Examination Regulations for the M.Sc. in Nanoscience of the Faculty of Mathematics and Natural Sciences of the University of Kassel of 17th May 2023

Please note:

*The current text is not legally binding as it represents merely the English translation of the "*Fachprüfungs-ordnung für den Masterstudiengang Nanoscience des Fachbereichs Mathematik und Naturwissenschaften der Universität Kassel vom 17. Mai 2023*": For all obligatory references please consult the German version, which can be found here: https://www.uni-kassel.de/uni/studium/nanoscience-master*

Contents

Attachment

Study plan (overview)
Study and examination plan *(see description of modules in the module handbook, 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 Master 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 M.Sc. 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 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 Master programme

(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 M.Sc. Nanoscience programme. In particular, sufficient knowledge in the three natural science disciplines of chemistry, physics and biology as well as in-depth knowledge and practical skills in at least one of these three disciplines must be proven. If the applicant lacks the prerequisites for admission to the M.Sc. degree programme, the examination board may grant admission on the condition that the missing knowledge is proven by successfully completing certain modules or module parts from the following catalogue in the amount of up to 30 credits:

Bridging the Gap: Biology (Fundamentals)

Bridging the Gap: Biology (Specialization)

Bridging the Gap: Chemistry (Fundamentals)

Bridging the Gap: Chemistry (Specialization)

Bridging the Gap: Physics (Fundamentals)

Bridging the Gap: Physics (Specialization)

as well as further modules from the study programme B.Sc. Nanostrukturwissenschaften.

The reasons for the respective requirements will be communicated to the applicants in the course of enrolment.
Requirements from the modules "Bridging the Gap: Chemistry (Fundamentals)", "Bridging the Gap: Physics (Fundamentals)", "Bridging the Gap: Biology (Fundamentals)" are to be completed in the first semester if possible, other requirements in the second semester at the latest. Successful completion of the requirements is a prerequisite for admission to all internship modules according to §8(2) as well as for the module "Preparatory Project" and the Master's degree module. The time required for requirements is not counted towards the standard period of study of the Master's degree.

(3) An admission requirement is knowledge of English (Level B2 of the Common European Framework Reference CEFR), 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 to clarify existing compentences, 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 which should preferably take place in presence, alternatively as a video conference.

§ 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 / scientific paper review (5 to 20 pages)
- report of internship
- multiple choice examinations
- multimedia-based examinations, such as by computer
- practical examinations
- 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 M.Sc. examination subjects

(1) One of the three subjects offered, Nanochemistry, Nanophysics and Nanobiology, has 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 Master's Degree module with the relevant credits.

Required modules:

P01 Methods of Nanostructure Analysis	5 C
P02 Nanochemistry	6 C
P03 Nanophysics	6 C
P04 Nanobiology	6 C
P05 Preparatory Project	13 C (3 C for integrated key competences)
P06 Masterabschlussmodul (Master's Degree Module)	30 C (5 C for integrated key competences)
sum	66 C

Focus modules:

S01 Advanced Synthetic Chemistry	8 C (1 C for integrated key competences)
S02 Advanced Physical & Theoretical Chemistry	8 C (1 C for integrated key competences)
S03 Advanced Nanophysics	8 C (1 C for integrated key competences)
S04 Advanced Biochemistry & Microbiology	8 C (1 C for integrated key competences)
At least one focus module	8 C (1 C for integrated key competences)

Other required elective modules:

a) Course-like modules	
V-BPM Professional Practical Trainin	8 C
V-KEY Additive Key Competencies	max. 8 C
V-INT International Elective Modules	max. 30 C
W-ABT Applied Biotechnology	3 C
W-AEP Lab Course Advanced Experimental Physics	9 C
W-APC Applied Physical Chemistry	5 C
W-ARO Aromatic Building Blocks for Organic Nanostructures	3 C
W-ASP Applied Semiconductor Physics	6 C
W-CHM Chemistry of Materials	3 C
W-CLK Biological Rhythms, Oscillations, and Clocks	6 C
W-COC Computational Chemistry	6 C
W-COP Computational Physics	5 C
W-EPS Experimental Physics Seminar	5 C
W-GCO Seminar Basics of Chronobiology and Olfaction	3 C
W-MMC Machine Learning for Materials and Chemistry	6 C
W-MS1 Molecular Physics and Spectroscopy I	6 C
W-MS2 Molecular Physics and Spectroscopy II	6 C
W-NQ1 Nanoscale Quantum Optics	6 C
W-NQ2 Advanced Nanoscale Quantum Optics	6 C
W-NTN Nanosystem Technology and Nanophotonic Device Fabrication	6 C
W-PHS Physiology of the Senses	5 C
W-PSR Physics with Synchrotron Radiation	3 C
W-SCO Advanced Seminar: Chronobiology, Endocrinology and Olfaction	3 C
W-SCL Semiconductor Laser	6 C
W-SEN Nanosensorics	5 C
W-SMB Small Brains	3 C
W-STN Special Topics in Nanoscience	2 C
W-SUC Sustainable Chemistry	6 C

W-SUR Surface Science	4 C
W-TFP Thin Film Physics	3 C
W-ULP Ultrashort Laserpulses and their Applications	8 C

b) Research modules

X-IBC Research Internship Biochemistry	6 or 12 C
X-IBP Research Internship Biophysics	6 or 12 C
X-ICB Research Internship Cell Biology	6 or 12 C
X-ICC Research Internship Construction Chemistry	6 or 12 C
X-IDG Research Internship Developmental Genetics	6 or 12 C
X-IHM Research Internship Hybrid Materials	6 or 12 C
X-ILA Research Internship Laboratory Astrophysics	6 or 12 C
X-IPC Research Internship Macromolecular Chemistry	6 or 12 C
X-IMI Research Internship Microbiology	6 or 12 C
X-INA Research Internship Nanoprocessing and -analysis	6 or 12 C
X-INB Research Internship Neurobiology	6 or 12 C
X-INC Research Internship Neurochemistry	6 or 12 C
X-INM Research Internship Physics of Nanostructured Materials and Devices	6 or 12 C
X-IOC Research Internship Organic Chemistry	6 or 12 C
X-IOM Research Internship Organometallic Chemistry	6 or 12 C
X-IPC Research Internship Physical Chemistry	6 or 12 C
X-IPP Research Internship Plant Physiology	6 or 12 C
X-IQO Research Internship Nanoscale Quantum Optics	6 or 12 C
X-ISS Research Internship Surface Science	6 or 12 C
X-ITS Research Internship Thin Films and Synchrotron Radiation	6 or 12 C
X-IUP Research Internship Ultrashort Laser Pulses	6 or 12 C
sum	**46 C**
total	**120 C**

(3) The Examination Committee can add further required elective modules to the list or suspend the offer of individual required elective modules in justified cases.

(4) 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.

(5) 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 “External 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.

(6) In the required elective modules at least 12 credits from modules designated as course modules and at least 12 credits from modules designated as research modules should be selected.

§ 9 Key competences

In the M.Sc. programme Nanoscience a total of 9 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 Master’s degree module

(1) M.Sc. thesis and M.Sc. Colloquium make up the Master’s 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 by the examination committee. 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 digitally.

(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 Formation 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:

55% for the average value of the required modules, including the M.Sc. degree module, weighted according to the number of credit points.

45% for the average value of chosen focus modules and other required elective modules weighted according to the number of credit points.

Modules that are not graded are removed from the calculation of the average. If the number of credits acquired exceeds 120, the candidate may have surplus compulsory elective modules, but not focus modules, removed from the calculation and listed as additional work upon application to the examination office. In this case modules cannot be divided.

§ 12 Entry into force

These examination regulations enter into force on 1st October 2023.

Kassel, 17th May 2023

The Dean of the Faculty of Mathematics and Natural Sciences