the two evaluations equates to more than 1.7. Sub-paragraph 3 applies accordingly. In the case of only one of the examiners giving the grade "not sufficient" (5.0) and the other giving the thesis a grade of 3.3, 3.7 or 4.0, a third examiner is brought in and decides whether the Master's thesis is 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. At the Colloquium, the issuer of the topic of the Master's thesis (supervisor) must participate. The requirement for admission to this 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 of submission of the Master's thesis. The colloquium presentation should last 30 minutes and the subsequent discussion should not exceed 60 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 of the Master's thesis and the colloquium, § 14 applies with the proviso, that

1. for a second repetition of the Master's thesis can be submitted accordingly to § 14 sub-paragraph 2 within a month of receipt of the ruling of failure,

2. a failed colloquium can only be repeated once within a period of six weeks.

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

§ 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 on offer at the TU Bergakademie Freiberg or from a cooperating institute of higher education. They are not considered in the calculation of a student's workload. They do not count towards the calculation of the overall grade of the Master's examination, but can, upon request, be recorded in the transcript.

§ 21
Academic Degree

If the Master's examination is passed, the TU Bergakademie Freiberg awards 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. Included in the transcript are the module grades, the credit points and remarks of the recognition, the topic and grade of the Master's thesis, the overall grade as well as the method of its calculation. If applicable – upon the candidate's request – the result of module examinations in modules other than those prescribed (additional modules) can be included in the transcript.

(2) The date on the Master's transcript is that of the rendering of the last examination and is the date of the official copy.

(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 is certification of the conferral of the Master's degree.

(5) The Master's degree certificate and the transcript are signed by the Dean of the Faculty of Mathematics and Computer Science 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 met, without willful deceit on the part of the candidate, and if this fact is 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 "failed" on the basis of 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, upon request, are allowed, 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, in electronic form in accordance with § 3a sub-paragraph 2 of the “Verwaltungsverfahrensgesetz” and with § 9a sub-paragraph 5 of the “Onlinezugangsgesetz” or by recorded declaration within a month of the student being informed of the decision. The Student Services Office takes 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
Effective Date, Termination, and Transitional Provisions

(1) These regulations take effect on the day following their publication in the Official Announcements of the TU Bergakademie Freiberg. They apply to students who begin their studies in the 2026/27 winter semester or later.

(2) At the same time, the examination regulations for the master's program in Mathematics for Data and Resource Sciences at TU Bergakademie Freiberg, dated March 25, 2022 (Official Announcements of TU Bergakademie Freiberg No. 9 of March 29, 2022), are hereby repealed, subject to paragraph 3.

(3) Students who began their studies in the Master's program in Mathematics for Data and Resource Sciences before these examination regulations took effect may continue their studies in accordance with the examination regulations applicable to them. They must have taken the Master's examination by September 30, 2030, at the latest. Students are also entitled to retake exams in accordance with the deadlines for retaking exams specified in the examination regulations applicable to them. Once the retake deadlines specified in the examination regulations have expired, students are no longer entitled to retake exams in the Master's program in Mathematics for Data and Resource Sciences.

(4) Students enrolled in the Master's program in Mathematics for Data and Resource Sciences who began their studies before these examination regulations took effect may, upon submitting a written request to the Student Office, continue their studies under these examination regulations. This request is irrevocable. The request must be submitted by the end of the registration period for the winter semester 2026/27 examination period.

Freiberg, on

Prof. Dr. Jutta Emes
President

Appendix: Examination Schedule

Module	Type of exams und Prerequisites	Weighting within the Module	Special Requirement for Admission	CP
Obligatory modules				
Seminar Mathematical Fundamentals for Data and Resource Science	AP (Seminar Presentation) PVL (Comments on the presentations)	1 0		5
German A1/ 1. Semester[1]	KA PVL (Active participation in at least 80% of class time)	1 0		4
Statistical Foundations of Data Science	KA (Exam) PVL (Programming Project)	1 0		5
Geomodelling – Geostatistics for Natural Resource Modelling	KA AP (Supporting Documents and Internship Report)	2 1		5
German A1/ 2. Semester[1]	KA PVL (Active participation in at least 80% of class time)	1 0	German A1 / 1st Semester or equivalent language proficiency	4
Mathematics of Machine Learning	MP	1		6
Seminar Mathematics for Data and Resource Sciences	MP* (Scientific Lecture) AP* (Seminar Thesis)	1 1		6
Master Thesis (Mathematics for Data and Resource Sciences)	AP* (Master's Thesis without a Professional Internship) AP* (Colloquium) OR AP* (Master's Thesis with Professional Internship) AP* (Colloquium) AP* (Internship Report and Internship Discussion)	2 1 OR 2 1 0	Courses totalling at least 60 credit points (excluding the master's thesis (Mathematics for Data and Resource Sciences))	30

[1] Students with advanced German language skills take one of the two-semester advanced German courses “German A2,” “German B1,” or “German B2” offered by the International University Center at TU Bergakademie Freiberg instead of the modules “German A1/1st Semester” and “German A1/2nd Semester,” Students whose native language is German or who have a German language proficiency level of at least B2 take other language modules offered by the International University Center or modules from the “A. Mathematical Elective Modules” catalog, totaling at least 8 LP, instead of the “German A1/1st Semester” and “German A1/2nd Semester” modules.

Module	Type of exams und Prerequisites	Weighting within the Module	Special Requirement for Admission	CP
Elective Modules ** Modules totalling 55 credit points must be chosen from the following catalogs of elective modules. Whereas modules totalling at least 37 credit points have to be chosen from the catalogue of mathematical elective modules and modules totalling at least 4 credit points have to be chosen from the catalogue of minor subject elective modules. In addition, no more than 6 credit points can be taken as optional modules.				
Elective modules: Mathematics modules				
Elective Mathematics Modules: **Analysis**				
Basics in Partial Differential Equations	MP	1		4
Inverse Problems	MP	1		5
Fourier Analysis	MP	1		5
Differential Geometry	MP	1		5
Mathematics of Crystallographic Texture Analysis	MP	1		5
Selected Topics in Applied Operator Theory	MP	1		5
Selected Topics in Partial Differential Equations	MP	1		5
Wavelets	MP	1		6
Mathematical Image Processing	MP	1		6
Global Analysis	MP	1		5
Elective Mathematics Modules: **Discrete Mathematics/Algebra**				
Algorithmic and Structural Graph Theory	KA* MP*	1 1		9
Algorithmic Topology	MP	1		6
Geometry and Topology	MP	1		6
Algorithmic Geometry	MP	1		6
Algorithms	AP (Lecture) KA	3 1		6
Topological Data Analysis	MP	1		6
Methods of Applied Algebra	MP	1		6

Module	Type of exams und Prerequisites	Weighting within the Module	Special Requirement for Admission	CP
Elective Mathematics Modules: **Numerics/Optimization**				
Introduction to Scientific Programming	KA PVL (Programming Project)	1 0		4
Scientific Computing Project	AP (Presentation of the algorithm and implementation) PVL (Presentation materials with explanations)	1 0		6
Current Topics in Numerical Analysis I	MP OR AP (Presentation and Discussion) The exam format will be announced during the first lecture.	1 OR 1		6
Modelling and Simulation	MP	1		9
Introduction to High Performance Computing and Optimization	MP/KA (MP = Individual exam; group exam for 30 or more participants) PVL (Programming Project)	1 0		4
Numerical Methods for Initial Value Problems	MP	1		9
Current Topics in Numerical Analysis II	MP OR AP (Presentation and Discussion) The exam format will be announced during the first lecture.	1 OR 1		6
Finite Element Methods (FEM) for Mathematicians	MP	1		9
Vector Optimization	MP	1		6
Numerical Methods for Nonlinear Optimization and Nonlinear Systems	MP	1		9
Parallel Computing	MP	1		6
Stochastic Programming	MP	1		6
Stochastic Programming	MP	1		6
Elective Mathematics Modules: **Stochastics**				
Applied Statistics	MP	1		6

Module	Type of exams und Prerequisites	Weighting within the Module	Special Requirement for Admission	CP
Current Topics in Stochastics	MP	1		6
Methods in Machine Learning	MP	1		6
Stochastic Processes	MP	1		6
Data Analysis Project	AP (Documentation of a data analysis project, including an oral presentation)	1		4
Data-driven Forecasting under Uncertainty	MP	1		6
Mathematics of Ethics	MP* AP* (Participation in the seminar, including a presentation)	1 1		5
Introduction to Bayesian Data Analysis	AP* (Practical Exercises) MP/KA* (Whether the course will be taught by an MP or a KA will be decided during the course; a KA will teach if there are 15 or more participants.)	3 2		4
Random Graphs	MP	1		5
Statistical Analysis of Systems	MP	1		6
Elective Modules: Minor Subjects				
Advanced Theory of Potential Fields	MP	1		4
Theory of Potential Methods	MP	1		4
Numerical Simulation Methods in Geophysics	AP (Solutions to Practice Problems)	1		6
Climate Change	AP (Climate Analysis Project with Report (preferably a Jupyter Notebook))	1		5
Applied Geomodelling	AP (Project Documentation)	1		4
Applied Machine Learning for Geoscience	KA* AP* (Project Work with Report)	1 1		5
Inverse Problems in Geophysics	AP (Solutions to Practice Problems)	1		6
Theory of Electromagnetic Methods	MP	1		4
Continuum Multiphysics in the Geosciences	MP/KA (KA for 4 or more participants)	1		4
Techno-Ecological Project	MP* (Individual presentation of the project's progress through a talk)	2		5

Module	Type of exams und Prerequisites	Weighting within the Module	Special Requirement for Admission	CP
	AP* (Joint written report on the project (document, max. 20 pages))	3		
Introduction Machine Learning und Big Data	MP/KA (KA for 15 or more participants)	1		6
Optional Module Modules totalling up to 6 credit points have to be chosen from those on offer either at the TU Bergakademie Freiberg or from 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 governed by the regulations of the degree programmes 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.				

Legende:

MP = Mündliche Prüfungsleistung (oral exam)
KA = Klausurarbeit (written examination)
AP = Alternative Prüfungsleistung (alternative assessment)
PVL = Prüfungsvorleistung (prerequisite)
* = In modules requiring more than one examination, this examination has to be passed or completed with at least "ausreichend" (4,0), respectively.
** = The list of required elective modules may be amended by the Faculty Council of the Faculty of Mathematics and Computer Science upon the recommendation of the Academic Committee. The amended list of required elective modules must be posted 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 6th, 2023, SächsGVBI. p. 467) the Faculty Council of the Faculty of Mathematics and Computer Science at the Technische Universität Bergakademie Freiberg, in consultation with the Senate, agreed on the following study regulations for the Master's degree programme in … :

Study Regulations for the Master's Degree Programme in Mathematics for Data and Resource Sciences at the Technische Universität Bergakademie Freiberg

Contents: **§§**

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

§ 1
Scope

(1) The existing study regulations regulate the aim, content and structure of the Master's degree programme in Mathematics for Data and Resource Sciences on the basis of the examination regulations of the international Master's degree programme in Mathematics for Data and Resource Sciences at the TU Bergakademie Freiberg.

(2) In these regulations, grammatical masculine forms referring to persons apply equally to all persons regardless of their gender.

§ 2
Aims of the Degree Programme

(1) The master’s program provides in-depth, research-oriented knowledge in key areas of pure and applied mathematics and equips students to apply this knowledge to solve complex data- and resource-related problems. Students acquire a systematic understanding of mathematical concepts and methods from algebra, analysis, numerical mathematics, optimization, statistics, and probability theory, and are able to critically evaluate, further develop, and apply these concepts to new fields of application. The program thus continues the strong Freiberg tradition of application-oriented mathematics education with a holistic view of the breadth of mathematical disciplines.

(2) Graduates possess broad, integrated knowledge and understand the mathematical foundations of data science and the geosciences. In line with the program’s learning objectives, students acquire technical and methodological competencies that enable them to abstract real-world problems, formulate appropriate mathematical models, and address these problems using both analytical and computational methods. They can analyze complex datasets, implement statistical and algorithmic methods, and evaluate their results in light of assumptions and model limitations. In addition, they possess technical skills in using modern scientific software tools, as well as the ability to carry out analysis, modeling, and simulation processes in a structured and reproducible manner.

(3) The program also fosters cross-disciplinary skills, particularly analytical and critical thinking, problem-solving skills, and the ability to collaborate across disciplines. Graduates are able to conduct independent scholarly work, present complex issues in a manner tailored to the audience, and communicate their findings both in writing and orally. They are thus qualified for positions in research and development, as well as for challenging roles in data- and resource-oriented professional fields in industry, business, and public institutions.

§ 3
Type of Degree Programme

The Master's degree programme in Mathematics for Data and Resource Sciences is a consecutive Master's degree programme with a strong emphasis on research.

§ 4
Admission Requirements

(1) Admission to the master’s program in Mathematics for Data and Resource Sciences is limited to applicants who hold a Bachelor degree from a university, that requires at least six semesters of study, in either mathematics or a natural sciences or engineering

with in-depth mathematical training, and who have demonstrated the required academic aptitude in an assessment procedure in accordance with Appendix 3.

(2) In addition, applicants must meet the following admission requirements:

(a) provides proof of English language proficiency through a recognized language test, such as the Test of English as a Foreign Language (TOEFL), with a score of at least 4.5 (Internet-based test), or the International English Language Testing System (IELTS), with a score of at least 6.5, or an equivalent test with a corresponding score. Exceptions to this requirement are international applicants who, based on their educational credentials in accordance with the reference framework for English language proficiency established by the Arbeits- und Servicestelle für internationale Studienbewerbungen e.V., are exempt from the requirement to provide proof.

(b) A letter of motivation (no more than one DIN A4 page) explaining your reasons for applying to the program.

(3) The examination committee may require the applicant to complete certain coursework and examinations within a specified time frame, but no later than the date the topic for the master's thesis is assigned.

(4) Beyond this, the enrollment regulations of the TU Bergakademie Freiberg apply.

§ 5
Language Requirements

In this degree program, coursework, preparatory work for exams, and exams are generally to be completed in English. In courses for which the module description in the appendix to these academic regulations is written exclusively in German, coursework, preparatory work for exams, and exams may be required to be completed in German.

§ 6
Duration of Studies, Study Volume and Commencement of Studies

(1) The prescribed period of study is 4 semesters

(2) In the Master's degree programme in Mathematics for Data and Resource Sciences, 120 credit points must be acquired.

(3) Studies commence in the winter semester.

§ 7
Student Advice

(1) In addition to general advice concerning studies from 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 programme in Mathematics for Data and Resource Sciences. 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.

§ 8
Programme Structure

(1) The degree programme is composed of 4 semesters and is concluded with the Master's examination.

(2) The Master's thesis is written during the 3rd and 4th semester. Further details concerning the Master's thesis and colloquium are regulated in the examination regulations of the international Master's degree programme in Mathematics for Data and Resource Sciences.

(3) Separable 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.

§ 9
Methods of Instruction and Assessment

(1) Courses (Lehrveranstaltungen, LV) can be lectures (Vorlesungen, V), workshops (Übungen, Ü), seminars (Seminaren, S), practicals (laboratories, fieldwork, internships etc.) (Praktika, P) and other types of courses. In lectures, theoretical knowledge is presented. They can also be carried out digitally synchronously or synchronously hybrid. In workshops, material from the lectures and background knowledge necessary for understanding the lectures is revised, practised and consolidated. Seminars lead the student’s to independent scientific work through discussions and their own presentations. The aim of practicals, besides the consolidation of theoretical knowledge, is to learn methods and other practical skills.

(2) The size of courses is measured in "semester week hours" (Semesterwochenstunden, SWS). One SWS describes a unit of time of generally 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 practicals, workshops and seminars, prepare and follow up. To attain the necessary knowledge, additional independent 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.

§ 10
Provision of Courses

(1) The university ensures through its course programme that the module examinations, in accordance with the examination regulations for Mathematics for Data and Resource Sciences, 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. Repeat examinations, as far as is 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 programme planning can be in place in time for the new academic year.

§ 11
Course Programme

(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.

§ 12
Effective Date, Termination, and Transitional Provisions

(1) These Study Regulations, together with the Examination Regulations for the Master's program in Mathematics for Data and Resource Sciences, shall enter into force on the day following their publication in the Official Gazette of the TU Bergakademie Freiberg. They apply to students who begin their studies in the 2026/27 winter semester or later.

(2) At the same time, the academic regulations for the master's program in Mathematics for Data and Resource Sciences at TU Bergakademie Freiberg, dated March 25, 2022 (Official Announcements of TU Bergakademie Freiberg No. 9 of March 29, 2022), are hereby repealed, subject to paragraph 3.

(3) Students who began their studies in the Master's program in Mathematics for Data and Resource Sciences before these academic regulations took effect may continue their studies in accordance with the academic regulations applicable to them. The corresponding courses will be offered through the summer semester of 2030. Further details are set forth in the examination regulations for the Master's program in Mathematics for Data and Resource Sciences.

(4) Students enrolled in the Master's program in Mathematics for Data and Resource Science who began their studies before these academic regulations took effect may continue their studies under these regulations by submitting a written request to the Student Office. This request is irrevocable. The request must be submitted by the end of the registration period for the winter semester 2026/27 exam period.

Freiberg, on

Prof. Dr. Jutta Emes
President

Appendix 1: Study Schedule

When starting your studies in the winter term

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	CP
Obligatory Modules					
Seminar Mathematical Fundamentals for Data and Resource Science	0/0/3/0				5
German A1/ 1. Semester[2]	0/4/0/0				4
Statistical Foundations of Data Science	2/1/0/0				5
Geomodelling – Geostatistics for Natural Resource Modelling		2/2/0/0			5
German A1/ 2. Semester[2]		0/4/0/0			4
Mathematics of Machine Learning		3/1/0/0			6
Seminar Mathematics for Data and Resource Sciences			0/0/2/0		6
Master Thesis (Mathematics for Data and Resource Sciences)				x	30

When starting your studies in the summer term

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	CP
Obligatory Modules					
Seminar Mathematical Fundamentals for Data and Resource Science		0/0/3/0			5
German A1/ 1. Semester[2]		0/4/0/0			4
Statistical Foundations of Data Science		2/1/0/0			5
Geomodelling – Geostatistics for Natural Resource Modelling	2/2/0/0				5
German A1/ 2. Semester[2]			0/4/0/0		4
Mathematics of Machine Learning	3/1/0/0				6
Seminar Mathematics for Data and Resource Sciences			0/0/2/0		6
Master Thesis (Mathematics for Data and Resource Sciences)				x	30

[2] Students with advanced German language skills take one of the two-semester advanced German courses “German A2,” “German B1,” or “German B2” offered by the International University Center at TU Bergakademie Freiberg. Students whose native language is German or who have a German language proficiency level of at least B2 take other language modules offered by the International University Center or modules from the required-elective catalog “A. Mathematical Elective Modules” totaling at least 8 CP.

Module	winter semester	summer semester	CP
Elective Modules [3] Modules totalling 55 credit points must be chosen from the following catalogs of elective modules. Whereas modules totalling at least 37 credit points have to be chosen from the catalogue of mathematical elective modules and modules totalling at least 4 credit points have to be chosen from the catalogue of minor subject elective modules. In addition, no more than 6 credit points can be taken as optional modules.			
Elective modules: Mathematics modules			
Elective Mathematics modules: **Analysis**			
Basics in Partial Differential Equations	2/1/0/0		4
Inverse Problems	2/1/0/0		5
Fourier Analysis (only in odd-numbered years)	2/1/0/0		5
Differential Geometry (only in even-numbered years)	2/1/0/0		5
Mathematics of Crystallographic Texture Analysis	2/1/0/0		5
Selected Topics in Applied Operator Theory (only in odd-numbered years)		2/1/0/0	5
Selected Topics in Partial Differential Equations		2/1/0/0	5
Wavelets (only in even-numbered years)		3/1/0/0	6
Mathematical Image Processing (only in odd-numbered years)		3/1/0/0	6
Global Analysis (only in odd-numbered years)		2/1/0/0	5
Elective Mathematics modules: **Discrete Mathematics/Algebra**			
Algorithmic and Structural Graph Theory	2/1/0/0	2/1/0/0	9
Algorithmic Topology (only in odd-numbered years)	2/2/0/0		6
Geometry and Topology	2/1/0/0		6
Algorithmic Geometry	2/2/0/0		6
Algorithms		2/2/0/0	6
Topological Data Analysis		2/1/0/0	6
Methods of Applied Algebra		2/1/0/0	6
Elective Mathematics modules: **Numerics/Optimization**			
Introduction to Scientific Programming	2/2/0/0		4
Scientific Computing Project	0/0/3/0		6
Current Topics in Numerical Analysis I	2/0/1/0		6
Modeling and Simulation (only in even-numbered years)	4/2/0/0		9
Introduction to High Performance Computing and Optimization	2/1/0/0		4

[3] The list of required elective modules may be amended by the Faculty Council of the Faculty of Mathematics and Computer Science upon the recommendation of the Study Commission. The amended list of required elective modules must be posted at the beginning of the semester.

Module	winter semester	summer semester	CP
Numerical Methods for Initial Value Problems (only in odd-numbered years)	4/2/0/0		9
Current Topics in Numerical Analysis II		2/0/1/0	6
Finite Element Methods (FEM) for Mathematicians (only in odd-numbered years)		4/2/0/0	9
Vector Optimization (only in odd-numbered years)		2/2/0/0	6
Numerical Methods for Nonlinear Optimization and Nonlinear Systems ((only in even-numbered years)		4/2/0/0	9
Parallel Computing (only in odd-numbered years)		3/1/0/0	6
Stochastic Programming (nur in geraden Jahren)		3/1/0/0	6
Elective Mathematics Modules: **Stochastics**			
Applied Statistics	2/2/0/0		6
Current Topics in Stochastics (only in odd-numbered years)	3/0/0/0		6
Methods in Machine Learning	3/1/0/0		6
Stochastic Processes (only in even-numbered years)	3/1/0/0		6
Data Analysis Project	0/0/1/0 + 1 SWS project work		4
Data-driven Forecasting under Uncertainty (only in even-numbered years)		2/2/0/0	6
Mathematics of Ethics (only in odd-numbered years)		2/0/1/0	5
Introduction to Bayesian Data Analysis		1/1/0/0	4
Random Graphs (only in odd-numbered years)		2/1/0/0	5
Statistical Analysis of Systems		2/2/0/0	6
Elective modules: Minor subjects			
Advanced Theory of Potential Fields	2/1/0/0		4
Theory of Potential Methods	2/1/0/0		4
Numerical Simulation Methods in Geophysics	2/2/0/0		6
Climate Change	2/2/0/0		5
Applied Geomodelling	1/2/0/0		4
Applied Machine Learning for Geoscience		2/1/0/0	5
Inverse Problems in Geophysics		2/2/0/0	6
Theory of Electromagnetic Methods		2/1/0/0	4
Continuum Multiphysics in the Geosciences		2/0/0/0	4
Techno-Ecological Project		1/0/1/1	5
Einführung Machine Learning und Big Data		2/2/0/0	6
Optional Module Modules totalling up to 6 credit points have to be chosen from those on offer either at			

Module	winter semester	summer semester	CP
the TU Bergakademie Freiberg or from 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 governed by the regulations of the degree programmes 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.			

Appendix 2: Module Descriptions

Adaptation of Module Descriptions

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

1. Level of the module
2. Responsible (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. 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 start 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.

Appendix 3: Qualification Assessment Process

1. General Information

(1) The purpose of the qualification assessment is to evaluate the applicant's specific motivation and qualifications for the international Master's programme in Mathematics for Data and Resource Sciences. The goal is to determine whether the applicant is likely to be able to successfully complete the program. Particular consideration is given to the applicant's academic prerequisites.

(2) The assessment of qualifications for the international master's programme in Mathematics for Data and Resource Sciences takes the form of an assessment interview. It is not open to the public and lasts 15 to 30 minutes. The assessment interview may also be conducted online.

2. Application Process

(1) As a general rule, the assessment of qualifications is requested as part of the online application (application for admission to study) for the master's program in Mathematics for Data and Resource Sciences.

(2) Before participating in the eligibility assessment process for the master's program in Mathematics for Data and Resource Sciences, the following must be submitted:

- Certificate of the relevant professional degree,
- Proof of English language proficiency through a recognized language test, such as the Test of English as a Foreign Language (TOEFL), generally with a score of at least 4.5 (Internet-based test), or the International English Language Testing 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 are exempt from the requirement to provide evidence, based on their academic qualifications as assessed against the uni-assist reference framework,
- Proof of program-specific professional experience or internships,
- a one-page letter of motivation explaining the reasons for applying to the Master's programme in Mathematics for Data and Resource Sciences.

3. Qualification Assessment Process

(1) The selection of applicants and the conduct of the admission interviews are the responsibility of the faculty member in charge of the respective program. The faculty member responsible for the respective field of study is appointed by the examination committee of the master's programme in Mathematics for Data and Resource Sciences for a term of three years. Reappointments are permitted. The faculty member responsible for the respective field of study may make decisions on a case-by-case basis regarding the conduct of the qualification assessment process.

(2) The applicant will be notified in writing of the date of the evaluation interview. In justified cases, a different date may be arranged at the applicant's request.

(3) The assessment interview may take the form of an individual or group interview with up to 4 applicants.

(4) Minutes must be taken of the assessment interview, detailing the date, location, and duration, as well as the names of the participants, the course of the interview, the main topics discussed, and an evaluation of those topics. In the case of group interviews, the responses of individual participants must remain identifiable and be recorded separately.

4. Assessment and Validity of the Qualification Determination

(1) The assessment interview must be graded as “pass” or “fail”. In group interviews, each applicant must be evaluated individually.

(2) The admissions office must issue the applicant a written notice regarding the outcome of the evaluation interview, stating whether the applicant has been admitted to or rejected from the requested degree program. The notice must include information on the right to appeal.

(3) Proof of passing the qualification assessment for the master's program in Mathematics for Data and Resource Sciences is valid for two years.

(4) Upon request, the applicant will be granted access to the minutes of the evaluation interview. The request must be submitted to the examination committee within one month of the announcement of the results. The examination committee will determine the time and place for reviewing the minutes.

5. Failure to Determine Eligibility

(1) The assessment interview is considered a “fail” if the applicant misses the appointment without a valid reason or if the applicant withdraws from the assessment interview once it has begun without a valid reason.

(2) The reasons given for the absence or withdrawal must be reported to the examination committee in writing without delay. If the candidate is ill, a doctor’s note is required. If the examination committee accepts the reasons, a new date will be scheduled.