

Teaching and Examination Regulations

2013 – 2014

Top Master Programme in

Nanoscience

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Section 1 General provisions

Article 1.1 Applicability

These Regulations apply to the course units and final assessment of the Top Master Programme in Nanoscience hereafter referred to as 'the degree programme'. The degree programme is organized by the Faculty of Mathematics and Natural Sciences of the University of Groningen.

Article 1.2 Definitions

The following definitions apply to these Regulations:

- a. the Act: *Wet op het Hoger Onderwijs en Wetenschappelijk onderzoek* [Higher Education and Research Act].
- b. student: a person enrolled at the university for the purpose of taking course units and/or examinations and the final assessment leading to the conferral of a university degree.
- c. course unit: a teaching unit or other part of the degree programme within the meaning of the Act.
- d. practical: a learning-by-doing exercise, as referred to in Art. 7.13 of the Act.
- e. examiner: staff member appointed by the Board of Examiners to assess students knowledge and skills
- f. final assessment: the final assessment of the degree programme.
- g. ECTS: credits in accordance with the European Credit Transfer and Accumulation System (1 ECTS equals 28 hours of study).
- h. semester: part of the academic year, either commencing on 1 September and ending on a date to be determined by the Executive Board on or around 31 January, or commencing on the aforementioned date determined by the Executive Board and ending on 31 August.
- i. study guide: a document containing information about the degree programme and relevant regulations applicable to students.
- j. colloquium: lecture about a discipline related subject based on scientific literature

The other definitions shall have the meaning that the Act ascribes to them.

Article 1.3 Aim of the degree programme

The Top Master Programme in Nanoscience aims to provide the student with the knowledge, skills, and insights pertaining to the field of nanoscience that will enable him or her to seek employment or apply for a continued training as researcher.

Article 1.4 Type of degree programme

The degree programme is full-time.

Article 1.5 Teaching language

The degree programme is taught in English.

Article 1.6 - Refusal of registration (Iudicium abeundi)

1. In extraordinary cases of reprehensible behaviour and/or statements made by a student, the Board of the University may, on the recommendation of the Board of Examiners or the Faculty Board, terminate said student's registration.
2. The Board of the University will not make a decision as referred to in Article 1.6.1 until after the student in question has been heard about the proposed decision, any interests of the student and the institution have been carefully assessed and it has been proven reasonable to assume that the student's behaviour and/or statements prove him/her to be unsuitable for one or more of the professions which he/she is being trained for in his/her degree programme or for the practical preparation for the profession. In such cases the Faculty Board, the Board of Examiners and the Board of the University will follow the Protocol Iudicium Abeundi [protocol for refusal of registration] as approved by the Nederlandse Federatie van Universitaire Medische Centra [Netherlands Federation of University Medical Centres] on 1 November 2010.

Section 2 Structure of the degree programme

Article 2.1 Study load

1. The degree programme has a study load of 120 ECTS.
2. The study load of each course unit is expressed in integer ECTS.

Article 2.2 Specializations

The degree programme is not divided into specializations.

Article 2.3 Content of the degree programme

The compulsory part of the Top Master Programme in Nanoscience consists of:

- a. **Guided self-study** (6 ECTS) intended to enable students to follow the Core Curriculum. Topics from the following list will be assigned on an individual basis by the Chair of the Board of Examiners:
 - Solid-state physics
 - Quantum theory

- Organic chemistry
- Inorganic chemistry
- Mathematics

For each assigned topic, the tutor associated with the topic will determine in an oral exam whether the student has passed the requirements.

b. Core Curriculum (30 ECTS)

The Core Curriculum defines to a large extent the character of the Programme. It consists of the following three modules:

Preparation of nanomaterials and devices (8 ECTS)

Characterization of nanomaterials (9 ECTS)

Fundamental and functional properties of nanomaterials (13 ECTS)

These modules will be examined in written form in two or three parts each. The mark obtained for each part has to be at least 6.

c. Scientific paper (6 ECTS)

The student will write a scientific paper on a topic of his or her choice. This choice needs the approval of the mentor and of the coordinator of this component of the programme, who will also jointly determine the mark obtained.

d. Small research project (13 ECTS)

The student will carry out a small research project around an already defined problem. All students of a given cohort will jointly organize a symposium in which they will present their individual small research projects. The supervisor of the project and the coordinator of this component of the curriculum will jointly determine the mark obtained.

e. MSc thesis project (45 ECTS)

The student will carry out a substantial research project.

f. PhD proposal (6 ECTS)

The student will write a proposal for a PhD project, in the form required by Dutch funding agencies like FOM. It is not necessary that the student actually intends to carry out this project himself or herself. The supervisor of the project and the coordinator of this component of the curriculum will jointly determine the mark obtained.

The small research project (sub d) and the MSc thesis project (sub e) cannot be carried out in the same research group.

The small research project (sub d), the MSc thesis project (sub e), and the scientific paper (sub c) cannot be on the same topic nor supervised by the same person.

Article 2.4 Optional course units

The student will spend at least 14 ECTS on electives, on topics related to nanoscience but not sufficiently covered by the Core Curriculum. The choice of electives requires consultation with the mentor and approval by the Board of Examiners. These electives are taken from the regular physics and chemistry curricula; the examination method is determined by the Board of Examiners of these curricula. The study load in ECTS is determined by the Board of Examiners of the Top Master Programme in Nanoscience,

and is normally about 20% lower than that in the regular physics and chemistry curricula.

The electives in the list below are recommended.

Course name	Code	Credits(ECTS)
Structure determination using spectroscopic methods	NS104	4
Computational physics	NS106	4
Non-linear optics	NS108	4
Many-particle systems and quantum theory of solids	NS110	4
Theoretical condensed-matter physics	NS112	4
Mesoscopic physics	NS114	4
Micromechanics	NS116	4
Computational methods of quantum chemistry	NS120	4
Stereochemistry	NS124	4
Coordination chemistry	NS128	4
Polymer surfaces and interfaces	NS132	4
Polymer physics	NS134	4
Advanced polymer chemistry	NS136	4
Physics of lasers	NS138	4
Solid-state phase transitions	NS140	4
Device physics	NS142	2
Modern laser microscopy	NS146	4
Surface analysis techniques (Part of: Surfaces and Interfaces)	NS196	3

The Board of Examiners may permit the student to select one or more course units from another master's degree programme (from the University of Groningen or from another university). In such case, the Board of Examiners will determine the study load on ECTS of the course units.

Section 3 Examinations and final assessment in the degree programme

Article 3.1. General

1. Examinations, both interim and final, provide the student with the information necessary for the student to assess whether the required learning goals are – or will be achieved. This will help the student with further participation in the degree programme in question.
2. Assessment is expressed in whole and half numbers greater than or equal to 1 and smaller than or equal to 10, or by the qualifications 'pass' (v) or 'fail' (o). A teaching unit or course unit is passed when a mark higher or equal to 6 is achieved or when the qualification 'pass' (v) is awarded. The mark 5,5 is not awarded.

Article 3.2 Compulsory order of examinations

The Guided Self-study has to be completed prior to the start of the Core Curriculum. The three Core Modules have to be completed prior to starting the small research project, the MSc project, and the PhD proposal, unless the Board of Examiners has ruled otherwise on a motivated written request of the student.

Article 3.3 Frequency and examination Periods

1. There shall be an opportunity to sit the examinations for the course units listed in Article 2.3 two times each year.
2. An examination for a practical is given once a year.
3. A course unit will be examined twice in the year the course unit was not offered.
4. A course unit will be examined twice in the year following the year a course unit was offered for the last time.

Article 3.4 Form of examinations

1. The form of the examinations for the course units listed in Article 2.3 and 2.4 are specified there.
2. At the student's request, the Board of Examiners may allow an examination to be taken in a form different from that covered by Article 3.4.1.
3. Students with a functional disorder will be given the opportunity to take examinations in a form that will compensate as best as possible for their individual handicap. If necessary, the Board of Examiners will seek expert advice on this matter. Applications for an adjusted exam should be done/made at least one month before the exam.

Article 3.5 Oral examinations

1. Unless the Board of Examiners decides otherwise, an oral examination may only be taken by one student at a time.
2. On request of the examiner or the student a neutral third party may be asked to attend an oral examination.

Article 3.6 Examination of practical course units

1. For practical course units, active and visible participation in the research training as well as the approval of a (research) report written by the student are required for passing the examination.
2. The assessment of internal practical course units and the written report of such course units will be conducted by one staff member.
3. The assessment of an external research training project will be conducted by the internal examiner advised by an external supervisor.

Article 3.7 Authority of the Board of Examiners regarding optional course units

1. The Board of Examiners for the degree programme setting the examination is authorized to assess the examinations and deal with any complaints. This does not apply to a request for an alternative examination regulation. In this case, the Board of Examiners of the degree programme for which the student has registered is authorized.
2. With regard to examinations for students with a functional performance disability, the Board of Examiners of the degree programme referred to in Article 3.7.1 shall comply with the facilities permitted by the Board of Examiners of the degree programme for which the student has registered.

Article 3.8 Assessing the Final Degree Project

The assessment of a final degree project (thesis or research projects/internships) takes place within a general assessment framework. The supervisors (at least two) who have been appointed as examiners by the Board of Examiners will determine the mark together. If necessary, they will consult an external supervisor.

Article 3.9 Marking of examinations and publication of grades

1. After an oral examination, the examiner will assess the examination immediately and provides the administration office with a written confirmation.
2. The examiner will mark a written examination within 10 working days after the day the examination was taken and provides the administration office with the necessary details regarding the distribution of the written confirmation to the student.
3. The overview of the results sent digitally to the student twice a year has to be interpreted as the written confirmation.

4. The examiner will mark a practical examination within 10 working days after the day the course unit is finished, with the exception of those practicals for which the Board of Examiners has decided on a deviating term of marking with a maximum of a month.
5. The examiner provides the administration office with the necessary details regarding the distribution of the written confirmation to the student.
6. If an examination is taken in a form other than oral, written or practical, the Board of Examiners will determine in advance how and when the student will receive written confirmation of the result.

Article 3.10 Validity

1. Examinations that have been passed remain valid indefinitely.
2. Contrary to the provision of Article 3.10.1, the Board of Examiners may decide to require a student to take a supplementary or substitute examination for a course unit taken more than six years previously before allowing that student to progress to the final assessment.

Article 3.11 Right of Inspection

1. On request, a student has the right to inspect his marked work during a period of six weeks after the results of a written examination have been made known.
At the student's request a copy of his work is provided against cost price.
2. Within the time frame stipulated in Article 3.11.1, the student may request that he be allowed to peruse the examination paper and the assessment criteria.
3. The Board of Examiners may determine that this inspection or perusal will take place at a certain place and time. This inspection and perusal may be organized collectively.
If the person concerned can show that he was prevented by force majeure from attending at the indicated place and time, he will be offered another opportunity.

Article 3.12 Exemptions

At the student's request, the Board of Examiners, having discussed the matter with the examiner in question, may grant exemption from an examination on condition that the student:

- a. has completed part of a university or higher vocational course unit that is equivalent in content and level
- b. can demonstrate by work and/or work experience that he has sufficient knowledge and skills in respect of the course unit in question.

Article 3.13 Final assessment

1. The Board of Examiners determines the result of the final assessment as soon as the student has passed all the required examinations, thereby acquiring the necessary academic training, and to that end issues a certificate.
2. Students are deemed to have passed the final assessment if they have obtained a sufficient grade for each course unit of the degree programme (see Article 3.1.2).
3. Before the final assessment can be determined, the Board of Examiners may decide to test the student's knowledge of one or more course unit units or components of the degree programme, if and in as much as the marks for these course units provide a reason for doing so.
4. By determining the result of the final assessment, the Board of Examiners also commits itself to a speedy processing of the degree certificate ceremony.
5. If a student wishes to postpone the date of graduation due to extra examinations that still need to be taken, he must submit a request to this end to the Board of Examiners in good time.

Article 3.14 Degree

1. A student who has satisfied all the requirements of the final assessment is awarded the degree of "Master of Science".
2. The degree awarded is registered on the final certificate.
3. The qualification "Top programme" is registered on the diploma supplement.

Article 3.15 Assessment plan

An assessment plan has been approved by the Faculty Board, comprising the following topics:

1. the learning outcomes of the degree programme;
2. the course units of the degree programme and the learning outcomes of each course unit;
3. the relationship between course units and learning outcomes;
4. the test method to be used and the test moments for each course unit;
5. the test design and assessment procedures, assessment criteria and pass mark definition used;
6. who is/are responsible for the implementation of the various components of the assessment policy;
7. the method of regular evaluation.

Section 4 Selection procedure

Article 4.1 Admission procedure

1. Students in possession of an admission permit can be admitted to the programme.
2. Students who meet the requirements are provided with an admission permit by the Admission Board.
3. An admission permit is only valid for the academic year following the academic year in which the permit is granted.
4. There may be other conditions attached to the admission permit. The requirements must be met before the programme has started.
5. The admission requirements comprise:
 - a bachelor's degree in chemistry, physics, materials science, or other field deemed relevant by the Admissions Board;
 - sufficient knowledge of the English language;
 - sufficient knowledge of the relevant sciences;
 - a suitable attitude, motivation and talent to follow the programme.
6. The Board of Examiners establishes an Admissions Board that judges the student's fulfilment of the requirements. This Board consists of three members of the Board of Examiners, completed by a university employee.
One of the members is appointed as chairperson.
7. The decisions of the Admissions Board can be appealed to at the Board of Appeal for Examinations.
8. Students apply to the admission procedure by sending in the following documents:
 - a completed application form;
 - a complete curriculum vitae;
 - a survey of the study results attained in academic courses so far;
 - a letter in which the student states why s/he wants to follow this programme in particular, what his/her expectations and ambitions are;
 - (if desired) results of former research projects, like reports or articles;
 - the names of three scientists willing to provide personal information on the applicant;
 - (if desired) other documents that the student thinks useful in furthering his/her application.

These documents are to be sent to the Faculty of Mathematics and Natural Sciences by 1 February preceding the start of the programme.

9. Sufficient knowledge of the English language can be proved by
 - Cambridge Certificate of Proficiency in English (A, B or C);
 - Cambridge Certificate in Advanced English (A, B or C);

- an overall score of 6.5 or higher in the International English Language Testing System (Academic version);
- a score of at least 580 on the paper-based form of the Test of English as a Foreign Language;
- a score of at least 237 on the computer-based form of the Test of English as a Foreign Language;
- a score of at least 92 on the internet-based form of the Test of English as a Foreign Language.

An original certificate of the test, not older than two years, needs to be sent in. The Admissions Board may accept other proofs of knowledge of the English language that guarantee a comparable level of knowledge of English.

Students who have completed their secondary education in The Netherlands, are exempt from the English proficiency requirement.

Article 4.2 Applications procedure

1. The application deadline for admission to the degree programme is 1 February for non-EEA-students and 1 May for EEA-students. The application must be submitted to the Admissions Board.
2. Only in exceptional cases will the Admissions Board consider an application submitted after the dates stated in Article 4.5.1.
3. The Admissions Board will make a decision before 1 May for non-EEA-students and before 1 July for EEA-students. The written admissions declaration will include information for the student about the possibility of an appeal to the Committee of Appeal for the Final Assessments.

Section 5 Tutoring

Article 5.1 Study progress administration

1. The Faculty Board is responsible for the registration of the individual results of students.
2. The Faculty Board will provide each student digitally an overview of his results twice a year.
3. At the request of the student the administration office provides a certified overview.

Article 5.2 Tutoring

1. Within the framework of the admissions procedure, the Faculty Board is responsible for making an appointment with the student to discuss the individual degree programme he will follow.
2. The Faculty Board is responsible for providing the student with a study guide at the start of his degree programme.
3. The Faculty Board ensures that the student has sufficient supervision during his degree programme, particular attention will be paid to possible changes deemed necessary to ensure the chosen programme is compatible either with conducting academic research or exercising a profession outside the university.

Section 6 Final provisions

Article 6.1 Amendments

1. Any amendments to these Regulations will, after discussion with the course unit committee and, if necessary, approval of the Faculty Council, be confirmed by the Faculty Board in a separate decree.
2. An amendment to these Regulations does not apply to the current academic year, unless it may reasonably be assumed that the amendment will not harm the interests of students.
3. An amendment may not harm the interests of students by affecting decisions taken by the Board of Examiners within the meaning of these Regulations.

Article 6.2 Publication

1. The Faculty Board shall duly publish these Regulations, any rules and guidelines formulated by the Board of Examiners, and any amendments to these documents.
2. Copies of the documents referred to in Article 6.2.1 are available from the Faculty Office.

Article 6.3 Appeal procedure and unexpected events

1. In exceptional cases or cases not covered by these regulations, the Board of Examiners shall have the final say.
2. Appeals against decisions made by an examiner or a Board of Examiners may be filed with the Board of Appeal for Examinations.

Article 6.4 Date of commencement

These Regulations shall take effect on 1 September 2013.