

Assessment plan for the curriculum of the Master's degree programme in Science Education and Communication, 2024-2025

Programme director: Lemke Kraan

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Date approval Faculty Board:

Introduction

This assessment plan is a systematic description of the testing and assessment modes for the study components in the curriculum of the Master's degree programmes in Science Education and Communication.

It comprises only the courses that are mandatory for both tracks (education and communication) and the mandatory and elective courses for the communication track. The other courses for the education track are part of the assessment plan of the teacher education master degree programme.

The plan is based on the assessment policy of the Faculty of Science and Engineering, as set out in the 2013 version of the FSE Quality Assurance Manual (Chapter 4: Assessment) and the protocol setting out the duties and powers of the Faculty's Board of Examiners (April 2013).

The assessment plan for the curriculum consists of the following parts:

1. objective(s) of the degree programme
2. the learning outcomes of the degree programme
3. descriptions of the study components, as set out in the appendices to the Teaching and Examination Regulations 2024-2025 of the degree programme
4. Descriptions of the content of each study component in Ocasys, the online course catalogue. The following elements are relevant in this context:
 - objectives
 - description of content
 - examiners
 - assessment mode(s) and calculation of final mark
 - mode(s) of instruction
5. An overview of the examiners and a detailed assessment mode for each study component. This overview is based on the curriculum approved by the Programme Committee, as set out in the appendices to the Teaching and Examination Regulations 2024-2025 for the degree programme.
6. A matrix showing the relationship between the study components and the detailed learning outcomes for each competence area.

Parts 3 and 4 are not included in this document. For the descriptions of the study components, see the Appendix to the Teaching and Examination Regulations 2024-2025 for the degree programmes. Descriptions of the content of each study component can be found in Ocasys, the online course catalogue (<http://www.rug.nl/ocasys/>).

1. Objectives of the degree programme

The degree programme aims to prepare students for a professional career in science communication in The Netherlands or abroad, or as teachers in mathematics, physics, chemistry, biology or computer science qualified to teach in upper-level secondary education.

The degree programme aims to support students in developing knowledge, skills, and understanding in the field of science communication and science education.

The degree programme aims to prepare students to work in a professional environment in the field of science communication or science education and continue their professional development in a manner that is largely self-directed or autonomous.

Vision on assessment

1. The programme aims to prepare the next generation of teachers and science communicators for the professional field of science communication. In line with this vision of being a professional academic master programme, we assess through authentic assignments in various formats instead of assessing by exams.
2. Assessment stimulates the student's independent ability to design communication strategies or products for science communication or science education, taking into account the target group and goals.
3. Assessment stimulates the student's reflection on their product, their own knowledge, skills, vision and role as a science communicator and the relationship between science, society and science communication or education, to enable students to continue their professional development after receiving their master's degree.

Assessment guidelines

1. We use clear criteria that have been established by at least two examiners in advance, most often in the form of rubrics or assessment forms, which are accessible for students during the course.
2. We use the four-eyes principle, where two lecturers are grading the same final works and when needed also for formative assessment. Rubrics are designed by more than one lecturer.
3. We use formative feedback during the assessments. Thus, where possible, students get formative feedback on first versions of an assignment. The use of feedback and a student's reflection on feedback is in several courses assessed.
4. If a student does not pass a course unit, remedial work can be done, according to the rules in the CUAO for the course unit, which is to be handed in at a date given in the Teaching and Examination Rules (TER).
5. In group work, students are assessed on their individual contribution as well, based on personal reflection or peer review (under final responsibility of the examiner).

2. Learning outcomes of the degree programme

Shared learning outcomes

Graduates should be able to:

- EC-1. Demonstrate advanced knowledge and understanding of the key concepts and research methods in a science, mathematics, SEC or engineering field, and are able to apply these to set up and conduct a Master's level research project in a science, mathematics, science education and communications or engineering field, by critically synthesising sources, approaches and methodologies, to develop an evidence based approach to addressing a scientific problem, and substantiating and discussing conclusions, and are able to communicate about this to specialist and non-specialist audiences
- EC-2. Demonstrate knowledge, understanding and skills for utilising communication and education resources and strategies and apply these to design communication strategies or products for use in science communication or science education, taking into account the target group and design context.
- EC-3. Work in a professional environment in the field of science communication or science education
- EC-4. Continue their professional development in a manner that is largely self-directed or autonomous.

Differentiated learning outcomes for the Science Communication track

Graduates should be able to:

- EC-C1. Acquire and communicate key concepts, knowledge and understanding of science disciplines other than their own.
- EC-C2. Acquire and demonstrate knowledge on historical and philosophical developments in the sciences and apply this in the contextualisation and communication of scientific developments.
- EC-C3. Demonstrate awareness of the relations between science and society, including societal implications of scientific research and public engagement and participation in scientific research, and form an informed and critical opinion about current developments in science, technology and science communication.
- EC-C4. Apply relevant perspectives and theories in the critical analysis of science education or communication issues, using the appropriate research methods.
- EC-C5. Act consciously, ethically, and critically as intermediaries between science and society.

Differentiated learning outcomes for the Science Education track(s)

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.

5. Overview of assessment methods, test moments for course units, and examiners

Course unit name	ECTS	Modes of assessment***	Does (part of the) assessment have a formative function?	Test moment(s) (e.g., mid-term, continuous assessment, exam week, etc.)	Examiner(s)
Science Research Project: [Discipline]	30	R, P [#]	Yes	- mid-term halfway project - continuous formative assessment during project - assessment final report and presentation at the end of project	Examiners from all Master programmes of our faculty
Research Project in Science Education	30	R, P, PR	Yes	- mid-term halfway project - continuous formative assessment during project - assessment final report and presentation at the end of project	Lucy Avraamidou* Mohammad Gharesifard** Francisco Castillo Hernandez**
Skills in Science Communication	5	AST, R, P	Yes	- formative assessment on first versions of writing assignments and reports during course - assessment final presentation end of course - assessment report(s)/writing assignments at the end of the course	Lemke Kraan* Natasa Grgurina** Renee Lutke**
Design for Science Education and Communication	10	AST, R	Yes	- formative assessment on first versions of assignments and report during course - assessment final product and report at the end of course (part group work part individual work)	Ferdinand van der Graaf* Miquel Pérez Torres**
Science and the Public	5	AST	Yes	- formative assessment on first versions of assignments during course - assessment final assignments at the end of course (partly group work, partly individual)	Lucy Avraamidou* Lemke Kraan**
Science Communication and Journalism	5	AST	Yes	- formative assessment on first versions of assignments during course - assessment final assignments at the	Lemke Kraan* Henk Mulder**

				end of course	
History and Philosophy of Science	5	AST	Yes	- formative assessment on first versions of assignment during course - assessment final assignment at the end of course	Erik Ducker* Henk Mulder**
Citizen Science	5	R, P	Yes	- formative assessment on first versions of report during course - assessment final report and presentation at the end of course (partly group work, partly individual)	Mohammad Gharesifard* Henk Mulder**
Science, Communication and Society	10	AST, P	Yes	- formative assessment on first versions of assignments during course - assessment final assignments at the end of course (partly group work, partly individual), assessment presentation at the end of the course	Henk Mulder* Lemke Kraan** Mohammad Gharesifard**
Nature of Scientific Disciplines	5	AST	Yes	- formative assessment on first versions of assignments during course - assessment final assignment at the end of course (partly group work, partly individual)	Mohammad Gharesifard* Henk Mulder**
Research Methods in Science Education and Communication	5	AST	Yes	- formative assessment on first versions of assignments during course - assessment final assignment at the end of course	Lucy Avraamidou* Francisco Castillo Hernandez** Mohammad Gharesifard**
External Science Communication Project	15-25	AST, R	Yes	- mid-term halfway project (for > 15 ECTS projects) - assessment final report during final conversation	Henk Mulder* Lemke Kraan** Lucy Avraamidou** Mohammad Gharesifard** Renee Lutke**
Research Project in Science Communication	9-14	R, P, PR	Yes	- continuous formative assessment during project - assessment final report and presentation at the end of project	Lucy Avraamidou* Mohammad Gharesifard** Francisco Castillo Hernandez**
Portfolio Science Communication	1	AST	Yes	- assessment assignment during final conversation	Henk Mulder* Lucy Avraamidou** Lemke Kraan**

Internship Science Communication	5-15	AST, R	Yes	- assessment final report during final conversation	Henk Mulder* Lemke Kraan** Lucy Avraamidou** Mohammad Gharesifard** Renee Lutke**
Small Research Project in Science Education	5-15	R, P, PR	Yes	- continuous formative assessment during project - assessment final report and presentation at the end of project	Lucy Avraamidou* Mohammad Gharesifard** Francisco Castillo Hernandez** TBA new TT science education**

The following courses are assessed by examiners from the master programme:

Course unit	ECT	Modes of Assessment***	Does (part of the) assessment have a formative function?	Test moment(s) (e.g., mid-term, continuous assessment, exam week, etc.)	Examiner(s)
Introduction to Science Communication	5	AST	Yes	- formative assessment on first versions of assignments during course - assessment final assignment at the end of course	Charlotte Vlek* Lemke Kraan**
Oriëntatie op Onderwijs in de Bètawetenschappen	5	OR, R	Yes	- oral examination, assessment report at the end of course	Enno van der Laan* Gerrit Roorda**
Oriëntatie op Onderwijs in de Bètawetenschappen voor Masterstudenten	5	OR, R	Yes	- oral examination, assessment report at the end of course	Enno van der Laan* Gerrit Roorda**
Science Communication (UCG)	5	AST, PR, P	Yes	- formative assessment on first versions of assignments during course - assessment final assignment at the end of course	Mohammad Gharesifard* Lucy Avraamidou** Henk Mulder** Lemke Kraan**

* Formal First examiner, ** Formal Second examiner

*** Assignment (AST), Interim test (IT), Multiple choice exam (MC), Oral exam (OR), Practical work (PR), Presentation (P), Report (R), Written exam (WE).

in accordance with TER of the respective Master programmes

List of examiners of the master programme Science Education and Communication 2024-2025

- L. Avraamidou
- F. Castillo Hernandez
- E.P. Dücker
- M. Gharesifard
- F.H.C.E. van der Graaf
- N. Grgurina (Faculty of Behavioural and Social Sciences)
- L.T.J. Kraan
- J.E. van der Laan
- R. Lutke
- H.A.J. Mulder
- M. Pérez Torres
- G. Roorda (Faculty of Behavioural and Social Sciences)
- C. Vlek

Examiners and modes of assessment for the Science Education track(s) are given in the Assessment Plan of the Teacher Education Programme

6. Relationship between course units and details of the learning outcomes

Learning Outcomes →			Shared (E and C)				C-track				
Course Units (mandatory)	Year	Period	EC-1	EC-2	EC-3	EC-4	EC-C1	EC-C2	EC-C3	EC-C4	EC-C5
Tracks Education and Communication											
Science Research Project: [Discipline]	1 (E) 2 (C)	1b-2b (E) 1a-1b (C)	xx			xx					
Skills in Science Communication	1	1a (C) 2a (E)		x		x			x	x	x
Research Methods in SEC	1	1a	xx			x				x	x
Design for Science Education and Communication	1	2a-2b		xx	xx	xx				xx	xx
Track Education											
Research Project in Science Education	1	1b-2b	xx			xx					
Track Communication											
History and Philosophy of Science	1	1a	x	x		x	x	xx	xx		xx
Science, Communication and Society	1	1b		xx		x			xx	x	xx
Nature of Scientific Disciplines	1	1b		xx		x	xx	xx	x		xx
Science and the Public	1	2a		xx		x			x	xx	x
Citizen Science	1	2b		xx		x			xx	xx	x
Science Communication and Journalism	1	2b		xx		x	x		xx		xx
External Science Communication Project	2	2a-2b		xx	xx	xx			xx	xx	xx
Portfolio Science Communication	2	2b			x	xx					x
Research project science communication [#]	2	Whole year	xx		xx	xx				xx	
Electives											
Small Research Project in Science Education	1/2	Whole year	xx		xx	xx				xx	
Internship Science Communication	1/2	Whole year		xx*	xx*	xx*			xx*	xx*	xx*

Each **x** means that the learning outcome is explicitly assessed: **x** = orienting/preparing; **xx** = founding; **xxx** = compounding

x* = Learning outcomes depend on the length of the internship and its position in the individual programme.

[#] This project will be part of the curriculum starting from 2025-2026 (second year of the communication track).

Relationships between course units and details of the learning outcomes for the Science Education track(s) are given in the Assessment Plan of the Teacher Education Programme.