Assessment report
Limited Framework Programme Assessment

Master Earth Sciences

VU Amsterdam

Contents of the report

1. Executive summary

In this executive summary, the panel presents the main considerations which led to the assessment of the quality of the Master Earth Sciences programme of VU Amsterdam, which has been assessed according to the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, as published on 20 December 2016 (Staatscourant nr. 69458).

The programme objectives are relevant and sound. The panel welcomes students being offered the opportunities to specialise in either one of the specialisations or to opt for one of the variants. The panel recommends to put more emphasis on mitigation subjects in the programme objectives. The panel suggests to monitor the Earth Sciences contents of the Science Communication and Education variants.

The programme objectives meet the domain-specific reference framework for the Earth Sciences programmes. The panel appreciates the efforts by the joint Earth Sciences programmes in the Netherlands to draft this framework and regards this to be the sound and up-to-date description of this domain.

The panel is positive about students being prepared for positions in various industries within the programme field.

The programme intended learning outcomes correspond to the programme objectives, are complete and conform to the master level. The panel advises to monitor the domain-specific Earth Sciences contents of the intended learning outcomes of the Global Environmental Change and Policy specialisation.

Although the student inflow numbers are satisfactory, the panel supports programme management plans to raise these numbers. The admission requirements and procedures of the programme are clear and relevant, applications being screened by the Admission Board and pre-master courses being provided.

The curriculum meets the intended learning outcomes of the programme. The courses are up to standard. The panel regards the curriculum as coherent. The panel welcomes students to be offered the opportunities to do two individual research projects and to be provided the option of internships. The panel welcomes the practical laboratory and fieldwork research components of the curriculum. In addition, the panel notes students acquiring academic skills.

The panel regards the lecturers in the programme to be capable researchers and dedicated and skilled lecturers. Their educational capabilities are up to standard. The panel feels the lecturers' workload to be adequately managed. The interaction among lecturers is intensive.

The educational concept meets the programme characteristics. The study methods are varied and induce student-centred learning. The number of hours of face-to-face education are generous. The panel is positive about the study guidance and feedback given to students. The panel perceives the drop-out rates as well as the student success rates to be satisfactory.

The examinations and assessment rules and regulations of the programme are adequate, being in line with VU Amsterdam and Faculty of Science policies. The panel approves of the examination methods adopted by the programme and welcomes the variety of methods used. The methods are consistent with the goals and contents of the courses. The panel considers the measures ensuring the validity, reliability and transparency of examinations and assessments to be satisfactory.

The supervision and assessment processes for Research Projects and Master Theses have been organised satisfactorily. Although students are offered appropriate supervision, some thesis processes take long. The assessment procedures are up to standard, involving two examiners assessing the work separately and on the basis of assessment scoring forms. Although these supervision and assessment processes are satisfactorily organised, the panel suggests to schedule, monitor and assess Research Projects and Master Theses more strictly.

The Master theses of the current specialisations the panel studied, match the intended learning outcomes and are appropriate research projects. None of the theses were found by the panel to be unsatisfactory. The level and quality of the theses differ. These differences are adequately reflected in the grades for the theses. The panel supports the grades given by the programme examiners.

Although the panel acknowledges the Education and Science Communication variants to offer domain-oriented Earth Sciences contents only in the first year, the panel feels the Master Theses do not reflect these contents in sufficient depth and proposes to ensure this aspect of these Master Theses.

The formats of the Master theses tend to differ quite substantially. The panel is of the opinion the current specialisations ought to be aligned in terms of thesis requirements and thesis study load. The panel advises to provide templates for the Master theses, to allot the same study load to the theses of all specialisations and to have as requirement for all of theses to cover the whole empirical research cycle.

The panel regards the programme graduates to have reached the intended learning outcomes and to be qualified to find appropriate positions in the relevant professional field. The panel advises the programme to remain informed about the demands of prospective employers in order to adjust the programme to professional field requirements.

The panel that conducted the assessment of the Master Earth Sciences programme of VU Amsterdam assesses this programme to meet the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, judging the programme to be satisfactory. Therefore, the panel advises NVAO to accredit the programme.

Rotterdam, 18 March 2019

Prof. dr. ir. A. Veldkamp
(panel chair)

drs. W. Vercouteren
(panel secretary)

2. Assessment process

The evaluation agency Certiked VBI received the request by VU Amsterdam to organise the limited framework programme assessment process for the Master Earth Sciences programme of this University. The objective of the programme assessment process was to assess whether the programme would conform to the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, published on 20 December 2016 (Staatscourant nr. 69458).

Having conferred with management of the VU Amsterdam programme, Certiked invited candidate panel members to sit on the assessment panel. The panel members agreed to do so. The panel composition was as follows:

- Prof. dr. ir. A. Veldkamp, dean ITC Faculty of Geo-Information and Earth Observation, University of Twente, the Netherlands (panel chair);
- Drs. T.M. van Daalen, director Geological Survey of the Netherlands, Netherlands Organisation for Applied Scientific Research, the Netherlands (panel member);
- Prof. dr. P.A. van der Beek, full professor, Institut des Sciences de la Terre, Université Grenoble Alpes, France (panel member);
- Prof. dr. M. Landrø, full professor, Department of Petroleum Technology and Applied Geophysics, Norwegian University of Science and Technology, Norway (panel member);
- Prof. dr. ir. N.E.C. Verhoest, associate professor, Department of Environment, Ghent University, Belgium (panel member);
- L. Roelofs BSc, student Master Earth Surface and Water, Faculty of Geosciences, Utrecht University, the Netherlands (student member).

On behalf of Certiked, drs. W. Vercouteren served as the process coordinator and secretary in the assessment process.

All panel members and the secretary confirmed in writing being impartial with regard to the programme to be assessed and observing the rules of confidentiality. Having obtained the authorisation by the University, Certiked requested the approval of NVAO of the proposed panel to conduct the assessment. NVAO has given its approval.

To prepare the assessment process, the process coordinator convened with management of the programme to discuss the outline of the self-assessment report, the subjects to be addressed in this report and the site visit schedule. In addition, the planning of the activities in preparation of the site visit were discussed. In the course of the process preparing for the site visit, programme management and the Certiked process coordinator regularly had contact to fine-tune the process. The activities prior to the site visit have been performed as planned. Programme management approved of the site visit schedule.

Well in advance of the site visit date, programme management sent the list of final projects of graduates of the programme of the most recent years. Acting on behalf of the assessment panel, the process coordinator selected the theses of 15 graduates from the last few years. The grade distribution in the selection was ensured to conform to the grade distribution in the list, sent by programme management.

The panel chair and the panel members were sent the self-assessment report of the programme, including appendices. In the self-assessment report, the student chapter was included. In addition, the expert panel members were forwarded a number of theses of the programme graduates, these theses being part of the selection made by the process coordinator.

Well before the site visit date, the assessment panel chair and the process coordinator met to discuss the self-assessment report provided by programme management, the procedures regarding the assessment process and the site visit schedule. In this meeting, the profile of panel chairs of NVAO was discussed as well. The panel chair was informed about the competencies, listed in the profile. Documents pertaining to a number of these competencies were presented to the panel chair. The meeting between the panel chair and the process coordinator served as the briefing for panel chairs, as meant in the NVAO profile of panel chairs.

Prior to the date of the site visit, all panel members sent in their preliminary findings, based on the self-assessment report and the final projects studied, and a number of questions to be put to the programme representatives on the day of the site visit. The panel secretary summarised this information, compiling a list of questions, which served as a starting point for the discussions with the programme representatives during the site visit.

Shortly before the site visit date, the complete panel met to go over the preliminary findings concerning the quality of the programme. During this meeting, the preliminary findings of the panel members, including those about the theses were discussed. The procedures to be adopted during the site visit, including the questions to be put to the programme representatives on the basis of the list compiled, were discussed as well.

On 8 and 9 January 2019, the panel conducted the site visit on the VU Amsterdam campus. The site visit schedule was as planned. In a number of separate sessions, the panel was given the opportunity to meet with Faculty Board representatives, programme management, Examination Board members, lecturers and final projects examiners, and students and alumni.

In a closed session at the end of the site visit, the panel considered every one of the findings, weighed the considerations and arrived at conclusions with regard to the quality of the programme. At the end of the site visit, the panel chair presented a broad outline of the considerations and conclusions to programme representatives.

Clearly separated from the process of the programme assessment, assessment panel members and programme representatives met to conduct the development dialogue, with the objective to discuss future developments of the programme.

The assessment draft report was finalised by the secretary, having taken into account the findings and considerations of the panel. The draft report was sent to the panel members, who studied it and made a number of changes. Thereupon, the secretary edited the final report. This report was presented to programme management to be corrected for factual inaccuracies. Programme management were given two weeks to respond. Having been corrected for these factual inaccuracies, the Certiked bureau sent the report to the Board of VU Amsterdam, to accompany their request for re-accreditation of this programme.

3. Programme administrative information

Name programme in CROHO:	M Earth Sciences
Orientation, level programme:	Academic Master
Grade:	MSc
Number of credits:	120 EC
Specialisations:	Geology & Geochemistry
	Earth and Climate
	Global Environmental Change and Policy
Variants:	Education
	Science Communication
Location:	Amsterdam
Mode of study:	Full-time (language of instruction English)
Registration in CROHO:	66986
Name of institution:	VU Amsterdam
Status of institution:	Government-funded University
Institution's quality assurance:	Approved

4. Findings, considerations and assessments per standard

4.1 Standard 1: Intended learning outcomes

The intended learning outcomes tie in with the level and orientation of the programme; they are geared to the expectations of the professional field, the discipline, and international requirements.

Findings
The Master Earth Sciences programme is one of the in total 24 master programmes of the Faculty of Science of VU Amsterdam. The dean of the Faculty has the responsibility for all programmes of the Faculty. This Master programme is part of the Graduate School Earth, Ecology and Environmental Sciences of this Faculty. The director of the programme is responsible for the contents, quality and implementation of the programme. The programme director is assisted by the programme coordinator and three specialisation coordinators. The Programme Committee for the programme, being composed of three lecturers and students of each of the three specialisations, advises programme management on quality issues. The Faculty Examination Board monitors the programme adhering to the applicable Education and Examination Regulations. The sub-committee of the Examination Board for the Earth, Ecology and Environmental domain supervises the quality of examinations and assessments of the programme. The lecturers in the programme are employed either at the Faculty Department of Earth Sciences or at the Faculty Institute for Environmental Studies.

The Master Earth Sciences of VU Amsterdam is a two-year, research-based, broad academic master programme in the multi-disciplinary Earth Sciences domain. The programme objectives are to study and understand Earth as a system with different spheres (geosphere, hydrosphere, atmosphere, cryosphere, biosphere and anthroposphere), to quantify processes and feedback within and between these spheres, and to approach subjects in this domain multi-disciplinary, deriving insights from Earth Sciences subfields (e.g. geography, geology, geochemistry, tectonics, hydrology, atmospheric science). Students are taught the fundamentals of System Earth processes, and are trained to model processes, do field and laboratory work, perform data analysis and report on their findings. In addition, students are trained in academic skills and attitudes to apply Earth Sciences insights in societal contexts.

The programme offers three specialisations, being Geology and Geochemistry, Earth and Climate, and Global Environmental Change and Policy. The last few years, the set-up of the specialisations underwent a series of changes for various reasons, among which recommendations by previous accreditation panels. The Geology and Geochemistry specialisation replaced the Solid Earth specialisation. The Earth and Climate specialisation replaced formerly offered specialisations Earth Surface Processes, Climate and Records, Applied Environmental Geosciences and Palaeoclimatology and Geo-ecosystems. The Global Environmental Change and Policy specialisation was only recently introduced, in 2018, replacing the former Earth and Economy specialisation. In addition, two variants are offered, being the Education and the Science Communication variants. The Education variant prepares students as fully-qualified teachers in Dutch secondary education. The Science Communication variants allows students to become communication specialists in the programme domain.

The programme has been benchmarked against the domain-specific reference framework for the Earth Sciences in the Netherlands, which has been drafted by the joint programmes in the Netherlands. The objectives of the programme conform to this framework.

The programme trains students to enter the labour market, preparing them for a range of positions in this field. In recent years, the Work Field Advisory Board was installed. This Board consists of professional field representatives and consults the programme on the alignment with professional field requirements.

The programme objectives have been translated into intended learning outcomes, specifying fundamental and specific theoretical and practical knowledge of the Earth Sciences domain, especially within the field of specialisation, knowledge and skills to carry out research independently, being able to perform at academic level, self-directed learning competencies, historical, philosophical and socio-economic understanding of this domain and being prepared to continue to complete a PhD thesis or enter the labour market. For each of the specialisations mentioned, specific intended learning outcomes have been drafted, which are covered by these general intended learning outcomes.

Programme management presented the comparison of the intended learning outcomes to the Dublin descriptors for the master level.

Considerations
The panel considers the programme objectives to be relevant and sound. The panel welcomes students being offered the opportunities to specialise in either one of the specialisations or to opt for one of the variants. The panel recommends to put more emphasis on mitigation subjects. The panel suggests to monitor the Earth Sciences contents of the Science Communication and Education variants.

The programme objectives meet the domain-specific reference framework for the Earth Sciences programmes. The panel appreciates the efforts by the joint programmes in the Earth Sciences in the Netherlands to draft this framework and regards this to be the sound and up-to-date description of this domain.

The panel is positive about students being prepared for positions in various industries within the programme field.

The programme intended learning outcomes correspond to the programme objectives, are complete and conform to the master level. The panel advises to monitor the domain-specific Earth Sciences content of the intended learning outcomes of the Global Environmental Change and Policy specialisation.

Assessment of this standard
These considerations have led the assessment panel to assess standard 1, Intended learning outcomes, to be satisfactory.

4.2 Standard 2: Teaching-learning environment

The curriculum, the teaching-learning environment and the quality of the teaching staff enable the incoming students to achieve the intended learning outcomes.

Findings
The number of incoming students in the last five years was on average about 40 students, the inflow being rather stable across these years. The programme wants to raise the influx. The admission requirements of the programme are academic bachelor degrees with knowledge of natural sciences disciplines (mathematics, physics, chemistry) and of Earth Sciences (geology, geochemistry, geophysics), Earth Sciences processes understanding, and academic skills and English language proficiency. The vast majority of the incoming students have bachelor degrees from Dutch universities, being predominantly the Bachelor Earth Sciences or the Bachelor Earth Sciences and Economics programmes of VU Amsterdam. Small proportions of students come from other Dutch universities or originate from abroad. The programme Admission Board screens applications. Students not meeting the admission requirements, may take pre-master programme courses.

The curriculum of the programme takes two years and carries 120 EC of study load. For the programme, a table was presented, showing the mapping of the intended learning outcomes and the courses. The structure of the curriculum is similar for all three specialisations of the programme, the allocation of credits being to some extent different across these specialisations. The curriculum consists of compulsory courses (30 EC to 48 EC), elective courses (24 EC to 36 EC), the Research Project (12 EC to 27 EC) and the Master Thesis (24 EC to 27 EC). The compulsory courses are specialisation-specific and mostly scheduled in the first year. They introduce students to the specialisation field. The elective courses address themes or subjects in preparation of the Master Thesis. Students may opt for streams, being packages of compulsory and elective courses. Streams allow students to pursue more specialised tracks within the specialisations. Important parts of the curriculum of all specialisations are the Research Project and the Master Thesis, which are both individual research projects in the chosen specialisation field. Research Projects may be projects of more general nature, whereas Master Theses may take the form of internships in organisations. In the Education and Science Communication variants, students combine the first year in one of the specialisations with the second year in either dedicated education or science communication courses. New trends are being incorporated in the curriculum.

A total number of about 45 lecturers are involved in the programme. The lecturers are employed at the Department of Earth Sciences or at the Institute for Environmental Studies. Most of the lecturers are active researchers in their fields, ensuring research-based lectures. Practically all staff members have PhD degrees. Of the total number of lecturers 84 % are BKO-certified or are in the process of obtaining the certificate. In addition, 13 % of the lecturers have acquired or are in the process to acquire the SKO-certificate. Lecturers experience the workload as demanding, but manageable. Lecturers' meetings are scheduled regularly to discuss the programme and current developments in the programme. Students indicate to be content about lecturers' performances and accessibility.

The educational concept of the programme is student-centred learning, being meant to promote students engaging actively in the learning processes. The number of hours of face-to-face education is on average

about 20.0 hours per week. Study methods adopted in the programme are, among others, lectures, practical classes, computer exercises, and excursions. Practical laboratory work, computer exercises or fieldwork are part of most of the courses, allowing students to acquire practical research knowledge and skills. To promote active participation in class and to foster academic attitude and academic skills, students are required to do oral presentations, make summaries from literature, write proposals, do poster presentations or engage in flipped classroom sessions. Lecturers give students feedback on their work. Students are provided with individual guidance by staff members, named mentors, who advise students on choices to be made in the curriculum and who monitor students' study progress. Students may also turn to the programme study advisor or the trust person for guidance. Students with whom the panel met, expressed being content about study guidance. The curriculum is perceived by students to be quite challenging, but doable. The student success rates are about 24 % after two years and about 63 % after three years.

Considerations
Although the student inflow numbers are satisfactory, the panel supports programme management plans to raise these numbers. The admission requirements of the programme are clear and relevant. The admission procedures are adequate, applications being screened by the Admission Board and pre-master courses being provided.

The panel ascertained the curriculum to meet the intended learning outcomes of the programme. The courses are up to standard. The panel is positive about the options for students to take one of the specialisations or to opt for one of the variants offered. The panel considers the curriculum to be coherent. The panel welcomes students to be offered the opportunities to do two individual research projects and to be provided the option of internships. The panel welcomes the practical laboratory and fieldwork research components of the curriculum. In addition, the panel notes students acquiring academic skills.

The panel regards the lecturers in the programme to be capable researchers and dedicated and skilled lecturers. Their educational capabilities are up to standard, as may be deduced from the proportion of BKO-certified lecturers. The panel feels the lecturers' workload to be adequately managed. The interaction among lecturers is intensive.

The panel considers the educational concept and study methods to meet the programme characteristics. The study methods are varied and induce student-centred learning. The number of hours of face-to-face education are generous. The panel is positive about the study guidance and feedback given to students. The panel perceives the drop-out rates and the student success rates to be satisfactory.

Assessment of this standard
These considerations have led the assessment panel to assess standard 2, Teaching-learning environment, to be satisfactory.

4.3 Standard 3: Student assessment

The programme has an adequate system of student assessment in place.

Findings
The programme examination and assessment procedures are aligned with the VU Amsterdam policies and the Faculty of Science policies. As has been indicated, the Examination Board for the programme has the authority to monitor the quality of examination and assessment processes and products. The sub-committee of the Board for the Earth, Ecology and Environmental domain specifically monitors the examinations and assessments quality for this programme.

The examination methods for the courses are selected in line with the courses' contents. In most of the courses, multiple examinations are scheduled. The examination methods in the programme include written examinations, oral presentations, written summaries or essays, reports, (computer) exercises and group assignments.

As has been indicated, students do two individual research projects, being the Research Project and the Master Thesis. These projects are conducted in line with Faculty guidelines. Prior to the start of these projects, agreements are signed, specifying the project objectives, time tables and supervision. Students are entitled to supervision by one of the programme staff members. Day-to-day supervision may be delegated to PhD students or, in case of external internships, to company supervisors. Draft versions of reports are commented on by supervisors. Research Projects and Master Theses are assessed by the supervisor and second reader independently, using thesis assessment scoring forms. The day-to-day supervisor or company supervisor may give advice. The assessment components are academic attitude (pass/fail), project execution (30 % of grade), report, including problem statement, methodology, findings and results (60 %) and oral presentation (10 %). The second reader will only assess the report. The examiners' grades for the report are averaged. In case these assessments differ more than 2.0 points or in case one of the examiners judges the project to be unsatisfactory, a third examiner will be asked to assess and grade the thesis as well. All theses are checked for plagiarism.

Programme management and the Examination Board have taken a number of measures to promote the validity, reliability and transparency of examinations and assessments. The Examination Board appoints examiners, who should have PhD degrees and, preferably, ought to be BKO-certified. Examinations' drafts may be peer-reviewed by fellow-lecturers. In course files, test matrices are required. Test examinations are presented to students. For the Examination Board, the Assessment Committee reviews samples of course examinations and individual research projects. All courses are reviewed every year. Cases of plagiarism or fraud are to be reported to the Examination Board, who will handle them.

Considerations
The panel regards the examinations and assessment rules and regulations of the programme to be adequate, these being in line with VU Amsterdam and Faculty of Science policies.

The panel approves of the examination methods adopted by the programme and welcomes the variety of methods used. The methods are consistent with the goals and contents of the courses.

The supervision and assessment processes for Research Projects and Master Theses have been organised satisfactorily. Although students are offered appropriate supervision, some thesis processes take long. The assessment procedures are up to standard, involving two examiners assessing the work separately and on the basis of assessment scoring forms. Although the supervision and assessment processes for Research Projects and Master Theses are satisfactorily organised, the panel suggests to schedule, monitor and assess Research Projects and Master Theses more strictly.

The panel considers the measures ensuring the validity, reliability and transparency of examinations and assessments to be satisfactory.

Assessment of this standard
The considerations have led the assessment panel to assess standard 3, Student assessment, to be satisfactory.

4.4 Standard 4: Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

Findings
The panel studied a total of fifteen Master Theses of graduates of the programme. Some of the theses belonged to specialisations, which are no longer offered by the programme and which have been replaced by other, current specialisations. For the recently introduced Global Environmental Change and Policy specialisation, no Master theses were yet available. The panel was not in the position to assess the Master theses of this specialisation. Master theses in the Education variant were not part of the list of Master theses of graduates of the last two years. The panel studied two Master theses of the Science Communication variant of the programme.

The average grades for the Master Theses in the last few years were 7.8 for 2016/2017 and 8.0 for 2017/2018.

The programme conducted a survey on programme graduates' careers. The results of this survey show these graduates to find positions in a wide variety of industries. Graduates are employed in, among others, research, education, operational management, information technology or consultancy. The recently installed Work Field Advisory Board for the programme, consisting of professional field representatives, has confirmed the capabilities of the programme graduates.

Considerations
The Master theses of the current specialisations the panel studied, match the intended learning outcomes and are appropriate research projects. None of the theses were found by the panel to be unsatisfactory. The level and quality of the theses differ. These differences are adequately reflected in the grades for the theses. The panel supports the grades given by the programme examiners. Some theses of the former specialisations, which have been removed and have been replaced by current specialisations, were confined to literature studies, did not cover the empirical research cycle and lacked depth.

The panel found the Master theses of the Science Communication variant not to reflect the Earth Sciences contents of the programme in sufficient depth. The panel acknowledges this variant and the Education variant to offer domain-oriented Earth Sciences contents only in the first year, the second year with the Master thesis being meant to gain either science communication or education expertise. The panel proposes, however, to ensure the Earth Sciences contents in the Master theses of these variants.

The formats of the Master theses tend to differ quite substantially. The panel is of the opinion the current specialisations ought to be aligned in terms of thesis requirements and thesis study load. The panel advises to provide templates for the Master theses, to allot the same study load to the theses of all specialisations and to have as requirement for all of theses to cover the whole empirical research cycle.

The panel regards the programme graduates to have reached the intended learning outcomes and to be qualified to find appropriate positions in the relevant professional field. The panel advises the programme to remain informed about the demands of prospective employers in order to adjust the programme to professional field requirements.

Assessment of this standard
The considerations have led the assessment panel to assess standard 4, Achieved learning outcomes, to be satisfactory.

5. Overview of assessments

Standard	Assessment
Standard 1. Intended learning outcomes	Satisfactory
Standard 2: Teaching-learning environment	Satisfactory
Standard 3: Student assessment	Satisfactory
Standard 4: Achieved learning outcomes	Satisfactory
Programme	Satisfactory

6. Recommendations

In this report, a number of recommendations by the panel have been listed. For the sake of clarity, these have been brought together below. These panel recommendations are the following.

- To put more emphasis on mitigation subjects in the programme objectives and intended learning outcomes.
- To ensure the Earth Sciences contents of the Science Communication and Education variants.
- To monitor the domain-specific Earth Sciences content of the intended learning outcomes of the Global Environmental Change and Policy specialisation.
- To schedule, monitor and assess Research Projects and Master Theses more strictly.
- To provide templates for the theses, to allot the same study load to the Master theses of all specialisations and to have as requirement for all of the theses to cover the whole empirical research cycle.
- To monitor the Earth Sciences contents in the Master theses of the Science Communication and Education variants.
- For the programme to remain informed about the demands of prospective employers in order to adjust the programme to professional field requirements.