

Education and Exam Regulations 2022-2023

Master Mathematics

Table of contents

PART I GENERAL PROVISIONS	4
Section 1. General provisions	4
Article 1.1 Applicability of these regulations.....	4
Article 1.2 Executive Board Guidelines.....	4
PART II GENERAL PART	7
Section 2. Admission to the degree programme and education	7
Article 2.1 Admission and admission requirements	7
Article 2.2 Language requirements.....	7
Section 3. Structure and design	7
Article 3.1 Final examination, degree and distinctions	7
Article 3.2 General learning outcomes.....	8
Article 3.3 Curriculum	8
Article 3.4 Types of interim examination	9
Article 3.5 Exemptions	9
Article 3.6 Term of validity for successfully completed interim examinations	10
Article 3.7 Elective programmes.....	10
Section 4. Testing	10
Article 4.1 Frequency of interim examinations	10
Article 4.2 Registration for course examinations.....	11
Article 4.3 Confirmation of examination results.....	11
Article 4.4 Publication of results	11
Article 4.5 Right of inspection and explanation	12
Article 4.6 Confirmation of examination results.....	12
Article 4.7 Awarding distinctions.....	13
Section 5. Study performance, guidance and evaluation of education	13
Article 5.1 Study performance and support.....	13
Article 5.2 Method of evaluation of education	13
PART III PROGRAMME-SPECIFIC PART	14
Section 6. Admission to the degree programme and education	14
Article 6.1 Admission requirements	14
Section 7 Structure and design	14
Article 7.1 Programme-specific learning outcomes.....	14
Article 7.2 Composition of the programme	17
Article 7.3 Deviating programme	28
Article 7.4 Additional requirements.....	28
Section 8. Transitional provisions	28

PART IV FINAL PROVISIONS	33
Section 9. Final provisions	33
Article 9.1 Safety net scheme and hardship clause	33
Article 9.2 Establishment and amendments.....	33
Article 9.3 Entry into force	33
Article 9.4 Publication.....	33
Appendix 1: Guideline for awarding distinctions	34
Appendix 2: Fraud Regulations	35
Section 1. Introductory provisions	35
Article 1. Objective and scope of the regulations	35
Article 2. Definitions	35
Section 2. Definition of fraud, procedure and sanctions	35
Article 3. Definition of fraud	35
Article 4. Procedure for determining fraud	36
Article 5. Remedial measures.....	36
Article 6. Sanctions	37
Section 3. Transitional provisions	37
Not applicable.....	37
Section 4. Final provisions	37
Article 7. Decisions and legal protection.....	37
Article 8. Adoption and amendments.....	37
Article 9. Entry into force	38
Article 10. Publication.....	38

PART I GENERAL PROVISIONS

Section 1. General provisions

Article 1.1 Applicability of these regulations

1. These Education and Examination Regulations (hereinafter EER) apply to the Master's programmes (the degree programme in which the student is enrolled is hereinafter referred to as 'the programme'), including all their components, of the Faculty of Science. These EER outline the applicable procedures, rights, and obligations concerning teaching, interim examinations, and final examinations.
2. These regulations apply to all students enrolled in the programme in the 2022-2023 academic year. Students who started the degree programme before 1 September 2016 and have been continuously enrolled in this programme may appeal to the EER that were active at the time of their initial enrolment in the programme.
3. Course components provided by other faculties or institutions are subject to the rules applicable at the faculty or institution in question. Components offered by the Faculty of Science are subject to the regulations described in at least one of the EER of the Faculty of Science at all times.
4. The faculty offers the following 120 EC Master's programmes:
 - a. Biology;
 - b. Chemistry (being phased out);
 - c. Computing Science;
 - d. Mathematics;
 - e. Medical Biology;
 - f. Molecular Life Sciences (being phased out);
 - g. Molecular Sciences
 - h. Physics and Astronomy;
 - i. Science (being phased out).
5. The faculty offers the following 60 EC Master's programmes:
 - a. Information Sciences.
6. The degree programmes are offered exclusively as full-time programmes.
7. The programmes are taught in English, with the exception of the educational components of the Faculty of Science Education and Science specialisations which are taught in Dutch.

Article 1.2 Executive Board Guidelines

1. The Executive Board has laid down the following guidelines with a view to the organisation and coordination of the provisions in these regulations: The guidelines can be found in the Appendix:
 - a. Distinction Regulations.
 - b. Fraud Regulations

Article 1.3 Definition of terms

1. The terms used in these EER that are also used in the Higher Education and Research Act (*Wet op het hoger onderwijs en wetenschappelijk onderzoek*, hereinafter, 'the Act') will have the same meaning as in the Act.
2. Apart from the terms referred to in paragraph 1, the terms below are understood to have the following meanings:
 - a. Degree programme: the Master's programme, as referred to in Article 7.3a, paragraph 1 of the Act;
 - b. Component: an educational unit as referred to in Article 7.3, paragraphs 2 and 3 of the Act;
 - c. Student: anyone enrolled at Radboud University for participation in a degree programme or in the partial examinations or final examinations of a programme;
 - d. Academic year: the period from 1 September in a given year until 31 August of the following year;
 - e. Practical: a practical exercise as referred to in Article 7.13, paragraph 2 under D of the Act;
 - f. Interim examination: an examination testing the knowledge, understanding or skills of the student in relation to a certain unit of study, as well as the assessment of the results of this examination, which is administered by at least one examiner designated by the Examining Board. For the purpose of these regulations, a partial examination or a resit is also considered an interim examination;
 - g. Partial examination: an examination of the knowledge, insight and skills of the student, as well as the assessment of the results of the examination, which, in conjunction with one or more other partial examinations, constitute the interim examinations as referred to under paragraph f. In these regulations, when the term 'examination' is used, this can also be read as 'partial examination', unless explicitly indicated otherwise;
 - h. Resit: an opportunity to retake a particular examination as referred to in Article 7.10, paragraph 1 of the Act. In these regulations, when the term 'examination' is used, this can also be read as 'resit', unless explicitly indicated otherwise;
 - i. Final examination: an assessment, on the basis of which the Examining Board determines whether all the components pertaining to the Master's programme have been completed successfully. The Examining Board may decide that the final examination also includes an investigation by the Examining Board into the knowledge, insight and skills of the candidate, as well as the assessment of the outcomes of that investigation (in accordance with Article 7.10 WHW);
 - j. Fraud: any behaviour or negligence on the part of the student that, by its nature, is directed toward making it partly or entirely impossible to properly assess the knowledge, insights and skills of the student or of another student.

- k. Examining Board: the examining board of a degree programme, established in accordance with Article 7.12 of the Act. Also see the Radboud University Structural Regulations;
- l. Examiner: the person designated by the Examining Board to administer the interim examinations, in accordance with Article 7.12 of the Act;
- m. EC: European Credits, i.e. the study load unit in accordance with the European Credit Transfer System;
- n. Specialisation: a coherent programme within the Master's programme that has been approved as such by the faculty board;
- o. Work day: Mondays to Fridays, with the exception of official holidays and any other days designated by Radboud University as collective holidays;
- p. Awarding of the degree certificate: the formal confirmation that all the examination requirements have been met;
- q. Prospectus: the guide for a particular Faculty of Science degree programme, containing specific information regarding the Master's degree programme;
- r. The University: Radboud University;
- s. The faculty: The Faculty of Science;
- t. The education institute: the organisational unit responsible for the degree programme;
- u. Free elective: a freely-selected, academic, assessable component.
- v. Rules and regulations: the rules in which the Examination Board explain how it works in accordance with the Education and Examination Regulations.

PART II GENERAL PART

Section 2. Admission to the degree programme and education

Article 2.1 Admission and admission requirements

1. Decisions regarding admission are made by the education institute on behalf of the dean.
2. The programme-specific part of these EER lists the admission requirements students must meet to be admitted to the degree programme.

Article 2.2 Language requirements

1. Sufficient command of the English language is required to participate in the programme and to sit examinations in English. This requirement is met if the student:
 - a. comes from one of the following countries: Australia, Canada (with the exception of Quebec), Ireland, New Zealand, Singapore, the United Kingdom, the United States or South Africa; or
 - b. is in possession of a pre-university education (VWO) diploma; or
 - c. is in possession of a pre-university education diploma obtained at an English-language institution in the Netherlands or elsewhere; or
 - d. has a pre-university education diploma obtained at a German secondary education institution, with English as Grundkurs; or
 - e. has a Bachelor's diploma from a university of applied sciences (HBO); or
 - f. has a Bachelor's diploma from a Dutch university; or
 - g. meets the requirements in the opinion of the programme; or
 - h. has passed one of the following assessments:
 - i. the TOEFL with a score of 575 or higher for the paper version;
 - ii. the TOEFL with a score of 90 or higher for the Internet version with none of the sub-scores below 20;
 - iii. the IELTS with a score of 6.5 or higher, where none of the sub-scores are below 6.0;
 - iv. the Cambridge CAE or CPE with a score of C or higher.
2. Sufficient command of Dutch is required to participate in the programme and to sit examinations in Dutch. Non-Dutch students have met the language requirement for sufficient proficiency in Dutch if they have passed the state examination of Dutch as a second language, level 2. In certain cases, the education institute may assess whether a student is sufficiently proficient in Dutch.

Section 3. Structure and design

Article 3.1 Final examination, degree and distinctions

1. The degree programme is concluded by the Master's final examination.
2. Students who pass the examinations of the Master's degree programme will be awarded a Master of Science degree.

3. The degree referred to in the second paragraph is awarded exclusively if the student has earned at least half of the EC for their degree programme at this University.
4. The Examining Board can award distinctions to students who have successfully passed the degree programme examination. The rules for awarding distinctions can be found in Article 4.7 of these EER.

Article 3.2 General learning outcomes

The degree programme has the following learning outcomes for students:

1. Acquire knowledge, skills and insights in the relevant field of study;
2. Develop academic competences;
3. Prepare for further study or a future career;
4. Strengthen qualifications in the area of independent academic research.

Article 3.3 Curriculum

1. The programme comprises the total of the components as described in the programme-specific part of these regulations and is aimed at the realisation of well-defined objectives regarding the knowledge, understanding and skills that students are expected to possess upon successful completion.
2. For each section, the lecturer must make a course guide available prior to the course, which includes a description of the course, tests with weighting factors and deadlines. This guide may coincide with the course description in the study guide.
3. The programme has research specialisations and societal specialisations. The specialisations are described in the programme-specific part.
4. Each degree programme includes a component that is philosophical in nature with a minimum study load of 3 EC, a free elective space of 6 EC and a component to aid reflection on study performance, study planning, and professional orientation with a study load of 0 or 1 EC.
5. The electives cannot have substantial overlap in content with courses from the mandatory or elective components of the programme. It is not possible to receive an exemption for the elective component based on a Bachelor's course.
6. The composition of the Master's programme compiled by the student must be presented to the Examining Board for approval no later than three months before the expected examination date. The Examination Board will decide whether to grant approval within a month of receiving the submitted programme.
7. Students can only participate in components provided by the Radboud Teachers Academy of Education after the disciplinary internship has been completed. Students can only participate in the Science, Management and Innovation final research project after the student has passed the thematic components and NWI-FMT019 Methods in Societal Research: Science, Management & Innovation. Students can only participate in the Science in Society research project after 12 EC have been obtained from the SiS curriculum.
8. Students can add components to the examination programme. These components are considered extra-curricular and do not count towards the determination of the distinction.

9. If a student has a choice between components within the curriculum and the student has passed more than one of these components, then the student can decide which components will count toward their distinction if one or more of the components are extra-curricular.

Article 3.4 Types of interim examination

1. Each component of the degree programme is concluded by an interim examination. Interim examinations may comprise more than one modular partial examination and may consist of the following assessment forms:
 - a. Written test and/or;
 - b. Oral test and/or;
 - c. Presentation and/or;
 - d. Skill test and/or;
 - e. The creation of a discipline-specific product and/or text.
2. Prior to the commencement of the academic year, information will be provided in the prospectus on each individual component regarding how the interim examinations will be administered and how their results will be determined, taking the weighting of any partial exams into account. At the request of the student or the examiner, the Examination Board may allow an interim examination to be administered in a form other than stated above, if this is not to the detriment of the student.
3. In cases where an interim examination has admission requirements, the admission requirements will be published in the prospectus before the start of the academic year, see Article 3.3, paragraph 7. This requires permission from the programme coordinator. Contrary to the above provisions, the admission requirements for the courses completed in the fourth period may still be changed up until the start of the second period, with permission from the programme coordinator.
4. There are no admission requirements for interim examinations; if students are enrolled in a component, they are admitted to all sub-components, including the interim examination.
5. Students with disabilities are given the opportunity to take interim examinations in a manner appropriately suited to their disability. The Examining Board shall seek expert advice and counsel prior to reaching its decision if necessary. If the students in question require certain facilities for their interim examinations or resits, they must request these from the Education and Examination Administration of the faculty no later than two weeks before the interim examination or resit.
6. During oral examinations, no more than one person is tested at a time, unless decided otherwise by the Examination Board.
7. Oral interim examinations are not public, unless the Examining Board has deemed otherwise in exceptional cases. All oral examinations are recorded. A second examiner or a designated observer may be present as an alternative to recording.

Article 3.5 Exemptions

1. At the request of the student and having heard the examiner involved, the Examination Board may exempt a student, either partially or fully, from sitting for an interim examination if the student:

- a. Has completed a course in a relevant subject at a university or institute of higher vocational education (HBO);
 - b. Demonstrates that they have adequate knowledge and skills regarding the component in question as a result of relevant work experience or professional experience.
2. If the degree programme allows group exemptions, then these are included in the programme-specific part of these regulations.
 3. Only one grade for each course may be registered for a single degree programme. If a course is also part of another examination programme, this course will be listed on the diploma as an exemption.
 4. Students who were first enrolled on or after 1 September 2017 can never have more exemptions than a quarter of the total study load of the programme expressed in EC, as stated in paragraph 1.
 5. All results for a degree programme achieved before the date of the first enrolment are stated as exemptions on the degree programme's diploma. These exemptions do not count towards the EC as stated in clause 4 if the courses are only included in a one examination programme.
 6. Exemptions as referred to in paragraphs 1 and 2 cannot be granted for final examination assignments.

Article 3.6 Term of validity for successfully completed interim examinations

1. The term of validity of successfully completed interim examinations is unlimited.
2. Results obtained for interim examinations are valid until the end of the academic year at least. Lecturers can decide to extend the term of the validity of the result obtained for a partial examination.

Article 3.7 Elective programmes

The programme Examination Board shall decide on a request for authorisation to follow a free education programme as referred to in Article 7.3d WHW. The Examination Board will verify whether the programme fits within the domain of the degree programme under the authority of the Examination Board, whether it is sufficiently cohesive, and whether the level is adequate in the context of the programme's exit qualifications. The programme-specific part of these EER may contain further criteria for the order in which components may be taken and the related interim examinations.

Section 4. Testing

Article 4.1 Frequency of interim examinations

1. Students are given the opportunity to take the examinations at least twice per academic year per interim examination.
2. Contrary to the provisions of paragraph 1, a degree programme coordinator may decide to only offer one opportunity for an interim examination or partial examination. If only one opportunity is given to take an interim examination or partial examination, this is stated in the programme study guide before the start of the academic year.

3. Notwithstanding the provisions in the first paragraph, there will be at least one opportunity in the following year to take an interim examination for a course that was taught for the final time in a particular academic year.
4. If a certain component is not given in a particular academic year, the opportunity to take the corresponding examination will be offered once in that academic year, as long as the interim examination is administered in written or oral form.

Article 4.2 Registration for course examinations

1. Students who register through Osiris for a component are automatically registered for the first interim examination opportunity in the relevant academic year. This does not apply to students whose enrolment in the degree programme has not yet been completed.
2. Students can register for an examination right up until 11:59 pm on the day prior to a period of five working days before the date of the examination. Registration is no longer possible after this date, unless the head of Education Centre decides otherwise in special cases on behalf of the dean.
3. A successfully passed examination may be taken again. If a student resits an interim examination, the most recent result will determine the final result.

Article 4.3 Confirmation of examination results

1. The result of an interim examination is determined by an examiner in the form of a grade on a scale from 1 to 10 (with 10 being the highest possible grade), consisting exclusively of whole numbers or half numbers. However, a grade of 5.5 is never given. When rounding off between 5 and 6, the rule is that a grade lower than 5.5 is rounded down to a five (5), which is an insufficient grade, meaning the educational component has not been successfully completed; a 5.5 and higher is rounded up to a six (6), meaning that the educational component has been successfully completed. In addition to results in the form of a grade, the assessments 'completed', 'not completed', 'satisfactory', 'not satisfactory', and 'good' may also be awarded.
2. Notwithstanding the provisions of paragraph 1, partial examinations may also be graded with one decimal point on a 1 to 10 point scale. Only the final grade is rounded off.

Article 4.4 Publication of results

1. The examiner shall determine the result of the final project within 15 working days after the presentation of the final project has taken place and after the final project has been submitted in <http://thesubmission.science.ru.nl>.
2. The examiner shall determine the result of an interim examination within 15 working days of the date the examination was administered. Here the precondition applies that there must be at least ten working days between the date of the publication of the result in Osiris and the date of the resit.
3. Contrary to the provisions in paragraph 2, the examiner shall determine the result of an interim examination in the fourth period no later than nine days before the scheduled date of the corresponding resit. The lecturer always has at least five working days after the written examination to determine the result.

4. Contrary to the provisions set out in paragraph 2, the examiner shall determine the result of an oral examination within two working days of the date it was administered.
5. In special cases, the Examination Board may extend the term in which the result must be determined as referred to in paragraph 2 and 3 by a maximum of ten working days. This is not possible for interim examinations in the fourth period.
6. In this statement of the result of an interim examination, the student is also informed of their right to inspection, referred to in Article 4.5 as well as the right to appeal to the Examination Appeals Board.
7. Students may submit an appeal of a decision by the Examination Board to the Examination Appeals Board within six weeks.

Article 4.5 Right of inspection and explanation

1. Students may request access to review and inspect all graded work within at least 30 working days following publication of a written interim examination result. For the results of interim examinations with 'open' questions, at their request, the student shall be granted a copy of their graded work at cost.
2. During the period referred to in paragraph 1 of this Article, any student who has taken an interim examination may review the questions and assignments of the interim examination in question, as well as the standards on which the result was based.
3. Students must be offered at least one opportunity to inspect or have their examinations explained, as referred to in paragraphs 1 and 2. If the student demonstrates that they are or were unable to attend an inspection, they may request the Examination Board to allow them another opportunity to inspect the examination, within the period referred to in the first paragraph if possible. In all cases, the inspection must take place at least five working days before the resit of an interim examination. For examinations in the fourth period, students may view their work until one working day before the resit.
4. The examiner shall retain all written interim examinations and related papers (assignments or otherwise) that count towards the final result for a period of two years following the date when the examination was administered. Master's programme reports and theses must remain available for visitations, accreditations and inspections, and shall be kept for seven years.

Article 4.6 Confirmation of examination results

1. Students are given the opportunity to take the final examination after they have provided sufficient proof of passing the components leading up to the final examination.
2. Examinations are scheduled each month.
3. The Examining Board will determine the result of the final examination, as well as the rules in relation to the manner in which the result of the examination is determined. The result of the examination is determined by the Examining Board within five weeks following the student's request. If the examination takes place in July, the results will be determined no later than 31 August. Where needed in relation to entry requirements for a subsequent programme or the acceptance of a job, a statement can be released indicating that the student has met the

requirements of the examination within five days. This is only possible if the student has met the criteria specified in clause 1.

4. Prior to determining the result of the final examination, the Examination Board may evaluate and assess the student's knowledge with respect to one or more components or aspects of the programme, if and to the degree to which the results of the related interim examinations justify this.

Article 4.7 Awarding distinctions

The guidelines concerning distinctions can be found in the Appendix of the Guideline for Distinction Regulations.

Section 5. Study performance, guidance and evaluation of education

Article 5.1 Study performance and support

1. The faculty dean is responsible for recording student results in such a way that, upon request, the Examination Board can respond by providing the student with an overview of the progress of the study programme within a reasonable time frame.
2. The dean is responsible for providing adequate student counselling.

Article 5.2 Method of evaluation of education

In compliance with the quality assurance system of the university as described in the Handboek Kwaliteitszorg Onderwijs Radboud Universiteit (Radboud University Quality Assurance Manual), the dean shall ensure that the education of the degree programmes is evaluated systematically.

PART III PROGRAMME-SPECIFIC PART

Section 6. Admission to the degree programme and education

Article 6.1 Admission requirements

Admission requirements for the programme:

1. Students must have successfully passed the final examination of the Bachelor's programme in Mathematics at Radboud University.
2. Students must have successfully passed the final examination of the Bachelor's programme in (Technical) Mathematics at Radboud University or an equivalent degree at another Dutch university.
3. Students must have successfully completed the final examination of the Bachelor's programme in Physics and Astronomy at Radboud University with the following Mathematics courses: NWI-WP029 Inleiding Wiskunde, NWI-WP030 Groepentheorie, NWI-NP028 Lineaire Algebra B, NWI-WP001B Analyse 1, NWI-WB001B Analyse 2, NWI-WB012B Ringen en Lichamen, NWI-WB003F Gewone Differentiaalvergelijkingen+Numerieke Methoden/NWI-WB104 Gewone Differentiaalvergelijkingen, and NWI-WB027B Topologie.
4. Students must be in possession of a degree certificate that is at least equivalent to the degrees referred to in paragraphs 1, 2 and 3.
5. Students must have demonstrated suitability for participation in the degree programme, in the opinion of the Examining Board.
6. Students meeting the requirements mentioned under 4 or 5 must provide proof of sufficient proficiency in English, as described in Article 2.2.

Section 7 Structure and design

Article 7.1 Programme-specific learning outcomes

Graduates of the Master's Programme in Mathematics will have achieved the following learning outcomes:

1. Graduates have acquired knowledge, skills and insights in the area of mathematics that enable them to independently carry out their profession and qualify for advanced programmes as researchers and designers.
2. Graduates have acquired specialist knowledge and insight in at least one sub-specialisation of mathematics.
3. Graduates have acquired specialist knowledge of another sub-specialisation of mathematics, or of a mathematics-related topic outside the field of mathematics.
4. Graduates are able to acquire independent insight into new developments in their field.
5. Graduates have learned to independently solve complicated problems and formulate solutions, while simultaneously critically assessing established academic insights.

6. Graduates possess adequate computer and computing skills.
7. Graduates can acquire new knowledge in the area of mathematics and integrate this into their existing knowledge. In doing so, they possess the learning skill to orientate themselves at the level of a specialist in a sub-specialisation of mathematics outside their chosen specialisation.
8. Graduates are able to communicate with their peers on scientific knowledge, at both a basic and a specialised level. Graduates are also able to make oral presentations and write clear articles on research that they have conducted, also for a general non-specialist audience. Graduates can prepare both oral and written reports and can debate scientific topics.
9. Graduates possess sufficient knowledge and insight into the role of mathematics in society to enable them to perform satisfactorily in their future positions and to reflect on social and ethical problems.
10. Graduates have demonstrated, by completing a thesis, the ability to independently develop or apply mathematics at a sufficient standard or to apply it in context.

Specific qualifications that are gained through the different specialisations:

Research specialisation 'Mathematics' (as described in Article 7.2a):

Graduates:

1. have a broad and in-depth overview of the main theme of the Master's specialisation, and fundamental knowledge of capita selecta in connection to the subject of the Master's thesis.
2. are able to keep up to date independently on developments in Mathematics by a review of literature.
3. are able to formulate new research questions and hypotheses in the field of Mathematics, and to select suitable techniques and research methods to answer these questions.

Specialisation "Science, Management and Innovation" (as described in Article 7.2b):

Graduates are:

1. Able to bridge between their own science discipline and other disciplines, based on profound understanding of the chosen core theme and how this relates to societal, political, economic, and environmental requirements of today's world;
2. Familiar with and able to analyse specific problems within their theme, and able to apply a range of approaches to address these, argue for, select and implement feasible options, taking into account the full breadth of technological, societal, political and economic perspectives.
3. Proficient in using research methods and techniques, including basic finance and economics, to verify, justify and substantiate strategies and plans and are capable of effectively using a wide variety of information and communication channels;

4. Able to balance perspectives and interests in specific contexts within a company or (non)governmental organisation in order to formulate appropriate strategies and plans towards implementation of the Sustainable Development Goals (SDGs);
5. Able to communicate insights, views and analyses of complex issues to others in a clear, concise and understandable manner, both in written and spoken form;
6. Able to work in multidisciplinary and multicultural high-performance teams based on sound division of tasks, knowledge, competencies, and responsibilities, whilst respecting diverging views and opinions.

Specialisation ‘Science in Society’ (as described in Article 7.2c):

Graduates are:

1. Capable of analysing the role of scientific expertise in societally relevant issues;
2. Capable of designing and conducting independent, methodologically sound research about the interface of science and society, and contributing to academic research;
3. Capable of understanding and implementing public and stakeholder engagement in research and innovation;
4. Capable of analysing, improving and evaluating interdisciplinary collaborations with multiple stakeholders, integrating different perceptions, interests and types of knowledge (experiential, professional and scientific);
5. Capable of substantiating and communicating the relevance of their scientific discipline in society

Specialisation ‘Science and Education’ (as described in Article 7.2d):

Graduates:

1. have knowledge of and insight into the theoretical principles of discipline-specific thinking, educational design, and the methods and techniques of applying didactic research in the discipline.
2. are able to design, implement and systematically evaluate an educational design and a scientific study, drawing a link between didactic and professional practice concepts, discipline-specific thinking of the students at different levels and problems from teaching practice.
3. are able to devote attention to discipline-specific learning of individual and unique students and focus on developing inspiring education.
4. Are able to apply thorough scientific knowledge on general didactic concepts about the learning of individual students and on methods to improve both the social climate in the classroom and to answer the individual learning needs of the students;

5. are able to act in a differentiated way and improve the social climate for collaboration and, in doing so, set independent priorities and, after consultation with relevant third parties, respond appropriately to development and behavioural problems;
6. focus on collaboration and responsible behaviour based on clear communication with individual students and colleagues, on the basis of a personal vision;
7. Are able to develop a personal professional knowledge base to justify their own actions and understand the actions of colleagues and supervisors;
8. are able to use the professional knowledge base and contextual feedback (students, colleagues, supervisors) to evaluate and guide their own professional development;
9. are able to develop a personal identity in the context of their own actions, external frameworks and ethical dilemmas.

Article 7.2 Composition of the programme

Subject to the provisions in Part II of these regulations, the student chooses one of the following specialisations of the degree programme:

1. Mathematics
2. Science, Management and Innovation
3. Science in Society
4. Science and Education

Artikel 7.2a Mathematics

The Master's programme in Mathematics with the research specialisation Mathematics consists of the following components:

1. Track (30 EC)

A choice needs to be made from one of the following tracks with at least 30 EC. Courses with 'MasterMath' as a course code are provided in collaboration with MasterMath. They can be found on MasterMath's website (<https://elo.mastermath.nl/>).

a. Track: Pure Mathematics

Mandatory selection (30 EC) from the following courses and optional interdisciplinary synergy track (not all courses are offered every year):

	Course code	Course name	EC
1	NWI-WM150	Category Theory and Homological Algebra, or:	6
	MasterMath	Calculus of Variations of:	8
	NWI-WM144	Calculus of Variations	6
2	MasterMath	Differential Geometry, or:	8
	MasterMath	Algebraic Geometry 1	8

3	MasterMath MasterMath	Lie Groups, or: Lie Algebras	8 8
4	NWI-WM094B/Mastermath NWI-WM072B	Algebraic Topology 1, or: Complexity Theory	6/8 6
5	Mastermath Mastermath NWI-WM255	Riemann Surfaces, or: Elliptic Curves, or: Probabilistic Combinatorics	8 8 6
6	MasterMath NWI-WM120C/Mastermath	Operator Algebras, or: Computability Theory	8 6/8
7	MasterMath NWI-WM139	Algebraic Number Theory, or: Analytic Methods in Number Theory	8 6
8	Synergy Track Mathematics of Computer Science:		
	Mandatory course (6 EC):	NWI-WM069B Computer Algebra	6
	Mandatory electives (12 EC):	NWI-IMC010 Type Theory and Coq NWI-IMC011 Semantics and Domain Theory NWI-IMC036 Category Theory and Coalgebra NWI-WM158 Experimental Mathematics NWI-IMC009 Automated Reasoning	6 6 6 6 6

b. Track: Applied Mathematics

Mandatory selection (30 EC) from the following courses and optional interdisciplinary synergy track:

	Course code	Course name	EC
1	NWI-WM144 MasterMath MasterMath MasterMath	Calculus of Variations, or: Calculus of Variations, or: Measure Theoretic Probability, or: Numerical Linear Algebra	6 8 8 8
2	NWI-WM246 NWI-WM160	Optimal Transport, or: Gamma-Convergence	6 6
3	NWI-WM126 NWI-WM098B	Biostatistics, or: Regression Analysis and Non-Parametric Statistics	6 6
4	MasterMath MasterMath NWI-WM156	Mathematical Biology, or: Asymptotic Statistics, or: Finite Elements	8 8 6
5	NWI-WM255 NWI-WM161	Probabilistic Combinatorics, or: Monte Carlo Methods	6 6
6	NWI-WM152 MasterMath	Martingales and Large Deviations, or: Numerical Bifurcation Analysis of Large-scale Systems	6 8

7	NWI-WM153 NWI-WM151 MasterMath	Nonlinear Wave Equations, or: Stochastic Simulation, or: Partial Differential Equations	6 6 8
8	Synergy Track Mathematics and Data Science:		
	Mandatory course (6 EC):	NWI-WM098B Regression Analysis and Non-Parametric Statistics	6
	Mandatory electives (12 EC):	MasterMath Machine Learning Theory	8
		NWI-IMC030 Machine Learning in Practice	6
		NWI-NM048D CDS: Machine Learning + NWI-NM047D Computational Neuroscience*	6
		NWI-NM127 Modeling of Complex Real-world Systems	6

*These 6 EC can be replaced by: NWI-NM048B Advanced Machine Learning (6 EC)

c. Track: *Mathematical Physics*

Mandatory selection (30 EC) from the following courses and optional interdisciplinary synergy track:

	Course code	Course name	EC
1	MasterMath NWI-WM069B	Differential Geometry, or: Symplectic Geometry	8 6
2	NWI-WM068C MasterMath	Noncommutative Geometry, of: Poisson Geometry	6 8
3	MasterMath MasterMath	Lie Groups, or: Lie Algebras	8 8
4	MasterMath NWI-WM144 MasterMath	Calculus of Variations, or: Calculus of Variations, or: Partial Differential Equations	8 6 8
5	NWI-WM153 NWI-WM159	Nonlinear Wave Equations, or: Singularities and Black Holes	6 6
6	MasterMath MasterMath	Functional Analysis, or: Operator Algebras	8 8
7	MasterMath MasterMath	Quantum Computing, or: Quantum Information Theory	8 8
8	Synergy Track Gravity+:		
	Mandatory electives (12 EC)	NWI-NM107 General Relativity	6
		NWI-NM024C Foundations and Frontiers of Gravitational Wave Astrophysics óf: NWI-NM1 14 Quantum Gravity	6
		NWI-WM159 Singularities and Black Holes	6
		NWI-WM153 Nonlinear Wave Equations	6

2. Compulsory components (8 EC)

Course code	Course name	EC
NWI-WM115C	Master Seminar*	6
NWI-WM301	Professional Preparation for Math	2

*Students who choose the synergy track Mathematics of Computer Science may replace NWI-WM115C Master Seminar (6 EC) by NWI-IMC057 MFoCS Seminar (6 EC). *Students who choose the synergy track Gravity+ may replace NWI-WM115C Master Seminar (6 EC) by NWI-WM115B Master Seminar (3 EC) + NWI-NM124 Gravity+ Club (3 EC).*

3. Mathematical Electives (18 ec)

The students must take 18 EC of mathematics courses at the Master's level. This package must be presented to the Examination Board for approval.

4. Master Electives (15 ec)

The students must take 15 EC of courses at the Master's level, within or outside the field of mathematics. This package must be presented to the Examination Board for approval.

5. Philosophical component (3 EC)

The student must follow at least 3 EC courses of a philosophical nature at Master's level. Courses from the table below have been approved. NB: Not all courses are offered annually, and some are subject to enrolment restrictions.

Course code	Course name	EC
NWI-FFIL212	Philosophy of Water Management	3
NWI-FFIL215	Upgrading the Human?	3
NWI-FFIL216	Imagining the Anthropocene	3
NWI-FFIL217	Science and Arts	3
NWI-FFIL218	Science and Values	3
NWI-FFIL219	Philosophy of Neuroscience	3
NWI-FFIL220	Philosophy of Evidence and Expertise	3
NWI-FFIL302	Philosophy and Ethics in Microbiology	3
NWI-FFIL202A	Evolution and the Mind	3
NWI-FFIL203B	Bio-ethics for Life Scientists	3
NWI-FFIL209B	Environmental Ethics	3
NWI-FFIL211B	Physics and Philosophy	3
NWI-FFIL300C	Philosophy of Mathematical Practice	3

NWI-WM302	History and Philosophy of Mathematics	3 or 6
MasterMath	History and Philosophy of Mathematics	8
NWI-FFIL220	Philosophy of Evidence and Expertise	3

6. Free electives (6 EC)

7. Master Thesis Project Mathematics NWI-WM052C (40 ec)

In line with the major, consisting of conducting a literature study, writing a thesis and making a final presentation. The thesis can consist of an internship report. Research or internships may be completed outside of the Mathematics department, but the first assessor needs to be from the department. A plan needs to be drafted in consultation with the first assessor prior to commencement of the research or internship.

Artikel 7.2b Science, Management and Innovation

The Master's programme in Mathematics with the specialisation Science, Management and Innovation consists of the following components:

1. Track (24 EC)

A choice needs to be made from one of the tracks of at least 24 EC, as outlined in Article 7.2a point 1.

2. Mathematical Electives (22 ec)

The students must take 22 EC of mathematics courses at the Master's level. This course package must be presented to the Examination Board for approval.

3. Compulsory components (8 EC)

Course code	Course name	EC
NWI-WM115C	Master Seminar*	6
NWI-WM301	Professional Preparation for Math	2

*Students who choose the synergy track Mathematics of Computer Science may replace NWI-WM115C Master Seminar (6 EC) by: NWI-IMC057 MFoCS Seminar (6 EC). *Students who choose the synergy track Gravity+ may replace NWI-WM115C Master Seminar (6 EC) by: NWI-WM115B Master Seminar (3 ec) + NWI-NM124 Gravity+ Club (3 EC).

4. Philosophical component (3 EC)

The student must follow at least 3 EC courses of a philosophical nature at Master's level. Courses from the table below have been approved. NB: Not all courses are offered annually, and some are subject to enrolment restrictions.

Course code	Course name	EC
NWI-FFIL212	Philosophy of Water Management	3
NWI-FFIL215	Upgrading the Human?	3
NWI-FFIL216	Imagining the Anthropocene	3
NWI-FFIL217	Science and Arts	3
NWI-FFIL218	Science and Values	3
NWI-FFIL219	Philosophy of Neuroscience	3
NWI-FFIL220	Philosophy of Evidence and Expertise	3
NWI-FFIL302	Philosophy and Ethics in Microbiology	3
NWI-FFIL202A	Evolution and the Mind	3
NWI-FFIL203B	Bio-ethics for Life Scientists	3
NWI-FFIL209B	Environmental Ethics	3
NWI-FFIL211B	Physics and Philosophy	3
NWI-FFIL300C	Philosophy of Mathematical Practice	3
NWI-WM302	History and Philosophy of Mathematics	3 or 6
MasterMath	History and Philosophy of Mathematics	8
NWI-FFIL220	Philosophy of Evidence and Expertise	3

5. Free electives (6 EC)

Students can use the free elective space to expand the Science, Management and Innovation final research project by 3 EC.

6. Specialisation (57 EC)

a. Compulsory courses (15 EC)

Course code	Course code	EC
NWI-FMT003E	Sustainable Innovation Management	6
NWI-FMT030	Reaching the Sustainable Development Goals	6
NWI-FMT019	Methods in Societal Research: Science, Management & Innovation	3

b. Theme courses (15 EC)

Choice of one of the themes:

Climate and Energy

Course code	Course name	EC
NWI-FMT022	Energy and Climate	6
NWI-FMT026	Energy Modelling	3
NWI-FMT032	Environmental Life Cycle Assessment	6

Health

Course code	Course name	EC
NWI-FMT023	The Future of Health	6
NWI-FMT029	How Health Systems Work	6
	Free electives	3

Green Industries & IT

Course code	Course name	EC
NWI-FMT022	Energy and Climate	6
NWI-SM299	Pattern Recognition in the Natural Science	3
NWI-FMT032	Environmental Life Cycle Assessment	6

Biodiversity

Course code	Course name	EC
NWI-BM038A	Environmental and Ecological Concepts	3
NWI-BM075	Biodiversity Assessment	3
NWI-BM033F	Nature in a Crowded Country	3
NWI-FMT032	Environmental Life Cycle Assessment	6

c. Science, Management and Innovation Final research project (27 EC) (NWI FMT033)

The SMI research project may, in consultation with the SMI coordinator or a lecturer from the SMI specialisation, be completed both internally (within RU/Radboudumc) or externally (government, businesses, consulting firms, NGOs, etc.), at home or abroad. In the first month, the student will write a research plan which must be approved by both the external supervisor and first assessor, as well as the second reader. Of the latter two, at least one is from the Mathematics department. The assessment of the thesis is based on the criteria described in the manual 'Doing a research project: A guide for students of the Science, Management & Innovation Master's specialisation'.

Artikel 7.2c Science in Society

The Master's programme in Mathematics with the specialisation Science in Society consists of the following components:

1. Track (24 EC)

A choice needs to be made from one of the tracks of at least 24 EC, as outlined in Article 7.2a point 1.

2. Mathematical Electives (22 EC)

The students must take 22 EC of mathematics courses at the Master's level. This course package must be presented to the Examination Board for approval.

3. Compulsory components (8 EC)

Course code	Course name	EC
NWI-WM115C	Master Seminar*	6
NWI-WM301	Professional Preparation for Math	2

*Students who choose the synergy track Mathematics of Computer Science may replace NWI-WM115C Master Seminar (6 EC) by: NWI-IMC057 MFoCS Seminar (6 EC). *Students who choose the synergy track Gravity+ may replace NWI-WM115C Master Seminar (6 EC) by: NWI-WM115B Master Seminar (3 ec) + NWI-NM124 Gravity+ Club (3 EC).

4. Philosophical component (3 EC)

The student must follow at least 3 EC courses of a philosophical nature at Master's level. Courses from the table below have been approved. NB: Not all courses are offered annually, and some are subject to enrolment restrictions.

Course code	Course name	EC
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NWI-FFIL212	Philosophy of Water Management	3
NWI-FFIL215	Upgrading the Human?	3
NWI-FFIL216	Imagining the Anthropocene	3
NWI-FFIL217	Science and Arts	3
NWI-FFIL218	Science and Values	3
NWI-FFIL219	Philosophy of Neuroscience	3
NWI-FFIL220	Philosophy of Evidence and Expertise	3
NWI-FFIL302	Philosophy and Ethics in Microbiology	3
NWI-FFIL202A	Evolution and the Mind	3
NWI-FFIL203B	Bio-ethics for Life Scientists	3
NWI-FFIL209B	Environmental Ethics	3
NWI-FFIL211B	Physics and Philosophy	3
NWI-FFIL300C	Philosophy of Mathematical Practice	3
NWI-WM302	History and Philosophy of Mathematics	3 or 6
MasterMath	History and Philosophy of Mathematics	8
NWI-FFIL220	Philosophy of Evidence and Expertise	3

5. Free electives (6 EC)

6. Specialisation (57 EC)

The Master's specialisation *Science in Society* consists of two partially corresponding 'tracks': *Science in Social Interaction & Philosophies and Worldviews*.

a. Compulsory courses

Course code	Course name	EC
NWI-FC003B	Research Responsibility & Uncertainty	3
NWI-FC0044C	Methods of Societal Research	6
NWI-FC0010D	Framing Knowledge	6

b. Theme courses (12 EC)

Choice of one of the themes:

Societal Track – Science in Societal Interaction

Course code	Course name	EC
NWI-FC002B	Science & Societal Interaction	3
NWI-FC0013C	Science & Media	3

NWI-FC0043B	Science & Public Policy	3
	SiS optional course*	3

*To be filled with components related to the topic of the thesis. These components must be presented for approval to the SiS coordinator.

Philosophical Track – Philosophies and Worldviews

Course code	Course name	EC
NWI-FFIL220	Philosophy of Evidence and Expertise	3
NWI-FFIL218	Science & Values	3
Choice of: NWI-FFIL216 NWI- FFIL211B NWI- FFIL209B NWI-FFIL219	Imagining the Anthropocene Physics and Philosophy Environmental Ethics Philosophy of Neuroscience	3 3 3 3
Choice of: NWI-FFIL212 NWI-FFIL215 NWI-IMI003	Philosophy of Water Management Upgrading the Human? Philosophy and Ethics for Computing and Information Science	3 3 3

c. Science in Society internship and report (30 EC).

In consultation with an SiS lecturer, the SiS graduation project can be completed either internally (at the ISIS department) or externally (government, consulting firms, NGOs, etc.). In the first month, the student will write a research plan which must be approved by both the first supervisor as well as a second reader. Of the latter two, at least one is from the Mathematics department. The assessment of the thesis is based on the criteria described in the '*Graduation project guidelines SiS*'.

Artikel 7.2d Science and Education

1. Compulsory components (108 EC)

Course code	Course name	EC
RDA-MA2-01	Visie op het schoolvak, wetenschapsgebied en onderwijs	3
RDA-MA2-02	Leren en instructie 1: effectieve lessen vanuit meerdere perspectieven	2
RDA-MA2-03	Persoonlijk leiderschap van de docent en professioneel spreken	1

RDA-MA2-04	Leren en instructie 2: het leren zichtbaar maken door leraren	2
RDA-MA2-06	Oriëntatie op de pedagogische professionaliteit van leraren	3
RDA-MA2-21	Leren en instructie 3: vakdidactische oriëntatie op leermoeilijkheden en instructiestrategieën	3
RDA-MA2-08	Handelen vanuit pedagogische professionaliteit: creëren van een veilig en krachtig leerklimaat	2
RDA-MA2-13	Leren en instructie 4: leren innoveren in het schoolvak	4
RDA-MA2-16	Teacher Leadership	4
RDA-MA2-09	Supervised internship 1	7
RDA-MA2-10	Supervised internship 2	7
RDA-MA2-11	Independent internship 1	8
RDA-MA2-12	Independent internship 2	8
RDA-MA2-15	Intensification theme 1	1
RDA-MA2-20	Intensification theme 2	1
NWI-WM157	Statistics in Society**	6
LET-EDU-MA11	Academic and Professional Development 1	2
LET-EDU-MA12	Academic and Professional Development 2	2
LET-EDU-MA13	Academic and Professional Development 3	2
LET-EDU-MA14	Academic and Professional Development 4	2
NWI-EDU02	Methoden van Onderzoek	6
NWI-WM302	History and Philosophy of Mathematics**	6
NWI-EDU03	Geïntegreerd masteronderzoek	20
NWI-WM300	Mathematical Thinking and Applications**	6

** Master's degree course for Lecturers

2. Mathematics electives (6 EC)

Free selection from the Mathematics Master's course.

3. Free electives (6 EC)

Article 7.3 Deviating programme

If a student does not choose a specialisation, they must submit a motivated request for permission to the Examination Board for an alternative major selection before the start of the Master's programme.

Article 7.4 Additional requirements

The Master's degree programme content chosen by the student may, after prior permission from the Examination Board, contain a maximum of 12 EC of courses from the Bachelor's programme in Mathematics. This may consist exclusively of third year courses that were not part of the student's Bachelor's programme.

Section 8. Transitional provisions

- NWI-WM115C Master Seminar (6 EC) may be replaced by NWI-WM115B Master Seminar (3 EC), provided it was followed in 2017-2018 or earlier.
- Students who started the Master's in Mathematics degree programme before 1 September 2020 may choose from the specialisations as outlined in the EER of their starting year or from the EER 2020–2021.
- Students who started the Master Mathematics before 1 September 2020 may choose the following courses as part of the major Applications: NWI-WM154 Numerical Methods for PDE (6EC), NWI-WM098B Regression Analysis and Non-Parametric Statistics (6EC) en NWI-WM126 Biostatistics (6EC).
- Students who started the Master's in Mathematics before 1 September 2020, may replace the following compulsory components from Article 7.2d point 1 by mathematic electives: Geïntegreerd masteronderzoek (NWI-EDU02, 20 EC), Statistics in Society (NWI-WM157, 6 EC), Geschiedenis en Grondslagen van de Wiskunde (NWI-WB019C, 6 EC).

For students of the specialisation in Science, Management and Innovation the following applies:

- Students who have successfully completed NWI-FMT020 Bio-Economy may use it instead of one of the 3 EC courses in the Climate and Energy theme.
- Students who have successfully completed NWI-FMT025B From Lab to Clinic may use it instead of NWI-FMT029 How Health Systems Work.
- Students who have successfully completed NWI-FMT024 Policy and Economics *and* NWI-FMT006A Entrepreneurship Clinic may use it instead of NWI-FMT030 Reaching the SDGs.

- Students who have successfully completed NWI-FMT006A Entrepreneurship but *not* NWI-FMT024 Policy and Economics can place it in the free elective space *or* follow NWI-FC0043B Science and Public Policy with which they may use NWI-FMT006A Entrepreneurship and NWI-FC0043B Science and Public Policy together instead of NWI-FMT030 Reaching the SDGs.
- Students who have successfully completed NWI-FMT024 Policy and Economics but *not* NWI-FMT006A Entrepreneurship can place this in the free elective space.
- Students who have successfully completed NWI-MM020A Environmental Life Cycle Assessment and a 3 EC free elective may use it instead of NWI-FMT032 Environmental Life Cycle Assessment.

For students who started in 2020-2021 academic year (or earlier):

1. The following courses are allowed per track:

Pure Mathematics Track:

	Course code	Course name	EC
7	Mastermath	Algebraic Number Theory, or:	8
	Mastermath	Analytic Number Theory, or:	8
	NWI-WM139	Analytic Methods in Number Theory	6

Applied Mathematics Track:

	Course code	Course code	EC
1	NWI-WM144	Calculus of Variations, or: Gamma-Convergence	6
	NWI-WM160		6
2	Mastermath	Partial Differential Equations, or: Measure Theoretic Probability, or: Numerical Linear Algebra	8
	Mastermath		8
	Mastermath		8
4	Mastermath	Mathematical Biology, or: Asymptotic Statistics, or: Numerical Bifurcation Analysis of Large-scale Systems	8
	Mastermath		8
	Mastermath		8
5	NWI-WM151	Stochastic Simulation, or: Monte Carlo Methods	6
	NWI-WM161		6
6	NWI-WM152	Martingales and Large Deviations, or: Probabilistic and Extremal Combinatorics	6
	Mastermath		8
7	NWI-WM153	Nonlinear Wave Equations, or: Introduction to Finite Elements	6
	NWI-WM156		6

2. The following two tracks are allowed:

Track: Mathematics and Computation:

Mandatory selection (30 EC) from the following courses:

	Course code	Course code	EC
1	NWI-WM069B	Computer Algebra	6
2	NWI-WM072B	Complexity Theory	6
3	NWI-WM120C Mastermath	Computability Theory, or: Computability Theory	6 8
4	Mastermath	Probabilistic and Extremal Combinatorics	8
5	NWI-WM150	Category Theory and Homological Algebra	6
6	NWI-IMC010	Type Theory and Coq	6
7	NWI-IMC011	Semantics and Domain Theory	6
8	NWI-WM156	Introduction to Finite Elements	6
9	NWI-WM158	Experimental Mathematics	6

Track: Gravity+ Synergy (30 EC):

Compulsory components (18 EC):

Course code	Course code	EC
NWI-WM115B	Master Seminar	3
NWI-NM124	Gravity+ Seminar	3
NWI-NM0107	General Relativity	6
NWI-NM018B	Singularities and Black Holes	6

Mandatory selection (12 EC) from the following courses:

Course code	Course code	EC
NWI-WM115B	Non-linear Wave Equations	6
NWI-NM124	Calculus of Variations	6
NWI-NM0107	Non-commutative Geometry	6
Mastermath	Riemann Surfaces	8
Mastermath	Differential Geometry	8

- The course NWI-WM301 Professional Preparation for Math (2 EC) may be replaced by NWI-NM019B Professional Preparation (1 EC).
- For the philosophical component, the following course is allowed: NWI-WM040B Philosophy of Mathematics (3 EC).
- Students who choose the track Mathematics and Computation may replace this by NWI-WM115B Master Seminar (3 EC) + NWI-IMC049 MFoCS Seminar (3 EC).
- Students opting for the Synergy track Gravity+ may replace it with NWI-WM115B Master Seminar (3 EC) + NWINM124 Gravity+ Seminar (3 EC).

For students who started in the 2020-2021 academic year, the following applies for the Science and Education specialisation:

- mathematics electives 18 EC (instead of 6 EC) and 12 EC 'lecturer's Master's' (choice from 3 courses in 7.2.d point 1 marked with **).

This is the curriculum for students who started the programme before the 2020-2021 academic year: The Master's programme in Mathematics with a Science and Education specialisation consists of the following components:

1. Mathematical electives (44 EC)

The students must take 44 EC of mathematics courses at the Master's level. This course package must be presented to the Examination Board for approval.

2. Compulsory components (7 EC)

Course code	Course code	EC
NWI-WM115C	Master Seminar	6
NWI-NM019B	Professional Preparation	1

3. Philosophical component (3 EC)

Course code	Course code	EC
NWI-WM040B	History and Philosophy of Mathematics	3
NWI-WM040C	History and Philosophy of Mathematics	6
NWI-FILL220	Philosophy of Evidence and Expertise	3

4. Free electives (6 EC)

5. Specialisation (60 EC)

The Science and Education specialisation includes the following components with the accompanying study load:

- a. Series of lectures (5 EC)
- b. Self-evaluation 1 (10 EC)
- c. Supervised internship (15 EC)
- d. Design and research (10 EC)
- e. Self-evaluation 2 (5 EC)
- f. Independent internship (15 EC)

These components are provided by the Radboud Teachers Academy. If, due to the successful completion of the education minor during the Bachelor's programme or for other reasons, a portion of the abovementioned components need not be followed, the corresponding number of EC must be filled with programme-specific components and/or components from the SiS (7.2c) or SMI (7.2b) programme as referred to in Articles 7.2b and 7.2c.

PART IV FINAL PROVISIONS

Section 9. Final provisions

Article 9.1 Safety net scheme and hardship clause

1. In all cases not covered fully or clearly by these regulations, the decision lies with the dean.
2. In all cases in which these regulations may result in an unreasonable or unfair situation for individual students, the Examining Board or the dean is authorised to make an exception to the provisions in these Education and Examination Regulations.

Article 9.2 Establishment and amendments

1. Contrary to the provisions in Article 7 of the Structure Regulations, these regulations are drawn up or amended by the dean after receiving advice from the programme committees and after having obtained the approval of the Joint Assembly of the faculty.
2. Amendments to these regulations do not take effect in the current academic year, unless this disproportionately compromises the student's interests.
3. Contrary to paragraph 1, the dean is authorised to drop elective components from the curriculum should the circumstances be deemed impossible for offering these courses.

Article 9.3 Entry into force

These regulations enter into force on 1 September 2022.

Article 9.4 Publication

1. The dean is responsible for publishing these regulations and any amendments thereto.
2. Interested parties may consult these regulations via the prospectus.

As determined by the dean on 14-07-2022.

Appendix 1: Guideline for awarding distinctions

- a. With due observance of the provisions set out in this Article, the Examining Board is responsible for the decision of whether a distinction shall be awarded and if so, which distinction.
- b. The distinction shall be calculated on the basis of all components of the examination programme for which a grade has been awarded on a scale ranging between 1 and 10, with the exception of extra-curricular components.
- c. The number of EC of the component referred to in paragraph b shall serve as the weighting factor for the calculation of the weighted average result, unless stipulated otherwise in the programme-specific part of the EER.
- d. The distinction 'cum laude' shall be awarded if the weighted average result of the final assessment of the components referred to in paragraph b is equal to or higher than 8.0.
Both the EC-weighted average of the assessments of all exam parts with a size of **less than 20 EC** and the EC-weighted average of the assessments of all exam parts with a size **equal to or more than 20 EC** must be at least 8.0 before any rounding off.
- e. The distinction 'summa cum laude' shall be awarded if the weighted average result of the final assessment of the components referred to in paragraph b is at least 9.0.
Both the EC-weighted average of the assessments of all exam parts with a size of **less than 20 EC** and the EC-weighted average of the assessments of all exam parts with a size **equal to or more than 20 EC** must be at least equal to 9.0 before any rounding off.
- f. A distinction shall not be awarded if more than 10% of the total study load of the examination programme (being one or more components) has been resat, unless the Examining Board decides otherwise, stating the reasons for this decision.
- g. A distinction shall not be awarded if exams have been resat more than once, unless the Examining Board decides otherwise, stating the reasons for this decision.
- h. A distinction is not granted if the extent of the granted exemption includes more than 50% of the programme, considering possible further restrictions to the number exemptions as stated in the EER.
- i. The distinction shall not be awarded if fraud was discovered in one of the exams of the examination programme.

Appendix 2: Fraud Regulations

Section 1. Introductory provisions

Article 1. Objective and scope of the regulations

The Dean of the Faculty of Science at Radboud University has drawn up the following regulations with a view to preventing fraud during interim and final examinations as referred to in Article 7.12b of the Higher Education and Research Act (Wet op het Hoger onderwijs en Wetenschappelijk onderzoek (hereinafter: WHW)) that are part of the teaching and exams of the study programmes in the Faculty of Natural Sciences, Mathematics and Computer Science at Radboud University.

Article 2. Definitions

The terms that are used in these regulations – in so far as these terms are also used in the WHW or the Education and Examination Regulations of the degree programme (hereinafter: the EER) – have the same meaning that is given to these terms in the WHW and the EER.

Section 2. Definition of fraud, procedure and sanctions

Article 3. Definition of fraud

1. At Radboud University, fraud is understood to mean any act or omission by a student which, by its nature, is intended to render the proper assessment of the knowledge, understanding and skills of that student or another student fully or partially impossible.

2. Fraud in general is defined as:

a) Fraud when taking written interim and final exams, including:

- i. Having access to unauthorised aids as referred to in the House Rules for Radboud University Examination Rooms;
- ii. Looking at the work of others or exchanging information;
- iii. Impersonating someone else or allowing someone else to impersonate oneself during an interim or final exam.

b) Committing fraud when writing theses or other papers or completing assignments, including:

- i. Plagiarism in the sense of using or copying someone else's texts, data or ideas without complete and correct references to sources, plagiarism in the sense of copying the work of another student and presenting this as one's own work and other specifically academic forms of plagiarism;
- ii. The fabrication or falsification of research data;

iii. The submission of a thesis or other paper that has been written by someone else.

c) Other fraud during examination, including:

i. Taking possession of assignments, answer keys and the like, prior to the time the exam takes place;

ii. Changing answers to questions on an examination after it has been submitted for assessment;

iii. Providing incorrect information when requesting exemption, an extension of the validity period, and other similar requests regarding an examination.

3. Any attempt at fraud will also be considered fraud in the sense of these regulations.

Article 4. Procedure for determining fraud

1. In the event that fraud is suspected, the Examining Board or the examiner will immediately inform the student. If fraud is suspected while an exam is being given, then the Examining Board or the examiner will provide the student with the opportunity to complete the exam.

2. The Examining Board or the examiner may order the student to provide the materials involved in the suspicion of fraud.

3. For the application of the provisions in paragraphs 1 and 2, 'examiner' is understood to mean the invigilator or another Radboud University staff member.

4. The Examining Board or the examiner will draw up a report of the suspected fraud. If the examiner draws up the report, they will send it to the Examining Board immediately.

5. The Examining Board will immediately make the report referred to in paragraph 4 available to the student and will begin an investigation into it. The Examining Board will provide the student with the opportunity to respond to the report in writing. The Examining Board will hear both the examiner and the student.

6. Within four weeks of making the report available to the student, the Examining Board will determine whether there is evidence of fraud. The Examining Board will inform both the student and the examiner of its decision in writing. The period of four weeks may be extended by two weeks.

Article 5. Remedial measures

If the Examining Board determines that fraud has been committed:

a) It will declare the exam in question to be invalid; and

b) It will document the identification of fraud and, if applicable, the sanctions imposed in the student's file.

Article 6. Sanctions

1. If the Examining Board determines an instance of fraud, it is able to:

a) Decide that the student is no longer able to sit for one or more exams during a period to be defined by the Examining Board, being no longer than a year;

b) Decide that no distinction will be granted on the student's diploma;

c) Make a recommendation to the Dean of the Honours Academy that the student should not be admitted to the honours programme of the university or the faculty, or recommend that the student's participation in the honours programme of the university or the faculty be terminated.

2. If the Examining Board establishes that serious fraud has been committed:

a) the Examining Board can recommend to the Executive Board that the student's enrolment in a study programme be definitively terminated;

b) The Executive Board may definitively terminate the student's enrolment in a study programme at the suggestion of the Examining Board.

3. The sanctions as specified in this provision will be imposed on the day following the date on which the student has been informed of the decision to impose the sanctions.

Section 3. Transitional provisions

Not applicable.

Section 4. Final provisions

Article 7. Decisions and legal protection

1. Decisions on the basis of these regulations may be sent to the student digitally or by email.

2. For decisions based on these regulations, the student is permitted to appeal the relevant decision within six weeks of the decision date to the Examination Appeals Board (EAB).

Article 8. Adoption and amendments

1. This scheme is adopted and amended by the dean.

2. If the content of these regulations relates to duties and powers of the Examining Board of the study programme, that content must be approved by that Examining Board.

Article 9. Entry into force

These regulations enter into force on 1 September 2022. On that date, these regulations will replace the preceding regulations.

Article 10. Publication

1. The dean is responsible for publishing these regulations and for appropriately disclosing any amendments thereto.
2. For the purpose of proper and clear provision of information to students and prospective students, the dean includes these regulations as an appendix to the Education and Examination Regulations (Onderwijs- en Examenreglement (EER)).

As determined by the dean on 14-07-2022 and ratified by the Examining Board on 12-09-2022.