

# Examination Regulations for the M.Sc. in Nanoscience of the Faculty of Mathematics and Natural Sciences of the University of Kassel of 13<sup>th</sup> January 2016

**Please note:**

*The current text is not legally binding as it represents merely the English translation of the “Fachprüfung-sordnung für den Masterstudiengang Nanoscience des Fachbereichs Mathematik und Naturwissenschaften der Universität Kassel vom 13. Januar 2016“: For all obligatory references please consult the German version, which can be found here: [www.uni-kassel.de/fb10/study/msc/nano](http://www.uni-kassel.de/fb10/study/msc/nano)*

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## **Attachment**

Studies and examination plan (*see description of modules in the manual, grey boxes only*)

## **§ 1 Scope**

The degree examination regulations for the consecutive M.Sc. degree in Nanoscience offered by the Faculty of Mathematics and Natural Sciences of the University of Kassel complements the General Provisions for Subject Area Examination Rules for Degrees at the Bachelor's and Master's level at the University of Kassel in the version that is currently valid.

## **§ 2 Academic degree, profile type**

(1) Those who pass the Master's examination will receive the degree of "Master of Science" (M.Sc.) from the Faculty of Mathematics and Natural Sciences.

(2) The profile type of the M.Sc. Nanoscience programme in its conception is that of a more strongly research-oriented study course, taught predominantly in English.

## **§ 3 Standard study period and content**

(1) The standard study period for the M.Sc. amounts to four semesters including the M.Sc. thesis and colloquium.

(2) In total, 120 credits will be awarded upon successful completion of the M.Sc. programme of which 30 credits are for the Master degree module.

## **§ 4 Commencement of study period**

The M.Sc. programme can begin in the winter or summer semester.

## **§ 5 Examination committee**

(1) Decisions in matters concerning the M.Sc. examination in Nanoscience are made by the Examination Committee for Bachelor Nanostructural Sciences/Master Nanoscience.

(2) The Committee consists of:

- a) three professors from the Kassel University Institutes of Chemistry, Physics and Biology, respectively,
- b) one academic assistant from the above-mentioned Institutes,
- c) a student from the University of Kassel B. Sc. programme in Nanostrukturwissenschaften or the M. Sc. programme in Nanoscience.

(3) The Examination Committee can leave individual case decisions in examination matters to the Examination Committee chairman. Students are entitled to lodge an objection to any such decision with the Examination Committee.

## **§ 6 Admission requirements for the M.Sc.**

(1) Admission to the M.Sc. programme is limited to those who

- a) have passed the B.Sc. examination in the same subject area or
- b) have a degree of at least equal value in the same or related subject area from another university or University of Applied Sciences (UAS) with a standard study period of at least six semesters or
- c) have a foreign degree of at least equal value in the same or related subject area with a standard study period of at least six semesters.

(2) The subject profile of the degree, in accordance with para. 1 lit. b and c, has to meet the requirements of the Nanoscience M- Sc. programme. In particular, the candidate must demonstrate satisfactory basic knowledge in the three natural sciences, Chemistry, Physics and Biology, as well as in-depth knowledge and practical skills in at least two of the three disciplines. If candidates do not meet the prerequisites for admission, the Examination Committee can agree to admission on condition that the candidate, by the time of the Master's thesis, is able to demonstrate satisfactory knowledge by successfully passing certain modules in the order of up to 30 credits.

(3) An admission requirement is knowledge of English (Level B2 of the Common European Framework Reference), in accordance with the provisions of the general guidelines of the CEFR for language requirements for Bachelor and Master degrees of the University of Kassel in the version of these guidelines that is currently valid.

(4) The Examination Committee, in accordance with para. 2., decides whether the prerequisites have been met. Their decision is made on the basis of written application documents. If it is not unambiguously clear from the written application that the prerequisites have been met, the matter will be subject to a hearing, in individual cases, by at least two authorized examiners who are members of the Examination Committee or two examiners appointed by the Committee. The applicant will be notified usually one week before the hearing.

## **§ 7 Examination results, module examination, repeats**

(1) The module examinations are to be completed in connection with the module both in terms of time and practicalities.

(2) Types of examination may include:

- written (30 to 180 minutes),
- oral (15 to 60 minutes),
- seminar lecture (15 to 45 minutes)
- written work (5 to 20 pages)
- report of internship
- multiple choice examinations
- multimedia-based examinations, such as by computer
- and, where necessary, other examinations described in the studies and examination schedule.

The type of examination for a module or partial module is determined by the lecturer at the beginning of the relevant course of lectures, in accordance with the regulations laid down for the studies and examination schedule.

(3) The module examinations can consist of several partial examinations. The minimum grade required to pass a module examination is 4.0 (satisfactory).

(4) Failed module examinations can be repeated twice. A repeat of a module examination that has been passed is not permitted. If a module examination consists of several components, the 'not satisfactory' components can be repeated twice. A repeat of a module component examination that has been passed is not permitted.

(5) A change of required elective modules with the aim of improving the grade is permitted. The list of required elective modules to be credited has to be conclusively established at the time of registration for the M.Sc.

(6) In addition to the required and required elective modules prescribed in the Examination Regulations additional modules can be taken and recorded in the Transcript of Records (additional modules). Registration for an examination must be accompanied by the description of the module, otherwise the examination counts as an additional achievement. The final description as additional module will be made at registration for the M.Sc. thesis, at the very latest.

(7) Module examinations can be done in English or German, if the examiner agrees.

(8) Repeat examinations are in principle to be done the next time the examination is offered.

## § 8 M.Sc. examination subjects

(1) Two of the three subjects offered, Nanochemistry, Nanophysics and Nanobiology, have to be chosen. This choice must be made at the very latest at registration for the M.Sc. thesis.

(2) The M.Sc. examination consists of the following module examinations, including the M.Sc degree module with the relevant credits.

One of the modules Nanochemistry, Nanophysics and Nanobiology can be replaced by required elective modules.

### Required modules:

Methods of Nanostructure Analysis	5 c
Preparatory Project	13 c
Masterabschlussmodul (Master's Degree Module)	30 c
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<b>sum</b>	<b>48 c</b>

### Required elective modules:

#### Focus modules

Nanochemistry	12 c
Nanophysics	12 c
Nanobiology	12 c
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<b>sum (2 focus areas)</b>	<b>24 c</b>

**Other required elective modules:**

a) Course-like modules

Additive Key Competencies	max. 6 c
International Elective Modules	max. 30 c
Applied Physical Chemistry	6 c
Aromatic Building Blocks for Organic Nanostructures	3 c
Chemistry of Materials	3 c
Applied Semiconductor Physics	6 c
Semiconductor Laser	6 c
Thin Films Physics	3 c
Physics with Synchrotron Radiation	3 c
Ultrashort Laserpulses and their Applications	8 c
Lab Course Advanced Experimental Physics	9 c
Experimental Physics Seminar	5 c
Surface Science	4 c
Nanoscale Quantum Optics	6 c
Thermodynamics and Statistical Physics	8 c
Computational Physics	5 c
Molecular Mechanisms of Biochemical Processes	4 c
Biocatalysis	4 c
Sensory Physiology	5 c
Seminar Basics of Chronobiology and Olfaction	3 c
Advanced Seminar Chronobiology and Olfaction	3 c
Seminar Basics of Neuroethology	3 c
Molecular Methods - Microbiology	4 c
Computational Materials Chemistry I: Force Field Methods	6 c
Computational Materials Chemistry II: Density Functional Theory	6 c
Nanosystem Technology and Nanophotonic Device Fabrication	6 c
Nanosensorics	5 c
Nanophotonics	4 c
Semiconductor Devices: Theory and Modelling	6 c
Computational Electromagnetics I	6 c
Computational Electromagnetics II	6 c
Special Topics in Nanoscience	2 c
Mathematics IV Numerical Analysis	6 c

## b) Research modules

Research Internship Organometallic Chemistry	6 c	
Research Internship Hybrid Materials	6 c	
Research Internship Physical Chemistry	6 c	
Research Internship Organic Chemistry	6 c	
Research Internship Physics of Nanostructured Materials and Devices	6 c	
Research Internship Thin Films and Synchrotron Radiation	6 c	
Research Internship Ultrashort Laser Pulses	6 c	
Research Internship Nanoscale Quantum Optics	6 c	
Research Internship Biochemistry	6 resp. 12 c	
Research Internship Biophysics	6 resp. 12 c	
Research Internship Neuroscience	6 resp. 12 c	
Research Internship Microbiology	6 resp. 12 c	
Research Internship Cell Biology	6 resp. 12 c	
Research Internship Developmental Genetics	6 resp. 12 c	
Research Internship Nanophotonics	6 c	
<b>sum</b>	<b>48 c</b>	<b>Total 120 c</b>

(3) The module of the subject not chosen can also be chosen as the required elective module.

(4) The Examination Committee can add further required elective modules to the list.

(5) The modules for the M.Sc. in Nanoscience and the B. Sc. in Nanostructure Science shown in the module handbook can also be done in the B.Sc. programme. Credits will not be awarded for the same module completed or the same course of lectures attended in both the B. Sc. and M.Sc. degrees.

(6) In the case of modules completed at a foreign university as part of a period of study abroad the Examination Committee can credit these as a module under the heading "International Elective Modules". The prerequisite for this is usually a so-called 'learning agreement' signed by the accepting institution, the student, the chairperson of the Examination Committee and, where appropriate, the programme co-ordinator.

(7) In the required elective module a minimum of 12 credits from modules designated as course modules and a minimum of 12 credits from the modules designated as research modules are to be chosen.

## **§ 9 Key competences**

In the M.Sc. programme Nanoscience a total of 10 credits of integrated key competences are acquired through required and focus modules. In addition, integrated and additional key competences can also be obtained that are set out in the relevant required elective modules. Additional key competences can be chosen from what the University of Kassel offers. Credits for other additional key competences are decided by the Examination Committee at the request of the student. The general provisions for key competences in Bachelor and Master programmes of the University of Kassel apply in the currently valid version.

## **§ 10 M.Sc. degree module**

(1) M.Sc. thesis and M.Sc. Colloquium make up the M.Sc. degree module. For this module 30 credits are awarded.

(2) The subject of the M.Sc. thesis is issued at the earliest after two semesters. It can be issued only after successful completion of two focus modules and the acquisition of at least 30 credits in the required elective area. The subject of the thesis in terms of content builds on the Preparatory Project module. The Examination Committee issues the subject and appoints referees to supervise the work. The student has the right to make suggestions.

(3) The time allotted for the thesis is 26 weeks and begins with the announcement of the subject. The subject may be rejected only once and within eight weeks of issue. The subject must be such that the work on it can be done within the time-limit prescribed.

(4) If the candidate is unable, for reasons beyond the candidate's control, to submit the thesis on the first date set, the Examination Committee can extend the submission period by the amount of time equal to that of the delay, at the longest 13 weeks.

(5) The thesis is to be written in English. In exceptional cases, where there is a good reason, the Examination Committee can allow the thesis, at the request of the student, to be written in another language.

(6) The thesis is to be submitted to the Examination Committee at the appointed time and in three bound copies as well as on a data carrier.

(7) The thesis is to be presented in a Master Colloquium, in which the candidate, the first referee and an observer participate. Participants in the seminar, in the framework of which the Colloquium is held, as well as students of the M.Sc. Nanoscience programme are entitled to participate in the seminar as listeners. The Colloquium is to be held at the latest two months after the submission of the thesis. The Colloquium lasts a total of 60 minutes.

(8) To pass the degree module students have to achieve a 4.0 (satisfactory) in the M.Sc. thesis and Colloquium. The Colloquium grade makes up 20% of degree module. A Colloquium in which the student has not achieved the minimum 4.0 grade can be repeated twice.

### **§ 11 Structure and weighting of the grade**

(1) A module is passed and can be assessed as part of the M.Sc. degree, if at least grade 4.0 (satisfactory) has been achieved.

(2) If a module grade consists of several partial module examinations, the grade is calculated as an average of the individual parts. The partial examinations are considered to be equal, provided that the module description allots no specific weighting.

(3) The overall grade of the M.Sc. examination is calculated as follows:

40% for the average value of the required modules, including the M.Sc. degree module, weighted according to the number of credit points.

20% for the average value of the two focus modules chosen weighted according to the number of credit points.

40% for the average value of the other required elective modules weighted according to the number of credit points.

All graded modules will be taken into account that are not designated as 'additional achievement'.

### **§ 12 Coming into effect**

These examination regulations came into force on 1<sup>st</sup> October 2016.

Kassel, 17<sup>th</sup> March 2016

The Dean of the Faculty of Mathematics and Natural Sciences