



Appendices to the Teaching and Examination Regulations: Master's degree programme in **Mathematics and Science Education and Communication** (2017-2018)

Appendix I Learning outcomes of the degree programme (art. 1.3)

1. The degree programme is designed to
 - a. prepare students for professional practice in the field of science communication or as teachers of mathematics, physics, chemistry, biology or computer science qualified to teach in upper-level secondary education
 - b. impart specialized knowledge, skills and understanding in the field of science communication and science education
2. The teacher training programme is designed to realize the aims laid down in the Teaching and Examination Regulations for teacher training at the University of Groningen.

Shared learning outcomes

Graduates

- EC-1. have knowledge and understanding of the basic concepts and research methods of their discipline and are able to communicate about these with colleagues in that discipline.
- EC-2. have the skills required to conduct research in their specialist field and are able to communicate about this with colleagues in that field.
- EC-3. have knowledge and understanding of the possibilities for utilizing communication resources and strategies used in science communication and education, and are able to communicate about these.
- EC-4. have the skills required to design communication resources for use in science communication and education, taking into account the target group and design context.
- EC-5. have the skills required to use sources (including academic sources) relating to science communication and education to form a founded judgement to analysing or solving a problem encountered in practice and to communicate about this.
- EC-6. have the skills required to conduct practice-oriented research in the field of science communication or science education, and to communicate about this.
- EC-7. have the skills required to work in a team in a professional environment in the field of science communication or science teaching.
- EC-8. have the skills (including reflective skills) and attitude required to enable them to continue their professional development in a manner that is largely self-directed or autonomous.

Differentiated learning outcomes for the Science Communication specialization

Graduates

- EC-C1. have basic knowledge and understanding of science disciplines other than their own, and are able to deepen this knowledge and communicate about it.
- EC-C2. have knowledge of historical developments in the science disciplines and of the philosophical backgrounds of those disciplines.



- EC-C3. are aware of the societal implications of scientific research and are able to form an informed and critical opinion about current developments in science and technology.
- EC-C4. have knowledge and understanding of a number of perspectives and theories relating to science communication and are able to apply these in order to analyse and design communication resources and strategies, and are able to communicate about this.
- EC-C5. are able to act consciously, ethically, and critically as intermediaries between science and society.

Appendix II Tracks/Specializations of the degree programme (art. 2.2)

The degree programme comprises a joint programme plus a choice of one of the following specializations:

- Science Education: this specialization prepares students for a career as a teacher of mathematics, physics, chemistry, biology or computer science qualified to teach in upper-level secondary education
- Science Communication: this specialization prepares students for a career in the field of science communication.

Appendix III Content of the degree programme (art. 2.3); Appendix IV Electives (art. 2.4); Appendix V Entry requirements and compulsory order of examinations (art. 3.4)

The specializations consist of the following course units with their related student workloads, entry requirements and assessments:

1. Joint programme

<i>Course unit [course code]</i>	<i>ECTS</i>	<i>Entry requirements</i>	<i>Practical</i>
Science Communication Skills [WMEC13004]	5	-	x
Research Project: [discipline] [WMEC13006]	30	-	x
Science Education and Communication Design [WMEC13005]	10	-	x
Introduction to Research in SEC [WMEC13007]	5	Science Communication Skills, Research Project: [discipline]	x

2-E. Science Education specialization

<i>Course unit [course code]</i>	<i>ECTS</i>	<i>Entry requirements</i>	<i>Practical</i>
Basiscursus Master lerarenopleiding [ULOM1005AL]	5	-	
Masterstage 1 leraar [schoolvak]	5	-	x



[ULOM1105[afk.vak]]			
Masterstage 2 leraar [schoolvak] [ULOM1215[afk.vak]]	15	Basiscursus Master lerarenopleiding, Masterstage 1 leraar [schoolvak], Research Project: [discipline]	x
Vakdidactiek 1 [schoolvak] [ULOM1305[afk.vak]]	5	Research Project: [discipline]	
Vakdidactiek 2 [schoolvak] [ULOM1405[afk.vak]]	5	Research Project: [discipline]	
Onderwijskunde VO [ULOM1505]	5	Research Project: [discipline]	
Masterstage 3 leraar [schoolvak] [ULOM1610[afk.vak]]	10	Masterstage 2 leraar [schoolvak], Research Project: [discipline]	x
Onderzoek Master Lerarenopleiding [ULOM1710AL]	10	Research Project: [discipline]	x
Keuzeruimte	10*	**	**

* Each student's choice of electives in the Subsidiary must be approved by the Board of Examiners.

** Depends on the course units chosen.

2-C. Science Communication specialization

<i>Course unit [course code]</i>	<i>ECTS</i>	<i>Entry requirements</i>	<i>Practical</i>
Science and the Public [WMEC17003]	5	-	x
Science Communication and Journalism [WNEC1WVJ5]	5	Science Communication Skills	x
Science, Communication and Society [WNEC2WCM10]	10	Science Communication Skills, Research Project: [discipline]	x
History and Philosophy of Science [WMEC17001]	5	Research Project: [discipline]	x
Nature of Scientific Disciplines [WMEC17002]	5	History and Philosophy of Science, Science Communication Skills, Research Project: [discipline]	x
External Science Communication Project [WMEC13008]	15	Science Education and Communication Design, Science Communication Skills, Research Project: [discipline]; *	x
Science Communication Research Project [WMEC13000]	9	Introduction to Research in SEC	x
Portfolio Science Communication	1		x



[WMEC13001]			
Subsidiary	15 #	**	**

* Additional requirements may apply depending on the assignment chosen.

** Depends on the course units chosen.

Each student's choice of electives in the Subsidiary must be approved by the Board of Examiners.

2-K. Choice of electives

<i>Course unit [course code]</i>	<i>ECTS</i>	<i>Entry requirements</i>	<i>Practical</i>
Science Education Research Project [WMEC13003]	5-10	Introduction to Research in SEC	x
Internship SC [WMEC13002]	5-15	Science Education and Communication Design, Science Communication Skills, Research Project: [discipline],*	x
**			

* Depend on the assignment chosen.

** Students following the Communication specialization may take course units from 2-E as electives, and students following the Education specialization may take course units from 2-C as electives (on condition that they satisfy the entry requirements for these course units). Each student's choice of electives in the Subsidiary must be approved by the Board of Examiners.

Course units offered by the degree programme for students from outside the degree programme:

<i>Course unit [course code]</i>	<i>ECTS</i>	<i>Entry requirements</i>	<i>Practical</i>
Education and Communication [WBEC15000]	5		x

Appendix VI Admission to the degree programme and different tracks/specializations (art. 5.1.1 + art. 5.2)

Toelatingscriteria voor master 'Educatie en Communicatie in de Wiskunde en natuurwetenschappen' (Nederlandstalig): Track Educatie, Track Communicatie

A. Universitair bachelordiploma in wiskunde, informatica, kunstmatige intelligentie, natuurkunde, sterrenkunde, scheikunde, biologie, farmacie, technische opleidingen, of gerelateerde disciplines.

B. Voor het volgen van de lerarenopleidingsvariant (Track Educatie) kunnen aanvullende eisen worden gesteld, te bepalen door de toelatingscommissie.

C. Voor niet-moedertaalsprekers van het Nederlands geldt er aanvullend de eis van een staatsexamen Nederlands als tweede taal, programma II (NT2-II).



D. In alle gevallen beslist de toelatingscommissie over toelating.

Admission requirements for the Master's degree in 'Mathematics and Science Education and Communication' (English): Science Communication specialization

A. Degree requirements:

Bachelor's degree in mathematics, computing science, physics, astronomy, chemistry, biology, pharmacy, engineering, or related disciplines.

B. Language requirements:

All students for whom English is not their native language must satisfy the following requirements (this also applies to Dutch students who wish to take the English version of the programme):

- Speaking, writing: IELTS 7.0 (equivalent to TOEFL 95, CEFR C1, Cambridge English CAP > 180)

- Reading, listening: IELTS 6.5 (equivalent to TOEFL 80, CEFR B2/C1 (preferably C1), Cambridge English CAE > 160)

C. In all cases the Admissions Board decides on admissions.

Appendix VII Transitional provisions (art. 7.1)

Transitional arrangement for the Master's in Mathematics and Science Education and Communication:

Discontinued course units				Substitute course units				
Course unit code	Course unit name	ECTS	Final exam period	Course unit code	Course unit name	ECTS	Explanation	Equivalent* Yes/No
WNEC 2AB10	Backgrounds of Scientific Research	10	Nov. 2017	WMEC 17001 + WMEC 17002	History and Philosophy of Science + Nature of Scientific Disciplines	5 + 5	The combination of the two new course units is equivalent to the discontinued course unit	Yes
WNEC 1WVJ5	Science in the limelight	5	April 2017	WMEC 17003	Science and the Public	5		Yes

* It is also possible to substitute equivalent course units in the other direction. This can apply to students with a large backlog who want to fall under the new OER.

Appendix VIII Application deadlines for admission (art. 5.6.1) and decision deadlines (art. 5.6.3)

The deadline for applications, for both non-EU and EU students, is 1 May 2018. The deadline for decision concerning both non-EU and EU students is 1 November 2018.