

Unofficial Version of the JSL

of 19th August 2005 (Official Proclamations vol. 36, no. 46, pp 269 - 293)
as amended on 29th September 2017 (Official Proclamations vol. 48, no. 56, pp 238 – 257)

Examination Regulations for the Master of Science (M.Sc.) Program

Appendix B. Subject Specific Requirements for the Master of Science (M.Sc.) Examination Regulations.

Sustainable Materials

1. Course Outline

(1) The masters program in Sustainable Materials is research orientated and consecutive (following on from a bachelor's degree).

(2) The Sustainable Materials masters degree program is designed especially for graduates of bachelors degree programs in Chemistry, Physics, Microsystems Engineering, Materials Engineering or Materials Science based on the contents of the interdisciplinary subjects Macromolecular Chemistry, Physics and Material Sciences, to qualify students in design, synthesis, characterization and application of new materials for sustainability in the energy, environmental and medical sectors. Depending on their qualifications and individual interests, students can choose between the three specialisms: Crystalline Materials, Functional Materials and Polymer Sciences. An essential objective of the program is to train the students in independent scientific work. The successful completion of the masters program qualifies graduates for scientific activity in research institutes at the interface between Chemistry, Physics and Materials Science, as well as for a professional work in the technological industry.

(3) The masters program in Sustainable Materials with the specialism Polymer Sciences can either be completed entirely in accordance with the German and English curriculum offered at the Albert Ludwigs University (bilingual version) or within the scope of the cooperation with the University of Applied Sciences funded by the Franco-German University of Strasbourg (bi-national version). The decision to admit the student to the bi-national study program funded by the Franco-German University as part of the masters program in Sustainable Materials will be made in the admission procedure.

2. Program Commencement, Place and Scope

(1) The masters course program in Sustainable Materials can only be started in the Winter semester.

(2) Studies in the masters program in Sustainable Materials with the specialism Crystalline Materials, Functional Materials or Polymer Sciences in the bilingual version can be completed entirely at the Albert Ludwigs University.

(3) In the masters program in Sustainable Materials with the specialism Polymer Sciences in the binational version, the first semester is to be completed at the University of Strasbourg and the second semester at the Albert Ludwigs University. The required elective modules for the third semester can be completed at the Albert Ludwigs University as well as at the University of Strasbourg. The master module for the fourth semester is to be completed at the choice of the student either at the Albert Ludwigs University or at the University of Strasbourg.

(4) The masters course program in Sustainable Materials requires 120 ECTS credits.

3. Language

(1) In the masters program in Sustainable Materials with the specialism Crystalline Materials or Polymer Sciences in the binational version, the courses and examinations are usually held in English. In the masters program in Sustainable Materials with the specialism Functional Materials or Polymer Sciences in the bilingual version, the courses and examinations are usually held in German or English.

(2) In the masters program in Sustainable Materials with the specialism Polymer Sciences in the binational version, some of the freely selectable courses and the associated examinations at the University of Strasbourg can also be held in French and at the Albert Ludwigs University in German.

3a. Course Content with the Specialism Crystalline Materials

In the masters program in Sustainable Materials with the specialism Crystalline Materials all the modules listed in Table 1 below have to be completed. The courses that can be taken as part of the individual modules are determined by the Subject Examination Committee and are listed in the applicable module handbook. Insofar as certain compulsory courses (C) have to be completed in the individual modules, these are listed in the module handbook. As far as optional courses (O) which are completed, they can be selected from the offer listed in the module handbook for the respective module; If appropriate, the Subject Examination Committee may, upon request, approve further suitable courses or modules.

Table 1: Crystalline Materials Specialism Module

Module	Type	Hours per Week	ECTS Credits	C/ O	Recommended Semester	Assessment/ Examination
Advanced Crystallography	L + Ex	4	6	C	1	Exam: written and / or oral
Crystal Growth	L + Ex	8	12	C	1 and 2	Exam: written and / or oral
Methods and Concepts	variable		18	O	1 to 3	Academic Assessment
Sustainability	L + Ex + S	5	6	C	1 to 3	Exam
Physical and Chemical Analytical Procedures	L + Ex	4	6	C	1 or 3	Exam: written and / or oral
Advanced Analytical Methods	L + Ex	4	6	C	2	Exam: written and / or oral
Applied Materials I	L + Ex	4	6	C	2	Exam: written and / or oral
Defects	L + Ex	4	6	C	2	Exam: written and / or oral
Applied Materials II	L + Ex	4	6	C	3	Exam: written and / or oral
Field Trips and Seminars	L + Ex-cur.	6	6	C	3	Academic Assessment
Technical and Applied Mineralogy	L + Ex	4	6	C	3	Exam: written and / or oral
X-Ray Methods	L + Ex	4	6	C	3	Exam: written and / or oral
Master Module			30	C	4	Exam: Masters Thesis

Abbreviations in the table:

Type = Type of class; Hours per Week = anticipated semester hours of study per semester week; C = Compulsory; O = Optional; Excursion = Excur; L = Lecture /Class; Ex = Exercise; S = Seminar; AP = Academic Performance; ER = Examination Requirement.

4. Course Content with the Specialism Functional Materials

(1) In the masters program Sustainable Materials with the specialism Functional Materials, the modules listed below in Table 2 are to be completed in accordance with the regulations in paragraphs 2 to 6. The courses that can be taken as part of the individual modules are determined by the Subject Examination Committee and are listed in the applicable module handbook. Insofar as certain compulsory courses (C) have to be completed in the individual modules, these are listed in the module handbook. As far as elective courses (O) are completed, they can be selected from the offer listed in the module handbook for the

respective module; If appropriate, the Subject Examination Committee may, upon request, approve further suitable courses or modules.

Table 2: Functional Materials Specialism Module

Module	Type	Hours per Week	ECTS Credits	C/O	Recommended Semester	Academic Performance/ Examination
Lecture Series Methods of Chemistry	L + Ex	3	3	C	1	Academic Performance
Organic Functional Materials	L + Pr	5	6	C	1	Exam: written and / or oral practical
Extension Field	L + Ex		21	O	1 und 2	Exam: written and / or oral
Sustainability	L + Ex +S	5	6	C	1 und 2	Academic Performance
Methods and Concepts	variable		9	O	1 bis 3	Academic Performance
Engineering of Functional Materials/	L + Pr	5	6	C	1 oder 2	Exam: written and / or oral practical
Lab Course Engineering	L + Pr	4–5	6	C	1 oder 2	Exam: written and / or oral and/ or practical
Inorganic Functional Materials	L + Pr	5	6	C	2	Exam: written and / or oral and/ or practical
Lecture Series Methods of Material Science	L	3	3	C	2	Academic Performance
Advanced Lab	Pr		12	O	3	Exam: written and / or oral
Research Lab	Pr		12	O	3	Academic Performance
Master Module			30	C	4	Exam: Masters Thesis

Abbreviations in the table:

Type = Type of class; Hours per Week = anticipated semester hours of study per semester week; C = Compulsory; O = Optional; Pr = Practical; L = Lecture /Class; Ex = Exercise; S = Seminar.

(2) The successful completion of the modules Organic Functional Materials and Inorganic Functional Materials is a prerequisite for the modules Advanced Lab and Research Lab.

(3) Depending on their individual previous knowledge, students in the module supplementary area must take appropriate courses on the basics of Chemistry or on the Fundamentals of Materials Science. The courses are selected by the students in coordination with a mentor appointed by the Subject Examination Committee. The examinations to be taken in the assigned courses are regarded as dependent parts of the final module examination. The grade of the final module examination is calculated as the average of the grades of these parts, weighted according to ECTS credits.

(4) In the module Methods and Concepts, suitable courses or modules from the fields of Chemistry, Pharmacy, Micro-systems Engineering, Physics and Geosciences can be taken. With the consent of the person responsible for the module, suitable courses from the options in other subjects may also be taken.

(5) The modules Advanced Lab and Research Lab are to be completed in the same or in different fields of Chemistry or Microsystems Technology.

5. Course Content for the Specialism Polymer Sciences in the Bilingual Version

(1) In the masters program Sustainable Materials with the specialism Polymer Sciences in the bilingual version, the modules listed below in Table 3 are to be completed in accordance with the regulations in paragraphs 2 to 7. The courses that can be taken as part of the individual modules are determined by the Subject Examination Committee and are listed in the applicable module handbook. Insofar as certain compulsory courses (C) have to be completed in the individual modules, these are listed in the module handbook. As far as optional courses (O) are completed, they can be selected from the offer listed in the module handbook for the respective module; If appropriate, the Subject Examination Committee may, upon request, approve further suitable courses or modules.

Table 3: Module Content of the Profile line Polymer Sciences in the bilingual version in Freiburg

Module	Type	Hours per Week	ECTS Credits	C/ O	Recommended Semester	Academic Performance/ Examination
Lab Course Macromolecular Materials and Chemistry	Pr	9	9	C	1	Exam: written, oral and practical
Macromolecular Materials and Chemistry	L + Ex	7	9	C and O	1	Exam: written or oral
Polymer Physics	L + Ex	8	9	C	1	Exam: written or oral
Methods and Concepts	variable		9	O	1 to 3	AP
Sustainability	L + Ex + S	5	6	C	1 to 3	AP
Industrial Polymer Science	Pr + S + Ex		9	C	2	AP
Major Module	variable		15	O	2	Exam: written or oral
Advanced Lab	Pr		12	O	3	Exam: written or oral
Research Lab	Pr		12	O	3	AP
Master Module			30	C	4	Exam: Masters Thesis

Abbreviations in the table:

Type = Type of class; Hours per Week = anticipated semester hours of study per semester week; C = Compulsory; O = Optional; Pr = Practical; L = Lecture /Class; Ex = Exercise; S = Seminar AP = Academic Performance.

(2) The successful completion of the module Lab Course Macromolecular Materials and Chemistry is a prerequisite for the attendance of the Major Module as well as the modules Advanced Lab and Research Lab.

(3) The subject of the final module examinations in the modules Macromolecular Materials and Chemistry and Polymer Physics are the contents of the courses attended.

(4) In the module Methods and Concepts, suitable courses or modules from the fields of Chemistry, Pharmacy, Microsystems Engineering, Physics and Geosciences can be taken. With the consent of the person responsible for the module, suitable courses from the options available in other subjects may also be taken.

(5) The Major Module has to be completed in one of the main areas listed in the module handbook from the three areas of Chemistry and Physics, Engineering and Biomaterials. Provided that sufficient places are available in the respective focus area, the focus area can be freely chosen by the students. If, in a priority area, the number of applicants exceeds the number of available study places, the allocation of study places in this priority area will be by lot.

(6) In the module Industrial Polymer Science, theoretical courses as well as excursions to companies, working in a field relevant to the program, are carried out.

(7) The modules Advanced Lab and Research Lab are to be completed in the same or in different fields of Chemistry or Micro-systems Technology.

6. Course Content with the Specialism Polymer Sciences in the Bi-national Version

(1) In the Master's program Sustainable Materials with the specialism Polymer Sciences in the binational variant, the modules listed below in Table 4 are to be completed in accordance with the regulations in paragraphs 2 to 5. The courses that can be taken as part of the individual modules are determined by the Subject Examination Committee and are listed in the applicable module handbook. Insofar as certain compulsory courses (C) have to be completed in the individual modules, these are listed in the module handbook. As far as optional courses (O) are completed, they can be selected from the offer listed in the module handbook; If appropriate, the Subject Examination Committee may, upon request, approve further suitable courses or modules.

Table 4: Module with the Specialism Polymer Sciences in the Binational Variant in Strasbourg and Freiburg

Module	Type	Hours per Week	ECTS Credits	C/ O	Recommended Semester	Academic Performance/ Examination
1. Semester at the University of Strasbourg						
Chemistry of Macromolecular Materials	L + Ex		5	C	1	Exam
Elective Statistical Physics and/or Quantum Mechanics	L + Ex		6	O	1	Exam
Introduction to Continuum and Materials Mechanics	L + Ex		5	C	1	Exam
Introduction to Polymer and Soft Matter Sciences	L + Ex		6	C	1	Exam
Language Course I	Ex		3	O	1	Exam
Polymer Characterization	L + Ex		5	C	1	Exam
2. Semester at the Albert Ludwigs University						
Lab Course Macromolecular Materials and Chemistry	Pr	9	9	C	2	Exam: written and oral
Language Course II	Ex		2	O	2	AP
Intercultural Competences	L + Ex + S		4	C	2	AP
Major Module	variable		15	O	2	Exam: written or oral
3. Semester at the University of Strasbourg and/or at the Albert Ludwigs University						
Advanced Lab A	Pr		9	O	3	Exam
Advanced Lab B	Pr		12	O	3	Exam
Advanced Lab C	Pr		18	O	3	Exam
Advanced Polymers	L		9 or 12	O	3	Exam
Industrial Polymer Science	Pr + S + Excurs		9	C	3	AP
Language Course III	Ex		3	O	3	AP
Methods and Concepts	variable		6	O	3	AP
4. Semester at the Albert Ludwigs University or at the University of Strasbourg						

Master Module			30	C	4	Exam: Masters Thesis
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Abbreviations in the table:

Type = Type of class; Hours per Week = anticipated semester hours of study per semester week; C = Compulsory; O = Optional; Pr = Practical; Excurs = Excursion; L = Lecture /Class; Ex = Exercise; S = Seminar AP = Academic Performance.

(2) In the first semester the modules listed for this purpose in Table 2 must be completed at the University of Strasbourg.

(3) The modules listed in Table 2 for the second semester are to be completed at the Albert Ludwigs University. The Major Module has to be completed in one of the main areas listed in the module handbook from the three areas of Chemistry and Physics, Engineering and Biomaterials. Provided that sufficient places are available in the respective focus area, the focus area can be freely chosen by the students. If, in a priority area, the number of applicants exceeds the number of available study places, the allocation of study places in this priority area will be by lot.

(4) The study program scheduled for the third semester includes the Industrial Polymer Science module, which includes theoretical courses and field trips to companies working a field relevant to the profile of the program, and the Language Course III module is to be completed. In addition, further modules of a total of 18 ECTS credits must be completed following students own choice. If the Advanced Polymers module is taken, lectures of the student's own choice with a total scope of 9 or 12 ECTS credits must be taken from the range of options. With the exception of the module Industrial Polymer Science, which is offered only at the Albert Ludwigs University, and the module Advanced Polymers, which is offered only at the University of Strasbourg, all modules planned for the third semester will be offered both at the Albert Ludwigs University as well as at the University of Strasbourg and can be combined with each other.

(5) The Masters module can be completed either at the Albert Ludwigs University or at the University of Strasbourg.

7. Course Requirements

In each module course based assessments may be required, the successful completion of which are a prerequisite for admission to the module examination. For example, academic achievements may include regular participation in courses, certificates, reports or presentations. The type and extent of study achievements are specified in the applicable module manual and will be announced to the students at the beginning of the courses belonging to the respective module.

8. Course Related Examinations

(1) Written examinations are usually examination papers (written supervised work) and reports. Oral examinations are usually presentations (papers) or oral examinations (interview examinations). The type and extent of the course related examinations are specified in the applicable module handbook and will be announced to the students at the beginning of the courses belonging to the respective module.

(2) Written examination papers have a maximum duration of 30 minutes per ECTS credit. They may consist entirely or partially of multiple-choice tasks; For this, the regulations of section 17a of these examination regulations apply.

(3) Oral exams have a maximum duration of 10 minutes per ECTS credit.

9. Repeat of Course Based Examinations

(1) Course-related examinations that have been graded as "unsatisfactory" (5.0) or that have failed can be repeated once. In addition, a maximum of two failed examinations can be repeated a second time; In the specialism Polymer Sciences in both variants, examinations are excluded in the module Lab Course Macromolecular Materials and Chemistry.

(2) The second re-examination should take place at the next possible examination date after the first re-examination. Section 24, paragraphs 3 and 4 of these examination regulations apply accordingly.

(3) Repeating examinations fwhich have been passed or the purpose of grade improvement is not permitted.

10. Admission to the Master Thesis

Only students who have enrolled on the masters degree program in Sustainable Materials and successfully completed modules in a specialism with a minimum of 70 ECTS credits can be admitted to the Masters Thesis.

11. Masters Thesis

(1) The masters thesis is to be prepared within a period of six months on a subject in the fields of Crystalline Materials, Functional Materials or the field of Polymer Science, according to the selected specialism. 30 ECTS credits are awarded for the preparation of the master's thesis.

(2) The masters thesis is to be written in English in the Crystalline Materials specialism and in English or German in the Functional Materials and Polymer Sciences specialisms. In the binational version of the Polymer Sciences specialism, the Master's thesis can also be written in French; If the Master's thesis is not written in English or German, it must contain a summary in German or English.

(3) The master thesis is to be submitted to the examination office in bound form in triplicate as well as additionally in electronic form on the specified data storage system in the specified file format.

(4) At least one of the two reviewers of the masters thesis must work full-time at the Faculty of Chemistry and Pharmacy, the Faculty of Environment and Natural Resources or the Faculty of Engineering of the Albert Ludwigs University.

12. Attainment of the Final Mark

(1) The overall grade of the masters examination in the masters degree program in Sustainable Materials with the specialism Crystalline Materials is calculated as the average of the grades of the modules as listed below. In this case, the individual module nodes each enter the calculation with the weight assigned to the relevant module:

Module	Weighting
Advanced Crystallography	5 percent
Crystal Growth	15 percent
Physical and Chemical Analytical Procedures	5 percent
Advanced Analytical Methods	5 percent
Applied Materials I	7.5percent
Defects	5 percent
Applied Materials II	7.5 percent
Technical and Applied Mineralogy	5 percent
X-Ray Methods	5 percent
Masters Module	40 percent

(2) The overall grade of the masters examination in the masters degree program in Sustainable Materials with the specialism Functional Materials is calculated as the average of the grades of the modules listed below. In this case, the individual module nodes each enter the calculation with the weight assigned to the relevant module:

Module	Weighting
Organic Functional Materials	10 percent
Extension Field	20 percent
Engineering of Functional Materials	10 percent
Lab Course Engineering	10 percent
Inorganic Functional Materials	10 percent
Advanced Lab	10 percent
Masters Module	30 percent

(3) The overall grade of the masters examination in the masters degree program in Sustainable Materials with the specialism Polymer Sciences in the bilingual version is calculated as the average of the grades of the modules listed below. In this case, the individual module nodes each enter the calculation with the weight assigned to the relevant module:

Module	Weighting
Lab Course Macromolecular Materials and Chemistry	5 percent
Macromolecular Materials and Chemistry	10 percent
Polymer Physics	10 percent
Major Module	25 percent
Advanced Lab	10 percent
Masters Module	40 percent

(4) The overall grade of the masters examination in the masters degree program in Sustainable Materials with the specialism Polymer Sciences in the binational variant is calculated as the average of the following positions. In this case, the individual items each enter the calculation with the specified weighting.

1. The grade, which is the ECTS credits-weighted average of the grades of all examinations for the first semester, makes up 25% of the final grade.
2. The grade of the module Lab Course Macromolecular Materials and Chemistry makes up five percent of the overall grade.
3. The grade of the Major module is 20 percent of the overall grade.
4. The ECTS-weighted average of the grades of the examinations intended for the third semester make up 10% of the overall grade.
5. The grade of the Master Module forms 40 percent of the overall grade.

(5) If all module grades are "very good" - 1.3 or better - the M.Sc is awarded "with distinction" .

13. Academic Degree

(1) On completion of the masters examination in the masters degree program Sustainable Materials with the specialism Crystalline Materials, the academic degree is awarded "Master of Science Sustainable Materials" with the addition "specialized Crystalline Materials".

(2) On completion of the masters examination in the masters degree program Sustainable Materials with the specialism Functional Materials, the academic degree is awarded "Master of Science Sustainable Materials" with the addition "specialized Functional Materials".

(3) On completion of the masters examination in the masters degree program Sustainable Materials with the specialism Polymer Sciences, the academic degree is awarded "Master of Science Sustainable Materials" with the addition "specialized Polymer Sciences".

Attachment

Conversion table for the marks in the masters degree program in Sustainable Materials with the specialism Polymer Sciences in the bi-national variant

Conversion from German marks to French marks

Germany Marks	France Points
1	16.8
1.1	16.5
1.2	16.2
1.3	15.9
1.4	15.7
1.5	15.5
1.6	15.2
1.7	14.9

1.8	14.7
1.9	14.5
2.0	14.2
2.1	14
2.2	13.8
2.3	13.6
2.4	13.5
2.5	13.3
2.6	13.1
2.7	12.9
2.8	12.7
2.9	12.5
3.0	12.3
3.1	12.1
3.2	11.9
3.3	11.6
3.4	11.5
3.5	11.3
3.6	11.1
3.7	10.9
3.8	10.8
3.9	10.6
4.0	10.4
5.0	7.5

Conversion from French marks to German marks

France Points in the final mark	France points in the Module Mark	Germany Mark
16.6 – 20.0	16.0 – 20.0	1
16.3 – 16.5		1.1
16.0 – 16.2		1.2
15.8 – 15.9	15.0 – 15.9	1.3
15.6 – 15.7		1.4
15.3 – 15.5		1.5
15.0 – 15.2		1.6
14.8 – 14.9	14.3 – 14.9	1.7
14.6 – 14.7		1.8
14.3 – 14.5		1.9
14.1 – 14.2	13.7 – 14.2	2.0

Nichtamtliche Lesefassung des JSL

13.9 – 14.0		2.1
13.7 – 13.8		2.2
13.6	13.0 – 13.6	2.3
13.4 – 13.5		2.4
13.2 – 13.3		2.5
13.0 – 13.1		2.6
12.8 – 12.9	12.4 – 12.9	2.7
12.6 – 12.7		2.8
12.4 – 12.5		2.9
12.2 – 12.3	11.7 – 12.3	3.0
12.0 – 12.1		3.1
11.7 – 11.9		3.2
11.6	11.0 – 11.6	3.3
11.4 – 11.5		3.4
11.2 – 11.3		3.5
11.0 – 11.1		3.6
10.9	10.5 – 10.9	3.7
10.7 – 10.8		3.8
10.5 – 10.6		3.9
10.0 – 10.4	10.0 – 10.4	4.0
0 – 9.9	0 – 9.9	5.0