The only official and thus legally valid form of the subject-specific examination regulations in the Master's program Materials Chemistry and Mineralogy is in German. This translation is only an aid to understanding for persons who are not proficient in the German language and has no legally binding effect.

Subject-specific examination regulations for the Master's Degree „Materials Chemistry and Mineralogy" at the Department of Geosciences at the University of Bremen

Of February 3, 2021

On February 3, 2021, the Faculty Council 5 (Geosciences) in accordance with Section 87 Paragraph 1 Number 2 of the Bremen University Act (BremHG) in conjunction with Section 62 BremHG in the version of the announcement of May 9, 2007 (Brem.GBI. P. 339), amended by Article 1 of the law of February 24, 2021 (Brem.GBl. p. 216), has decided the following examination regulations:

These subject-specific examination regulations apply in conjunction with the general part of the Examination regulations for Master courses (AT MPO) at the University of Bremen from January 27, 2010 in the currently valid version.

§ 1

Scope of study and degree

(1) (1) For the successful completion of the Master's degree „Materials Chemistry and Mineralogy" a total of 120 credit points (CP) according to the European Credit Transfer and Accumulation System (ECTS) have to be acquired. This corresponds to a standard period of study of 4 semesters.

(2) Based on the Master's examination, the degree

Master of Science
(abbreviated M. Sc.)

will be awarded.

§ 2

Course structure, modules and credits

(1) The Master's degree course „Materials Chemistry and Mineralogy" (short: MCM) is studied as a Master's degree course according to § 4 Paragraph 1 Sentence 1 AT MPO. The General Studies area according to § 4 Paragraph 4 AT MPO comprises 6 CP, 3 of which can be freely selected as part of a module from the complementary studies at the University of Bremen. For more details, see module description.

(2)

(a) The course is structured as follows:

i. Master Thesis, 30 CP. The master thesis is to be written in the chosen profile subject "Chemistry" or "Mineralogy", see also § 6;
ii. Compulsory modules (without Master Thesis module) amounting to 42 CP;
iii. Compulsory elective modules and elective modules totalling 48 CP, for details see letters b and c in this paragraph.

(b) In the compulsory elective and elective modules, students have two profile subjects to choose from, namely the “profile subject chemistry” and the “profile subject mineralogy”. Students decide to what extent they will complete both profile subjects.

(c) The following selection rules apply to studying the profile subjects:

i. Two compulsory elective modules with a total of 12 CP each must be completed, which can be freely selected across both profile subjects.
ii. At least 24 CP and a maximum of 42 CP must be completed in the first profile subject: If, for example, 24 CP are completed in the first profile subject, 24 CP must be completed in the second profile subject; if a profile subject is completed with 42 CP, then the other profile subject must be completed with 6 CP, etc.
iii. If a profile subject is studied to a greater extent, elective modules from the profile subject offering must be studied with at least 12 CP and at least one compulsory elective module with 12 CP.

(3) Annex 1 shows the recommended course of study, Annex 2 regulates the examinations to be performed.

(4) Modules are carried out as compulsory, compulsory elective or elective modules.

(5) The compulsory, compulsory elective and elective modules provided in the curriculum are offered at least once a year.

(6) Compulsory and compulsory elective modules are held in English, elective modules in German or English. It is guaranteed that elective modules are offered in English with at least 24 CP in each profile subject.

(7) The courses assigned to the modules are shown in the module descriptions.

(8) Lectures are held in accordance with Section 6 Paragraph 1 AT MPO. In addition, courses are held as project exercises.

§ 3

Examinations

(1) Examinations are carried out in accordance with §§ 8 ff. AT MPO: In addition, examinations can be carried out as listed in Appendix 3. In individual cases, the examination board can allow other modes of examination at the request of an examiner.

(2) According to § 20 Paragraph 4 AT MPO, an examination can be repeated in another mode than the one originally carried out.

(3) The students will be informed about deadlines and scopes of examinations at the beginning of the module.

(4) Examinations can be carried out as multiple choice or electronic exams. Annex 4 regulates further details.

(5) Exams will be carried out in English language.

(6) The compensation principle according to § 5 Paragraph 8 AT MPO will not be applied.

§ 4

Recognition and crediting

The recognition or crediting of achievements takes place in accordance with § 22 AT MPO in the currently valid version.

§ 5

Admission requirements for modules

Except for the context of § 6 paragraph 2, there are no admission requirements for modules.

§ 6

Module Master Thesis (including colloquium)

(1) The module “Module Master Thesis” (30 CP) consists of the Master's thesis with a scope of 30 CP (including a colloquium). The Master's thesis must be written in the more comprehensive completed profile subject “Chemistry” or “Mineralogy”. If both profile subjects have been completed equally (24), the choice of the Master's thesis is not tied to a profile subject, provided that at least one elective module has been completed in both profile subjects.

(2) The prerequisite for registering for the Master’s thesis is proof of at least 60 CP, including at least one compulsory elective module in the chosen profile subject “Chemistry” or “Mineralogy”.

(3) The processing time for the Master’s thesis is 24 weeks. The examination board can approve a one-time extension of a maximum of 6 weeks upon justified request.

(4) The Master’s thesis has to be done as an individual work.

(5) The Master’s thesis has to be written in English.

(6) A colloquium is part of the Master Thesis Module. A joint module grade is formed for the Master’s thesis and the colloquium. The grade of the Master’s thesis is included in the joint grade with 75%, the grade of the colloquium with 25%.
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§ 7

Overall grade of the Master examination

The overall grade is formed from the grades of the modules weighted with credit points. Ungraded modules are not included in the calculation.

§ 8

Scope and coming into effect

(1) These examination regulations come into effect on October 1, 2021 after being approved by the Rector. It is published in the official gazette of the Free Hanseatic City of Bremen.
It applies to students who start their studies for the first time in the Master's degree "Materials Chemistry and Mineralogy" from the winter semester 2021/22.

(2) Students who started their studies in the Master's degree in "Materials Chemistry and Mineralogy" before the winter semester 2021/22, can switch to these examination regulations upon request. The application has to be submitted to the responsible examination office by November 15, 2021. Already achieved performances will be acknowledged by the examination board depending on the individual situation.

(3) The examination regulations “Materials Chemistry and Mineralogy” of November 24, 2011 will expire on September 30, 2024. Students who started their studies in accordance with these examination regulations and do not finish their studies by September 30, 2024, switch to these examination regulations. The examination board decides on the acknowledgement of achievements based on the individual situation.

Approved, Bremen, February 22, 2021
The rector of the University of Bremen

Annexes:
Annex 1: Course plan of the master's degree "Materials Chemistry and Mineralogy"
Annex 2: Modules and examination requirements
Annex 3: Further types of examinations
Annex 4: Execution of examinations as multiple-choice examinations and "e-exams" (electronic examinations)

Annex 1: Course plan of the master's degree "Materials Chemistry and Mineralogy"
The course plan is a recommendation for the process of the course. Students can attend modules in a different order.

	Compulsory Modules, without Master's thesis), 42 CP					Master's thesis, 30 CP	Compulsory Elective Modules and Elective Modules, 48 CP; Profile subjects		∑ **120 CP**
	Compulsory Modules					**Master Thesis**	**"Profile Chemistry" und "Profile Mineralogy"** Compulsory Elective Modules	Elective Modules	
1. Sem.	MCM-A1 Analytical Methods I, 6 CP	MCM-MI Mineralogy, 6 CP	MCM-CR Crystallography, 6 CP	MCM-CH Chemistry, 6 CP	MCM-MS Materials Science, 6 CP				30
2. Sem.	MCM-A2 Analytical Methods II, 6 CP							Cf. § 2 Para. 2, letters b and c as well as annexes 2.3.1 and 2.3.4	30
3. Sem.	MCM-GS General Studies, 6 CP						Cf. § 2 Para. 2, letters b and c as well as annexes 2.3.1 and 2.3.3		30
4. Sem.						MCM-MT Module Master Thesis, 30 CP			30

CP = Credit Points, Sem. = Semester

Annex 2: Modules and examination requirements

2.1: Master Thesis, 30 CP

Ref.-No.	Title of Module	Type of Module P/WP/W	CP	MP/TP/KP	Distribution of CP for TP	PL/SL (Amount)
MCM-MT	Module Master Thesis (incl. Colloquium)	P	30	MP	Master Thesis and Colloquium	PL: 2 SL: 0

Ref.-No. = Reference Number; P: Compulsory Module, WP: Compulsory Elective Module, W: Elective Module; CP = Credit Points; MP = Module Exam, TP = Partial Exam, KP = Combined Exam; PL = Exam Achievement (= graded), SL = Course Achievement (= not graded)

2.2: Compulsory Modules, 42 CP

Ref.-No.	Title of Module	Type of Module P/WP/W	CP	MP/TP/KP	Distribution of CP for TP	PL/SL (Amount)
MCM-A1	Analytical Methods I	P	6	KP		PL: 1 SL: 1
MCM-MI	Mineralogy	P	6	MP		PL: 1 SL: 0
MCM-CR	Crystallography	P	6	KP		PL: 1 SL: 1
MCM-CH	Chemistry	P	6	MP		PL: 1 SL: 0
MCM-MS	Materials Science	P	6	MP		PL: 1 SL: 0
MCM-A2	Analytical Methods II	P	6	KP		PL: 1 SL: 1
MCM-GS	General Studies	P	6	TP	Programming (3 CP)	PL: 1 SL: 0
					General Studies (3 CP)	PL: 0 SL: 1

Ref.-No. = Reference Number; P: Compulsory Module, WP: Compulsory Elective Module, W: Elective Module; CP = Credit Points; MP = Module Exam, TP = Partial Exam, KP = Combined Exam; PL = Exam Achievement (= graded), SL = Course Achievement (= not graded)

2.3: Compulsory elective and elective modules of the profile subjects „Mineralogy“ and „Chemistry“, 48 CP

The rules for selection in this module area are set out in § 2 paragraph 2 letters b and c.

2.3.1 “Profile Mineralogy”, Compulsory Elective Modules

Ref.-No.	Title of Module	Type of Module P/WP/W	CP	MP/TP/KP	Distribution of CP for TP	PL/SL (Amount)
MCM-MR1	Research Module Mineralogy I	WP	12	MP		PL: 1 SL: 0
MCM-MR2	Research Module Mineralogy II	WP	12	MP		PL: 1 SL: 0

Ref.-No. = Reference Number; P: Compulsory Module, WP: Compulsory Elective Module, W: Elective Module; CP = Credit Points; MP = Module Exam, TP = Partial Exam, KP = Combined Exam; PL = Exam Achievement (= graded), SL = Course Achievement (= not graded)

2.3.2 “Profile Mineralogy”, Electives Modules

Ref.-No.	Title of Module	Type of Module P/WP/W	CP	MP/TP/KP	Distribution of CP for TP	PL/SL (Amount)
MCM-CS	Crystal Structure Analysis	W	6	MP		PL: 1 SL: 0
MCM-MM	Minerals and Materials	W	6	KP		PL: 2 SL: 0
MCM-PP	Physical Properties of Crystals	W	6	MP		PL: 1 SL: 0
MCM-ST	Special Topics in Mineralogy and Materials Science	W	6	KP		PL: 1 SL: 1
MAG-AP2	Petrological Methods in Ore Geology	W	6	MP		PL: 1 SL: 0
MCM-NM	Nanomaterials	W	6	KP		PL: 1 SL: 1
MCM-FC	Functional Ceramics	W	6	MP		PL: 1 SL: 0
MCM-TC	Technical Ceramics	W	6	MP		PL: 1 SL: 0

Ref.-No. = Reference Number; P: Compulsory Module, WP: Compulsory Elective Module, W: Elective Module; CP = Credit Points; MP = Module Exam, TP = Partial Exam, KP = Combined Exam; PL = Exam Achievement (= graded), SL = Course Achievement (= not graded)

2.3.3 „Profile Chemistry“, Compulsory Elective Modules

Ref.-No.	Title of Module	Type of Module P/WP/W	CP	MP/TP/KP	Distribution of CP for TP	PL/SL (Amount)
MCM-CR1	Research Module Chemistry I	WP	12	KP		PL: 1 SL: 1
MCM-CR2	Research Module Chemistry II	WP	12	KP		PL: 1 SL: 1

Ref.-No. = Reference Number; P: Compulsory Module, WP: Compulsory Elective Module, W: Elective Module; CP = Credit Points; MP = Module Exam, TP = Partial Exam, KP = Combined Exam; PL = Exam Achievement (= graded), SL = Course Achievement (= not graded)

2.3.4 „Profile Chemistry“, Electives Modules

Ref.-No.	Title of Module	Type of Module P/WP/W	CP	MP/TP/KP	Distribution of CP for TP	PL/SL (Amount)
W02	Solid State Synthesis and Characterization	W	6	MP		PL: 1 SL: 0
W03	Structure Property Relationships	W	6	TP	Lecture exam, 3 CP	PL: 1 SL: 0
					Seminar assignment, 3 CP	PL: 1 SL: 0
W11	Surface Chemistry and Catalysis	W	6	KP		PL: 2 SL: 0
MCM-SO	Solid State Spectroscopy	W	6	KP		PL: 2 SL: 0

MCM-CM	Computational Materials Science	W	6	KP		PL: 2 SL: 0
MCM-DA	Multiple (Large) Dataset Analysis	W	6	KP		PL: 2 SL: 0

Ref.-No. = Reference Number; P: Compulsory Module, WP: Compulsory Elective Module, W: Elective Module; CP = Credit Points; MP = Module Exam, TP = Partial Exam, KP = Combined Exam; PL = Exam Achievement (= graded), SL = Course Achievement (= not graded)

Annex 3: Further types of examinations

Bonus examinations: Voluntary efforts accompanying the course, which can only have a positive effect on the grade of the module examination. Bonus exams that are not taken have no negative impact on the module grade.

Annex 4: Execution of examinations as multiple-choice examinations and "e-exams" (electronic examinations)

§ 1

Execution of examinations as multiple-choice examinations

(1) A multiple-choice examination exists if the candidate's minimum performance required to pass the examination can only be achieved by marking or assigning the correct or incorrect answers. Multiple-choice exams are only permitted if they are suitable to provide evidence that the candidate has mastered the content and methods of the module in the essential contexts and can apply the knowledge and skills acquired. A multiple-choice exam must be prepared by an examiner in accordance with Section 27 AT BPO. The examiner selects the examination material, the questions and determines the possible answers. Furthermore, he or she creates the evaluation scheme according to paragraph 4 and applies it after the examination. The deduction of points within an examination task in the multiple-answer voting procedure is permitted.

(2) The questions must be clearly understandable, clearly answerable and suitable for determining the knowledge of the candidates to be tested in accordance with paragraph 1, sentence 2. The examiner can also create a pool of equivalent questions. In the exam, students from this pool receive different exam questions to answer. The assignment is done by random selection. The equivalence of the questions must be ensured. The prerequisites for passing the exam must be specified in advance. For each exam

- the selected questions,
- the sample solution and
- the evaluation scheme according to paragraph 4

have to be determined.

(3) The examination is passed if the candidate has achieved at least 50 percent of the total achievable points. If the total average of all candidates of the points achieved in an examination is lower than 50 percent of the total achievable points, the examination is also passed if the number of points achieved by the candidate is not more than 15 Percent below this average. An evaluation scheme that only defines an absolute pass limit is not permitted.

(4) The achievements are to be valued as follows: If the minimum number of achievable points required to pass the examination according to paragraph 3 has been achieved, the grade will be

„Very good“, if at least 75 percent,

„Good“, if at least 50 but less than 75 percent,
„Satisfactory“, if at least 25 but less than 50 percent,
„Sufficient“, if none or less than 25 percent

of the achievable points beyond that were achieved.

(5) If the valuation of multiple-choice examinations reveals a conspicuous accumulation of errors in answering individual examination questions, the examiner will this immediately and before the announcement of the examination results, whether they are defective in terms of the requirements according to paragraph 2 sentence 1.
If the review reveals that individual examination questions are incorrect, these examination questions must be reassessed or not taken into account when determining the examination result. The number of questions to be taken into account for the determination of the result is reduced accordingly. The reduction in the number of examination tasks must not be detrimental to the students. If the number of points attributable to the examination tasks to be eliminated exceeds 20 percent of the total achievable points, the examination must be repeated in total; this also applies to an examination which is only partly offered as a multiple-choice exam.

(6) If only part of a written exam consists of multiple-choice questions, this annex applies, with the exception of paragraph 5, sentence 5, 2nd half-sentence, only to the multiple-choice answer.

§ 2

Execution of examinations as „E-Exams“

(1) An “e-exam” is an examination that is created, carried out and evaluated (with the exception of the open questions) with the help of a computer. An “e-exam” is permitted if it is capable of proving that the candidate has mastered the content and methods of the module in the essential contexts and can apply the knowledge and skills acquired; if necessary, it can be supplemented by other forms of examination.

(2) The "e-exam" must be carried out in the presence of a professionally competent person (keeper of the minutes). Minutes must be made of the course of the examination, in which at least the names of the person taking the minutes and the examination candidates, the beginning and end of the examination and any special occurrences must be recorded. It must be ensured that the electronic data can be clearly and permanently assigned to the candidates. In accordance with the provisions of § 24 Paragraph 6 AT BPO, the candidates must be given the opportunity to inspect the computer-aided examination and the result they have achieved. The task including the sample solution, the assessment scheme, the individual test results and the minutes must be archived in accordance with the statutory provisions.