



**MASTER'S PROGRAMME
NATUURWETENSCHAPPEN
EN BEDRIJF**

FACULTY OF SCIENCE

UTRECHT UNIVERSITY

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This report was finalised on 5 October 2021

REPORT ON THE MASTER'S PROGRAMME

NATUURWETENSCHAPPEN EN BEDRIJF OF UTRECHT UNIVERSITY

This report takes the NVAO's Assessment Framework for the Higher Education Accreditation System of the Netherlands for limited programme assessments as a starting point (September 2018).

ADMINISTRATIVE DATA REGARDING THE PROGRAMME

Master's programme Natuurwetenschappen en Bedrijf

Name of the programme:	Natuurwetenschappen en Bedrijf*
CROHO number:	60710
Level of the programme:	master's
Orientation of the programme:	academic
Number of credits:	120 EC
Specialisations or tracks:	Science and Business Management
Location(s):	Utrecht
Mode(s) of study:	full-time
Language of instruction:	English
Submission deadline NVAO:	1 May 2022

*The programme is registered as 'Natuurwetenschappen en Bedrijf' in the CROHO. For clarity in English, the (unregistered) translation 'Science and Business' is often used. The programme currently has one specialisation, the educational programme Science and Business Management. Since this is the only specialisation, the name of the programme in everyday use is usually equated to Science and Business Management (abbreviated SBM), as it is in the current.

The visit of the assessment panel Biology to the Faculty of Science took place on 25-26 May 2021.

ADMINISTRATIVE DATA REGARDING THE INSTITUTION

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

COMPOSITION OF THE ASSESSMENT PANEL

The NVAO approved the composition of the panel on 6 May 2021. The panel that assessed the master's degree programme Natuurwetenschappen en Bedrijf consisted of:

- Prof. dr. Ton Bisseling, emeritus professor of Molecular Biology at Wageningen University & Research (chair);
- Em. prof. dr. Nico van Straalen, emeritus professor of Animal Ecology at Vrije Universiteit Amsterdam (vice-chair);
- Prof. dr. Aard Groen, professor of Entrepreneurship & Valorization at University of Groningen;
- Prof. dr. Dennis Claessen, professor of Molecular Microbiology at Leiden University;
- Dr. Mieke Latijnhouwers, assessment expert at Education Support Centre of Wageningen University & Research;
- Drs. Bas Reichert, founder and CEO of BaseClear (microbial genomics);

- Ishara Merhai, bachelor student Biology at University of Amsterdam (student member).

The panel was supported by Dr. Els Schröder, who acted as secretary.

WORKING METHOD OF THE ASSESSMENT PANEL

The site visit to the master's degree programme Natuurwetenschappen en Bedrijf, e.g. the educational programme SBM, at the Faculty of Science of Utrecht University was part of the cluster assessment Biology. Between May 2021 and January 2022 the panel assesses 21 programmes at six universities. The following universities participated in this cluster assessment: Utrecht University, Radboud University, University of Groningen, Vrije Universiteit Amsterdam, Leiden University and University of Amsterdam.

On behalf of the participating universities, quality assurance agency Qanu was asked for logistical support, panel guidance and the production of the reports. In the summer of 2021, Qanu withdrew from the assessments at Radboud University, University of Groningen, Vrije Universiteit Amsterdam, Leiden University and University of Amsterdam. In consultation with the participating universities, quality assurance agency Academion took over the responsibility for these assessments. Qanu and Academion closely collaborated to ensure a smooth transition. Els Schröder was project coordinator for Qanu. Fiona Schouten and Peter Hildering were project coordinators for Academion. Els Schröder, Peter Hildering, Mariëlle Klerks and Fiona Schouten acted as secretaries in the cluster assessment. All are certified NVAO secretaries. During the site visit at Utrecht University, the panel was supported by Els Schröder.

Panel members

The members of the assessment panel were selected based on their expertise, availability and independence. The panel consisted of the following members:

- Prof. dr. Ton Bisseling, emeritus professor of Molecular Biology at Wageningen University & Research (chair);
- Em. prof. dr. Nico van Straalen, emeritus professor of Animal Ecology at Vrije Universiteit Amsterdam (vice-chair and chair at Leiden University);
- Prof. dr. Aard Groen, professor of Entrepreneurship & Valorization at University of Groningen;
- Prof. dr. Menno Witter, professor of Neuroscience at Norwegian University of Science and Technology;
- Prof. dr. Ellen Blaak, professor of Human Biology at Maastricht University;
- Prof. dr. Roos Masereeuw, professor of Experimental Pharmacology at Utrecht University;
- Prof. Sander Nieuwenhuis, professor of Cognitive Psychology at Leiden University;
- Prof. dr. Maarten Frens, professor in Systems Physiology at Erasmus University Rotterdam;
- Prof. dr. ir. Jan Kammenga, professor of Functional Genetics at Wageningen University & Research
- Prof. dr. Dennis Claessen, professor of Molecular Microbiology at Leiden University;
- Prof. dr. Isa Schön, team leader at the Royal Belgian Institute of Natural Sciences;
- Prof. dr. Hauke Smidt, professor of Microbial Ecology at Wageningen University & Research
- Dr. Frank van der Wilk, executive director, Netherlands Commission on Genetic Modification;
- Dr. Mariken de Krom, head of team, Education and Research (Brain Division) at UMC Utrecht;
- Dr. Mieke Latijnhouwers, assessment expert at Education Support Centre of Wageningen University & Research;
- Dr. Eric Schouwenberg, head of department Nature and Biodiversity at Arcadis;
- Dr. Peter Korsten, researcher and lecturer in Evolutionary Biology at Bielefeld University;
- Dr. Éva Kalmár, researcher and lecturer in Science Communication at Delft University of Technology;
- Drs. Bas Reichert, founder and CEO of BaseClear (microbial genomics);
- Jelle Keijzer, BSc, master student Molecular Cellular Life Sciences at Utrecht University (student member);
- Ishara Merhai, bachelor student Biology at University of Amsterdam (student member).

Schedule

The secretary composed a schedule for the site visit in consultation with the Faculty. Due to the covid-19 pandemic, the site visit was scheduled to take place on 25-26 May 2021 in an online setting. All panel members agreed with this approach. Prior to the site visit, the Faculty selected representative partners for the various interviews. It also offered students and staff members an opportunity for a confidential discussion during an online consultation hour on 20 May 2021. Three students requested a consultation. For all three programmes included in this assessment, a separate development dialogue took place on 6 July 2021. See Appendix 3 for the final schedule.

Preparation

On 7 April 2021, the panel chair for Utrecht University was briefed by Qanu on his role, the assessment framework, the working method, and the planning of site visits and reports. Two separate preparatory panel meetings were organised on 25 March 2021 and 19 April 2021.

In the first meeting, on 25 March 2021, the panel received instructions on the use of the assessment framework. The preparation for the assessment and the study of the documentation were discussed. Panel members discussed points of interest for the assessment and chose areas to focus on in the preparatory phase. They also discussed their working method and the planning of the site visits and reports. A second preparatory meeting was organised on 19 April 2021. In it, the panel members shared their initial observations based on the study of the documentation, the final works and their assessment forms. Then they formulated their preliminary findings. The secretary collected all initial questions and remarks and distributed them amongst all panel members. Afterwards, some additional materials were requested from Utrecht University to complete the panel's preparation for the assessment. At the start of the site visit, the panel discussed its questions for the programme and assigned tasks during the site visit.

Documentation

Before the site visit to Utrecht University, the secretary received the relevant documentation from the programme and sent it to the panel. An extensive set of current documentation pertaining to the four standards of examination was provided serving as self-evaluation report to allow the panel a close study of daily practice at the programme. The secretary verified that the programme included a balanced review of the standards in the form of a comprehensive analysis of the programme's strengths and weaknesses, reflection on the way in which recommendations of the 2014 assessment panel had been taken forward, and a separate and independent student chapter along with the required appendices to ensure that all requirements for the self-evaluation report were met. Before and during the site visit, the panel studied the additional documents provided by the programmes. An overview of these materials can be found in Appendix 4.

A selection of 15 research project reports and 7 business internship reports was made by the panel's chair and the secretary to assess the scientific achievement level of the graduates. The selection also included the assessment forms for the programme, based on a list provided of graduates between 2019-2020. A variety of topics and a diversity of examiners were included in the selection. The secretary and panel chair ensured that the distribution of grades in the selection matched the distribution of grades of all available theses.

Online site visit

The online site visit to Utrecht University took place on 25-26 May 2021. The panel conducted interviews with representatives of the programmes: students and staff members, the programme's management, alumni and representatives of the Board of Examiners. It used the final part of the site visit to discuss its findings in an internal meeting. Afterwards, the panel chair publicly presented the panel's preliminary findings and general observations. A separate report on the outcomes of the development dialogue will be disseminated by Utrecht University.

Consistency and calibration

In order to assure the consistency of assessment within the cluster, various measures were taken:

1. The panel composition ensured regular attendance of panel members, including the two chairs;

2. The coordinators ensured consistency by being present at the panel discussions leading to the formulation of preliminary findings at all site visits;
3. Representatives of the cluster regularly discussed procedures during the assessments with the coordinators;
4. The coordinators collaborated intensively during the transfer period in which Academion took over from Qanu to share knowledge, make agreements and ensure consistency in approach.

Report

After the site visit, the Qanu secretary wrote a draft report based on the panel's findings and submitted it to one of the Academion project coordinators for peer assessment. Subsequently, she sent the report to the panel. After processing the panel members' feedback, the secretary sent the draft reports to the Faculty in order to have them checked for factual irregularities. The secretary discussed the ensuing comments with the panel's chair, and changes were implemented accordingly. The report was then finalised and sent to the Faculty and University Board.

Definition of judgements standards

In accordance with the NVAO's Assessment framework for limited programme assessments, the panel used the following definitions for the assessment of the standards:

Generic quality

The quality that, from an international perspective, may reasonably be expected from a higher education Associate Degree, Bachelor's or Master's programme.

Meets the standard

The programme meets the generic quality standard.

Partially meets the standard

The programme meets the generic quality standard to a significant extent, but improvements are required in order to fully meet the standard.

Does not meet the standard

The programme does not meet the generic quality standard.

The panel used the following definitions for the assessment of the programme as a whole:

Positive

The programme meets all the standards.

Conditionally positive

The programme meets standard 1 and partially meets a maximum of two standards, with the imposition of conditions being recommended by the panel.

Negative

In the following situations:

- The programme fails to meet one or more standards;
- The programme partially meets standard 1;
- The programme partially meets one or two standards, without the imposition of conditions being recommended by the panel;
- The programme partially meets three or more standards.

SUMMARY JUDGEMENT

The two-year master's educational programme Science & Business Management (SBM), the only specialisation of the master's degree programme *Natuurwetenschappen en Bedrijf*, is an interdisciplinary programme that admits students with different science backgrounds. Since this is the only specialisation, the name of the programme in everyday use is usually equated to Science and Business Management (abbreviated SBM), as it is in the current.

Since 2012, the educational programme SBM has been delivered by the Graduate School of Life Sciences (GSLs). SBM, as specialisation of the master's degree programme *Natuurwetenschappen & Bedrijf*, is based together with the master's degree programmes in Biosciences and Biomedical Sciences at the GSLs. SBM's student population is diverse and consists of students with various scientific backgrounds, both in the Life Sciences and Natural Sciences. Biosciences, Biomedical Sciences and SBM fall under the remit of the same Board of Examiners, Board of Admissions and Educational Board.

Standard 1

The panel verified that the intended learning outcomes (ILOs) of the educational programme SBM, the only specialisation of the master's degree programme *Natuurwetenschappen en Bedrijf*, are in line with the Dublin Descriptors and hence meet the international level requirements for an academic master's degree programme. It considers the objectives of the educational programme SBM highly relevant and tailored to the demands of the professional field; the programme aims to educate scientifically trained professionals that are prepared and interested to work in a business environment and able to translate science to business, and vice versa. As a result, the programme offers graduates a good starting position for their career. They are trained as professionals who understand scientific principles and have experience with the scientific discovery process and growth of knowledge. The panel considers the current profile and ILOs to be of a satisfactory level. It wants, however, to stimulate the programme to rethink the communication strategies of its core identity, reflecting on the way in which the two underlying pillars – science and business – could be better connected and integrated, without compromising the scientific standards. To do so, it encourages the programme to start with a reformulation of their current ILOs in terms of the interdisciplinary and business skills achieved. They would also benefit from clear achievement level indicators for these skills.

Standard 2

Students at the SBM educational programme have a heterogeneous cultural and educational background. The international classroom adds a dynamic which closely resembles the students' expected professional career line. Based on these findings, the panel is convinced that the use of English as the language of instruction is an indispensable aspect of the teaching-learning environment and the students' future careers. The English proficiency of the staff members is also sufficiently monitored and trained, where necessary. The panel supports the students' wish for more community building in the first year, preferably involving staff members. It was pleased that the programme management is already exploring options in response to this student request. In its view, this proves the programme's serious consideration of its students' interests. It found that the programme would like to strengthen its intake from the Natural Sciences. It would recommend demanding some prior training in business management-related courses, or business experience. This would allow the programme to build on some prior knowledge in these areas, which could advance the level of the programme's business component.

Considering the information studied and the explanation of the programme management and staff members during the site visit, the panel concluded that the programme SBM faces many challenges in respect to its curriculum design and content. The balance between the first and second year, between the science component and the business component, is hard to strike and also difficult to organise in the interfaculty setting in which SBM has to operate. The panel feels reassured that the programme management is aware of these challenges and is trying to address them to the best of its abilities while offering a teaching-learning environment that enables the students to achieve

the ILOs. It explored some alternative options for scheduling the current curriculum with representatives of the programme, as it wonders whether changes could not create an even stronger learning trajectory. It supports the attention paid to the content of the business courses that is currently under way and trusts the current team of staff members at SBM to take some of the ideas shared during the site visit into account. In its opinion, an enhanced focus on entrepreneurship, including the opportunities offered by local incubators to support the creation of innovative start-ups, would be a good addition to the current content. Also, it advocates offering more theoretical models and theory on the conjunction of science & business, in particular science-based entrepreneurship and R&D management, to the students.

Facilities and staff have been under pressure during the period under assessment, but these challenges have been adequately met, for which the panel wants to praise all involved. It found staff members at SBM engaged, enthusiastic and highly adaptive, also in respect to their teaching practices that needed to shift due to the covid-19 pandemic. It noted a good, reflective attitude amongst staff members and programme management engaged in the SBM programme, which engenders trust in the opportunities for development and change discussed during the site visit. It wants to express its particular encouragement to initiatives that take entrepreneurial innovation and the strengthening of the programme's valuable double focus as their lead.

Standard 3

The educational programme SBM has a good assessment system that ensures that all students achieve ILOs. Its quality assurance system with a peer-review principle applied to all exam questions and the assessment of the research project and business internship, and frequent sampling to determine the quality of exams and the final projects enhance the validity and transparency of student assessment. In general, the panel was pleased by the way in which assessment of the research project and business internship is organised. It considered the quality of assessment satisfactory. Rubrics with grade descriptors per criterion are used to ensure the reliability and validity of assessment. The students considered the assessment fair and clearly communicated, with which the panel concurs. The transparency of the assessment could be further enhanced by introducing substantiation of grades in all cases. Based on the information presented, the panel verified that the transparency of assessment is, however, sufficiently demonstrated. It concluded that the Board of Examiners (BoE), supported by the Assessment Support Panel (ASP), of the GSLS is fully in control. It assures the quality of assessment in the programmes under its remit to a high standard, is proactive and open to suggestions for change, and has a keen eye for the needs and challenges of staff members and students alike. It also adequately responded to the challenges posed by the covid-19 pandemic, by proactively enforcing proctoring where necessary and supporting staff members who had to redesign tests and assignments. According to the panel, the BoE and ASP are a positive driving force. They ensure a development-oriented quality culture at the heart of the GSLS. A compliment is in order.

Standard 4

Graduates of the SBM programme successfully achieve the ILOs. The research reports demonstrated that they have obtained a solid foundation in science and mastered the required research skills at master's level. In addition, the business internship reports showed that the students managed to apply their scientific research training in an applied setting. They seem to function well in multidisciplinary teams, which gives them an advantage when entering the professional job market. In addition, they communicate effectively, use relevant research methods and bring forward various perspectives, both scientific and business-related. They are also satisfied with the programme and its preparation towards their further careers. Their testimonies confirm the panel's positive impression of the programme's achievement level. Graduates are in high demand and find employment easily upon graduation. Most graduates pursue a career in industry, but entrepreneurship and academia are acknowledged as feasible options by the panel. The panel encourages the programme to organise a structural engagement of alumni and the work field, as they could offer valuable networks and insights for the further development of the programme and contribute to the creation of a clear, separate identity for alumni of the programme. Regular advice from the alumni network will also assure that the SBM programme continues to serve the changing societal needs.

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

Master's degree programme Natuurwetenschappen en Bedrijf (educational programme Science Business Management)

Standard 1: Intended learning outcomes	meets the standard
Standard 2: Teaching-learning environment	meets the standard
Standard 3: Student assessment	meets the standard
Standard 4: Achieved learning outcomes	meets the standard
General conclusion	positive

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

Date: 5 October 2021

DESCRIPTION OF THE STANDARDS FROM THE ASSESSMENT FRAMEWORK FOR LIMITED FRAMEWORK ASSESSMENTS

Organisational context

The two-year educational programme Science & Business Management (SBM), the only specialisation of the master's degree programme Natuurwetenschappen en Bedrijf, is an interdisciplinary programme that admits students with various science backgrounds. Since 2012, the programme has been delivered by the Graduate School of Life Sciences (GSLs), which also houses the master's degree programmes in Biosciences and Biomedical Sciences. The GSLs, and its associated degree programmes, are part of the Faculty of Science. Biosciences, Biomedical Sciences and SBM fall under the remit of the same Board of Examiners, Board of Admissions and Educational Board.

In academic terms, the SBM educational programme is fully independent from Biosciences and Biomedical Sciences. SBM awards its students a MSc degree in Natuurwetenschap en Bedrijf. The three degree programmes share a common infrastructure. Especially with Biosciences, there is much overlap with SBM. Biomedical Sciences has its own Director of Education, while Biosciences and SBM share a Director of Education. Even though the programme is assessed as part of the Biology cluster, the master's educational programme SBM is not primarily aimed at Biology students. Graduates of the bachelor's programme in Biology may opt for the educational programme SBM, but SBM's student population is diverse and consists of students from various scientific backgrounds.

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 two-year 120 EC master's educational programme in Science & Business Management (SBM), the only specialisation of the master's degree programme Natuurwetenschappen en Bedrijf, is aimed at students with a bachelor's degree in life sciences or natural sciences, who are interested in a career in a business environment and industry. At SBM, the students receive an advanced training in a research environment within their area of original expertise, which they learn to connect to knowledge of business processes and practical skills for commercial settings. They are educated to understand both the science and business worlds and to operate in both. They are trained to become professionals who are able to manage the development and marketing of innovative products and processes. Such professionals understand the underlying scientific principles and have experience with the scientific discovery process.

They are expected to be qualified for research and management positions in an applied environment, such as companies producing knowledge-intensive products. Other opportunities may present themselves at consultancy firms, financial institutions, chemical and pharmaceutical companies, and government organisations, which highly value the combination of organisational insight and scientific knowledge. Alternatively, graduates could also opt for starting their own science-oriented company. Another potential career may be found in academic research, where this type of professional is also needed: scientifically trained graduates with knowledge of how to turn interesting ideas into products in a business environment. Hence, the programme offers students an opportunity to build on existing scientific knowledge and develop their disciplinary research skills to a master's level, which should allow graduates to progress into research positions at the PhD level.

The panel considers the aims of the educational programme SBM to be highly relevant. The combination of a scientific background with sound, business-minded knowledge is in high demand. The panel learned from the domain-specific framework of reference (see Appendix 1) that educational programmes exist at other Dutch universities that resemble SBM in its objectives. SBM is unique in the sense that it represents a separate and fully

independent educational programme at master's level. Graduates of SBM therefore stand out, and the programme delivers graduates with a good profile to enter the market, in line with the expectations of the professional field. The panel was surprised that the programme also advocates an academic career as a relevant option for students pursuing this degree. Evidence studied in preparation for the site visit indicated that a very small minority of graduates opts for this route. During the site visit, the students insisted on having chosen this programme with a life outside of academia in mind. They told the panel that they appreciated the opportunity to build on their existing knowledge base, but that they mostly looked towards extending their orientation to other work fields than research. In the panel's view, the strong emphasis on leaving an academic career open seems therefore somewhat redundant, especially the inclusion of this outcome as a potential career path in the programme's intended learning outcomes.

During the site visit, representatives of the programme explained that they consider the programme's strong focus on scientific research a key component for the programme's identity and sterling reputation. Consequently, the programme management does not want to compromise on its strong scientific component. Being able to pursue a scientific career in academia is therefore considered a logical result of this focus on the programme's scientific, academic basis and identification. According to the panel, the programme provides a valuable option for students who want to translate science to business and vice versa, rather than pursue a career in research first and foremost. It would therefore recommend reconsidering the focus on a potential academic career in the programme aims and objectives. Enhancing the theoretical level of the business side of the programme, as suggested above, would add to the possibilities of candidates in business as well as in commercial or entrepreneurship research, although this is a career step for probably only a few students.

The panel accepts the programme's position but feels that the programme may want to reflect on its current identity. It could reframe its current profile by opting for a presentation as solidly grounded in scientific research in the life and natural sciences combined with a clear focus on science in a business or entrepreneurial setting or product development. This may offer advantages in terms of potential partners to work with. In addition, the panel would like to suggest emphasising the entrepreneurial opportunities for students in the programme. It heard that some students aim to create their own start-up after finishing the programme. Utrecht Science Park also offers some good facilities for students interested in pursuing such a route, and there is a well-known incubator programme *in situ*. By bringing out these entrepreneurial aspects, the student population may diversify even further and create new, and interesting, potential career routes for the programme's alumni.

Intended learning outcomes

The programme's Intended Learning Outcomes (ILOs) reflect its aims. They correspond to the Dublin Descriptors at the master's level, tie in with the level and orientation of the programme and are in line with the aims formulated in the Domain specific framework of reference of the Master's education programme Science & Business Management. For an overview of the ILOs, see appendix 2. The panel noted that in operational terms, the programme's ILOs now fall into two groups: they are either more research-oriented or more related to communication skills for business. Together, they clearly support the science-oriented nature of the programme as a Life Sciences programme and reflect the standards that may be expected for a master's degree programme. This claim is substantiated by the attention paid to research methods, the mastery of the experimental cycle, research skills and reflection (for example, ILOs 1 and 2).

The panel considers the ILOs on business skills and knowledge acquisition related to business and management rather general. It would advise making them more representative of the programme's unique orientation. It would be valuable to relate specific business-minded skills and objectives more specifically to the life sciences industry and to clearly differentiate objectives with clear level indicators, aligned to a defined learning trajectory on business skills. This would further support the programme's identity as a business programme in a specific scientific context and bring out its unique take and identity. It would help graduates to explain the specific nature of their programme, while also guaranteeing a good connection between the two pillars that form the underlying concept of the programme.

Considerations

The panel verified that the intended learning outcomes (ILOs) of the educational programme SBM, the only specialisation of the master's degree programme *Natuurwetenschappen en Bedrijf*, are in line with the Dublin Descriptors. It considers the objectives of SBM highly relevant and tailored to the demands of the professional field: the programme aims to educate scientifically trained professionals who are prepared to work and are interested in a business environment and able to translate science into business, and vice versa. As a result, it offers graduates a good starting position for their career. They are trained as professionals who understand scientific principles and have experience with the scientific discovery process and increase in knowledge. The panel considers the current profile and ILOs to be of a satisfactory level. It wants to encourage the programme to rethink the communication strategies of its core identity, reflecting on the way in which the two underlying pillars – science and business – could be better connected and integrated, without compromising the scientific standards. To do so, it encourages the programme to start by reformulating their current ILOs in terms of the interdisciplinary and business skills acquired. Clear achievement level indicators for these skills would also be beneficial.

Conclusion

Educational programme Science and Business Management: the panel assesses Standard 1 as 'meets the standard'.

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

Curriculum design, content and structure

The educational programme SBM is a two-year's programme of 120 EC. Within these two years, the focus shifts from performing scientific research towards acquiring a range of business skills important for a career in industry or commercial organisations.

In their first year, SBM students start with a research project in a research group of the Graduate Schools Life Sciences or Natural Sciences, or an associated research institute elsewhere. The research project should build on their prior knowledge received during their bachelor's training. The research project consists of a minimum of 42 credits with a maximum of 9 credits for extra theoretical courses, depending on the student's skills and preferences. The students may choose their own research topics, but the chosen topics should have a potential application. They are required to present and write an executive summary about the ways in which the performed research could be applied or is relevant for a market-oriented application, which is part of the 'Orientation, Presentation and Career' course (2.5 EC). The summaries are peer-reviewed by other students, which is considered a valuable way to bring interdisciplinary perspectives to the forefront, since SBM students hold bachelor's degrees in different scientific disciplines. In addition, they take a mandatory theoretical course of their choice (5 EC). All students follow a course called 'Life Sciences Academy' together with other GSLs students in which the research field is introduced while also paying attention to the development of personal skills and growth (1.5 EC).

The students transition in their second year from a focus on the application of scientific research towards a more business-oriented approach. The second year starts with a half year dedicated to business courses: economic environment, management skills, organisation, marketing, quantitative methods for business, management accounting, human resources, business law, entrepreneurship and several workshops (33 EC), which the programme qualifies as an intensive 'mini-MBA'. The students work in groups in many of these courses, bringing together their multidisciplinary perspectives, resulting in an interdisciplinary approach. In this way, they are trained in the skills necessary for interdisciplinary teamwork, which is considered an essential benefit of the programme by the students that the panel met during the site visit. It is also considered a highly relevant training setting for their future careers

by the panel. The taught business skills are aimed at preparing SBM students for their business internship at a company or commercial organisation, which takes place in the second part of the year (27 credits). In this business internship, they are asked to set up and manage a project that analyses a practical business problem by using established research techniques. They are asked to translate the internship activities into an applied research project, which results in recommendations for the company based on a problem analysis using a theoretical, scientific framework and research that takes a methodological point of view. Reflection on their own functioning within this context is also part of the internship. To the panel, this seems an apt integration project for the students to complete their study.

During the site visit, the panel extensively discussed the programme's curriculum design and content with its representatives. It heard from the students that they really liked the programme and the opportunities it offered and created, but that they felt slightly lost at the start. While they chose the programme to be engaged with business and industry, they initially found themselves back in a research setting that closely resembled their bachelor's degree: often a project within their disciplinary background, doing research, thinking about applied science but not necessarily being treated differently from their fellow student researchers in disciplinary master programmes training at the same research group. Staff members indicated to the panel that they always tried to address SBM students differently who were working on a research project in their research group; they took their alternative interests into account and tried to steer their projects in a direction in which application was central.

The panel considers both views based in truth; it fully trusts the research staff to create the best possible learning environment for all their students, including the more interdisciplinary-minded and business-oriented SBM students. Nevertheless, especially with the massive increase in intake over the last years, it also understands that SBM students sometimes feel snowed under, especially as they are still very much defined by their prior disciplinary training at the start of their first year in the new master. One solution may be to consider exploring sourcing more research projects for first-year SBM students at associated companies and in the research-driven industry. This is currently an option, but external placements seem not to be strongly encouraged; as a result, many students stay in-house. The decision to stay in-house is student-driven, the panel heard during the site visit. Nevertheless, the complete infrastructure of the programme also seems to favour it. Many students enrolling in the programme have an international background; they may have less of an idea of what is common and possible within the seemingly strict restraints set by the programme.

Stimulating SBM students to choose an external setting for their first-year research project may create alternative challenges, the panel acknowledges. It is sympathetic to the programme's worry regarding good supervision and the need to keep a close eye on the academic level of research projects executed externally. Guidelines, a strong conceptual basis for the type of research projects allowed, and good coordination from the SBM programme would be essential. There are, however, additional reasons to explore this option: along with allowing SBM students direct contact with the alternative research setting that they consider a valuable option for their future careers, it could potentially also bring some relief to the highly pressured research groups at the university itself.

The current structure of the programme makes it hard to give the students more of a 'SBM community feel' at the start of their studies. The students have some programme elements in common, but this only comes to 4 EC shared in the first year. Although they try to organise themselves and have a study association, they first identify with the research group at which their research project is taking place. They consider this somewhat of a lost opportunity, as they really appreciate the interdisciplinary engagement encountered in their second year. The panel discussed with the programme whether starting with an intensive introduction course, in which the underlying concept of the programme was introduced and potentially guest speakers from various valid career options were invited could be added to the current curriculum.

The programme management explained that this was an option that was regularly discussed internally. It did not easily align, however, with the scheduling problems that an interfaculty programme encounters. While the

programme also reflected on the idea of scheduling the first and second year in reverse order, they concluded that this presented many other concerns. Research groups were worried that the students would not complete the full learning cycle this way, as their disciplinary bachelor's training was less engaged for a while. It seemed better to all involved to first complete this learning trajectory prior to bringing in alternative approaches. In addition, currently the second-year research project really serves to bring the two pillars underlying the programme together; it should be solidly based on research within a business context, and not become a mere internship. Hence, the second-year business internship builds on the knowledge and research skills acquired in the first-year research project. Reversal of the order could not be done without risking a loss of quality. The panel condones this line of thought but wants to add that it currently finds it hard to really identify a learning trajectory for the business skills taught in the programme. The students clearly progress, as proved by their business internship reports (studied for Standard 4), but how this progression is driven by the teaching in the programme is less clear. Under Standard 1, the panel formulated the advice to rephrase the programme's ILOs. Such a reformulation could then be used to inspire the creation of a learning trajectory on business skills.

Another approach involves the group-building activities that are currently being discussed among staff members, or potentially scheduling more feedback meetings for reflection on ongoing research projects in year one to bring students together more often. The programme agrees that there is a potential for additional ideas to stimulate community building and will take the students' input on this into account.

The panel considers the scientific research standards high, and positively reflected on the content of the science component of the programme. It wondered whether compromises would be possible, especially as the start of the programme was so clearly science-driven and research-embedded. The programme management was adamant that it did not want to compromise the advanced scientific research level of the first year. Shortening the research project or reducing the lab time dedicated to the training of skills necessary to conduct research would constitute too big a loss, in its view. To the SBM programme, the fact that the students received such a thorough research training was essential to its identity and the versatility of its graduates, which opened up many career routes including academic research as a valid continuation; 5% of SBM's graduates still opt for a PhD after finishing the programme. The programme management indicated that it is well aware that SBM students often question the heavy science-oriented start. Graduates of the programme, however, commented in surveys that they truly value their strong scientific base and found it to be highly relevant. They considered it an advantage that they hold over many of their colleagues at the workplace.

The business courses do not yet live up to their full potential, in the panel's view. This observation was backed by the students in the programme, who mentioned that they considered the business courses in the second year interesting and relevant, but relatively general and not very challenging. To the panel, the claim of these courses to be a 'mini-MBA' seemed a bit inflated for a science business-oriented programme. The SBM programme management and staff recognised this student feedback and indicated that they are working towards improvement; they still consider the course offer of the required degree level due to the level of reflection asked for in learning activities and assessment, but they take the panel's comments very seriously and indicated they are open to recommendations. One of the problems that the SBM programme staff encountered was the collaboration with staff members in a different Faculty, who generally have a background in Economics or Organisational Management. Finding staff members who could commit to the SBM programme and tailor their knowledge base to the needs and expectations of science students required careful vetting and time. The programme management felt that in this respect, SBM was in transition. It has managed to attract some promising teachers to the programme, who were now finding their feet and could become a force for change.

For example, the course on marketing had already been redesigned: shifting its focus from sales to market research, the latter being more relevant to SBM students. Staff members agreed that they still had not always found the right balance and were trying to adjust to the students' expectations and the changes in the industry and business environment. The panel felt reassured by these reflections on the current curriculum content and strongly supports

the need for allowing the current staff members room for innovation and change. It would like to suggest a more direct focus on entrepreneurship, including the opportunities offered by incubators to support the creation of innovative start-ups. It advocates offering multiple theoretical models and theory to the students, which would allow for more reflection. Such a reorientation would strengthen the research-based nature of the business component of the programme, bringing it more on par with the SBM science component.

Programme language, name, international classroom and admissions

For the educational programme SBM, the chosen language of instruction is English. The panel learnt that this choice was inspired by career-oriented motivations. According to the programme, it is becoming increasingly important for students to be equipped with intercultural and international competences for the highly internationally focused economy that characterises the Netherlands. These international competences include language skills, in order to have the best possible starting position on the labour market. The influx of international talent also contributes to an increase in the quality of education and the creation of a diverse and international student population. The panel wants to add that this last argument holds particularly true for a science-based programme; international talent may play a key role in driving scientific advancement and innovation.

Students enrolling in SBM may reasonably expect to work in a highly international environment, as entrepreneurs in innovation, as consultants or managers at international companies, as scientific advisors at governmental and other institutions. To prepare them to work in these multidisciplinary and international settings, the SBM programme is offered in an international classroom setting. The panel noted that the content of the programme has an international focus. Therefore, all course content and materials are provided in English. To maintain the quality of its research at a high level, international networks and sufficient international scientific staff are of great importance. Here, too, English is considered the only realistic choice by the programme and the panel.

These arguments are solidly supported by the realities of the teaching-learning environment at SBM. The academic community is internationally oriented, and staff members involved in teaching in the programme are internationally educated; many received their prior training in an international context. Some staff members have worked abroad. For their research, they participate in international projects. The staff's research inspires the teaching at the programme, so the students benefit directly from this international orientation and the context of their research. The creation of an international classroom is also supported by a diverse intake. In 2019, the student intake totalled 55 students, of which 34 were international students. In 2020, 31 students out of 59 enrolments had an international background. Based on these findings, the panel is convinced that the use of English as the language of instruction is a cornerstone of the programme's international classroom setting and of added value for the quality of the teaching-learning environment and the students' future careers.

Admission to the programme could be given some further thought, the panel found. The programme is very popular and needs to be selective, with a fixed quota of a maximum of 60 students per year. As places at SBM are limited, requiring some prior knowledge of organisational management or business courses, or business experience, may be a valid way to select motivated applicants with some initial training. This could support the strengthening of the programme's business component, as discussed above. The programme mentioned the availability of minor programmes at the university, at the bachelor's level. To the panel, this seems a good preparation that could serve as a valid admission criterion to this particular master, while other criteria should also be considered given the international intake and Dutch non-UU intake. The programme itself would welcome a more balanced student entry. In its SWOT analysis, it pointed out that the student entry is skewed towards Biosciences students (with a bachelor in Biology, Biomedical Sciences and Pharmaceuticals). More students from other scientific disciplines (Chemistry, Mathematics, Physics, Information Science) would make for a more diverse student population. This analysis was confirmed by the panel's scrutiny of research projects: it noted that most research projects in the programme were oriented to the Life Sciences (see Standard 4). The panel concurs with this programme observation and advised it to remember this aspiration in terms of communication, such as when considering its admission strategy.

According to its CROHO registration, the official programme's name is in Dutch: Natuurwetenschappen en Bedrijf. Its English translation, Science and Business, is now more widely used, also internally at Utrecht University. A rationale is provided for this use by its strong international focus. This seems appropriate to the panel. It seems justified to consider an official name change to the English programme name at some point.

Teaching Staff and responses to covid-19

The SBM programme uses staff from the Faculty of Sciences and the Faculty of Law, Economics and Governance. In this way, it is centrally placed within the Faculty of Sciences as an interfaculty programme. This creates the advantage of having a broad basis within the University while also posing organisational challenges in terms of scheduling and staff commitment to the programme.

The panel studied information regarding the staff involved in the SBM programme. A small core team coordinates the programme. This includes a programme leader, who also coordinates the research projects, and a programme coordinator. For the business component, staff members have been attracted to the programme mainly from the Utrecht School of Economics. These staff members have a relevant background in strategic management, operations management, entrepreneurship, international business, public procurement, marketing and financial management. The panel considers these teachers well-qualified and able. It also noted their enthusiasm for the programme and their willingness to share perspectives for change. It was pleased to hear that they have committed themselves to the SBM programme for a longer period and that they are actively involved in discussions regarding the redesign of certain courses and modules.

The students carry out their first-year project at different research groups within the Faculty of Science while following theory courses tailored to their needs and interests. This means that potentially all staff members of the Faculty of Science could be involved in teaching in the SBM programme. As a result, it is very difficult for the panel to get a comprehensive picture of the content expertise of all teaching staff. Based on the excellent record of the research groups of the Faculty of Science and student testimonies reflecting positively on the content knowledge of their teachers, the panel considers their content knowledge sufficiently proven.

The teaching credentials of the staff members are monitored through the appointment of qualified examiners by the Board of Examiners, which also checks the quality of the assessment. The panel has no concerns in this matter. It studied lists of the teaching staff involved in the departments of Biology, Pharmacy and Chemistry and verified that nearly all of them hold a teaching qualification (BKO/SKO or equivalent) or were in the process of obtaining one. Staff of the Utrecht School of Economics also proved to be qualified. In addition, sound policies are in place to monitor the level of English proficiency of staff members, and opportunities to improve one's capabilities are available and easily accessible for staff members. The panel noted that, in general, professional support for the teaching staff was well organised and of very high quality. It concluded that Utrecht University takes its responsibility for professional and personal growth very seriously; the staff is actively encouraged to invest in their teaching practice, with career perspectives for excellent teachers. It wants to compliment all involved at Utrecht University for this practice.

The students praised their staff members for their enthusiasm and engaged attitude: they always felt welcome to ask for support or direction, felt challenged and taken seriously as researchers in their own right. As mentioned above, they would welcome some additional community activities in their first year – preferably also attracting members of staff. They praised the accessibility of the programme leader and coordinator. Supervision was considered of good quality. This strongly expressed student satisfaction is important to the panel, in particular in a year in which teaching and research opportunities have been massively influenced by the circumstances imposed by the covid-19 pandemic. As a result of the pandemic, the programme had to move to online lectures and meetings and had to vastly reduce the opportunity for physical experimentation.

Although the programme identified the pandemic as a threat to the programme in its SWOT analysis, the students considered this fear countered by reality. Of course, their options were restricted. Group work had to be organised online and having fewer options to mingle with potential employers were all seen as unavoidable yet regrettable results of the circumstances. There were no opportunities to go abroad; international students enrolled from home and missed out on the physical experience of studying in Utrecht; and research time in laboratories was strictly monitored and allocated according to need. SBM students often followed their business internships remotely, which posed some practical and scheduling challenges. These changes due to the pandemic left less room for a change of plans during their studies, but also forced the students to carefully plan their research and prepare for online courses – which could be considered important lessons learnt that are also relevant for their future professional careers.

The students felt that the teaching staff and management had gone the extra mile to ensure a rich and still challenging teaching-learning environment during the pandemic. The staff responded quickly to questions, offered additional online support through social media outlets where necessary, inquired regularly after their students' mental and physical health and offered guidance to relevant services, if needed. They were also considered responsive in terms of adapting their regular and online teaching practices and guidance: they actively implemented feedback on their online courses, resulting in quick changes and fine-tuning of modes of delivery. This responsive staff attitude even gave the students a sense of increased ownership in some cases, as they felt like they were learning alongside the staff members and felt sincerely appreciated for their contributions. The staff members noted, on the other hand, that the students were often very well prepared, and often even better prepared, for the online classes than they had been for physical classes. They also felt rewarded for their efforts as the students really tried to adapt to the changed circumstances.

The panel was impressed by the way the programme, its staff and the students reacted to the covid-19 circumstances. It found it very promising that the programme was already reflecting on 'lessons learnt'. It noted that the programme was considering continuing offering the option of the business internship in two forms, including one that allows the students and companies to opt for a slightly shorter internship. The programme really valued its short communication lines with the students through social media outlets, which created a new dimension of interactivity within and outside of the classroom that the programme wants to retain. Although the panel agreed with all involved that the pre-pandemic teaching is to be preferred in general over the pandemic teaching, it considered the pandemic teaching of good quality – which was also confirmed by the passing rate of the students. It was pleased to hear that the post-pandemic teaching would reap the benefits of the new insights obtained.

Feasibility of the programme, facilities and high workload for staff

The students consider the programme feasible within its two-year time slot, based on its structure, content and the guidance provided by staff members. Like all students studying at the GSLS, they commented on the difficulty to find a suitable place at a research group as a threat to the feasibility of the programme – in particular for their first-year scientific research project. The student population in the Life Sciences has exploded in the period under assessment; enrolment numbers have been very high, in particular in the bachelor programmes in the Life Sciences. As a result, all associated programmes, research groups and staff members have been affected in terms of allocation of facilities and time to properly manage the large student cohorts. SBM is only affected by association: the programme itself has a fixed intake, but its students use the facilities provided by the research groups of the Faculty of Science, particularly those open to bachelor and master students in the life sciences. Consequently, SBM students had to compete for places at research groups of their first and second choice and could be one of many students supervised by one member of staff. The students mentioned that in some cases, when only allocated a place at a project of their third or fourth choice, they decided to postpone or extend their studies. Although feasibility was not necessarily an issue, as alternative options were available, freedom of choice was compromised in their view.

Representatives of the Faculty and members of staff of SBM, the master's degree programme in Biosciences and the bachelor's degree programme in Biology assured the panel that the University was doing everything it could to

address this situation. In the last two years, many new members had been hired, which had brought down the staff to student ratio to within acceptable proportions. Great investments had been made in support structures, such as coordinator functions, which could reduce the pressures for the teaching and research staff. Also, active investment in new research groups and research lines was being heavily supported, along with the necessary facilities to go with these investments. Naturally, these investments followed the increased demand but were now starting to compensate for it. As a result, more and more students would again be able to follow a research project of their first or second choice. The staff members mentioned that they felt that the programme management, Faculty and University took their needs and concerns seriously. They also confirmed that the work pressure was being reduced and breathing space was actually in sight.

The panel concluded that the Faculty and University have amply reacted to the massive increase in student numbers. It considers the challenges encountered by the students regrettable but unavoidable; the Faculty and programme SBM could not have anticipated the enormous growth and was hindered by the funding system, which only provides financial means to react to the new circumstances after a certain delay. It wants to praise the staff members working at the Faculty, who still managed to deliver education at such a high standard and who continued to go the extra mile for their research and their students. Their enthusiasm and positive attitude really stood out during the site visit; they did not belittle the challenges that they and the students face nor cover up the high workload. They showed how they addressed the students' concerns, engendering confidence in the panel that the encountered problems have been or are being addressed. That the Faculty managed to keep their spirits up and maintained their trust is laudable and a sign of good leadership and community, in the panel's opinion.

Considerations

The students at the SBM educational programme have a heterogeneous cultural and educational background. The international classroom adds a dynamic which closely resembles their expected professional career line. Based on these findings, the panel is convinced that the use of English as the language of instruction is an indispensable aspect of the teaching-learning environment and the students' future careers. The English proficiency of the staff members is sufficiently monitored and trained, where necessary. The panel supports the students' wish for more community building in the first year, preferably involving staff members. It was pleased that the programme management is already exploring options in response to this student request. In its opinion, this proves the programme's serious consideration of the students' interests. It found that the programme would like to strengthen its intake from the Natural Sciences. It would recommend requiring some prior training in business management-related courses, or business experience. This would allow the programme to build on some prior knowledge in these areas, which could advance the level of the programme's business component.

Considering the information studied and the explanation provided by the programme management and staff members during the site visit, the panel concluded that the SBM programme faces many challenges in respect to its curriculum design and content. The balance between the first and second year, between the science component and the business component, is hard to strike and also difficult to organise in the interfaculty setting in which SBM has to operate. The panel feels reassured that the programme management is aware of these challenges and is trying to address them to the best of its ability while offering a teaching-learning environment that enables the students to achieve the ILOs. It explored some alternative options for scheduling the current curriculum with representatives of the programme, as it wonders whether changes could not create an even stronger learning trajectory. It supports the attention paid to the content of the business courses that is currently under way and trusts the current team of staff members at SBM to take some of the ideas shared during the site visit into account. In its opinion, an enhanced focus on entrepreneurship, including the opportunities offered by local incubators to support the creation of innovative start-ups, would be a good addition to the current content. It also advocates offering more theoretical models and theory on the conjunction of science & business to the students, in particular science-based entrepreneurship and R&D management.

The facilities and staff have been under pressure during the period under assessment, but these challenges have been adequately met, for which the panel wants to praise all involved. It found the staff members at SBM engaged,

enthusiastic and highly adaptive, also in respect to their teaching practices that needed to shift due to the covid-19 pandemic. It noted a good, reflective attitude amongst staff members and the programme management engaged in the SBM programme, which engenders trust in the opportunities for development and change discussed during the site visit. It wants to express its particular encouragement to initiatives that take entrepreneurial innovation and the strengthening of the programme's valuable double focus into account.

Conclusion

Educational programme Science and Business Management: the panel assesses Standard 2 as 'meets the standard'.

Standard 3: Student assessment

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

Findings

Board of Examiners

The Board of Examiners (BoE) ensures the quality of assessment of all programmes at the GSLS, including the educational programme SBM. It consists in total of nine members: a chair, a vice-chair, five representatives of the programmes, and two external members, and is supported by two secretaries and an additional support officer.

The core activities of the BoE are to:

- ensure the quality of the examinations;
- adopt guidelines and instructions in order to assess and record the quality of examinations;
- assess research projects and the applications selected by students in terms of content, scientific value and relevance, and standards;
- grant exemptions from one or more examinations;
- decide on special requests regarding the study programme;
- deal with formal aspects concerning fraud or plagiarism;
- assess graduation files on the basis of the examination requirements stated in the Education and Examinations Regulations (EER);
- conceive rules and regulations on the implementation of the tasks and authorities;
- report on their actions and findings to the Board of Studies via an annual report.

The BoE delegated sample checks of final projects and course checks to the Assessment Support Panel (ASP), which reports back to the BoE. The ASP consists of 4-6 staff members from the degree programmes at the GSLS and is chaired by the vice-chair of the BoE, who also ensures direct input from the ASP to the BoE. The BoE and ASP both meet regularly; during the circumstances of the covid-19 pandemic, intensive contact between both bodies and the management teams of the degree programmes at the GSLS ensured quick communication regarding the assurance of the quality of assessment and changed assessment procedures.

The panel studied many documents reflecting on the activities of the BoE and ASP and was impressed by the level of care taken to assure the quality of assessment in the programmes under their remit. The BoE, with the input of the ASP, fulfils its legal tasks of appointing examiners by scrutinising the teachers' profiles and checking their teaching and assessment credentials, overseeing the quality of assessment by performing regular module checks, and ensuring that students meet the intended learning outcomes by performing final checks when they are about to graduate and by planning sample checks of final projects. It also oversees clear procedures regarding cases of academic misconduct and acts upon them if necessary.

The panel was impressed by the professionalism of the BoE and ASP, which really try to continue improving the quality of the assessment system by establishing good working relations with staff members, while trying to reduce

the impact of the procedure on their workload. For example, the ASP has proactively invested in computer systems to help reduce the workload for staff members and took pride in the fact that more and more staff members actually reached out for advice and support regarding their assessment practices.

Assessment system

The panel studied the assessment plan of the programme, an overview of the assessment methods and criteria per course, and some examples of exams used within the programme. It concluded that all intended learning outcomes are appropriately assessed throughout the programme. The assessment plan for the SBM programme details how the intended learning outcomes are assessed within the courses. Each course has an assessment matrix which relates the course goals to the tests and assignments within the course.

Courses have multiple tests, providing students with a mid-term update on their performance and allowing for formative growth based on feedback. The course guides clearly outline the types of assessment used and how they are aligned to the course objectives and the programme's ILOs. The panel considers these overviews very transparent and well-designed. The assessment method varies depending on the specific course goals. This is often a written exam with open questions, but there are also assignments testing practical skills, presentations and essays. The students are assessed both individually and in groups; group work also reflects on the individual student's contribution to the outcomes and includes peer-review. They indicated in the student chapter that they value this diversity of assessment types. During the site visit, they confirmed that they considered the assessment fair and transparent, and they appreciated the staff's formative feedback. The rules and regulations and the information provided on assessment are clear and well-communicated.

Prior to setting an exam, the quality of the exam questions and answer models is checked by a second reader for clarity, length, level and coverage of the course materials, usually a colleague. The panel heard during the site visit that the ASP is now regularly asked to advise on the assessment in new courses and redesigned modules, resulting in better designed and more varied types of assessment used in the programme. The quality of the courses is also monitored by the ASP on behalf of the BoE. The ASP takes annual samples of courses and checks whether the assessment in these courses fits the course goals and is of adequate quality. Through this process, each course is checked approximately once every four years. The ASP takes random samples of master's final projects annually and studies the reports and the assessment forms to check whether the regulations have been followed. Checking for fraud and plagiarism is the responsibility of the individual supervisor, while an automated plagiarism check is part of the procedure for checking the research reports and business internship reports. According to the panel, the annual checks by the ASP add to the quality of assessment within the programme.

Assessment of research projects and business internship reports

SBM students carry out two large projects during their study: the first-year research project (42-51 EC) and the second-year business internship (27 EC). Quality monitoring of the large projects is therefore important when discussing the quality of assessment within the programme. To this end, the panel studied 15 research projects and 7 business internships and their assessments. In general, it was pleased by the way in which the assessment was organised. Rubrics in combination with grade descriptors are used that ensure the reliability and validity of assessment of both projects.

For the research project, the assessment is performed by the examiner from Utrecht University or the UMCU, in close consultation with a second, independent reviewer and, if applicable, the daily supervisor. The second reviewer is a staff member who is not involved directly with the student's project and is required to assess the report and presentation. If the daily supervisor is a PhD student or a post-doc (a non-staff member), s/he cannot act as the second reviewer (but will be consulted by the examiner). The weighting of the practical work, written report and verbal presentation is 60%, 30% and 10% of the final grade, respectively. The BoE indicated that it still struggles with the large practical component and how to monitor the quality of its assessment. A rubric is provided to enhance the transparency, validity and reliability, but the BoE strives to strengthen the role of the examiner in the assessment,

by perhaps readjusting the weighting in favour of the final presentation. The panel leaves this matter safely in the hands of the BoE and programme; they are certain to find the best way forward.

The panel also discussed research projects performed externally. The BoE and ASP explained that for SBM, the students were free to opt for an external research project in their first year. This involved careful planning and alignment between the academic supervisor and the local supervisor at the company, foreign university or research facility. To ensure consistency in the examiner's involvement, rules and regulations had been formulated to safeguard the academic supervisor's involvement and responsibility for the students' academic performance. A second independent academic staff member acts as reviewer of the project report; the academic supervisor and reviewer are appointed as examiners. The examiners are ultimately responsible for the grade; the local supervisor only advises. If the students conduct their project at a university abroad, the academic supervisor at UU is also responsible for the translation of the grades, which is especially important for students involved in a different grading system. The BoE pointed out that they are also actively involved in the students' research project planning for SBM to warrant that the projects match the programme's requirements; it looked at all internship requests of the students and actively informed the internship coordinator when it consented to 'external' projects. The coordinator would then instruct the involved examiners regarding his or her responsibilities in the assessment. To the panel, this all sounded robust, fair and transparent.

The business internship is currently graded by means of the internship report (60%), the process during the internship (30%), and the final presentation (10%). All components are graded by the host supervisor and academic UU supervisor, who then discuss the final grade. Clear criteria for grading have been formulated, which include attention paid to both scientific method and research and the student's ability to function in a team and communicate. Staff members of the Utrecht School of Economics are appointed for academic supervision of the business report. One of the problems the programme encountered is that the students often started their business internship without a clear academically embedded problem to be solved in mind. This could result in a less focused business internship or delays. The BoE suggested therefore placing more emphasis on the formative interim assessment after two months, to help the students focus. They created a formative scoring rubric to help the supervisors give useful feedback. The students valued the interim assessment as a moment for feedback that really helped them with their project. The panel considers this another example of the valuable way in which the assessment bodies are involved in assuring the quality of assessment.

In terms of transparency and consistency, the panel was conflicted. On the one hand, the use of rubrics ensured a clear overview of the criteria used for assessment. On the other, it felt an opportunity for the substantiation of the grade was missing; an assessment form with a filled-in rubric was not produced for all final projects. It favours substantiation as it is very helpful in understanding the rationale behind the grading, as well as providing valuable personalised feedback to the student. The BoE and ASP explained that substantiation is currently not mandatory, in reaction to signs that staff members felt overwhelmed by their administrative load. Originally, the BoE and ASP had favoured mandatory substantiation along with the use of rubrics, but due to the enormous growth of the programmes within the GSLS and the workload for the staff members involved, it decided to give staff members a choice in the matter. Oral feedback is mandatory, however, so the students are provided with feedback on their performance. This last claim was substantiated for the research project by the current students and confirmed by the information available on alumni satisfaction. The alumni reflected positively on the feedback on the business internship from their supervisors and examiners.

In most cases, the panel agreed with the awarded grades, but for a minority of the projects, it would have graded either slightly higher or lower. It noted that the ASP also came across some grading differences in its own sample checks and wondered how it had reacted to this. The ASP explained that it had clear procedures in that case. Two members of the BoE and/or ASP check the original finding. If the grading difference is maintained, a discussion is planned with the involved examiners to explore the circumstances. They found that in some cases, the grade was the result of differences of opinion amongst the examiners. In other instances, the autonomy of a student had

contributed to the grading. Where necessary, they explained to the examiners why certain aspects could not be included as part of the assessment, in this way strengthening the assessment practices and rationale behind certain criteria of the staff members. As a result of these conversations, the ASP and BoE are in favour of revising the current assessment forms. They want to give the examiners some additional room to comment on aspects that may have contributed to the assessment but are not necessarily transparent from the other categories in the rubrics used. The panel considers this a sound action in line with their own wish for further substantiation and is pleased with the proactive attitude of the ASP and BoE.

Reaction to covid-19

The panel also discussed the implication of the covid-19 pandemic in terms of the assurance of assessment. For many exams, digital alternatives had been sought. The BoE had insisted on a form of proctoring for at-home exams right from the start, to ensure that all exams could stand up to any scrutiny. This resulted in some resistance from some students and staff members, but proctoring was implemented for all at-home testing. It started with simple formats, such as teachers live-checking behind cameras, and moved on to using proctoring software when it became available. Members of the BoE and ASP consulted staff members who had to find alternatives for group work and ways to ensure that the original intended learning outcomes were met. Additional feedback sessions were scheduled, when necessary. Some tests were redesigned, but no major changes to course objectives or the programme's ILOs were necessary. The panel concluded that the SBM team and the BoE and ASP acted appropriately and adequately in reaction to the pandemic.

Considerations

The educational programme SBM has a good assessment system in place that ensures that all students achieve its ILOs. Its quality assurance system with a peer-review principle applied to all exam questions, the assessment of the research project and business internship, and frequent sampling to determine the quality of exams and the final projects enhances the validity and transparency of the assessment. In general, the panel was pleased by the way in which the assessment of the research project and business internship is organised. It considered the quality of the assessment satisfactory. Rubrics with grade descriptors per criterion are used to ensure the reliability and validity of assessment. The students considered the assessment fair and clearly communicated, with which the panel concurs. The transparency of the assessment could be further enhanced by introducing substantiation of the grades in all cases. Based on the information presented, the panel verified that the transparency of the assessment is sufficiently demonstrated. It concluded that the BoE of the GSLS, supported by the ASP, is fully in control. The BoE ensures the quality of assessment in the programmes under its remit to a high standard, is proactive and open to suggestions for change, and has a keen eye for the needs and challenges of staff members and students alike. It also adequately responded to the challenges posed by the covid-19 pandemic, by proactively enforcing proctoring where necessary and supporting staff members who had to redesign tests and assignments. According to the panel, the BoE and ASP are a positive driving force. They ensure a development-oriented quality culture at the heart of the GSLS. A compliment is in order.

Conclusion

Educational programme Science and Business Management: the panel assesses Standard 3 as 'meets the standard'.

Standard 4: Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

Findings

Research project and business internship reports

Before the site visit, the panel selected 15 research project reports and 7 business internships reports to assess the scientific achievement level of the graduates and the way in which they perform in a more applied setting. In this

selection, attention was paid to the grading scale, the involvement of a variety of supervisors, and diversity in topics reflecting the diversity of the student population's background. The research projects were generally well-designed and aimed at an adequate scientific level, the addressed topics fit the programme goals, and the reports showed sufficient academic skills and command of the English language. They were in line with the programme's scientific orientation and demonstrated that the students achieve the intended learning outcomes at the master's level. The panel observed that most projects were conducted at research groups in the Life Sciences and underlines why the programme wishes to strengthen its intake from the Natural Sciences. The internship reports reflected the various options students have when applying their research-based attitude to an applied setting. For example, they followed their internships at pharmaceutical concerns, in the food industry or at a health-care department of a multinational. They seemed to function well in multidisciplinary teams, communicated effectively, used relevant research methods and introduced various perspectives, both scientific and business-related. The panel concluded that the studied materials demonstrated that the graduates have achieved the ILOs at the master's level.

Performance of alumni

Students who were about to graduate mentioned to the panel that they felt well-prepared for their future career. They were satisfied with the programme and felt that it provided them with the necessary knowledge and skills to be successful. They considered their experience in working in interdisciplinary teams of added value, and mentioned their strong scientific training as an important plus. In addition to these student testimonies, the panel studied the minutes of an alumni session, organised in February 2021. All alumni attending this session worked in industry. The management added during the site visit that while the alumni generally favoured working at large multinationals, 5% pursued a PhD in their disciplinary fields after completion. The panel thinks that the alumni would also be well placed to work in innovation and a more entrepreneurial setting, a line of interest that probably could be more actively brought to their attention during the programme..

Graduates of the programme typically find a job in line with their degree and interests. They are in very high demand and are employed at a wide variety of companies, often with a strong international orientation. The interviewed alumni were all very pleased with the programme; they considered the group work in year 2 a strong feature, and the business internship gave them a major advantage over students coming from a more disciplinary background. They felt better prepared for working in interdisciplinary teams than many of their working colleagues and considered it an advantage for their advancement in their professional careers. This alumni observation seems to be backed by the findings amongst employers. The Nederlands Instituut voor Biologie (NIBI) asked employers for their observations with regards to alumni of life sciences programmes. Generally, employers were very pleased with the level obtained in all master's programmes, but they would prefer more training in inter- and multidisciplinary teams. Having the experience of working in such teams as part of their educational training seems to give SBM students an advantage.

The panel advises the programme to engage alumni in the programme on a more structural basis. Alumni are usually the best ambassadors a programme could wish for; they provide highly valuable and relevant networks for current students and could offer valuable insights by taking a seat, for example, on an advisory board. In the organised alumni session, alumni indicated would welcome more opportunities to engage with professionals in their first year. Current students indicated that they are also looking for opportunities to create more of a community feel and professional identity. To the panel, these observations could be easily combined into a successful programme-led initiative. It would also create an added opportunity for the demands and innovations in industry to feed into the programme, allowing for a continuous development-directed and innovation-driven attitude. The programme agrees with the panel and acknowledged the added benefits of outreach to their graduates, also in terms of finding new projects and places for students to execute their research or follow their business internship.

Considerations

Graduates of the SBM programme successfully achieve the ILOs. The research reports demonstrated that they have obtained a solid foundation in science and mastered the required research skills at the master's level. The business

internship reports showed that the students manage to apply their scientific research training in an applied setting. They seem to function well in multidisciplinary teams, which gives them an advantage when entering the professional job market. In addition, they communicate effectively, use relevant research methods and propose various perspectives, both scientific and business-related. They are satisfied with the programme and its preparation for their future careers. Their testimonies confirmed the panel's positive impression of the programme's achievement level. Graduates are in high demand and find employment easily upon graduation. Most graduates pursue a career in industry, but entrepreneurship and academia are acknowledged as feasible options by the panel. The panel encourages the programme to organise the structural engagement of alumni and the work field, as they could offer valuable networks and insights for the further development of the programme and contribute to the creation of a clear, separate identity for alumni. Regular advice from the alumni network will also assure that the SBM programme continues to serve the changing societal needs.

Conclusion

Educational programme Science and Business Management: the panel assesses Standard 4 as 'meets the standard'.

GENERAL CONCLUSION

The panel assessed standards 1, 2, 3, and 4 of the educational programme Science and Business Management as 'meets the standard'. As a result, it assessed all standards of the master's degree programme *Natuurwetenschappen en Bedrijf* as 'meets the standard'. Based on the NVAO decision rules regarding limited programme assessments, it therefore assesses the degree programme as 'positive'.

Conclusion

The panel assesses the educational programme *Science and Business Management* and the degree programme *Natuurwetenschappen en Bedrijf* as 'positive'.

APPENDICES

APPENDIX 1: DOMAIN-SPECIFIC FRAMEWORK OF REFERENCE

Domain specific framework of reference of the Master's education programme Science & Business Management (SBM, CROHO registration number 60710)

Science, Business and Societies

Today's advanced societies are totally dependent on science and technology. Science and technology intensive enterprises and institutions provide societies with the tools and technology needed for such societies to thrive. Knowledge produced mostly by universities and research institutions is the starting point for established and novel enterprises for technological innovations that benefit societies. Enterprises and institutions in such societies have a need for professionals with a science or engineering education that also have professional business skills.

Most science related Master's degree programmes prepare student only for a scientific career, whereas the career path of most science graduates usually shift from science-driven to business-driven. The Master's degree programme Science and Business equips science and engineering students with research skills and prepares them for a business career.

The importance of SBM Master's education

The SBM Master's degree programme educates students that hold a BSc degree in one of the natural sciences, life sciences or engineering disciplines for a career in science-driven enterprises and institutions. In the programme, students are being trained in performing academic research and mastering the scientific method, and in acquiring in depth business knowledge that enables them to combine science and business skills in a business environment.

SBM at the national level

A number of SBM related educational programmes are presented at different Dutch universities but the SBM education at Utrecht University is unique in that it represents a separate degree programme leading to an independent MSc degree. SBM like programmes at other Universities are often specialisations within existing disciplinary science Master's. Content-wise there is some overlap between these specialisation programmes and SBM but all have a rather unique emphasis and teaching philosophy.

SBM related educational programmes

Most universities in The Netherlands have programmes that teach managerial skills to science students at different levels. However, only a few universities have specialisation programmes that have similarity to the SBM programme at Utrecht University. These programmes are mentioned in the table below.

Science & Business	Utrecht	Independent Master's degree	120 EC
Science & Research based business	Leiden	Specialisation programme	40-60 EC
Science, Business & Policy	Groningen	Specialisation programme	60 EC
Science, Business & Innovation	VU Amsterdam	Master's programme	120 EC

The Utrecht SBM programme already prepares students in their first year for a business career. In addition the Fundamentals of Business Economics (FBE) courses of 33 EC in the second year are intense training courses taught mostly by staff member of the Utrecht School of Economics (USE). Knowledge and skills acquired in these FBE courses are then used in a business internship in a company, under the guidance of USE academic staff.

SBM at the international level

International business degree programmes, in particular the Masters of Business Administration programmes generally do not require a science background, or a science traineeship. Entrance requirements for such MBA programmes are quite different and usually several years of working experience is required. Such MBA programs prepare mostly for general management positions. SBM graduates have strong analytical skills and are trained in solving complex scientific problems in the natural or life sciences.

Core body of knowledge

Management in a science-driven corporate context is at the core of the SBM Master's programme. Students are educated in an advanced scientific environment and in practical business skills. Students have diverse science related disciplinary backgrounds on which they build in the Master's science training part of the programme. In this part of the programme they receive high level training of specialized research scientists in their discipline of interest, mostly in the area of their BSc disciplinary education. This training includes specialized coursework during which students obtain contemporary knowledge of the scientific field and literature. In the business part of the programme all SBM students receive intense high level training in practical business skills, including financial management, business plan development, entrepreneurship, general managerial processes, information technology and communication skills. Students gain experience with multidisciplinary group work as they study together with students of diverse scientific backgrounds. Scientific knowledge and business skill are needed in the business internship for which students usually choose an enterprise or organisation related to their scientific background and business interest. The business internship acquaints students with the business environment and is concluded by writing a thesis on a business case and oral presentations.

General skills of SBM MSc Graduates

Knowledge and understanding

- Graduates have acquired general knowledge of science and the scientific method.
- Graduates have specialized and up to date knowledge of one of the areas of the natural or life sciences or engineering. Graduates understand the theories, concepts and techniques in this area at an academic level and know how to use and critically interpret specialized literature.

Application of knowledge and understanding

- Graduates understand how scientific method can be applied to solve complex problems. Graduates can apply specialized scientific theories, concepts and methods to solve such problems.
- Graduates can collaborate and communicate productively with other specialists in a multidisciplinary working environment.
- Graduates have acquired business, economics and management skills and attitudes that allow them to operate in a business or institutional environment.

- Graduates have acquired and can put to use specialized knowledge on business operations during their business internship.

Making judgements

- Graduates understand the strengths and weaknesses of scientific methods and can critically interpret research finding. Students can interpret novel findings in the context of scientific theories and the contemporary body of knowledge.
- Graduates can critically assess a variety of procedures in business and economics.

Communication

- Graduates can effectively communicate (presentations and writing) on scientific and business related issues to a diverse audience in different contexts (scientific and business).
- Graduates can communicate and collaborate in a diverse professional context (e.g. project teams, group reports).

Learning skills

- Graduates can effectively acquire novel knowledge and professional skills both in the science and business disciplines. Graduates are aware of the importance of professional development.

APPENDIX 2: INTENDED LEARNING OUTCOMES

De afgestudeerde van masterprogramma: Science and Business Management	
Opleiding Science and Business Management	Programmaspecifiek
Kenniss en inzicht	
1. Is in staat om - met kennis van ten minste één van de deelgebieden van de natuurwetenschappen - een belangrijke bijdrage te leveren aan de ontwikkeling en/of toepassing van wetenschappelijke concepten en methoden, - met name in onderzoeksverband.	<p>1a. Heeft door het bewerken van een onderzoeksstage bij een van de aangesloten afdelingen binnen de natuur- of levenswetenschappen zijn/haar kennis in dit gebied verdiept. Gedurende deze periode heeft de afgestudeerde geleerd wetenschappelijke methoden en concepten toe te passen in een wetenschappelijke onderzoek setting.</p> <p>1b. Heeft zich de wetenschappelijke methoden, inclusief de experimentele cyclus eigen gemaakt.</p> <p>1c. Beschikt over basiskennis van aspecten van economie en management, zoals: marketing, ondernemerschap, international business, financieel management, operationeel management, public procurement, strategisch management en innovatie</p>
2. Heeft een overzicht van belangrijke recente ontwikkelingen binnen ten minste één van de deelgebieden van de natuur- of levenswetenschappen en van de implicaties van deze ontwikkelingen voor het onderzoeksgebied en de maatschappij.	2. Is in staat te reflecteren op zijn/haar onderzoek en de context van het onderzoek. Heeft tijdens de cursus "Orientation on Presentation and Career (B-MSBIRME)" geleerd het onderzoek in een maatschappelijke context te presenteren en een interview gehouden met een deskundige over de toepassingen van het onderzoek dat tijdens de onderzoeksstage wordt uitgevoerd.
3. Is in staat gespecialiseerde literatuur over ten minste één van de deelgebieden van de natuur- of levenswetenschappen adequaat te hanteren en te interpreteren.	3. Heeft actuele kennis van het onderzoeksgebied en is in staat deze kennis adequaat in te zetten op het gebied van toegepast onderzoek.
Toepassen kennis en inzicht	
4. Is in staat een probleem uit het domein van de natuur- of levenswetenschappen te vertalen in een voor wetenschapsonwikkeling of productontwikkeling relevante en geschikte onderzoeksvraag.	4. Is in staat - door gebruik te maken van tijdens de stage opgedane onderzoekservaring - een probleem vanuit een deelgebied te analyseren en is in staat een probleem in kaart te brengen door systematisch onderzoek. Is in staat om de relevantie van een stelling te beoordelen. Is in staat een onderzoeksvraag te definiëren en te onderbouwen vanuit zowel theorie als recente literatuur.

<p>5. Is in staat een passend onderzoeksvoorstel op te stellen op basis van deze onderzoeksvraag, overeenkomstig de overeenkomstige methodologische en wetenschappelijke normen.</p>	<p>5a. Heeft ervaring met het opstellen van een wetenschappelijke onderzoeksvraag en met het opstellen van een zakelijke of maatschappelijk georiënteerde onderzoeksvraag.</p> <p>5b. Kan de haalbaarheid van een onderzoeksvoorstel inschatten.</p>
<p>6. Is in staat dit onderzoek op eigen kracht en met de vereiste zorgvuldigheid uit te voeren en de daarbij empirisch verkregen data op juiste wijze te verwerken, te analyseren, te interpreteren en te evalueren.</p>	<p>6a. Is in staat de regels van de experimentele praktijk en mogelijke ethische aspecten in acht te nemen en is voldoende zelfstandig, volhardend en geordend om het onderzoeksplan uit te voeren.</p> <p>6b. Beschikt over de nodige experimentele vaardigheden voor onderzoek en is op de hoogte van de verschillende methoden die worden gebruikt in de onderzoeksgroep waar de onderzoeksstage wordt uitgevoerd.</p> <p>6c. Is tevens in staat tijdens de bedrijfsstage een onderzoek uit te voeren op het gebied van bedrijfsbeheer met gebruikmaking van kennis en methoden die in de FBE-cursus worden aangeboden.</p>
<p>Oordeelsvorming</p>	
<p>7. Is in staat de resultaten van empirisch of theoretisch onderzoek te bespreken en deze resultaten te verbinden met de huidige stand van de wetenschap en literatuur.</p>	<p>7. Kan uitkomsten van eigen onderzoek duiden en is in staat actief deel te nemen aan wetenschappelijke discussies in de onderzoeksgroep.</p>
<p>8. Is in staat de relevantie aan te geven van dit onderzoek voor de oplossing van vragen en problemen op het gebied van een domein binnen de natuur- of levenswetenschappen, waar mogelijk ook vanuit een maatschappelijk standpunt.</p>	<p>8. Kan de eigen onderzoeksresultaten kritisch evalueren in het licht van overeenkomstig onderzoek binnen de natuur- of levenswetenschappen en kan een visie formuleren op de plaats van het onderzoek in de maatschappij.</p>
<p>9. Is in staat - vanuit een maatschappelijk perspectief - kritisch te reflecteren op zijn/haar eigen inspanningen als onderzoeker op het gebied van de natuur- of levenswetenschappen.</p>	<p>9. Kan reflecteren op het eigen handelen, en op sociale en ethische verantwoordelijkheden die gepaard gaan met toepassing van (eigen) onderzoeksresultaten en voorstellen. Heeft tijdens de cursus "Orientation on Presentation and Career (B-MSBIRME)" gereflecteerd op zijn/haar inspanningen het uitgevoerde onderzoek in een maatschappelijk kader te plaatsen.</p>
<p>Communicatie</p>	
<p>10. Is in staat de resultaten van onderzoek zowel schriftelijk als mondeling duidelijk over te brengen op een publiek van</p>	<p>10. Is in staat tot helder formuleren in woord en geschrift van wetenschappelijke rapporten betreffende literatuur dan wel praktisch onderzoek</p>

specialisten en niet-vakdeskundigen in een internationale context.	
11. Is in staat effectief te functioneren in een multidisciplinair samengesteld onderzoeksteam	11. Kan effectief communiceren. Kan prioriteiten stellen, afspraken nakomen, tijd managen, samenwerken. Kan (kritische) feedback geven en accepteren en staat open voor inbreng vanuit andere disciplines. Heeft tijdens cursussen geleerd in teamverband te werken aan projecten met studenten uit verschillende domeinen binnen de natuur- of levenswetenschappen.
Leervaardigheden	
12. Is in staat het eigen leren en de eigen ontwikkeling tijdens de studie te evalueren en is in staat - indien nodig - zichzelf te motiveren en te corrigeren.	12. Kan studeren op een grotendeels zelfgestuurde en zelfstandige manier.
13. Heeft zich een effectieve en resultaatgerichte werkwijze eigen gemaakt die hem of haar in staat stelt om zelfstandig te functioneren op een competitieve arbeidsmarkt.	13a. Kan een (in principe) subsidiabel onderzoeksvoorstel schrijven. 13b. Kan zelfstandig onderzoek uitvoeren op het gebied van het onderzoeksterrein van de stage.
14. Heeft de kwalificatie om een promotieopleiding te verkrijgen, dan wel een functie op de arbeidsmarkt.	14. Is in staat een promotiepositie op het gebied van de specialisatie, of een sleutelpositie in publieke of commerciële organisaties op het gebied van de natuur- of levenswetenschappen, of de toepassing daarvan te verwerven.

APPENDIX 3: OVERVIEW OF THE CURRICULUM

Please note that the order of the different components is fixed.



THE CURRICULUM OF SBM

Year 1: Science orientated (60 EC)

- B-MSBREPR Research Project (with Applied Component) (51-42 EC)
- Theoretical courses (5-14 EC)
- B-MSBIRME SBM course: Orientation on presentation and career, (2.5 EC)
- BMB509718, GSLS-ACAD: Life Sciences Academy (Introducing Life Sciences, Navigation Towards Personal Excellence and Life Sciences Seminars), (1.5 EC)

Year 2: Business oriented (60 EC)

Several Courses on Fundamentals of Business and economics (FBE) (33 EC):

- B-MSBOPMA Operations management (5 EC)
- B-MSBORBE Strategic Management and Innovation (5 EC)
- B-MSBMAR Marketing management (5 EC)
- B-MSBECO International Business (5 EC)
- B-MSBFUFO Business Research and Analytics (3 EC optional)
- B-MSBFIMA Financial management (5 EC)
- B-MSBENSH Entrepreneurship (5 EC)

B-MSBINBU Business Internship (27 EC)



































APPENDIX 4: PROGRAMME OF THE SITE VISIT

Tijd	Sessie
25 mei	
09:30 – 9:45	Inloop (opvangen technische problemen)
09:45 – 10:45	Vooroverleg panel
10:45 – 11:30	Sessie 1 – Opleidingsmanagement vicedecaan onderwijs, directeur Undergraduate School, opleidingsdirecteur Bachelor, opleidingsdirecteur Biosciences, opleidingsdirecteur NW&B, voorzitter BoS GSLS, portefeuillehouder onderwijs Biologie
11:30 – 11:45	Pauze
11:45 – 12:45	Sessie 2 – Studenten bachelor 6 studenten, verdeeld over de jaren
12:45 – 13:45	Overleg panel (met lunch)
13:45 – 14:45	Sessie 3 – Studenten master 5 studenten, 1 per programma waaronder 2 studenten die alumni zijn van de bacheloropleiding 3 alumni
14:45 – 15:00	Pauze
15:00 – 16:00	Sessie 4 – Docenten Bachelor 6-8 Docenten (examinatoren), alle jaren vertegenwoordigd, incl. docenten met een rol in ow-management (ow-coördinator, OC, ...)
16:00 – 16:15	Pauze
16:15 – 17:15	Sessie 5 – Docenten Master 6-8 Docenten (examinatoren), ieder programma vertegenwoordigd, incl., docenten met een rol in ow-management (programmacoördinatoren, OC, ...)
17:15 – 17:45	Paneloverleg: nabespreking dag 1
26 mei	
9:00 – 9:30	Vooroverleg panel
9:30 – 10:30	Sessie 6 – Examencommissies vz EC bachelor, kamervoorzitter biologie, lid EC bachelor, vz EC GSLS, 2 leden EC GSLS (gebied biosciences/SBM)
10:30 – 10:45	Pauze
10:45 – 11:30	Sessie 7 – Themasessie bachelor Interdisciplinariteit
11:30 – 11:45	Pauze
11:45 – 12:30	Sessie 8 – Themasessie master Biosciences Nieuwe biologie
12:30 – 13:30	Overleg panel (met lunch)
13:30 – 14:15	Sessie 8 – Themasessie master Natuurwetenschap en Bedrijf Rol en omvang van stage in het curriculum
14:15 – 15:45	Overleg panel en opstellen voorlopige bevindingen opleidingsmanagement op afroep beschikbaar voor vragen
15:45 – 16:15	Pauze
16:15 – 16:45	Terugkoppeling panel openbaar

APPENDIX 5: FINAL WORKS AND DOCUMENTS STUDIED BY THE PANEL

A selection of 15 research project reports and 7 business internship reports was made by the panel's chair and the secretary to assess the scientific achievement level of the graduates. The selection also included the assessment forms for the programme, based on a list provided of graduates between 2019-2020. A variety of topics and a diversity of examiners were included in the selection. The secretary and panel chair ensured that the distribution of grades in the selection matched the distribution of grades of all available theses. Information on the selected theses is available from Qanu upon request.

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):

-  01 Questions to committee
-  02 Corona-acties_Redesigning Life Sciences
-  03 Motivation English language
-  04 Annual reports GSLS
-  05 Quality control plan
-  06 iBabs
-  07 EER
-  08 Rules Board of Examiners
-  09 Learning outcomes on the programme level
-  10 Training plan
-  11 Assessment matrices
-  12 Strategy GSLS
-  13 Notulen biosciencesoverleg
-  14 SWOT
-  15 Student chapter
-  16 DSRK
-  17 Meeting alumni professional field
-  18 Social advisory board
-  19 Nationale AlumniEnquête
-  20 NIBI arbeidsmarktonderzoek
-  21 Staff qualifications BKO SKO
-  22 Course materials
-  23 Research projects
-  24 Business internship
-  Overview of curriculum developments.docx
-  Overview of masters programmes.docx
-  Response to considerations of the previous site visit panel.docx
-  Assessment MSc Bio Inspiration and Value Creation
-  SDG
-  Banenmarkt Overzicht bedrijven Alumni GSLS .xlsx
-  Entrepeneurship_Exam 2018-19_Answers.docx
-  FBE aanvulling 12-14 .docx
-  genes to organisms - herkansing.pdf
-  Leerlijnen eindrapport CEUT Mariet Hefting.pdf