

**Examination Regulations (Rules)
of the Faculty of Engineering
at Christian-Albrechts-Universität zu Kiel (Kiel University)
for students of 'Materials Science and Engineering'
leading to a Master of Science degree (M.Sc.) - 2018
of 7 March 2018**

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[Non-official publication]

Based on Section 52 (1) 1 of the Schleswig-Holstein Higher Education Act (HSG) in the version published on 5 February 2016 (Law and Official Gazette for the Land of Schleswig-Holstein (GVOBl. Schl.-H.), p. 39), last amended by Article 2 of the Act of 13 October 2017 (GVOBl. Schl.-H.), p. 470), after a resolution was passed by the Convention of the Faculty of Engineering of 31 January 2018 and a fast-track decision by the Dean of the Faculty of Engineering of 8 February 2018, the following Rules were issued:

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§ 1

Scope of application

- (1) These degree-specific examination regulations in conjunction with the Examination Procedure Regulations (Rules) of Christian-Albrechts-Universität zu Kiel (Kiel University) for students of Bachelor's and Master's Degree Programmes (PVO) apply to the teaching and assessment of the Master's degree programme Materials Science and Engineering with the degree Master of Science (M.Sc.) at Kiel University.
- (2) For imported modules, in particular for the admission to and the conduct of examinations, the provisions of the degree specific examination regulations of the offering subject apply.

§ 2

Objective of the degree programme

Graduates of the consecutive international Master's degree programme have advanced knowledge and skills in materials science, with a focus on the field of functional materials. They know detailed and complex theories on solids in general, and functional materials in particular, and can apply these to a variety of issues in materials science. They are able to use this knowledge to plan and develop their own projects.

Graduates can independently operate, check and evaluate both contemporary standard techniques as well as special experiments and processes from current research at the institute in the fields of preparation and analysis. In the course of their studies, graduates learn to independently tackle complex scientific problems, even when under time pressure and pressure to succeed. They have acquired the ability to analyse and structure a problem in order to investigate it adequately using the appropriate techniques and methods. They learn to support this with systematic literature research, and develop new approaches for solving the problem. Graduates are able to tackle problems from related disciplines and critically evaluate their work. In inter-disciplinary discussions, they give and receive constructive criticism. Working in teams during practicals enables graduates to develop and improve their ability to achieve tolerant and efficient teamwork.

The programme's international orientation enables graduates to develop and strengthen their personal intercultural skills. As the degree programme is conducted entirely in English, and due to its international environment, students gain a very good knowledge of the language. In numerous modules, graduates learn to prepare texts, publications and presentations in English. They can use the English language to present both themselves and a topic, and to confidently lead discussions.

With these skills and this knowledge, graduates are ideally suited to research and development in the field of functional materials. The combination of broad and in-depth, sound knowledge in the field of materials science provides them with the opportunity to work in industry as well as at research institutions. They are able to act as a project leader or team member in major international groups, in an operational or consulting capacity.

§ 3

Structure and scope of curriculum, standard period of study

- (1) The standard period of study for the Master's degree programme is four semesters. The degree programme encompasses approximately 69 weekly 45-minute teaching units for the duration of one semester of about 12 weeks (Semesterwochenstunden - SWS) and 120 ECTS credits, including 30 ECTS credits for the Master's thesis.
- (2) At least 58 ECTS credits must be obtained in the compulsory modules, which are defined in the annex. Of these, 12 ECTS credits from the modules "Master Lab 1", "Master Lab 2" and "Master Lab 3" are not graded.
- (3) At least 27 ECTS credits must be obtained from successfully completing technical compulsory elective modules. At least 20 ECTS credits of these must be obtained from the range on offer by the Materials Science and Engineering Master's degree programme. Students will be notified of the compulsory elective modules available, along with the ECTS credits allocated to each module, in due time before the start of the semester.

- (4) Up to 7 ECTS credits can be obtained from technical modules selected from the range of courses offered at Kiel University outside of the Department of Material Science, provided the number of ECTS credits awarded is at least two and that the modules are graded. To choose these modules, students must apply in writing to the Chairperson of the Examination Board at least four weeks before admission. If the technical nature of the module is not immediately apparent based on its title, the Examination Board will decide whether or not a module can be regarded as a technical module.
- (5) At least 5 ECTS credits must be obtained from successfully completing non-technical compulsory elective modules. These non-technical modules may be selected from the entire range of courses offered at Kiel University, provided the number of ECTS credits awarded is at least two. At least one non-technical optional module must be completed with a grade awarded. The degree-specific examination regulations for the subject offering the module apply here. If the module is offered by the Centre for Key Qualifications at the CAU (ZfS), then the rules and regulations regarding the Supplementary Studies (“Profil Fachergänzung”) at this institution apply. A module is considered to be non-technical if it is not offered by the Faculty of Engineering and has no obvious technical character, or is offered by the Faculty of Engineering but has an obviously non-technical character. The Chairperson of the Examination Board shall decide in cases of doubt.
- (6) The six-month Master's thesis is awarded 30 ECTS credits.

§ 4

Teaching and examination language

Lectures and examinations will be held in English.

§ 5

Academic year

- (1) The degree programme in Materials Science leading to a Master of Science degree is organised according to the academic year, starting in the winter semester. As a general rule, a course will be offered once a year. Courses which, according to the curriculum are planned for an odd-numbered semester, are generally offered in the winter semester. Courses which, according to the curriculum are planned for an even-numbered semester, are generally offered in the summer semester.
- (2) Registrations for both odd and even-numbered semesters are possible for the winter and summer semester. We recommend starting the degree programme in the winter semester, because otherwise it may not be possible to complete the studies as per the curriculum and qualification within the standard period of study cannot be guaranteed.
- (3) Aptitude tests are only conducted in the winter semester, for the following winter and summer semester.

§ 6

Admission to the Master's degree programme

- (1) Prerequisites for admission to the Master's degree programme are:
 1. Submission of a complete aptitude assessment application for the Master's degree programme to the Materials Science Examination Board before the deadline stated on the Institute for Materials Science website. The following documents are to be included with the application in German and English:
 - a) the Bachelor's certificate or a document showing the date on which the qualification is expected to be achieved,
 - b) the official grade transcript associated with the degree, including the grading system, and

- c) the Module Handbook for the degree or a comparable document showing the scope in terms of time, teaching forms, contents and learning objectives of the individual modules
 2. A degree with a standard period of study lasting at least three years at a German university or comparable foreign institution of higher education, which was completed with a Bachelor's examination or equivalent final examination with at least 180 ECTS credit points.
 3. A qualification assessment with at least 24 out of 48 possible points. For this, the candidate's existing qualification is assessed based on the first university qualification for entry into a profession, according to the following criteria:
 - a) Comparability of the field of study (0 to 24 points)

The first university qualification for entry into a profession is compared to the contents of the Bachelor's degree in Materials Science at Kiel University and points are awarded according to the number of similarities. 24 points are awarded in the event of complete comparability. Zero points are awarded if there are no similarities in terms of content.
 - b) Final grade (0 to 12 points)

The candidate's final grade is weighted in the range between the minimum grade required to pass and the best grade at the home university. To do this, the grading system for the first university qualification for entry into a profession and the grade awarded in accordance with this system is transferred proportionally to a scale from zero (worst possible grade) to 12 (best grade) points.
 - c) Individual grades in Maths, Physics and Chemistry in the first three semesters (0 to 4 points each).

In accordance with the procedure in Number 3 letter b, the respective average grades from the first three semesters from foundation modules in Maths, Physics and Chemistry are transferred to a points scale from zero (worst possible grade) to four (best grade) points.
- (2) If English is not the candidate's native language or the candidate has not obtained an English university entrance qualification or English Bachelor's degree, evidence must be provided of English language skills corresponding with level B2 under the Common European Framework of Reference for Languages (CEFR).
 - (3) Applications for the aptitude test for admission to the Master's degree programme, including the necessary proof of qualification as mentioned in (1) and (2), are to be addressed to the Materials Science Examination Board.

§ 7

Academic title

- (1) The student is awarded the degree of Master of Science (M.Sc.) if he or she has obtained at least a final grade of 'sufficient'.
- (2) The degree programme and branch of study is stated as 'in Materials Science and Engineering' on the degree certificate.

§ 8

Examination Board

- (1) The Materials Science Examination Board is responsible for the organisation of examinations in accordance with these Examination Regulations, as well as for the tasks allocated by these Examination Regulations. The business of the Examination Board is managed by the Materials Science Examination Office.

- (2) The Examination Board consists of four members from the university lecturers' group, two members of the student body and one member from the scientific staff group.

§ 9

Requirements for admission to examinations

- (1) If a module contains field trips, lab courses or practical exercises, admission to the examination assumes regular attendance at these courses.
- (2) If a module includes courses that are not mentioned in (1), admission to the examination assumes regular attendance at these courses, if the individual students cannot achieve the qualification objective without regular attendance, if attendance is necessary in order to grasp the basic subject-specific methods, or if acquiring competence is dependent on the presence of the other participants, or on being present at a certain place.

This is the case for advanced seminars and projects within the scope of this degree programme. The obligation for regular attendance at an advanced seminar within the scope of this degree programme is based on the premise that, in addition to oral presentations given by students, the course also provides the opportunity for all seminar attendees to learn scientific discussion. As such, in addition to the acquisition of specialist knowledge, the learning objectives of a seminar specifically encompass the development of analytical and rhetorical skills, the use of presentation techniques and the ability to successfully work in teams. An essential learning objective within a project is the ability to successfully work in teams. This learning objective can only be achieved through regular attendance.

- (3) Modules for which admission to the examination is subject to regular attendance are marked in the course of studies. For all other modules, regular attendance is not required for admission to the examinations.
The requirements for admission to the examinations for the imported subjects are contained in the degree-specific examination regulations of the departments offering the courses.
- (4) For courses with compulsory attendance, which take place weekly over the entire lecture period, a maximum of 20% of all course dates may be missed due to illness or other good reasons in accordance with Section 52 (4) HSG. If more dates are missed, the authorised examining teacher responsible for the module has the option to make up for the parts of the course which were missed with an equivalent achievement, provided that the type of course permits this. However, students do not have the right to demand this.
- (5) In addition, admission to examinations can also be made dependent on other conditions. Other examination prerequisites can also include: passed exercises, oral presentations, term papers, certificates or tests. Details will be published in a suitable manner by no later than the start of the course.

§ 10

Module examinations

- (1) The Master's examination consists of module examinations and a Master's thesis.
- (2) Oral examinations and oral presentations are permitted as oral types of examination. Group examinations of up to three candidates are possible. The duration of a final oral examination for a module is usually at least 15 minutes and no more than 30 minutes per candidate.
- (3) Written examinations, tests and term papers are permitted as written types of examination. The duration of a written examination is usually at least 60 minutes and no longer than 120 minutes.
- (4) In a lab course, the examination takes the form of successfully completed individual experiments (certificates). Failed practical experiments may only be repeated if the corresponding module is on offer, but at least once within two semesters.

- (5) Partial examinations may consist of term papers, practical laboratory exercises, protocols, oral presentations, written or oral tests. The type, number and weighting of the partial examinations are determined in the module description. The module coordinator may deviate from the module description in justified cases, if the student receives all necessary information at the beginning of the course.

§ 11

Master's thesis

- (1) Students who have obtained at least 74 ECTS credits from module examinations in compulsory and compulsory elective modules may be admitted to the Master's thesis. The Examination Board may deviate from this rule in justified exceptional cases at the student's request.
- (2) Admission to the Master's thesis must be applied for in writing at least three weeks before starting work on the thesis to the Materials Science Examination Office.
- (3) The thesis will be issued and supervised by a university lecturer active in teaching and research of the specialist field of Materials Science at Kiel University's Faculty of Engineering.
- (4) When applying for admission to the Master's thesis, the examination candidate may propose examiners and a topic for the thesis, without this giving rise to any claim for the proposal to be considered.
- (5) The period for completing the Master's thesis is six months. An extension of the processing time is regulated by the examination procedure regulations.
- (6) In the case of a Master's thesis which is prepared in cooperation with an officially recognised university, the deadline may be adapted to that of the cooperating university in justified exceptional cases. In this case, the topic, the objective and the scope of the thesis must be adjusted to suit the amended completion deadline. A corresponding application is to be included with the application as per (2).
- (7) The topic of the Master's thesis may be handed back only once and only within the first two months.
- (8) The Master's thesis consists of a written thesis and a scientific lecture. In the lecture, the main results of the work will be presented and discussed with the two examiners. The lecture takes place before the written paper is handed in and can be held in German or English at the students' request. The lecture must be passed, but will not be graded. The lecture can be repeated once in each examination attempt of the Master's thesis.
- (9) The written Master's thesis will be assessed by two examiners within four weeks of submission.
- (10) The written Master's thesis may be written in English or German. Amendments or supplements in other languages are not permitted.
- (11) A dedication may be included in the front of the actual written Master's thesis and/or acknowledgements at the end. These must be in English or German.
- (12) The written Master's thesis is to be submitted to the Materials Science Examination Office in the form of two hard copies and additionally one identical, editable version stored on a medium suitable for electronic data processing.

§ 11a

Obtaining a Master's degree within the framework of a fast-track doctoral degree

- (1) Students have the option of applying for a fast-track doctoral degree and obtaining a Master's degree within the framework of this fast-track doctoral degree. This application must be submitted in writing to the Dean.
- (2) The conditions for completing the fast-track doctoral degree with simultaneous acquisition of a Master's degree are set out in the joint Doctoral Degree Regulations for the Faculty of Mathematics and Natural Sciences and the Faculty of Engineering.

- (3) The interim evaluation provided for in Section 24 (3) of the joint Doctoral Degree Regulations for the Faculty of Mathematics and Natural Sciences and the Faculty of Engineering shall take place at the end of the second semester of the Master's degree programme. For this purpose, the Dean shall appoint an evaluation committee at the request of the doctoral candidate. This evaluation committee shall consist of at least two people who are authorised according to Section 5 (1) of the joint Doctoral Degree Regulations.
- (4) The Master's examination is deemed to have been passed as soon as the student has demonstrated 90 ECTS credit points from the compulsory and compulsory elective modules from the curriculum of this degree programme, as well as successful completion of the fast-track doctoral degree.
- (5) The overall grade of the Master's examination within the scope of a fast-track doctoral degree corresponds to the sum of the weighted grade components according to Section 12, not including the part for the Master's thesis.

$$\text{Overall Grade}(FTP) = \sum \frac{N_p \cdot 46}{78} + \frac{N_{tW} \cdot 27}{78} + \frac{N_{ntW} \cdot 5}{78}$$

(For abbreviations of the grade components see Section 12)

§ 12 Calculation of the overall grade

When calculating the overall grade, the module grades and the grade for the Master's thesis are weighted by ECTS credits as allocated to the modules. In doing so, the compulsory modules and the technical and non-technical compulsory elective modules are each combined into a separate section account, with the average grade for each section (calculated to one decimal place) used for the calculation of the overall grade. In order to achieve the required number of ECTS credits for the section accounts for technical and non-technical compulsory elective modules, the best modules will be taken into account in descending order, until at least the required number of ECTS credits is obtained. If the required number of ECTS credits for a compulsory elective section is exceeded with the last compulsory elective module, the full number of ECTS credits for this module will be taken into account for the compulsory elective section grade. However, the compulsory elective section is always included in the overall grade with its fixed number of ECTS credits.

$$\text{Grade component}_{\text{compulsory modules}}(G_C) = \sum_{\text{Compulsory modules}} \frac{\text{Grade} \cdot \text{ECTS credits}}{46}$$

$$\begin{aligned} \text{Grade component}_{\text{technical compulsory elective modules}}(G_{tce}) \\ = \sum_{\substack{\text{Accounted} \\ \text{technical compulsory elective modules}}} \frac{\text{Grade} \cdot \text{ECTS credits}}{\text{Total ECTS credits}} \end{aligned}$$

$$\begin{aligned} \text{Grade component}_{\text{non-technical compulsory elective modules}}(G_{ntce}) \\ = \sum_{\substack{\text{Accounted} \\ \text{non-technical compulsory elective modules}}} \frac{\text{Grade} \cdot \text{ECTS credits}}{\text{Total ECTS credits}} \end{aligned}$$

$$\text{Overall Grade} = \sum \frac{G_C \cdot 46}{108} + \frac{G_{tce} \cdot 27}{108} + \frac{G_{ntce} \cdot 5}{108} + \frac{\text{Grade}_{\text{Master's Thesis}} \cdot 30}{108}$$

§ 12a

Transitional provisions of the revised version dated 7 March 2018

- (1) For students who began their studies before the 2018/19 winter semester, the provisions of the expired examination regulations in accordance with Section 13 (2) continue to apply. Students can complete their Master's degree programme in accordance with these degree-specific examination regulations until the end of the summer semester 2022. Students who have not completed their degree programme by this time will automatically switch to the new degree-specific examination regulations.
- (2) Examinations completed under the previous degree-specific examination regulations are recognised in accordance with the Recognition Rules. Module examinations which have been completed and passed in full according to the previous degree-specific examination regulations will remain valid. The Examination Board determines which modules from these examination regulations the fully completed modules are to be recognised for. If a student has completed and passed independent parts of a module examination, and the remaining parts are no longer available, the Examination Board determines which supplementary examinations are necessary to complete the module, with regard to the learning objectives of the module and the ECTS credits to be obtained. The Examination Board decides regarding special cases of hardship for which the student is not responsible, upon request.

§ 12b

Transitional provisions of the amended regulations dated 8 May 2019

- (1) Module examinations which have been completed and passed in full by the date these examination regulations enter into force will remain valid.
- (2) If a student has completed and passed independent parts of a module examination, these will be recognised. The Examination Board determines which additional examinations are necessary to complete the module, under consideration of the module's learning targets and the purpose of the examination.
- (3) If a student has passed module 704 (Analytics 1 and 2) that is valid until the date these examination regulations enter into force, then this will also be recognised for the new module 711. If the student has not passed the examination in module 704, they shall complete the module in accordance with the previous degree-specific examination regulations that were in place until the date these examination regulations enter into force. If they subsequently successfully complete module 704, then (1) above applies accordingly.
- (4) Examinations failed before these examination regulations entered into force will be set off against the number of attempts in accordance with the new examination regulations, provided the structure of the new module examinations permits recognition.
- (5) The Examination Board decides regarding special cases of hardship for which the student is not responsible, upon request.

§ 12c

Transitional provisions of the amended regulations dated 10 February 2022

- (1) Module examinations which have been completed and passed in full by the date these examination regulations enter into force will remain valid.
- (2) If a student has completed and passed independent parts of a module examination, these will be recognised. The Examination Board determines which additional examinations are necessary to complete the module, under consideration of the module's learning targets and the purpose of the examination.
- (3) If a student has passed modules mawi-705 or mawi-706 (Advanced Materials A or Advanced Materials B) that are valid until the date these examination regulations enter into force, then these will also be recognised for the new modules mawi712-01a and mawi713-01a (for module mawi-705) or mawi713-01a and mawi714-01a (for module mawi-706).

- (4) Examinations failed before these examination regulations entered into force will be set off against the number of attempts in accordance with the new Examination Regulations, provided the structure of the new module examinations permits recognition.
- (5) The Examination Board decides regarding special cases of hardship for which the student is not responsible, upon request.

§ 12d

Transitional provisions of the amended regulations dated 20 July 2023

Insofar as the amendments to Section 11 (8) and the Annex concern a scientific lecture as part of the Master's thesis, they shall not apply to students who were already admitted to the Master's thesis when the amended regulations come into force.

§ 13

Entry into force, expiry

- (1) These rules enter into force on 1 October 2018.
- (2) At the same time, the degree-specific Examination Regulations (Rules) of the Faculty of Engineering at Christian-Albrechts-Universität zu Kiel (Kiel University) for students of the 'Materials Science and Engineering' Master of Science degree programme of 15 May 2014 (NBl. HS MBW. Schl.-H., p. 48) cease to be in force.

The University Board at Kiel University granted its approval in accordance with Section 52 (1) of the Schleswig-Holstein Higher Education Act in its letter dated 7 March 2018.

Kiel, 7 March 2018

Prof. Dr.-Ing. Reinhard Koch
Dean of the Faculty of Engineering
at Kiel University

Article 2 of the amended Examination Regulations of 8 May 2019.

- (1) These Examination Regulations enter into force as of 1 October 2019.

Article 2 of the amended Examination Regulations of 14 February 2020

These Examination Regulations enter into force on the day of their announcement and apply for the first time for the winter semester 2020/21.

Article 2 of the amended Examination Regulations of 10 February 2022

These Rules enter into force on the day after the date they are published and apply as from 1 October 2022.

Article 2 of the amended Examination Regulations of 20 July 2023

These Examination Regulations enter into force on the day following their announcement.

Annex

**Schedule for the Master's degree programme
Materials Science and Engineering**

Semester	Module code mawi-...	Module name	Course type	SWS	Compulsory / compulsory elective	Admission requirements	Type of examination	ECTS credits	Compulsory attendance
1.	702	Solid State Physics 1	Lecture	2	Compulsory	none	-	(4)	.*
			Practical exercise	1					.*
	711	Analytics 1	Lecture	2	Compulsory	none	-	4	.*
			Practical exercise	1					.*
	705	Advanced Materials A	Lecture	4	Compulsory	none	2 Written or oral examination (zP 50:50)	8	.*
			Practical exercise	2					.*
707	Advanced Mathematics	Lecture	2	Compulsory	none	Written examination	6	.*	
		Computer task	1					.*	
		Practical exercise	1	.*					
708	Thermodynamics and Kinetics 1	Lecture	2	Compulsory	none	Written examination	4	.*	
		Practical exercise	1					.*	
709	Master Lab 1	Practical lab course	3	Compulsory	none	8 certificates	4	Yes	
Total 1st semester								(30) 26	
2.	702	Solid State Physics 2	Lecture	2	Compulsory	none	Written examination	(4)8	.*
			Practical exercise	1					.*
	805	Analytics 2	Lecture	2	Compulsory	none	Written examination	4	.*
			Practical exercise	1					.*
	706	Advanced Materials B - Electronic Mat. 2	Per lecture	2	Compulsory	none	2 Written or oral examination (zP, 50:50)	8	.*
			Per practical exercise	1					.*
803	Thermodynamics and Kinetics 2	Lecture	2	Compulsory	none	Written examination	4	.*	
		Practical exercise	1					.*	
804	Master Lab 2	Practical	3	Comp	none	8 certificates	4	Yes	
	Non-technical Compulsory Electives	j.n.M.	j.n.M.	Optional	j.n.M.	j.n.M.	5	j.n.M.	
Total 2nd semester								(29) 33	
3.	938	Master Lab 3	Practical lab	3	Comp	none	8 certificates	4	Yes
		Technical Compulsory Electives	j.n.M.	j.n.M.	Optional	j.n.M.	j.n.M.	27	j.n.M.
Total 3rd semester								31	
4.	1001	Master's Thesis	Final thesis	6 months	Compulsory	At least 74 ECTS	Scientific lecture and written report	30	
Total 4th semester								30	
Overall total:								120	

j.n.M.: je nach Modul = depending on the module / zP: zusammengesetzte Prüfung = composite examination

.* Attendance to these courses is not compulsory. However, course attendance is expressly recommended to enable scheduled studies in line with this curriculum.

Appendix – Technical Compulsory Electives
(not part of the statute)

08.06.2020

Technical Compulsory Electives

Semester	Module code mawi-...	Module name	Course type	SWS	Compulsory / compulsory elective	Admission requirements	Type of examination	ECTS credits	Compulsory attendance
Winter semester	949-01a	Electron Microscopy	Lecture Practical exercise	3 2	Compulsory elective	none	Oral examination	7	-* -*
	950-01a	Micro- and Nanosystem Technology	Lecture Practical exercise	3 2	Compulsory elective	none	Written examination	7	-* -*
	951-01a	Semiconductors and Defects	Lecture Practical exercise	2 1	Compulsory elective	none	Oral examination	5	-* -*
	952-01a	Smart Materials	Lecture Practical exercise	2 1	Compulsory elective	none	Written examination	5	-* -*
	953-01a	Thin Films	Lecture Practical exercise	3 2	Compulsory elective	none	Written examination	7	-* -*
	948-01a	Cell Mechanics	Lecture Practical exercise	2 2	Compulsory elective	none	Written examination	7	-* -*
	919	Advanced Organic Materials	Advanced seminar	2	Compulsory elective	none	Oral presentation with written report (zP)	3	Yes
	921	Magnetic Materials: Physics and Applications	Lecture Practical exercise	2 1	Compulsory elective	none	Oral examination	5	-* -*
	955-01a	Chemistry and Physics of Biomaterials	Lecture Practical exercise Seminar	3 1 1	Compulsory elective	none	Written or oral examination	7	-* -* -*
	931	Selected Topics in Materials Science	Advanced seminar	2	Compulsory elective	none	Oral presentation with written report (zP)	3	Yes
	940-01a	Linear Finite Element Methods	Lecture Practical exercise	2 1	Compulsory elective	none	Oral examination	5	-* -*
	941-01a	Selected Topics in Computational Materials Science	Advanced seminar	2	Compulsory elective	none	Oral presentation with written report (zP)	3	Yes
	945-01a	Synchrotron Techniques for Materials Characterization	Lecture Practical exercise	2 1	Compulsory elective	none	Written or oral examination	5	-* -*

Summer semester	918	Advanced Metallic Materials	Advanced seminar	2	Compulsory elective	none	Oral presentation with written report (zP)	3	Yes
	954-01a	Statistical Methods in Materials Science	Lecture Practical exercise	2 1	Compulsory elective	none	Oral examination	5	-* -*
	924	Bioinspired Materials	Advanced seminar	2	Compulsory elective	none	Oral presentation with written report (zP)	3	Yes
	930	Nano Medicine	Advanced seminar	2	Compulsory elective	none	Oral presentation with written report (zP)	3	Yes
	932	Selected Topics in Solid State Chemistry	Advanced seminar	2	Compulsory elective	none	Oral presentation with written report (zP)	3	Yes
	933	Optical Materials	Advanced seminar	2	Compulsory elective	none	Oral presentation with written report (zP)	3	Yes
	934	Advanced Topics in Organic Materials	Advanced seminar	2	Compulsory elective	none	Written examination	3	Yes
	935	Advanced Topics in Metallic Materials	Advanced seminar	2	Compulsory elective	none	Written examination	3	Yes
	937	Engineering Aspects of Medical Technology	Seminar Practical exercise	2 1	Compulsory elective	none	Written or oral examination	5	-* -*
	942-01a	Computational Modeling of Inelastic Material Behavior	Lecture Practical Exercise	2 1	Compulsory elective	none	Written or oral examination	5	-* -*
	943-01a	Nonlinear Finite Element Methods	Lecture Practical Exercise	2 2	Compulsory elective	none	Written or oral examination	7	-* -*
	946-01a	Advanced Continuum Mechanics	Lecture Practical Exercise	2 1	Compulsory elective	none	Written or oral examination	5	-* -*

-* Attendance to these courses is not compulsory. However, course attendance is expressly recommended to enable a successful schedule in line with this curriculum.