Biological Sciences

Faculty of Science,
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This report was finalized on 16 March 2016

Report on the master's programme Biological Sciences of Utrecht University

This report takes the NVAO's Assessment Framework for Limited Programme Assessments as a starting point (19 December 2014).

Administrative data regarding the programme

Master's programme Biological Sciences

Name of the programme:	Biological Sciences
CROHO number:	60293
Level of the programme:	master's
Orientation of the programme:	academic
Number of credits:	120 EC
Specializations or tracks:	Environmental Biology - Plant Biology - Fungal Biology - Ecology & Natural Resource Management - Biomarine Sciences & Paleoecology - Behavioural Ecology Molecular & Cellular Life Sciences
Location(s):	Utrecht
Mode(s) of study:	full time
Language of instruction:	English
Expiration of accreditation:	18-07-2017

The visit of the assessment panel Biology to the Faculty of Science of Utrecht University took place on 12-13 januari 2016.

Administrative data regarding the institution

Name of the institution:	Utrecht University
Status of the institution:	publicly funded institution
Result institutional quality assurance assessment:	positive

Composition of the assessment panel

The NVAO has approved the composition of the panel on 21 September 2015. The panel that assessed the master's programme Biological Sciences consisted of:

- Prof. dr. Jan Kijne (chair), Professor emeritus of BioScience, Leiden University;
- Prof. dr. Ton Bisseling (vice-chair), Professor of Molecular Biology, Wageningen University;
- Prof. dr. Herman Verhoef, Professor emeritus of Soil Ecology, Vrije Universiteit Amsterdam;

- Prof. dr. Joost Teixeira de Mattos, Professor of Quantitative Microbial Physiology, University of Amsterdam;
- Jeffrey Verhoeff BSc. (student member), master's student Biology and Animal Sciences, Wageningen University.

The panel was supported by dr. Kees-Jan van Klaveren, who acted as secretary.

Appendix 1 contains the curricula vitae of the panel members.

Working method of the assessment panel

The assessment of the bachelor's programme Biology and the master's programme Biological Sciences of Utrecht University is part of a cluster assessment. From June 2015 until January 2016, the panel assessed a total of twenty-three programmes at seven universities.

The panel consisted of thirteen members:
- Prof. dr. Jan Kijne (chair), Professor emeritus of BioScience, Leiden University;
- Prof. dr. Ton Bisseling (vice-chair), Professor of Molecular Biology, Wageningen University;
- Prof. dr. Maarten Frens, Professor of Systems Physiology, Erasmus University Rotterdam;
- Prof. dr. Marieke van Ham, Professor of Biological Immunology, University of Amsterdam;
- Prof. dr. Paul Hooykaas, Professor of Molecular Genetics, Leiden University;
- Dr. Andries ter Maat, Research Scientist, Max Planck Institute for Ornithology;
- Dr. Maarten van der Smagt, Associate Professor of Experimental Psychology, Utrecht University;
- Prof. dr. Joost Teixeira de Mattos, Professor of Quantitative Microbial Physiology, University of Amsterdam;
- Prof. dr. Herman Verhoef, Professor emeritus of Soil Ecology, Vrije Universiteit Amsterdam;
- Prof. dr. Jos Verhoeven, Professor emeritus of Landscape Ecology, Utrecht University;
- Prof. dr. Rens Voesenek, Professor of Plant Ecophysiology, Utrecht University;
- Pieter Munster MSc. (student member), policy officer at Leiden University and graduate of the master's programme Cancer, Genomics & Developmental Biology, Utrecht University;
- Jeffrey Verhoeff BSc. (student member), master's student in Biology and Animal Sciences, Wageningen University.

For every site visit, a (sub)panel was composed, based on the expertise and availability of panel members, thereby preventing possible conflicts of interests. Panels regularly consisted of five or six members. In order to enhance consistency of assessment within the cluster, professor Kijne acted as chair during all seven site visits. Coordinator of the cluster assessment Biology is dr. Kees-Jan van Klaveren, employee of QANU. He acted as secretary of the panel at Wageningen University and Utrecht University. He was also present during the final meetings of the five other site visits and read and commented upon each draft report in order to safeguard consistency of assessment. Drs. José van Zwieten, freelance employee of QANU, acted as secretary of the panel at Leiden University, Radboud University Nijmegen,

the University of Groningen, the University of Amsterdam and VU University Amsterdam. In Groningen dr. Fiona Schouten, employee of QANU, acted as second secretary to the panel.

Preparation
The panel held a preliminary meeting on May 22, 2015. During this meeting the panel was instructed about the accreditation framework and the programme of the upcoming assessments. Furthermore, the panel discussed its working methods in preparation to and during the site visits. A vice-chair was appointed and the Domain-Specific Frameworks for Biology and Psychobiology were discussed.

To prepare the contents of the site visits, the coordinator first checked the quality and completeness of the critical reflections prepared by the programmes. After establishing that the reports met the demands, they were forwarded to the participating panel members. The panel members read the reports and formulated questions and findings on their contents.

Next to the critical reflections, the panel read a selection of fifteen theses per programme. The theses were chosen by the chair of the panel from a list of graduates of the last two completed academic years within a range of grades.

Site visit
A preliminary programme of the site visit was made by the coordinator and adapted after consultation of the contact persons at Utrecht University. The time table for the visit in Utrecht is included as Appendix 5.

Prior to the site visit, the panel asked the programmes to select representative interview partners. During the site visit, meetings were held with panels representing students and teaching staff, institute management, programme management, alumni, the Programme Committee and the Board of Examiners.

During the site visit, the panel examined material it had requested; an overview of this material is given in Appendix 6. The panel provided students and lecturers with the opportunity – outside the set interviews – to speak informally to the panel during a consultation hour. No requests were received for this option.

The panel used the final part of the visit for an internal meeting to discuss its findings. The visit was concluded with a public oral presentation of the preliminary impressions and general observations by the chair of the panel.

Report
Based on the panel's findings, the secretary prepared a draft report. This report was then presented to the panel members involved in the site visit. After implementing their comments and receiving approval, the draft report was sent to Utrecht University with the request to report any factual inaccuracies. The comments received were discussed with the panel's chair. Subsequently, the final report was approved and sent to Utrecht University.

Decision rules
In accordance with the NVAO's Assessment framework for limited programme assessments, the panel used the following definitions for the assessment of both the standards and the programme as a whole.

Generic quality
The quality that can reasonably be expected in an international perspective from a higher education bachelor's or master's programme.

Unsatisfactory
The programme does not meet the current generic quality standards and shows serious shortcomings in several areas.

Satisfactory
The programme meets the current generic quality standards and shows an acceptable level across its entire spectrum.

Good
The programme systematically surpasses the current generic quality standard.

Excellent
The programme systematically well surpasses the current generic quality standard and is regarded as an international example.

Summary judgement

The master's programme Environmental Biology at Utrecht Universiy aims to prepare students for conducting molecular and/or ecological research on plants, plant communities, micro-organisms, animals and/or (marine) ecosystems. It does so integrating different levels of biological organisation, from genes to ecosystems. According to the critical reflection, students are trained in performing fundamental research on topics with high societal and economic relevance, requiring them to deal with complex problems that need to be addressed in a multidisciplinary setting. It offers five complementary specialization tracks: Plant Biology, Fungal Biology, Ecology & Natural Resource Management, Biomarine Sciences & Palaeoecology, and Behavioural Ecology. Within the Graduate School of Life Sciences (GS-LS), students can opt to combine a specialization with a Science Communication & Education or Management profile. For those students, three additional learning outcomes apply.

The panel has established that the programme's intended learning outcomes are in line with (inter)national requirements. The programme shows a broad profile within the field of the life sciences with attention to societal and economic relevance. The panel suggests to translate the programme's interdisciplinary ambitions into a separate learning outcome, and more generally encourages the programme to more strongly express its (future) profile through its learning outcomes.

The programme Environmental Biology is a full-time, English-taught master's programme consisting of 120 EC. All students follow the mandatory GS-LS starting course 'Introducing Life Sciences' and need to attend at least ten seminars organised by the GS-LS or other institutes. Also, all students have to complete a major research project. For students taking a 'research profile', the remainder of the curriculum is filled by a writing assignment, theoretical courses, the minor research project, and/or electives.

Students who opt for a Science Communication & Education profile take three profile specific courses and an internship instead of a minor research project. Students with a Management profile take core science and business management related courses instead of a minor research project.

The panel considers that the programme offers students a broad palette with five tracks of decent to good quality in its research profile, plus two well-developed society-oriented profiles. The panel is positive about the general setup of the curriculum, which emphasises research training and includes a number of theoretical courses. The minor research project may be used as further preparation for an academic career, but also allows students to apply their scientific knowledge outside academia. The panel has studied some solid and even excellent courses but encourages the programme to offer biology students extra core courses addressing themes in New Biology.

Graduation rates are acceptable, but leave room for improvement. The programme identifies delays in the research projects as the main cause and has already taken action to better monitor student progress. The panel encourages the programme to detect signals of delay as early as possible and emphasises the primary responsibility of project examiners in this respect.

The programme is executed by a teaching staff with a very good to excellent research reputation. The panel appreciates the attention to and options for teaching professionalisation

at Utrecht University. The programme's staff-student ratio is quite favourable, although the teaching burden is not spread evenly over the research groups. The panel concludes that the programme has access to high quality facilities.

The programme's assessment system functions well and is subject to continuous improvement thanks to the efforts of the teaching staff in general and a proactive Board of Examiners and its Assessment Panel in particular. Test matrices have been developed encompassing each curriculum component, and rubrics and assessment forms are in place for the research projects and writing assignment. The panel compliments the programme for its rubrics, which provide students with accurate expectations of their assessment, and staff with a flexible assessment tool.

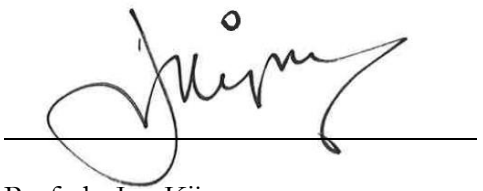
Based on the quality of their research project reports and their performance after graduation, the panel concludes that graduates have demonstrated a good overall level of achieved learning outcomes. All reports were adequately graded. The panel compliments the programme on the fact that a number of research projects have led to publications in peer reviewed journals. The panel is confident that intake selection and interim assessments will further raise the bar; still, small research groups may do with more shoulders to share the burden. The panel concludes that master graduates are well appreciated on the job market, both within and outside academia.

The panel assesses the standards from the *Assessment framework for limited programme assessments* in the following way:

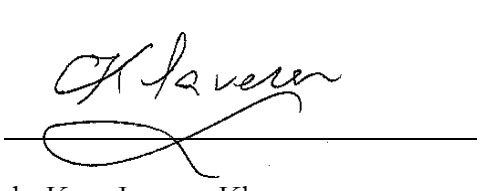
Standard 1: Intended learning outcomes	satisfactory
Standard 2: Teaching-learning environment	good
Standard 3: Assessment	good
Standard 4: Achieved learning outcomes	good
General conclusion	good

The chair and the secretary of the panel hereby declare that all panel members have studied this report and that they agree with the judgements laid down in the report. They confirm that the assessment has been conducted in accordance with the demands relating to independence.

Date: 16 March 2016



Prof. dr. Jan Kijne



dr. Kees-Jan van Klaveren.

Description of the standards from the Assessment framework for limited programme assessments

The master's degree programme Biological Sciences is offered by the interfaculty Graduate School of Life Sciences (GS-LS) at Utrecht University, which organises all master's and PhD programmes focused on micro-organisms, plants, animals, humans, the molecules of life, and health & disease. Within the CROHO-label Biological Sciences, the GS-LS distinguishes the programmes Environmental Biology and (joint with Chemical Sciences) Molecular & Cellular Life Sciences. As the latter programme has been reviewed as part of the master's programme Chemical Sciences and is accredited until 2019, the focus of this assessment panel has been on the programme Environmental Biology. This programme is also embedded in a research institute: the Institute of Environmental Biology at the Department of Biology of the Faculty of Science.

The master's degree programme Biological Sciences is a formal responsibility of the Board of Studies of the GS-LS, mostly delegated to its Executive Board of Studies (E-BoS). The organisation and coordination of the master's degree programme Biological Sciences on a daily basis resides with the Programme Director, assisted by a programme coordinator. The GS-LS Board of Examiners is responsible for the quality of assessments and examinations, assisted in its tasks by the Assessment Panel, a subcommittee addressing the quality control of assessments. Admission to the master's programmes is the responsibility of the GS-LS Board of Admissions, while the GS-LS Education Committee monitors teaching quality.

Standard 1: Intended learning outcomes
The intended learning outcomes of the programme have been concretised with regard to content, level and orientation; they meet international requirements.

Explanation:
As for level and orientation (bachelor's or master's; professional or academic), the intended learning outcomes fit into the Dutch qualifications framework. In addition, they tie in with the international perspective of the requirements currently set by the professional field and the discipline with regard to the contents of the programme. Insofar as is applicable, the intended learning outcomes are in accordance with relevant legislation and regulations.

Findings

The Consultative Body of Higher Educational Teaching in Biology ('Overlegorgaan Hoger Onderwijs Biologie', OHOB), in which all academic degree programmes in Biology in the Netherlands are represented, has drawn up the Domain-Specific Frameworks of Reference (hereafter the Frameworks) for academic bachelor's and master's programmes in Biology. This document demarcates the domain of Biology, and touches upon the recent transition towards New Biology. The past focus on mono-subdisciplines has shifted towards integration of scientific disciplines and requires competences in dealing with the dynamics and complexity of life as a network, from molecules to ecosystems. The Frameworks provide a set of general requirements for academic bachelor's and master's programmes in Biology.

The panel has studied the Frameworks, and notes that their general requirements correspond with the internationally accepted Dublin descriptors. In terms of contents, the requirements also encompass what might be expected of an academic bachelor's or master's programme in Biology. The panel appreciates the fact that New Biology is mentioned in the Frameworks. However, it notes that New Biology and the corresponding scientific attitude have not yet been translated into concrete requirements for academic degree programmes. The panel

expects that in the next revision of the document, the integrative and interdisciplinary nature of Biology will be better represented in the general requirements.

The master's programme Enviromental Biology at Utrecht Universiy reportedly aims to prepare students for conducting molecular and/or ecological research on plants, plant communities, micro-organisms, animals and/or (marine) ecosystems. It does so by integrating different levels of biological organisation, from genes to ecosystems. According to the critical reflection, students are trained in performing fundamental research on topics with high societal and economic relevance, requiring them to deal with complex problems that need to be addressed in a multidisciplinary setting. It facilitates students with an interest in applied science to carry out parts of their training in a professional organisation and provides them with life sciences-specific insights on scientific integrity, valorisation and professional attitude. It offers five complementary specialization tracks: Plant Biology, Fungal Biology, Ecology & Natural Resource Management, Biomarine Sciences & Palaeoecology, and Behavioural Ecology. Within the GS-LS, students can opt to combine a specialization with a Communication & Education or Management profile. For those students, three additional learning outcomes apply.

The panel has studied the learning outcomes of the master's degree programme Biological Sciences (in which Environmental Biology is included). As the learning outcomes are directly related to the Dublin descriptors and cover all the demands of the Domain-Specific Framework of reference, the panel concludes that they meet the international requirements. The programme shares its learning outcomes with all other master's programmes offered by the GS-LS. A complete overview of the programme's intended learning outcomes is given in Appendix 3. Somewhat to its surprise, the panel notes that the programme's ambitions with regard to interdisciplinarity as stated in the critical reflection have not been translated into a separate learning outcome. The panel suggests to repair this omission, which would also restore continuity with the learning outcomes of the bachelor's programme on this point.

Shortly before the site visit, the panel was informed about plans to merge the programmes Environmental Biology, Molecular & Cellular Life Sciences and Drug Innovation into a new CROHO label named 'Biosciences'. The panel will not assess those plans in this report, but uses them as a context for its suggestions for further improvement. The panel suggests to view the merger as an opportunity to review the learning outcomes in such a way that they more strongly express the programme's profile and ambitions.

Considerations
The panel has established that the programme's intended learning outcomes are in line with (inter)national requirements. The programmes shows a broad profile within the field of the life sciences with attention to societal and economic relevance. It suggests to translate the programme's interdisciplinary ambitions into a separate learning outcome, and more generally encourages the programme to more strongly express its (future) profile and its ambitions in New Biology through its learning outcomes.

Conclusion
Master's programme Biological Sciences: the panel assesses Standard 1 as 'satisfactory'.

Standard 2: Teaching-learning environment
The curriculum, staff and programme-specific services and facilities enable the incoming students to achieve the intended learning outcomes.

Explanation:
The contents and structure of the curriculum enable the students admitted to achieve the intended learning outcomes. The quality of the staff and of the programme-specific services and facilities is essential to that end. Curriculum, staff, services and facilities constitute a coherent teaching-learning environment for the students.

Findings

Curriculum contents and coherence
The programme Environmental Biology is a full-time, English-taught master's programme consisting of 120 EC spread evenly over two years. All students follow the mandatory GS-LS starting course 'Introducing Life Sciences' and need to attend at least ten seminars organised by the GS-LS or other institutes (starting course and seminars combined: 1.5 EC). In addition, all students are obliged to complete a major research project (51-63 EC). For students taking a 'research profile', the remainder of the curriculum will be filled by a writing assignment (7.5 EC), theoretical courses (15 EC), the minor research project (33-45 EC), and/or electives (up to 12 EC).

Students who opt for a Science Communication & Education profile take, instead of a minor research project, three profile specific courses (11.25 EC) and an internship (21.75). They may also opt to add another 12 EC to their internship instead of taking electives. Students with a Management profile substitute the minor research project by three core science and business management related courses (30 EC) and an additional individual assignment focusing on the sustainability and environmental aspects of business projects (3 EC). After studying the documentation on the society-oriented profiles and discussing them with alumni, the panel concludes that they function as valuable additions to a research-oriented master's programme. A number of alumni reported that it allowed them to become research-based professionals.

In the *Ecology & Natural Resource Management* (ENRM) track, students are provided with theoretical insights and research training in the ecological and environmental sciences. The critical reflection emphasises the societal relevance of this track in terms of sustainability and natural resource management. The track is offered by the Ecology & Biodiversity research group of the Department of Biology, the Energy & Resources research group of the Copernicus Institute of Sustainable Development (Faculty of Geosciences) and affiliated research groups at the KNAW-NIOO in Wageningen. Within the ENRM track, it is mandatory for students to perform their minor research project in a professional organisation outside academia, in order to let them experience in practice how to integrate scientific knowledge in a societal context.

Students reported positively on the ENRM track, although they would have liked some more track-specific courses. During the site visit, the panel studied the course 'Ecology of Natural Resources' in more detail. This course has been evaluated quite positively by students over the past few years, and the panel agrees with those evaluations. The course shows a diversity of teaching methods, including lectures, guest lectures, a substantial practical, an excursion and even some fieldwork. The course literature is of high level and includes several *Nature* articles. The panel suggests to include more of these entertaining and valuable courses; the programme may consider to take some EC's from the major research project.

In the *Behavioural Ecology* track, students gain a theoretical background and research experience in the fields of Animal Ecology, Behavioural Biology and Animal Welfare. The track is offered by the Animal Ecology research group of the Department of Biology, and by affiliated research groups at the Biomedical Primate Research Centre (BPRC) in Rijswijk, the KNAW-NIOO in Wageningen, and the Centre for Research and Conservation of the Royal Zoological Society of Antwerp.

During the site visit and based on the list of recent graduates, the panel learned that the Behavioural Ecology track is very popular among students, while not densely populated in terms of staff. Job opportunities are limited in this field, although staff members indicate that research positions are available and students can opt to do a society-oriented internship. The panel concludes that the teaching load for the staff of this track is quite severe. Over the past few years, the track has struggled with students who missed a background in ecology, but that problem seems to have been solved adequately (see Standard 4).

In the *Fungal Biology* track, the aim is to provide students with theoretical insights and research training in the fields of Microbiology, with a particular emphasis on Molecular Fungal Biology and the role of fungi in the environment. The track is offered by the research groups Molecular Microbiology, Plant-Microbe Interactions and Ecology & Biodiversity (all part of the Department of Biology), and by affiliated research groups of the Fungal Biodiversity Centre (KNAW-CBS) in Utrecht.

The panel has studied the track curriculum and looked in more detail at the course Molecular Fungal Biology. Both the course and the track in general look solid to the panel, but the track is attracting very few students.

In the *Plant Biology* track, students follow theoretical courses and obtain research training in the fields of Plant Molecular Biology, Plant Physiology, Plant-Microbe Interactions, Plant Ecophysiology, and Plant Ecology and Biodiversity. It is offered by the plant sciences research groups at the Department of Biology, and by affiliated research groups at the KNAW-NIOO. The critical reflection states that the research performed is placed in the context of societal challenges like sustainable food security and climate change.

The panel has studied the track curriculum and established to its appreciation that it leaves some room for students to follow their own interests. It has studied the course 'Molecular Plant Physiology and Biotechnology' in more detail. It was impressed with the state of the art research that is discussed during the course, and was also pleased to find a good link with society, in this case with related green industries.

In the *Biomarine Sciences & Palaeoecology* track, students are provided with a theoretical background and research training in the fields of Marine Palynology and Paleophysiology of plants in the context of environmental change. The track is offered by the research groups Marine Palynology and Paleoecology of the Faculty of Geosciences, and by affiliated research groups at the Royal Netherlands Institute of Sea Research (NIOZ) in Texel.

The panel has studied the track curriculum and appreciates its multidisciplinary topicality. The track offers a variety of training possibilities with aspects unique for The Netherlands. According to the panel, the track offers a valuable contribution to the broadness and interdisciplinarity of the master's programme.

For each of the tracks, a track coordinator has been appointed who safeguards the coherence and diversity of track-specific curriculum elements. This includes the student's choice of research projects and writing assignment. Beyond the track, students may select other courses within the Environmental Biology programme, or even within the GS-LS as a whole. The panel concludes that each of the tracks offers students a coherent and diverse curriculum. In the total balance, the panel suggests to add a few more core courses addressing New Biology themes. According to the panel, the emphasis on research training would not suffer from replacement of some of its EC's to courses.

The panel discussed the obligation to take ten seminars with students, who reported that the so called 'top lectures' offered by the GS-LS tend to focus on medical topics and thus are experienced as not very inspiring to general biologists. Students are at liberty to follow seminars elsewhere, and both staff and students assured the panel that this indeed is a popular option. The panel appreciates the initiative students take to follow their interests; still, it advises the programme to reconsider the current setup of the top lectures and see them as an opportunity to strengthen the programme's profile and increase the sense of community among cohorts.

The major and minor research projects form the core of the master's programme, adding up to a maximum of 96 EC. They are typically supervised on a daily basis by a PhD-candidate or post-doc, while his/her supervisor acts as examiner. Under this supervision, students carry out a research project from setting up an experiment to reporting, thus completing the whole research cycle. The minor research project offers students the opportunity to gain further research experience on a different subject. The programme encourages them to do this second project at a research institute elsewhere in the Netherlands or abroad. While students taking the ENRM track are obliged to take an internship outside academia, others may also opt to do so. The panel concludes that the minor research project offers students quite some options to profile themselves in preparation to their future career.

According to the critical reflection, students learn how to make a synthesis of existing literature for future research during the writing assignment. They can either choose to write a literature review or a research proposal for a PhD project. Supervision of the assignment is provided by the most relevant research group. Both assignments include literature research and critically reviewing literature, integrating results and models into new models, and formulating a hypothesis for future research. The panel considers the writing assignment to be a valuable training in academic writing skills. During the site visit, it learned that the topic of the writing assignment is not allowed to overlap with the topic of either the major or minor research project. The panel understands the added value of this rule when the writing assignment takes the form of a literature review, but suggests to make an exemption for students writing a research proposal. A new research proposal asks for a considerable amount of time and by combining it with a research project, students will be able to optimally profit from their efforts and the feedback they receive, while at least a number of them may end up with a viable proposal for an actual PhD project.

Feasibility

The programme Environmental Biology has an annual intake varying between 50 and 70 students per year. Applicants holding a relevant bachelor's degree from UU are admitted directly, whilst 65-70 per cent of the other applicants are admitted. Drop-out rates have been between 10 and 23 per cent over the last four cohorts, while the average study duration of graduates is about 30 months. The critical reflection mentions that graduation rates are below target, and it identifies delays during research projects as the main cause. In order to improve

those rates, the GS-LS appointed an internship coordinator monitoring student progress in order to limit delays in research projects. After a delay of three months, the programme coordinator is alerted and will contact the student in order to discuss why the project gets delayed and to set a new time schedule.

During the site visit, the panel discussed the issue with students. One of the explanations they offered is the early programming of the first research project. As it covers a period of nine months, students do not think lightly of the impact their choice will have on their study path and the start of their career afterwards. Some students do not feel prepared to decide upon a project early on, others revisit their choice in an early stage of the project – in both cases, delays will probably occur. The panel suggests that for students who took the UU bachelor's programme Biology, a more substantial bachelor research project might help alleviating some pressure. Another option would be to start the programme with a shared course introducing students to state-of-the-art research, thus showing them the palette to choose from.

The panel appreciates the efforts the GS-LS takes to improve graduation rates, although it is not entirely convinced that allowing the delay to build up for three months before taking concrete measures would be the most efficient way to do so. It suggests that the UU supervisor/examiner may take further responsibility for the progress of his/her students. This being said, the panel concludes that although there is room for improvement, graduation rates are at an acceptable level. In a number of cases, students deliberately choose to study longer and take more than the required number of credits. The panel concludes that the programme may be challenging, particularly for students who are still somewhat hesitant on what to choose, but that it is certainly feasible.

Staff

The education in the master's programme Environmental Biology is mainly performed by staff from the Department of Biology of the Faculty of Science, and staff from the Faculties of Geosciences and Veterinary Medicine. In total, 88 per cent of staff holds a university teaching qualification (Basiskwalificatie Onderwijs, BKO); 24 per cent also holds a senior teaching qualification (Senior Kwalificatie Onderwijs, SKO). According to the critical reflection, several activities have been organised for staff members to further improve their teaching skills, such as a training in supervision of research students.

The panel concludes that the programme's teaching staff is of high quality, both in terms of teaching skills and in terms of research quality. The participating research groups have a very good research reputation, as was confirmed by the 2012 QANU Research Review Biology. The panel appreciates the attention at the UU paid to didactics and teaching professionalisation.

The programme calculates its staff-student ratio as 1:13.4. The critical reflection adds that the large majority of the curriculum (78-86 per cent) is not included in this number, as it consists of research projects and the writing assignment. For those curriculum components students are supervised individually. The panel concludes that the ratio is quite favourable, although it should be noted that the workload is not evenly spread over the different research groups (see Standard 4).

During the site visit, the panel has met with the GS-LS Educational Committee (EC). Within this committee, all programmes are represented by at least one staff member and one student member. Based on its conversations with the EC and the EC's annual report, the panel concludes that the committee is proactively involved in maintaining and improving the quality

of the programme. Each year, the EC draws up a list of themes it wants to address, after which a student and a staff member meet with the programme leader and coordinator to discuss those issues. Next to that, the EC discusses student evaluations of courses, including courses for PhD students that allow master students to participate.

Programme specific facilities
The site visit took place at the new Victor J. Koningsberger Building that houses bachelor's and master's programmes in Biology and Chemistry. During the site visit, the panel had a tour through this building and also visited the Hugo R. Kruyt Building, where most of the teaching staff are based and where the research labs are located. The panel has established that the new building offers excellent facilities for education, including practicals. In the Hugo R. Kruyt Building the panel witnessed that the research labs for Cell Biology are furnished with state of the art equipment, amongst which a super-resolution STED microscope. Under supervision and after training, students can also make use of this equipment during research projects. The panel concludes that the programme has high quality facilities at its disposal.

Considerations
The panel considers that the programme offers students a broad palette with five tracks of decent to good quality in its research profile, plus two well-developed society-oriented profiles. The panel is positive about the general setup of the curriculum, which emphasises research training but includes a number of theoretical courses. The minor research project may be used as further preparation for an academic career, but also allows students to apply their scientific knowledge outside academia. The panel has studied some solid and even excellent courses, but encourages the programme to offer biology students extra core courses addressing New Biology themes.

Graduation rates are acceptable, but leave room for improvement. The programme identifies delays in the research projects as the main cause and has already taken action to monitor student progress. The panel encourages the programme to detect signals of delay as early as possible and emphasises the primary responsibility of project examiners in this respect.

The programme is executed by a teaching staff with a very good to excellent research reputation. The panel appreciates the attention to and options for teaching professionalisation at Utrecht University. The programme's staff-student ratio is quite favourable, although the teaching burden is not spread evenly over the research groups. The panel concludes that the programme makes use of high quality facilities.

Conclusion
Master's programme Biological Sciences: the panel assesses Standard 2 as 'good'.

Standard 3: Assessment

The programme has an adequate assessment system in place.

Explanation:
The tests and assessments are valid, reliable and transparent to the students. The programme's examining board safeguards the quality of the interim and final tests administered.

Findings

Assessment system
The assessment system of all degree programmes offered by the Graduate School of Life Sciences, including the master's degree programme Biological Sciences, is described and regulated in the School's Education and examination regulations 2015-2016 (EER). The programme has developed assessment matrices in which it relates its learning outcomes to the contents and assessment types of the different curriculum components. For each course, the programme has described how each of its learning goals are assessed. Typically, a combination of assessment types is used during and at the end of a course. Assessment methods within the programme include written exams, individual reports and assignments, group reports and assignments, and oral presentations.

Marks obtained abroad are recalculated to the Dutch system by a UU examiner. In the EER, a table is provided with guidelines. During the site visit, the panel learned that the programme actively copes with the issue that some countries have another culture of grading, which could lead to disproportionately high scores. Supervisors at host institutes are informed about what is expected of UU students, and are asked to also indicate whether the student's achievements would belong to the top-20, top-10 or even top-5 per cent of their class. Last but not least, the UU examiner is leading in determining the final grade. The panel appreciates the efforts of the programme to maintain consistency in grading for students who take courses, do internships or work on research projects abroad.

For the research projects and the writing assignment, the GS-LS has developed rubrics in order to assess the student's progress and level of achievement. Before a research project starts, it is customary in most research groups that students present the setup of their project, in order to make sure that they start working on a project that is feasible and at academic master's level. In this phase, student and supervisor also work out an agreement on the planning of the project. Since 2014 an interim assessment of the research project has been introduced. Based on the assessment rubrics, the supervisor evaluates the progress made and provide the student with feedback on what could or should be improved. The same rubrics are used as tool for the final assessment.

The panel concludes that the programme's assessment system is well worked out and is related in a transparent fashion to its learning outcomes and the learning goals of curriculum components. Based on its discussions with students and staff, it considers that the assessment rubrics function well in the sense that they provide students with accurate expectations on how they will be assessed, and staff with a tool to give adequate and constructive feedback. Moreover, the rubrics leave examiners at liberty to put more emphasis on the criteria they deem most relevant in a specific assessment.

The panel noticed that the procedure does not explicitly address a Go/No-Go-moment, but staff members indicated that the interim assessment does fulfil this function. The evaluation is planned quite early in the process, and has since its introduction led to discontinuation of a couple of projects, notably in the Behavioural Ecology track. The panel appreciates this

double role of the midterm evaluation, both encouraging students who are on the right track to further improve their projects and stopping projects that have derailed at an early stage. Based on its discussions with students and staff, the panel received some mixed signals on whether each research group does discuss the setup of each student's research project. The panel encourages the programme to make sure that each research plan is discussed properly before it starts.

Each research project is assessed by a supervisor and second examiner. The final grade is based on three elements: research skills (60 per cent), written report (30 per cent) and presentation (10 per cent). The supervisor provides a score for research skills, while both examiners separately score the written report and presentation. Next the examiner determines the final grade. In those cases where the supervisor is from the hosting institute, the Utrecht examiner is responsible for the final grade. All subgrades have to be satisfactory.

In a specific case, the panel encountered a research project that was initially graded with a 5 for the written report by the examiner and a 6 by the hosting supervisor, after which the project's final grade was 5.5 (which is a pass grade, according to the EER). The panel discussed this case with the Board of Examiners, as according to the initial scores the examiners disagreed on whether the student met the criteria. The Board argued that it trusts that both examiners will have discussed the difference in their initial assessment. A further written explanation of the score would only be required if the final grade would be below 6 or higher than 8.5.

Board of Examiners
The GS-LS Board of Examiners (BoE) is responsible for safeguarding the quality of tests and assessments in the master's degree programme Biological Sciences. A number of procedures have been introduced in order to ensure assessment quality. First, as routine practice, all tests are reviewed by a colleague prior to actual examination. Second, for each research project and each writing assignment, a second reviewer is appointed. Third, the quality of course and final project assessments is monitored by the Assessment Panel, a subcommittee of the BoE. The Assessment Panel does so by independently evaluating a selection of courses each year. The selection is partly random, and partly based on negative signals like student evaluations or complaints. Next to courses, the Assessment Panel evaluates a sample of reports of research projects and writing assignments. Both the Assessment Panel and the BoE in general try to identify best practices and improvements that may be beneficial to GS-LS. Fourth, the BoE is further advised on testing and assessment quality by the Faculty of Science Committee of Assessment ('Toetsadviescommissie').

The panel is pleased with the procedures adopted. During the site visit, it met with a proactive and outspoken BoE that seems well in control of the quality of tests and assessments. It learned that the Assessment Panel is aided in its tasks by the Centre for Teaching and Learning (Centrum voor Onderwijs en Leren Universiteit Utrecht, COLUU). The panel trusts that GS-LS management will continue to support the BoE and the Assessment Panel in their important tasks.

Considerations
The panel concludes that the programme's assessment system functions well and is subject of continuous improvement thanks to the efforts of the teaching staff in general and a proactive Board of Examiners and its Assessment Panel in particular. Test matrices have been developed encompassing each curriculum component, and rubrics and assessment forms are in place for the research projects and writing assignment. The panel compliments the programme on its rubrics, which provides students with accurate expectations of their assessment, and staff with a flexible assessment tool.

Conclusion
Master's programme Biological Sciences: the panel assesses Standard 3 as 'good'.

Standard 4: Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

Explanation:
The level achieved is demonstrated by interim and final tests, final projects and the performance of graduates in actual practice or in post-graduate programmes.

Findings

Research projects
Regardless of the track or profile chosen, each student at least completes the major research project (51 EC) as part of his/her curriculum. A majority of students also completes a minor research project (see Standard 2 for a more detailed overview of study paths). The programme has indicated that either one of these research projects may be regarded as a final project, demonstrating the achieved level of students.

Prior to the site visit, the assessment panel has studied seventeen research project reports in order to establish the level achieved by graduates. It confirms that all theses are of at least satisfactory quality, and that the average level of achievement is good. All reports were graded accurately. The panel was pleased to note that in a number of cases the reports had led to publications in peer reviewed journals, particularly in the field of Plant Biology and Ecology & Natural Resource Management.

On the other hand, some reports by students from the Behavioural Ecology track showed a more traditional approach. Based on its discussions with staff and management, the panel concludes that a relatively small number of staff is available for this very popular specialization. It should also be noted that the reports were written when tracks were not yet allowed to select their intake. Given its popularity, the research group can now afford to be highly selective. Staff members reported that the selection of students has significantly raised the standards. Moreover, some projects have been stopped based on a negative interim assessment (see Standard 3). The panel appreciates the measures taken, but suggests that an increase of staff might help in serving more students and in enabling the group to share its burden over more shoulders.

The level achieved by graduates is also demonstrated by their performance upon graduation. During the site visit, the panel spoke to a group of enthusiastic alumni, who convinced the panel that the programme had offered them good opportunities to prepare themselves for the first step in their career, be it in academia, in industry or in a policy job. They reported that they had put the flexibility of the programme to good use, either by taking a specialized minor research project or by taking up a consultancy project or internship in a sector of their preference. Given the fact that the enthusiasm of alumni is backed up by good scores in this respect in the National Students Survey 2015 (preparation for the labour market scored 3.75 on a five point-scale), and good performance of Utrecht graduates in for example the NWO Graduate Programme Experimental Plant Sciences, the panel concludes that graduates demonstrate a high level of achievement.

Considerations
The panel concludes that graduates have demonstrated a good overall level of achieved learning outcomes, based on the quality of their research project reports and their performance after graduation. All reports were adequately graded. The panel compliments the programme on the fact that a number of research projects have led to presentations in peer reviewed journals. The panel is confident that intake selection and interim assessments will further raise the bar; still, small research groups may do with more shoulders to share the burden. The panel concludes that master graduates are well appreciated on the job market, both within and outside academia.

Conclusion
Master's programme Biological Sciences: the panel assesses Standard 4 as 'good'.

General conclusion

The panel has encountered a master's programme with a strong research orientation that simultaneously offers options for students working towards a career as research-based professional. Although its learning outcomes are rather generic, the panel recognizes a distinct approach offering students the chance to determine their own study path. The programme consists of strong research components performed at or under supervision of research groups of very good to excellent reputation, underpinned by solid theoretical courses and a thorough training in academic writing skills. The programme's teaching staff consists of active researchers who are well-trained in university teaching. The programme has a good assessment system in place, the quality of which is well safeguarded by a proactive Board of Examiners and a committed teaching staff. The achieved learning outcomes of graduates as shown by their research reports are of high quality, a number of reports led to publications in peer reviewed journals. Also, the quality of graduates is recognized on the job market, both within and outside academia.

Conclusion
The panel assesses the *master's programme Biological Sciences* as 'good'.

Appendices

Appendix 1: Curricula Vitae of the members of the assessment panel

Prof. dr. J.W. (Jan) Kijne is Professor emeritus of BioScience at Leiden University. He studied Biology in Leiden and obtained his PhD in 1979 under supervision of Prof. Ton Quispel. In his dissertation Kijne studied the symbiotic nitrogen-fixing root nodules of the pea, a theme which remained a main focus in his further research. He was Professor of Fytotechnology (in collaboration with TNO, 1994-1997), Plant Physiology (1997-2006) and BioScience (2006-2010) in Leiden, and visiting Professor of Microbiology at the University of Tromsø, Norway (1995-2000). At Leiden University Kijne also acted as programme director Biology (1996-2002), as vice-dean of the Faculty of Science holding the Education Portfolio (2002-2008), and as Academic Director of the Pre-University College (2004-2008). In 2009-2010, Kijne was chair of the panel that assessed nineteen programmes in Biology at five Dutch universities. Students elected him as a Teacher of the Year in Biology and Life Science & Technology.

Prof. dr. A.H.J. (Ton) Bisseling is Full Professor and head of the Laboratory of Molecular Biology at Wageningen University. He studied Biology in Nijmegen and obtained his PhD at the Department of Molecular Biology of Wageningen University. After holding a number of scientific positions there, he was appointed to his current chair of Molecular Biology in 1998. Bisseling is member of numerous Editorial Boards of international journals, including *Plant Biology* and *Science*. Bisseling is member of the Royal Netherlands Academy of Arts and Sciences, and member of its Council for Earth and Life Sciences.

Prof. dr. H.A. (Herman) Verhoef is Professor emeritus of Soil Ecology at VU University Amsterdam. He holds a master's grade and a PhD in Biology, both obtained at VU University, where he was appointed as Associate Professor Animal Ecophysiology in 1986. In 1992, he changed to an Associate Professorship in Soil Ecology, and was subsequently appointed as Full Professor in this specialisation in 2003. Next to his academic career, Verhoef has held a number of social positions at VU University, chairing the Advisory Board on Higher Education HOVO and the Advisory Board on Internationalisation, and acting as auditing member of several Faculty Audits.

Prof. dr. M.J. (Joost) Teixeira de Mattos is Professor of Quantitative Microbial Physiology at the University of Amsterdam and co-founder of Photanol BV. Teixeira de Mattos studied Chemistry at the University of Amsterdam, and obtained his PhD in Chemistry there in 1984. He has held a number of scientific positions before being appointed as Full Professor in 2007. Throughout his career, Teixeira de Mattos has been actively involved in education, teaching subjects in biochemistry, microbiology and biotechnology in programmes ranging from Chemistry to Computer Science. He received the Dupont Award for Higher Education, was chosen by students as Teacher of the Year in Chemistry (twice) and in Biology. Teixeira de Mattos has also been member of the Education Advisory Boards in Chemistry and Biology/Biotechnology and of the Boards of Examiners in Chemistry and Life Sciences.

J. (Jeffrey) Verhoeff BSc. is master's student Biology and Animal Sciences at Wageningen University. In 2013, he obtained his bachelor's degree in Biology, also at Wageningen University. Verhoeff has been member of the Dutch national council of Biology students (Landelijk Overleg Biologie Studenten, LOBS) since 2013, and acts as its chair since 2015. He is member of the Board of the Dutch Institute for Biology (Nederlands Instituut voor Biologie, NIBI). Since 2012, Verhoeff has worked as student-assistant at Wageningen University, acting as teaching assistant in a number of courses and as co-organizer of Open Days for prospective students.

Appendix 2: Domain-Specific Framework of Reference

Domain-specific framework of the masters' programme in Biology

The domain of biology concerns life and its environment: the complete integrated system of biological entities in which regulation, interaction, communication, heredity and evolution are the central concepts. The coherence and dynamics of all these entities, therefore, should be the central themes in every Biology programme. Recently (or the last two decades), biological sciences have experienced tempestuous (booming) developments that have led to a more profound understanding of the dynamics of life and the structural and functional mechanisms that lie at its basis. In this process, integration with other disciplines such as mathematics, physics, chemistry, informatics, and earth sciences has shown to be crucial. Moreover, biology has become an integral science indispensable in the practice of resolving societal issues such as sustainable food production, conservation of biodiversity and the development of "green energy" resources. Biology in the Netherlands plays a key role in the preservation and further reinforcement of the strong international position of the top sectors.

The rapid development of the biological sciences and the plethora of positions for which biologists are required, force biological educational programmes to prepare students for jobs in fundamental research, applied research and technology, communication and policy; both in biology as well as in adjacent scientific fields. More than ever, biology demands the competence to deal with the dynamics and complexity at various levels of organisation, such as molecules, cells, organisms, populations, communities and ecosystems. Furthermore, students need to achieve excellent academic skills in scientific writing, oral presentation, critical reading of scientific literature, self-reflection and teamwork.

The MSc Biology covers a two-year programme, offering a deepening of knowledge in one or more biological sub disciplines in the fields of research, policy, management, communication or teaching. In each of these specialisations at least one research component is incorporated. After completion of the masters' programme, students are well equipped to follow a biologically oriented PhD trajectory or to obtain other positions of academic level related to biology.

Demands of (international) colleagues and the professional environment

Biological master programmes have a long and world-wide tradition as a central discipline. In the course of time, attention has shifted from capitalizing factual knowledge in mono-disciplines to the integration of the levels of organisation and disciplines. The masters' programme aims to provide students with knowledge and skills in their specific domain and with general academic competences that will enable them to perform in an excellent manner in a broad range of professional environments. Students should be able to explain and reflect on his or her choice for a specialized PhD trajectory, or for another position at the labour market within the area of policy/administration, management, education or communication.

The institutions offering a biologically oriented MSc in the Netherlands participate in the 'Overlegorgaan Hoger Onderwijs Biologie' (Consultative Body of Higher Educational Teaching in Biology). Students are allowed to take courses within the elective part of their master programme from other Dutch biology masters' programmes. Dutch masters' programmes in biology have a good international reputation. Students with a Dutch masters' diploma can enter into all relevant international biologically oriented PhD positions.

What can be expected from a MSc Biology?

1. Knowledge and research skills

The graduate:

a) is able to make use of the conceptual framework of the discipline in which he/she has specialized in order to explain the state of the art of developing theories and to identify the most important research issues;

b) can systematically solve scientific problems within the context of relevant biological fields;

c) can develop, apply and optimize research techniques in biological research;

d) can independently formulate, initiate and execute a biological research project and analyse and interpret the results.

2. Academic and learning skills

The graduate:

a) can report orally and in writing on the field of study for a specialist and a general audience;

b) is able to critically reflect on the performance of him/herself and others in the professional context and to evaluate the societal and ethical consequences of biological research;

c) can communicate effectively within the chosen field of specialisation.

Appendix 3: Intended learning outcomes

Master's programme Biological Sciences:

1. Graduates will have profound knowledge of, and insights into
a) At least one of the specialised subjects of Biological Sciences. With this knowledge graduates are able to make a substantial contribution to the development and/or application of scientific concepts and methods, often in a research context.
b) Important, recent developments within the Biological Sciences. Graduates are able to point out the implications of these developments on the Biological Sciences field and society.
c) The way to adequately use and interpret specialist literature in at least one of the subjects of Biological Sciences.
2. Graduates will become skilled in:
a) Translating a Biological Sciences problem into a relevant research question, suitable for research development or product design.
b) Designing a suitable research plan to test the formulated research questions, according to methodological and scientific standards.
c) Independently performing research, with the required accuracy. Graduates are able to handle, analyse, interpret and evaluate the empirically derived data in a correct manner.
d) Discussing the outcomes of empirical research and linking them with scientific theories.
e) Indicating the importance of research activities for solving a biological question or problem, if applicable from a social perspective.
f) Critically reflecting on their own research work in Biological Sciences, from a social perspective.
g) Comprehensibly reporting research results verbally and in writing, to specialised and non-specialised audiences in an international context.
3. Graduates will display attitudes that enable them to:
a) Function effectively in a multidisciplinary research team.
b) Reflect on their own development and study career. If necessary, graduates are able to motivate and adjust themselves.
c) Function independently and result oriented in a competitive labour market.
d) To be eligible for a PhD position or a position in other sector.

Profile-specific learning outcomes Management-profile:
Upon completion of the M-profile the student is:

- acquainted with several essential concepts within business management and entrepreneurship;
- able to apply this knowledge in different modules, assignments, case studies, projects and/or business plans;
- able to work in interdisciplinary teams.

Profile-specific learning outcomes Communication and Education-profile:
Upon completion of the C&E-profile the student is able to:

- Understand and critically use the core knowledge of science education and communication theories, and the research underlying such theories;
- Develop and adapt a theoretically based design for science education or communication;
- Develop adequate science communication and education products according to design criteria, based on both theory and the personal research project.

Appendix 4: Overview of the curriculum

Master's programme Biological Sciences:

Programme components Environmental Biology		
Theory		
Theoretical courses	15	EC
Introducing Life Sciences starting course + Life Sciences Seminars	1.5	EC
Writing assignment (literature review or research proposal)	7.5	EC
Research		
Major research project (9 months)	51	EC
Minor research project (6 months) *(can be extended using electives with 6, 9 or 12 EC)*	33	EC
Electives	12	EC
TOTAL	**120**	**EC**

Tracks:
- Environmental Biology
- Molecular and Cellular Life Sciences

Component:	credits
Major research project	51
Minor research project	33
Theoretical Master's courses	15
Elective components	12
Writing assignment	7.5
Introduction course + Life Sciences seminars (10)	1.5

Management profile

Component:	credits
Fundamentals of Business and Economics	15
Finance & Management of Accounting	7.5
Entrepeneurship	7.5
Additional assignment	3

Communication and Education profile:

The C&E profile includes theoretical courses and a short internship and comprises a total of 33 credits. The Graduate School of Life Sciences (GSLS) furthermore offers a possibility to use the electives (12 credits) to extend the internship of this profile.

Components:
1) Intro Science education and communication (3,75 credits)
2) Public science communication (3,75 credits)
3) Internship communicative and educative design (21,75 credits)
4) Designing science education and communication (3,75 credits)

Appendix 5: Programme of the site visit

DAG 1			
11.00	14.00	Voorbereidend overleg en inzien documenten (incl lunch)	
14.00	14.45	Gesprek met inhoudelijk verantwoordelijken	• prof. dr. Johannes Boonstra, Onderwijsdirecteur Biologie • prof. dr. Corné Pieterse, Programmaleider EVB • prof. dr. Han Wösten, Hoofd Departement Biologie • dr. Ton Peeters, Onderwijsmanager Biologie • dr. Shirrinka Goubitz, Opleidingscoödinator Graduate School Life Sciences
14.45	15.00	Overleg panel	
15.00	15.45	Gesprek met studenten bacheloropleiding Biologie	• Jasper Zweistra, BSc student 2e jaar • Bas van der Meer, BSc student 3e jaar • Julia Staats, BSc studente 1e jaar • Luuk Muthert, BSc student 2e jaar • Eloha Tajzai, BSc studente 3e jaar • Brigit van Brenk, BSc studente 3e jaar/studentbestuurslid
15.45	16.30	Gesprek met studenten masteropleiding Biological Sciences	• Lucas de Haan BSc, MSc specialisatie Ecology and Natural Resource Management • Annabel Dorrestein BSc, MSc specialisatie Ecology and Natural Resource Management • Dian Zijlmans BSc, MSc specialisatie Behavioural Ecology • Jeroen Heemsbergen BSc, MSc specialisatie Ecology and Natural Resource Management • Niels Aerts BSc, MSc specialisatie Plant Biology • Bettina Kaphingst BSc, MSc specialisatie Ecology and Natural Resource Management • Laura Dijkhuizen BSc, MSc specialisatie Plant Biology
16.30	17.00	Overleg panel, spreekuur	
17.00	17.30	Gesprek met alumni	• Sven Teurlincx MSc, PhD student NIOO • Gijs Steur MSc, PhD student GEO • Rascha Nuijten MSc, PhD student NIOO • Astrid Rox MSc, PhD student BIO • Iris Kampers MSc, trainee ecologie bij ARCADIS • Linde Berg BSc, masterstudent WUR • Yaro Laenen BSc, masterstudent Environmental Biology • Jelmer Laks BSc, masterstudent EVB (Marine Sciences and Paleoecology)
17.30	18.00	Gesprek over fusiemaster Biosciences	• prof. dr. Gerard Barkema, vice-decaan OW FBW • prof. dr. Corné Pieterse, Programmaleider EVB • dr. Paul van Bergen en Henegouwen, Programmaleider MCLS • dr. Shirrinka Goubitz, Opleidingscoördinator GS-LS • prof. dr. Han Wösten, hoofd Departement Biologie • dr. Monique Slijper, Programmaleider Drug Innovation
19.00	21.00	diner (voorbereiden tweede dag)	

DAG 2			
8.45	9.00	Aankomst panel	
9.00	9.45	Inzien documenten, voorbereiding gesprekken	
9.45	10.30	Gesprek met docenten	• dr. Kirsten ten Tusscher, Theoretische Biologie/docent BSc • dr. Fred Wiegant, Onderwijsinstituut/docent BSc • prof. dr. Rob de Boer, Theoretische Biologie/ docent BSc • dr. Guido van den Ackerveken, Plant microbe interacties/docent BSc • dr. Mariet Hefting, Ecologie en biodiversiteit/ docent BSc en MSc • dr. Francesca Sangiorgi, Mariene wetenschappen/ docent BSc en MSc • dr. Marcel Proveniers, Moleculaire plantenfysiologie/ docent BSc en MSc • prof. dr. Liesbeth Sterck, animale ecologie/ docent BSc en MSc
10.30	10.45	Overleg panel	
10.45	11.15	Gesprek met leden van de Opleidings(advies)-commissie	• dr. Martijn van Zanten, Vz OAC-B (docent) • dr. Isolde den Tonkelaar, Studieadviseur/OAC-B • dr. Luis Lugones, docentlid OAC-B • Amy Pace, Vvz OAC-B (studentlid) • prof. dr. Leo Jenneskens, Vz OC UGS • dr. Eric Huizinga, OC GS-LS • dr. Inge The, OC GS-LS • Martin van Oosterhout BSc, OC GS-LS
11.15	12.00	Gesprek met leden van de Examencommissie	• dr. Margot Koster, Vz dEC Biologie/Vz EC UGS • dr. Can Kesmir, dEC Biologie • dr. Jan Andries Post, dEC Biologie/EC GS-LS • dr. Maria Zonderland, EC GS-LS
12.00	12.30	Lunch	
12.30	13.30	Rondleiding labs/faciliteiten	
13.30	14.00	Voorbereiding eindgesprek	
14.00	14.30	Eindgesprek met formeel verantwoordelijken	• prof. dr. Gerard Barkema, vice-decaan OW FBW • dr. Gerrit Heil, directeur UGS FBW • prof. dr. Johannes Boonstra, Onderwijsdirecteur Biologie • prof. dr. Corné Pieterse, Programmaleider EVB • prof. dr. Han Wösten, Hoofd Departement Biologie • dr. Ton Peeters, Onderwijsmanager Biologie • dr. Shirrinka Goubitz, Opleidingscoödinator Graduate School Life Sciences
14.30	16.45	Opstellen voorlopige bevindingen	
16.45	17.00	Mondelinge rapportage voorlopig oordeel	

Appendix 6: Theses and documents studied by the panel

Prior to the site visit, the panel studied the theses of the students with the following student numbers:

3345785	3274888	3470164
3776352	3370771	3220125
3346129	3470474	3721280
3769550	3887243	3895696
3151107	3169413	4063937
3291170	3470385	

During the site visit, the panel studied, among other things, the following documents (partly as hard copies, partly via the institute's electronic learning environment):

- Information material master's programme;
- Management Report GS-LS Master's programmes and PhD Programmes, 2013-2014;
- GS-LS, 'Research-intensive education. A common basis for the Master's programmes of Utrecht University, update March 2012';
- Compulsary course literature;
- BioScope, monthly magazine Department of Biology;
- Annual reports Board of Examiners GS-LS, Educational Committee;
- Course guide, study materials, tests and assessments of the following courses:
    - Molecular Plant Physiology and Biotechnology
    - Molecular Fungal Biology
    - Ecology and Natural Resources
    - Measuring Behaviour