



MSc Biomedical Sciences
Universiteit Leiden

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Project code P2217

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Summary

Standard 1. Intended learning outcomes

The panel appreciates the clear profile of the MSc BMS in Leiden, which gives students a lot of freedom to design their own individual learning paths within a given framework. The different specialization options are clear and attractive to students. The MSc fits well within its institutional context, links with the vision and ambitions of UL and LUMC and meets the expectations of the profession. The programme could interactively engage with the professional field, for example by introducing a workfield advisory board. The panel concludes that the intended learning outcomes are consistent with this profile and clearly reflect the Dublin descriptors for academic master's programmes. The outcomes are consistent with the national framework for biomedical programmes. The outcomes are detailed and specialization-specific and clearly link the programme to the professional fields associated with the MSc. The panel recommends that the international focus of the programme be made more explicit in the profile and intended learning outcomes. It concludes that the intended learning outcomes are well chosen and appropriate for an academic master's programme in biomedical sciences.

Standard 2. Teaching-learning environment

The MSc BMS curriculum has a clear and coherent structure, providing a solid basis in biomedical science research and developing specific knowledge and skills in each of the five specialisations throughout the courses. The panel appreciates the flexibility within the curriculum to allow students to determine their own learning path and sees as strengths of the programme that it provides small and stimulating classes, and that the FOS courses, among others, provide state-of-the-art training. The panel valued the programme's clear focus on career development and suggested that this could be further strengthened by including it into the intended learning outcomes.

Students are well supported and the curriculum is generally feasible. Most students graduate in two to three years. However, the panel advises the programme management to investigate the reasons for the low number of students who nominally complete the curriculum and to ensure that any hurdles within the curriculum are removed. The programme has sufficient teaching staff who are appropriately qualified and able to link their teaching to cutting-edge research. The panel advises the programme management to keep paying attention to lowering work pressure among staff.

Standard 3. Student assessment

The panel is satisfied with the clear and transparent assessment policy and practice of the master's programme. It found the assessment process to be efficient and robust, supporting students by making assessments clear, transparent and accessible. The panel examined the assessment process for master's theses and found it to be transparent and robust. It appreciates that the assessment of the thesis takes into account the student's entire learning process. The programme may work on further standardization of the thesis assessment and set a maximum number of times that a supervisor will provide feedback on the thesis.

The programme has a well-functioning BE that understands and is accountable for its roles and responsibilities. The panel advises to ensure that the board of the master has sufficient capacity to maintain its current high level of support to the curriculum.

Standard 4. Achieved learning outcomes

The panel finds that the programme's final projects are of sufficient and often good quality. Alumni are doing well after graduation, continuing in academia or other relevant professional positions. Alumni look back with appreciation on the way the programme prepared them for their further careers and emphasize the

importance of the extensive skills training they received. The panel concludes that the intended learning outcomes of the programme are clearly being achieved.

Score table

The panel assesses the programme as follows:

M Biomedical Sciences

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

Prof. dr, Hans van Leeuwen
Chair

Drs. Jessica van Rossum
Secretary

Date: 21 February 2024

Introduction

Procedure

Assessment

On November 15 and 16 2023, the master's programme Biomedical Sciences of Leiden University was assessed by an independent peer review panel as part of the cluster assessment Biomedical Sciences. The assessment cluster consisted of 18 programmes, offered by Wageningen University, Vrije Universiteit Amsterdam, University of Amsterdam, Leiden University, Radboud University, Utrecht University, and Maastricht University. The assessment followed the procedure and standards of the NVAO Assessment Framework for the Higher Education Accreditation System of the Netherlands (September 2018).

Quality assurance agency Academion coordinated the assessment upon request of the cluster Biomedical Sciences. Peter Hilderling and Jessica van Rossum acted as coordinators and Annemarie Venemans, Hester Minnema, Carlijn Braam and Jessica van Rossum acted as secretaries in the cluster assessment. They have been certified and registered by the NVAO.

Preparation

Academion composed the peer review panel in cooperation with the institutions and taking into account the expertise and independence of the members, as well as consistency within the cluster. On 25 July 2023, the NVAO approved the composition of the panel. The coordinator instructed the panel chair on his role in the site visit according to the Panel chair profile (NVAO 2016).

The programme composed a site visit schedule in consultation with the coordinator (see appendix 3). The programme selected representative partners for the various interviews. It also determined that the development dialogue would be made part of the site visit. A separate development report was made based on this dialogue.

The programme provided the coordinator with a list of graduates over the period 2021-2022. In consultation with the coordinator, the panel chair selected 15 theses per programme. They took the diversity of final grades and examiners into account, as well as the various tracks. Prior to the site visit, the programme provided the panel with the theses and the accompanying assessment forms. They also provided the panel with the self-evaluation report(s) and additional materials (see appendix 4).

The panel members studied the information and sent their findings to the secretary. The secretary collected the panel's questions and remarks in a document and shared this with the panel members. In a preliminary meeting, the panel discussed the initial findings on the self-evaluation reports and the theses, as well as the division of tasks during the site visit. The panel was also informed on the assessment framework, the working method and the planning of the site visits and reports.

Site visit

During the site visit, the panel interviewed various programme representatives (see appendix 3). The panel also offered students and staff members an opportunity for confidential discussion during a consultation hour. One staff member requested a consultation. The panel used the final part of the site visit to discuss its findings in an internal meeting. Afterwards, the panel chair publicly presented the preliminary findings.

Report

The secretary wrote a draft report based on the panel's findings and submitted it to the coordinator for peer assessment. Subsequently, the secretary sent the report to the panel for feedback. After processing this feedback, the secretary sent the draft report to the programme in order to have it checked for factual irregularities. The secretary discussed the ensuing comments with the panel chair and changes were implemented accordingly. The panel then finalised and approved the report, and the coordinator sent it to Leiden University.

Panel

The following panel members were involved in the cluster assessment:

- Prof. dr. Hans van Leeuwen, professor of Calcium and Bone Metabolism, Erasmus MC – chair;
- Dr. Annik van Keer, Education Policy Adviser, Utrecht University;
- Dr. Mieke Latijnhouwers, Assessment Expert, Wageningen University & Research;
- Prof. dr. Frans Ramaekers, emeritus professor Molecular Cell Biology at Maastricht UMC and CSO and QA Manager at Nordic-MUbio;
- Prof. dr. Jan Eggermont, biomedical researcher in Cell Physiology, KU Leuven;
- Dr. Geert Ramakers, associate professor Translational Neuroscience, UMC Utrecht;
- Dr. Leo Schouten, associate professor Cancer Epidemiology, Maastricht University;
- Prof. Marjukka Kolehmainen, professor of Food and Health, University of Eastern Finland;
- Liliane Bouma-Ploumen MSc, Policy Adviser secondary education, Bètapartners;
- Dr. Maud Huynen, assistant professor Planetary Health, Maastricht University;
- Dr. Margot Kok, Education Policy Department Manager, Utrecht University;
- Prof. dr. Dennis Claessen, professor of Molecular Microbiology, Leiden University;
- Emma van Wijk BSc, master student Biomedical Sciences, Radboud University – student member;
- Daphne Louws BSc, master student Nutrition and Health, Wageningen University & Research – student member;
- Prof. dr. Mieke Verstuyf, professor of Clinical and Experimental Endocrinology, KU Leuven – referee;
- Dr. Jur Koksma, assistant professor Transformative Learning, Radboud University – referee;
- Prof. dr. Ton Bisseling, emeritus professor of Molecular Biology, Wageningen University & Research – referee.

The panel assessing the master's programme Biomedical Sciences at Leiden University consisted of the following members:

- Prof. dr. Hans van Leeuwen, professor of Calcium and Bone Metabolism, Erasmus MC – chair;
- Dr. Annik van Keer, Education Policy Adviser, Utrecht University;
- Dr. Maud Huynen, assistant professor Planetary Health, Maastricht University;
- Prof. dr. Frans Ramaekers, emeritus professor Molecular Cell Biology at Maastricht UMC and CSO and QA Manager at Nordic-MUbio;
- Emma van Wijk BSc, master student Biomedical Sciences, Radboud University – student member;
- Dr. Geert Ramakers, associate professor Translational Neuroscience, UMC Utrecht – referee.

Information on the programme

Name of the institution:	Leiden University
Status of the institution:	Publicly funded institution
Result institutional quality assurance assessment:	Positive
Programme name:	M Biomedical Sciences
CROHO number:	66990
Level:	Master
Orientation:	Academic
Number of credits:	120 EC
Specializations:	Research Management Communication Education Health
Location:	Leiden
Educational minor:	Not applicable
Mode(s) of study:	Fulltime
Language of instruction:	English, Dutch
Submission date NVAO:	May 1, 2024

Description of the assessment

Reflection on the previous assessment

The Biomedical Sciences (BMS) master's programme, offered at the Medical Faculty of Leiden University, was previously reaccredited in 2017. In that assessment, the panel recommended the formulation of a common set of learning outcomes for programmes in the assessment cluster, which was followed by all programmes. Specifically for the BMS programme in Leiden, the panel recommended adjusting the learning outcomes for the programme's research specialization in relation to the other specializations, strengthening bioinformatics and data science in the programme, increasing attention to scientific integrity, evaluating the internationalization of the programme, providing students with information about specializations other than research, and reducing vulnerability in the programme by creating a more balanced division of labour in the programme management. On the basis of the information provided in the self-evaluation report and its discussions with programme representatives, the panel concludes that the programme has addressed all these recommendations well over the past period.

Societal specializations

The three societal specializations within the programme (Management, Communication and Education) are faculty-wide specializations in which students from several master's programmes within the Faculty of Mathematics and Natural Sciences (FWN) and the Biomedical Sciences master's programme of Leiden University Medical Centre (LUMC) participate. To avoid repetition within programme accreditations, each of the three specializations has been allocated to a programme reaccreditation within the faculty. Therefore, information regarding the accreditation of the three specializations can be found in the reaccreditation reports of the concerning master's programmes in which the evaluation of each specialization was discussed.

Assessment in the Management, Communication and Education specializations is only described in the evaluation report when the BMS programme is directly responsible for the assessment. The courses in the Management specialization are addressed in the accreditation of the master ICT in Business and the Public Sector (ISAT 60205). The Education specialization falls under the accreditation of the master's programme Leraar Voorbereidend Hoger Onderwijs in de Bètawetenschappen (ISAT 68533, ICLON), and the courses and the internships of the Communication specialization fall under the master's programme Biology (ISAT 66860).

Standard 1. Intended learning outcomes

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

Findings

The master's programme Biomedical Sciences (BMS) at Leiden University is characterized by the fact that it offers students the opportunity to design their own individual learning paths within a given framework. The programme aims to activate students' independent thinking and learning skills, thus promoting their development from students to young professionals who are aware of their (future) position and role in society. The programme has five specializations: Research, Management, Communication, Education and Health.

Characteristics of the MSc BMS are:

- The combination of broad and in-depth training, not only in the Research and Health specializations, but also in Management, Communication and Education. The student can choose topics from a wide range of diseases and biomedical sub-disciplines, and from a wide range of research methods and techniques. By focusing on a particular area of research, the student can also choose a more specialized in-depth training in the internships.
- The opportunity to choose between a variety of specializations, allowing students to choose how they want to approach the challenges they face as biomedical scientists and what role they want to play in addressing these challenges.
- Integrated academic and scientific training with explicit attention to career orientation and skills such as communication skills, creative and critical thinking.
- Small-scale and activating education.
- The fact that BMS is a medical science programme rather than a science programme.
- The international learning environment.

These characteristics are in line with the educational vision and ambitions of Leiden University (UL) and Leiden University Medical Center (LUMC) in the sense that they promote an activating, research-driven education coupled with a societal perspective. The programme also aligns with the research themes of the LUMC, which include topics such as neuroscience, immunity and regenerative medicine. These research themes form building blocks for the in-depth scientific training in the programme (see Standard 2). The programme is part of the EuroLife consortium, a network of nine academic institutions and European centres with research expertise in Biomedicine and Medicine across Europe, which allows it to be informed about and aligned with international developments in the field of life sciences (education).

The programme has translated its aims and profile into a set of intended learning outcomes. These follow the national BMS learning outcomes, which were established in 2018 on the advice of the previous assessment panel. The MSc BMS Leiden has further developed these general national learning outcomes into 1) a set of intended learning outcomes specifically for the first year of the master's programme, combined with 2) a set of specific intended learning outcomes for each specialization. See Appendix 1 for an overview of both the national and programme-specific learning outcomes. These qualifications provide students with the knowledge and skills to work in an academic position within or outside academia or to pursue a career outside academia after graduation.

The panel appreciates the clear profile of the MSc BMS in Leiden. The different specialization options are clear and attractive to students. The programme fits into its institutional context and is linked to the vision and ambitions of UL and LUMC. The panel examined the intended learning outcomes and found them to be consistent with the profile and clearly reflect the Dublin descriptors for master's programmes. The outcomes are consistent with the national framework for biomedical programmes and clearly link the programme to the professional areas associated with the MSc. The panel is pleased to note that the programme has followed the advice of the previous panel in formulating detailed specialization-specific outcomes. It concludes that the profile and intended learning outcomes are well chosen and appropriate for an academic master's programme in biomedical sciences.

The panel noted that although the programme is a member of the EuroLife consortium, which enables it to keep abreast of international developments in life sciences education, its international orientation is not very clearly expressed in its profile or learning outcomes. The panel recommends that the profile and

outcomes be strengthened in this respect. The programme could for instance consider to include intercultural competence as part of the learning outcomes.

The programme conducts regular employer surveys of organizations in the professional field, in order to keep the programme in line with the demands and needs of the field. The most recent survey showed that employers value the student's writing and presentation skills, as well as collaborative, inter- and multidisciplinary skills and the ability to work independently. The survey also showed the importance that employers attach to basic knowledge and skills in conducting research, even when students have chosen to specialize in Communication or Management. The panel agrees with the programme that the profile of BMS Leiden is well suited to the demands of the professional field, with its combination of broad and in-depth education combined with individual learning paths and explicit attention to developing skills, such as communication skills, creative and critical thinking, and growing attention for sustainability/planetary health. The panel suggests the programme to not only conduct surveys, but also interactively engage with the professional field and actively involve them to keep the programme aligned with developments in the working field, for example by means of a workfield advisory board.

Considerations

The panel appreciates the clear profile of the MSc BMS in Leiden, which gives students a lot of freedom to design their own individual learning paths within a given framework. The different specialization options are clear and attractive to students. The MSc fits well within its institutional context, links with the vision and ambitions of UL and LUMC and meets the expectations of the profession. The programme could interactively engage with the professional field, for example by introducing a workfield advisory board. The panel concludes that the intended learning outcomes are consistent with this profile and clearly reflect the Dublin descriptors for academic master's programmes. The outcomes are consistent with the national framework for biomedical programmes. The outcomes are detailed and specialization-specific and clearly link the programme to the professional fields associated with the MSc. The panel recommends that the international focus of the programme be made more explicit in the profile and intended learning outcomes. It concludes that the intended learning outcomes are well chosen and appropriate for an academic master's programme in biomedical sciences.

Conclusion

The panel concludes that the programme meets standard 1.

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

The master BMS is a two-year programme of 120 EC, in which students select one of five specializations: Research, Management, Communication, Education and Health. The five specializations have in common that at least 60 EC must be spent on biomedical scientific research. In the first year, compulsory components in all specializations are Clinical Research in Practice (6 EC, including an introductory course in R), How to Write a Research Proposal (2 EC), Scientific Conduct (1 EC), Career Orientation (2 EC) and Junior Research Project 1 (JRP1, minimum 29 EC). In addition, in the first year, students choose a minimum of 12 EC of Frontiers of Science (FOS) courses. FOS courses provide an insight into the latest developments in research. There is also an elective space which varies in size between 8 and 24 EC depending on the specialization. In their elective area, students can take an additional FOS course, take courses elsewhere or extend their internship. Although students are largely free to choose their FOS courses, electives and internship subjects, they are bound by a framework that ensures the desired diversity of their chosen programme (see below).

The research internships, which cover the entire research cycle, are the most important preparation for the practice of scientific research. Students carry out their internship mainly at LUMC. Other internship places are for example medical centers of other universities, musea, and organizations such as RIVM (National Institute for Public Health and the Environment) and TNO (Netherlands Organisation for Applied Scientific Research). Students conduct an individual biomedical research project in order to obtain answers to the research question and participate as a member of the research team, in the departmental and/or laboratory consultations and in work discussions. The research project includes planning, literature research, the research itself and reporting of the results, both in writing (thesis) and by an oral presentation. In addition, FOS courses provide an insight into the latest developments in research. The internships in Management, Communication and Education each provide an introduction to professional practice in their respective fields.

Each specialization has its own curriculum in the second year:

- The research specialization includes writing a scientific review (6 EC), writing a research proposal (5 EC) in preparation for JRP2 research, and taking a course in laboratory animal science (4 EC). The specialization concludes with a second major JRP2 Research project of at least 40 EC. This internship can be extended in the elective area. Students are encouraged to cover a wide range of research disciplines and diseases in their programme. However, students with a specific interest and strong motivation to specialize in one of the tracks related to the research themes of the LUMC, namely Neuroscience, Immunity, Infection, Medical Genomics, Cardiovascular, Cancer or Regenerative Medicine, may do so, provided that JRP1 and JRP2 Research differ in research methods, background literature and topic.
- The Health specialization is only open to students combining a master's in medicine with BMS. This specialization has a second research internship JRP2 Health (29-46 EC, depending on the student's undergraduate programme) in addition to a clinical internship (22 EC). Due to the inclusion of the clinical internship, the Health specialization does not require the Research Proposal, the Laboratory Animal Science course or the Scientific Review as compulsory components. JRP1 and JRP2 Health are again conducted in different research areas, but a focus on a particular scientific area through

the above topics is also permitted. Students in this specialization all graduate with a Master's degree in Medicine and a master's degree in BMS.

- The Management specialization consists of four core courses (15 EC), which are taught by the MSc ICT in Business in the Faculty of Science. In addition, students can take elective business courses. Finally, in preparation for the internship, students have to write a project proposal (3 EC) and complete a JRP2 Management of at least 26 EC. The content of this internship is preferably related to the life sciences and is under the (internal) supervision of the Master BMS.
- The Communication specialization consists of a course programme organized and supervised by the Science, Communication and Society department of the Faculty of Science. In addition to the communication courses (23 EC), students write a project proposal (3 EC) and conduct a JRP2 Communication of at least 23 EC. This is preferably related to the life sciences. The JRP2 Communication consists of a practical and a research part, which can be combined in one internship or carried out in two separate internships.
- The Education specialization consists of a first-degree teacher training in biology, which is offered by the Graduate School of Teaching of Leiden University (ICLON: Interfacultair Centrum voor Lerarenopleiding, Onderwijsonderzoek en Nascholing). Courses in didactics, pedagogy and practical parts in secondary education are the core components of this specialization.

The specializations in Management, Communication and Education are partly offered by neighbouring faculties and institutes in Leiden. The BMS programme management maintains close contact with these faculties and institutes in order to ensure sufficient insight into the quality of education and to be able to inform students about the content of these specializations.

Central to the didactic principles of the curriculum is that students are in the lead. Students determine their own learning path and the structure of the programme is flexible. This means that students largely determine the order and content of their programme themselves. In line with this, the education is aligned with the student's learning process, promotes independent thinking and learning, and requires active student input. Teaching methods are designed to stimulate active learning and promote self-efficacy. The emphasis is on small classes of no more than twenty students, combined with self-study and individual (practical) training. In addition to this, blended learning is embedded in most courses, to help students prepare for lectures and practicals. The programme and teaching staff facilitate, guide and provide a framework. The learning paths of students must fulfill the requirements of the specialization they perform.

The panel studied the curriculum of the programme, including that of the specializations, and several course materials. It concludes that the curriculum is coherent and provides a solid grounding in biomedical scientific research. Each specialization offers relevant knowledge and skills within its domain throughout the courses. The programme has taken recommendations of the previous reaccreditation panel seriously and has started to integrate data science in the curriculum. The panel appreciates this development, regarding the increasing importance of data science for the biomedical field, and asks the programme to structurally keep paying attention to the size and content of data science in the curriculum. The panel appreciates the flexibility within the curriculum to allow students to determine their own learning path. It learned that this flexibility is also highly valued by students. Other strengths of the programme identified by the panel include the small size and stimulating nature of the courses, and the fact that FOS courses provide state-of-the-art training that is regularly updated to keep it relevant. The panel learnt from interviews with teaching staff that course coordinators and the Centre of Education Expertise are actively involved in designing FOS courses and monitoring course quality. The panel welcomes this active focus on course design and course quality. While the panel values the regular updates of the courses, it also advises the programme management to continue monitoring that this does not lead to expansion of courses, but that other topics are removed as

new topics are being introduced. Next to that, the panel noticed from the student chapter that information about the curriculum could be better organized on Brightspace and advises the programme management to address this.

Regarding the specializations in Communication, Management and Education, the panel appreciates that the programme management maintains close contact with the faculties and institutes that offer the specializations. It was noted that the programme management contacts the faculties and institutes for evaluation purposes and for final discussions regarding students completing the specialization. The panel thinks that is a good set-up. It suggests that, in addition to this, the programme management could also proactively engage in deliberation with the specializations regarding their alignment with the BMS programme. For instance, developments in the professional field of BMS might be addressed by the specializations as part of the BMS master's programme. This means that all internship topics should be life science related, and not preferably, to make sure that topics are related to the BMS programme.

The panel learned from interviewing students whom graduates from the LUMC bachelor's programme BMS that the set-up of some curriculum elements feel repetitive in the MSc BMS. For example, students are required to write a research proposal in both the third BSc year and the first MSc year, and the first part of the MSc course on R repeats parts of a BSc course. The panel noted in the documentation that the BSc and MSc are two independent programmes that students can follow sequentially, and believes that with minor adjustments in both curricula, the similarities can be resolved. For example, for the research proposal, examples and cases can be made different for the BSc and MSc courses. The panel noted with appreciation that in general, alignment between the BSc and MSc is on the agenda making the introductory part interesting for all students.

According to the panel, the programme places a strong emphasis on career development. The Career Orientation course (2 EC) is compulsory for all students and introduces them to the broad job market for biomedical scientists. The assignments and activities within Career Orientation are designed to encourage students to reflect on their strengths and weaknesses and to discover career options and choices. In this way, students are exposed to the wide job market for biomedical scientists by meeting researchers, alumni and employers during the various activities within the course. In addition, students practice how to present their professional profile to their network (i.e. to researchers, alumni and employers that students met during the programme), helping them to enter the job market as a logical follow-up to the activities in the master's programme. The learning environment is also largely practice-based, with the programme taking place in the LUMC research laboratory. The panel suggests that this focus on career development can be consolidated by including it in the intended learning outcomes to make its importance clear to students, and by involving students in further developing the Career Orientation course. Furthermore, the panel asks the programme to pay attention to the content of guest speakers' lectures, since it learned from students that some guest lectures are more scientific oriented than career development oriented.

Guidance and feasibility

The programme management ensures that students enter the programme with the necessary knowledge and skills to complete the curriculum. Students are required to have a bachelor's degree in biomedical sciences, or are admitted if deficiencies can be remedied in an extracurricular way through additional courses and if these deficiencies do not exceed 15 ECTS. Graduates from a Dutch University of Applied Sciences (HBO) bachelor's degree in Biology and Medical Laboratory Research, or its equivalent, are also admissible after successful completion of a one-year pre-master's programme (49 ECTS). To be eligible for the Health specialization, candidates must have a bachelor's degree in medicine and have successfully

completed the pre-master's Journey into Biomedical Sciences at the LUMC (27 EC). These entry criteria allow the programme to build on a common knowledge base.

Students generally take between two and three years to complete the programme. In 2021, 25% of students nominally graduated within two years, while 61% of the student population graduated within three years. During the programme, feasibility is promoted through the creation of a supportive learning environment tailored to curriculum choices. A wide range of support activities are available to students. Before starting the programme, students are invited to participate in a series of webinars to plan their programme and study path. At the start and for the first three months, each student is part of a student coaching group to help with practical and programme-related issues and social activities. There is a general MSc BMS mailbox where students can send questions about their programme. In addition, walk-ins are organized by the BMS programme management and bilateral online meetings are arranged upon request. In addition, at the beginning of the programme, each student receives a short survey from the study advisor to identify specific needs. The study results are monitored by the study advisor and, if there is reason to do so, the study advisor invites individual students at an early stage to discuss obstacles to study and to offer support where necessary.

During the internships, next to the guidance by internship supervisors, there are fixed times when the student's progress is monitored by the Master's Internship Committee (MIC). The MIC has been mandated by the master's Board of Examiners (master-BE) to approve JRP applications and consists of examiners who are appointed by the master-BE. If complications arise or are foreseen in student's progress, the MIC contacts the supervisor. To support students in the writing process, Communication in Science (CiS) tutors regularly organize workshops. In addition, two mandatory online modules, i.e. Ask Your Peer and Figure It Out, are available to support students before and during the writing process. Finally, students can consult the Career Service to prepare for the job market, and an International Office is available to provide information on study activities abroad.

The panel commends the programme's attention to feasibility and student support. The entry requirements help to ensure that students have a suitable background to be able to complete the curriculum. Sufficient attention is also given to helping students to shape their curriculum. Students all find suitable internships and the panel learned from interviews with students that the programme provides appropriate guidance in finding an internship. The programme management is involved in helping students find an internship and also to connect them to alumni to find suitable internships. In line with this, alumni evenings are helpful for finding an internship. Graduation rates after three years are at an acceptable level, and the panel learned from students and alumni that there are no programme-related obstacles that hinder timely completion of the curriculum. The panel learned from the conversation with the programme management that reasons for study delays are, amongst others, that students take longer to graduate, because they choose to simultaneously graduate in BMS and medicine. Other students choose extra courses because of their own interests, or students choose to prolong their internship. However, the panel advises the programme management to further investigate the reasons for the low number of students that nominally complete the curriculum, and to ensure that any hurdles within the curriculum are removed. During the site visit, the panel noted that students, as is the case in many other programmes, sometimes experience pressure on a personal level related to the realization of their ambitions. The panel advises the programme to constantly keep an eye open for this and to keep aiming for an environment in which students feel at home and can share any issues related to well-being, and don't feel pressure from outside (supervisor) to prolong their internship.

Language and internationalization

The Research, Management and Communication specializations are offered in English. The specializations in Education and Health are offered in Dutch. During the site visit, the panel discussed the use of English as the language of instruction and in the name of the programme with the programme management. The panel considers English to be an appropriate choice given the international orientation of the research field and the global labour market, such as universities, (academical) medical centers and pharmaceutical companies. English language proficiency (level C1) is one of the requirements for academic staff recruitment. Foreign students entering the programme must meet the English language requirements as part of their admission.

There are several initiatives to promote the internationalization of students. For instance, the Leiden Bioscience Park offers students opportunities in a number of internationally oriented companies; there are student exchanges with the German Cancer Research Centre in Heidelberg and the University of Heidelberg; there is collaboration within the education programme of the Eurolife consortium to further promote student exchanges; and travel grants have been made available.

Teaching staff

In the LUMC, staff members tend to combine at least two of the core roles: research, teaching and/or patient care. Lecturers in the BMS programme most often combine teaching with a scientific research position and less often with a clinical position. Course coordinators and teachers in the master's programme come from the relevant research areas at the LUMC and are actively involved in the design, organization and quality assurance of the programme. Almost all lecturers have a PhD degree and hold, or are in the process of obtaining, a University Teaching Qualification (UTQ), with several lecturers also holding a Senior Teaching Qualification (STQ).

On the basis of the documentation reviewed and discussions during the site visit, the panel concludes that the teaching staff is well qualified. The student chapter indicates that students value the teaching staff for their competence and expertise, and that they appreciate the approachability of the teachers. Furthermore, the panel learned with appreciation from the interviews that the teaching staff is highly motivated and committed. The panel considers the quantity of teaching staff to be sufficient. The only obstacle that is sometimes experienced by course coordinators is that it can be a challenge for courses to find available lecturers. In some cases, staff members find it difficult to combine teaching with one or two of the other core roles of research and patient care, and as a result prioritize research or patient care over teaching. The panel learned from coordinators and programme management that course coordinators can escalate to the educational portfolio holder, and that in these cases the educational portfolio holder is diligent in ensuring that sufficient attention is given to teaching and that teaching staff is made available. This is much appreciated by the panel and the panel advises programme management to keep paying attention to work pressure among staff.

The panel learned from the interviews that LUMC is working on the possibility for a teaching-focused career. The panel supports this development and thinks that there is a clear benefit to several staff positions with education as primary focus to further professionalize teaching within this and other programmes. It encourages the programme to carry on with these plans.

Considerations

The MSc BMS curriculum has a clear and coherent structure, providing a solid basis in biomedical science research and developing specific knowledge and skills in each of the five specialisations throughout the courses. The panel appreciates the flexibility within the curriculum to allow students to determine their own learning path and sees as strengths of the programme that it provides small and stimulating classes, and

that the FOS courses, among others, provide state-of-the-art training. The panel valued the programme's clear focus on career development and suggested that this could be further strengthened by including it into the intended learning outcomes.

Students are well supported and the curriculum is generally feasible. Most students graduate in two to three years. However, the panel advises the programme management to investigate the reasons for the low number of students who nominally complete the curriculum and to ensure that any hurdles within the curriculum are removed. The programme has sufficient teaching staff who are appropriately qualified and able to link their teaching to cutting-edge research. The panel advises the programme management to keep paying attention to lowering work pressure among staff.

Conclusion

The panel concludes that the programme meets standard 2.

Standard 3. Student assessment

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

Findings

Assessment system

The principles of assessment are described in the programme's assessment policy. The focus of assessment is to ensure that both formative and summative assessment are consistent with didactic principles (see Standard 2) and professional practice. The programme assessment matrix provides an overview of the assessment plans of all educational components and ensures that all intended learning outcomes are addressed and assessed in the programme.

For each course, an assessment plan is prepared by the coordinator, with the assistance of the educational advisor if necessary. The assessment plan describes how the student will be assessed in the course. Summative and formative assessment methods, feedback methods and the development of assessment criteria are described. The learning objectives of the course are linked to the intended learning outcomes of the programme. Most courses have a mixture of group and individual assignments. Formative assessment followed by individual feedback makes a significant contribution to student development. In line with the intended learning outcomes, emphasis is placed on the assessment of skills, tasks and products. The reliability and validity of assessments are ensured by assessment forms including rubrics, which describe the levels required. For each course, the assessment process and learning objectives are communicated to students via Brightspace and an e-guide. A few master's courses end with a written exam as the main form of assessment. In most courses, assessment takes place through a combination of examination formats, including oral presentations, essays, reviews, written (research) proposals, reports on practical assignments, and assessment of engagement and attitude during (group) teaching.

The panel noted from the information file that the master's programme has a clear and transparent assessment policy and practice and found it an efficient and sound assessment procedure that supports students in making assessments and aids teachers in making well-founded assessment decisions. The assessment plan contains a clear matrix showing the extent to which learning outcomes are assessed within each course. Furthermore, the panel noted that the Bloom's taxonomy is followed. The panel appreciates

how the programme communicates with students about the assessment process to ensure transparency of the assessment process and the variety of assessment methods used within courses.

From the documentation and the interview with various stakeholders, the panel learned that the part of learning outcome C1, that addresses communication to the lay public and to society, is currently not separately assessed in the core curriculum. The panel thinks that communication as a biomedical scientist to lay audiences is important and advises to explicitly include this in the assessment plan of the general programme as a separate element.

Thesis assessment

The internship is the most important instrument to measure the final level achieved by students. JRP1 and JRP2 are both research projects. JRP1 is always a biomedical research project, whereas the content of JRP2 differs among the specializations. For the Research and Health specializations, the JRP2 is a biomedical research project, that is considered as the final thesis. When applying for JRP2 Research or JRP2 Health, the MIC checks the diversity of the two internships JRP1 and JRP2. This diversity in the choice of internship is part of the internship regulations and guarantees the diversity of the student's programme. In the Management, Communication and Education specializations, the focus on biomedical research is less pronounced in the specialization year. Therefore, for the Management and Communication specializations, a combination of JRP1 and JRP2 Management or JRP2 Communication is considered as the final thesis required to achieve the intended learning outcomes of the master's programme. For the Education specialization, this is a combination of JRP1 and the ICLON portfolio.

For JRP1 and JRP2, the MIC has been mandated by the master-BE to approve applications based on the information provided in a digital application form. Once an application has been approved, an initial evaluation takes place in the 4th week of the internship. A mid-term formative evaluation is carried out in week 12 of the internship, based on similar criteria as the final evaluation. The mid-term assessment is also used to identify significant points of concern, leading to either more intensive supervision or early termination of the internship in the case of serious shortcomings. The student and supervisor discuss the student's strengths and areas for improvement. The student is also given the opportunity to provide feedback to the supervisor on the quality of supervision. At the end of JRP1 and JRP2 there is a final evaluation with feedback and a final assessment by the supervisor.

The assessment is standardized, and the assessment criteria are formulated using rubrics that are made available to the student and the supervisor prior to the formal assessment. The final grade is determined by an examiner, who is a member of the MIC and appointed by the master-BE, based on the assessments of the three assessors: supervisor, a second independent reviewer and a CiS tutor. The evaluation covers three categories:

- 1) knowledge, understanding and skills during the execution of the project itself (40% of the grade);
- 2) written reporting skills (20% supervisor - 20% reviewer - 10% CiS);
- 3) oral presentation skills (5% supervisor - 5% independent researcher).

Plagiarism is checked by the CiS tutor using Turnitin. For all external internships, an internal supervisor is appointed, who often acts as an independent reviewer of the report. The final assessment of the JRP1 is therefore based on the four-eye principle. In case of an unsatisfactory final mark, it is possible to resit the report and/or the presentation. It is not possible to repeat the practical work; an unsatisfactory performance there usually leads to a termination of the project, often in an earlier phase based on the interim evaluations.

For Management and Communication internships, students send monthly progress reports to the BMS internal supervisor by e-mail. In the case of a Management internship, the BMS supervisor will visit the

student and the internship supervisor halfway through the internship to discuss the progress of the project, carry out the interim assessment, provide information on the final assessment and discuss the reporting requirements. Communication internships are supervised by an internal supervisor from Science, Communication and Society. The Education specialization students are assessed on the basis of the products they produce in their coursework and on the basis of their teaching performance in school practice. There are three assessment moments in which the school counsellor and the institute counsellor (ICLON) play an important role: a go/no-go interview (after three months), the mid-term evaluation and the final interview. In addition, the protocols for approval, mid-term evaluation and final evaluation are similar to those mentioned above for internships.

In preparation for the site visit, the panel studied several final products and their assessment forms. It found that the theses were assessed transparently, and that the assessment provided students with insight into the different assessment elements through the underlying feedback. The panel also noted that both assessors graded the thesis independent from each other on separate forms. Nonetheless, they often gave comparable marks to the different components of the thesis. In addition, the panel commends the robust nature of the thesis assessment, including the assessment of the student's overall learning process within it. The number of times a supervisor provides feedback on a thesis differs between supervisors which holds the risk of inequality in assessment of students. The panel mentioned that the programme could work on further standardizing the assessment of the thesis and prevent inequality, for example by setting a fixed number of times a supervisor will provide feedback before the final marking of the thesis. This would provide both students and supervisors with clear information on what to expect in this regard and increase transparency. For the Communication, Management and Education specialization, the JPR2 topic should preferably be related to the life sciences, but this is not a hard requirement. This could be more binding in the eyes of the panel to ensure alignment with the other part of the BMS curriculum. There could be circumstances where this is not possible, but according to the panel, a life sciences-focus should be the standard.

Examination Board

The master-BE checks the quality of application, evaluation and assessment forms, the consistency of assessment, the appropriateness of assessment methods and monitors the quality and diversity of assessments. The master-BE carries out regular and random meta-assessments of the level and quality of internship reports, scientific reviews and FOS courses. Where necessary, this will result in feedback to the MIC and FOS coordinators and/or adjustments to the assessment process. Where assessment issues arise in the course evaluation process, the master-BE Education Advisor is involved in the improvement process. The annual updating of assessment plans is part of the educational evaluation cycle. Above that, the master-BE is supported by a subcommittee of assessment experts: the Assessment Committee.

The panel spoke with members of the BE and found it to be a solidly functioning board that understands and is accountable for its roles and responsibilities. Discussions with students and the student chapter revealed that the BE is visible and approachable for students. However, the panel learned from discussions that the board struggles to find sufficient time for all of its responsibilities. This sometimes leads to delays in for instance response times to students and in keeping its documentation up-to-date. The panel recommends the programme management to ensure that the Board has sufficient capacity to maintain its current high level of support to the curriculum and to monitor the practical implementation of assessment plans.

Considerations

The panel is satisfied with the clear and transparent assessment policy and practice of the master's programme. It found the assessment process to be efficient and robust, supporting students by making assessments clear, transparent and accessible. The panel examined the assessment process for master's

theses and found it to be transparent and robust. It appreciates that the assessment of the thesis takes into account the student's entire learning process. The programme may work on further standardization of the thesis assessment and set a maximum number of times that a supervisor will provide feedback on the thesis.

The programme has a well-functioning BE that understands and is accountable for its roles and responsibilities. The panel advises to ensure that the board of the master has sufficient capacity to maintain its current high level of support to the curriculum.

Conclusion

The panel concludes that the programme meets standard 3.

Standard 4. Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

Findings

In preparation for the site visit, the panel read 15 final projects from the programme. These included final projects from all specializations: the JRP2 products for the Research and Health specializations, and the combination of JRP1 and JRP2 Management or JRP2 Communication for the societal specializations. The panel concluded that these final projects are all of sufficient, and in many cases good, quality and clearly demonstrate that the intended learning outcomes of the programme are being achieved. Large datasets are regularly used to address relevant and often complex research issues.

Graduates of the programme do well after graduation. About 25% of BMS students are co-authors of at least one scientific publication by the time they graduate. The first steps towards a scientific career are therefore clearly taken by many students during their internships. Often, a PhD course is started immediately after or even during the final internship, building directly on the research started during the internship. Management and Communication students are encouraged by the programme to choose a JRP2 in a company or institute with a clear link to the biomedical (life) sciences. The combination of both scientific and business/communication skills enables students to take their performance to a higher level than could be expected from their business/communication skills alone. Many of these students also find their first job through their final internship.

An alumni survey conducted by the programme in 2023 showed that graduates look back on the programme with satisfaction and appreciate the skills training they received. Alumni interviewed by the panel confirmed this impression. Alumni mentioned that the soft skills (e.g. communication) proved particularly valuable in their current jobs. The panel concludes that graduates of the programme are well prepared and will do well when they enter higher education or the labour market.

Considerations

The panel finds that the programme's final projects are of sufficient and often good quality. Alumni are doing well after graduation, continuing in academia or other relevant professional positions. Alumni look back with appreciation on the way the programme prepared them for their further careers and emphasize the importance of the extensive skills training they received. The panel concludes that the intended learning outcomes of the programme are clearly being achieved.

Conclusion

The panel concludes that the programme meets standard 4.

General conclusion

The panel's assessment of the master's programme Biomedical Sciences is positive.

Development points

1. Strengthen the focus on career orientation and the international focus of the programme (e.g. intercultural competence) further by including these in the intended learning outcome.
2. Investigate the causes behind the low number of students completing the curriculum nominally and ensure that there are no curriculum-related hurdles to timely completion.
3. Proactively keep paying attention to student well-being and pressure that students experience and make student well-being an integral part of the programme and its image and culture.
4. Keep paying attention to lowering work pressure of staff.
5. Further uniformize thesis assessment and determine a maximum to how often a supervisor provides feedback on the thesis.
6. Ensure that the Board of Examiners of the master has sufficient capacity to maintain its current high level of support to the curriculum.

Appendix 1. Intended learning outcomes

Appendix 4: Intended learning outcomes master BMS Leiden (OER 2023-2024)

Holders of a master's degree in Biomedical Sciences

Knowledge and Understanding	Additional per specialization
<p>K1 know and understand (state-of-the-art) the development, structure, growth and integrated functioning of the healthy human body;</p> <p>K2 know and understand (in-depth and current) the main developmental disorders and diseases of the human body, as well as the endogenous and exogenous factors that play a part in the development of such disorders and diseases;</p> <p>K3 know and understand subject-specific aspects of various research fields, such as: molecular and cellular biology, genetics, immunology, anatomy, pathology, physiology, microbiology, neurobiology, endocrinology, -omics and/or data science;</p> <p>K4 know and understand the most common and state of the art analytical techniques in biochemistry, molecular biology, cellular biology, immunology and/or imaging, as well as different research methodologies in epidemiology and/or statistics;</p> <p>K5 know and understand the social aspects of the biomedical field, such as medical and scientific ethics, as well as legislation and rules related to conducting their own research;</p> <p>K6 know and understand the measures for promoting and protecting general health, as well as measures for avoiding or reducing complications and/or recurrence of diseases.</p>	<p>R*-K7 have deepened and extended learning outcomes K1 - K6 by performing a second research internship;</p> <p>R-K8 know and understand interdisciplinary aspects regarding laboratory animal science.</p> <p>M-K7 know and understand (at a basic level) the structure of businesses and organisations in the health care as well as the biomedical sector;</p> <p>M-K8 know and understand the basics of strategic and marketing management, financial management, project management, organisational sciences, patent policy and quality management.</p> <p>C-K7 know and understand aspects of modern information and communication technology;</p> <p>C-K8 know and understand aspects of human learning processes.</p> <p>E-K7 know and understand human learning processes.</p> <p>H-K7 have deepened and extended learning outcomes K1 - K6 by performing a second research internship;</p> <p>H-K8 have a broad overview of the medical sciences.</p>

*) R=Research; M=Management; C=Communication; E=Education; H=Health

Applying Knowledge and Understanding	Additional per specialization
<p>AK1 apply most common and state of the art analytical, quantitative and statistical techniques in biomedical science;</p> <p>AK2 develop a scientifically sound research plan and protocol, and to evaluate this plan against the opinion of others;</p> <p>AK3 analyse and consider experimental results and data from their own research critically, in order to process these data and draw conclusions;</p> <p>AK4 think in multidisciplinary terms and make connections between their own research and (international) research results.</p>	<p>R-AK5 work independently on a research project in order to show overall control of their project and assess how their research can contribute to biomedical sciences and to society;</p> <p>R-AK6 formulate scientific questions/objectives in such a way that useful experiments can be designed of which the results will not only extend knowledge but preferably also contribute to solving problem(s) that is/are relevant to research and society.</p> <p>M-AK5 plan and execute a business project within a (non)-profit organisation, connected to the biomedical domain;</p> <p>M-AK6 work independently on a business project in order to show overall control of their project and assess how their project can contribute to the business domain.</p> <p>C-AK5 work independently on a communication project in order to show overall control of their project and assess how their project can contribute to the communication domain.</p> <p>E-AK5 familiarise pupils with the most important features and contents of the biology domain, as well as the position of the domain within society;</p> <p>E-AK6 help pupils to connect with professionals in other domains and support them in their choice of education and occupation;</p> <p>E-AK7 develop an educational product and evaluate it on feasibility and relevance.</p> <p>H-AK5 critically analyse medical data and to integrate these data in their own research;</p> <p>H-AK6 work independently on a research project in order to show overall control of their project and are able to assess how their research can contribute to biomedical sciences and society.</p>

Making Judgements	Additional per specialization
<p>J1 estimate the value and applicability of laboratory and clinical results obtained within the context of their research project;</p> <p>J2 relate research within the field of biomedical sciences to relevant associated fields (such as medicine, biology, pharmacology);</p> <p>J3 collect, select and interpret biomedical data from scientific literature for their research project systematically;</p> <p>J4 demonstrate responsible scientific conduct through the ability to form a balanced judgment based on consideration of relevant social, cultural, scientific or ethical aspects.</p>	<p>R-J5 collect, select and interpret scientific literature systematically in order to write their scientific review.</p> <p>M-J5 call attention to, characterise and describe problems in projects and organisations, and develop policies to address and resolve these problems.</p> <p>E-J5 develop a vision of biology as a school subject, its place in society, as well as its relationship to other natural sciences.</p>
Communication	Additional per specialization
<p>C1 communicate data and conclusions from their research project clearly and unambiguously, as well as the knowledge, motives and considerations underlying their research to a specialist and non-specialist public;</p> <p>C2 defend and debate their position regarding their own research;</p> <p>C3 participate in the organisation and management of multidisciplinary (project)teams, both in the private and public sector;</p> <p>C4 translate questions from the public debate into a scientific research question and formulate research projects on that basis.</p>	<p>C-C5 apply different methods of knowledge transfer;</p> <p>C-C6 place developments in (biomedical) science within a social perspective and make these developments understandable for a wider audience;</p> <p>C-C7 interest a wider audience in such developments, and to motivate this audience to participate in a social debate on such developments;</p> <p>C-C8 communicate research results comprehensibly to non-specialists, and judiciously advise on the implications of such research results.</p> <p>E-C5 apply different methods of knowledge transfer.</p> <p>H-C5 mediate between the life sciences and medical sciences by working in both disciplines.</p>

Learning Skills	Additional per specialization
<p>L1 acquire and extend knowledge and understanding efficiently, including study of specialist literature;</p> <p>L2 reflect on one's own actions as well as the actions and judgments of others and to assimilate them in order to improve a product or approach;</p> <p>L3 adopt a professional and critical position during (research) projects and are able to give and receive peer review;</p> <p>L4 can think and work at an academic level and can and will improve in this;</p> <p>L5 are capable and aware of the need to keep abreast of relevant developments in the biomedical field;</p> <p>L6 make a conscious choice for possible further education and/or a job on the labor market.</p>	<p>R-L7 acquire and extend knowledge and understanding independently for their own research;</p> <p>M-L7 acquire and extend knowledge and understanding independently for their own project.</p> <p>C-L7 acquire and extend knowledge and understanding independently for their own project.</p> <p>E-L7 acquire and extend knowledge and understanding independently for their own project and/or teaching.</p> <p>H-L7 acquire and extend knowledge and understanding independently for their own research.</p>

Appendix 2. Programme curriculum

Appendix 5: Overview of Educational program (from OER 2023-2024)

Students within all specializations are required to earn a minimum of 60 credits from courses pertaining to biomedical sciences.

The compulsory components of the **Research** specialization are:

Code	Component	ECTS	Practical	Level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project 1	29	yes	500
312100300Y	How to Write a Research Proposal	2	yes	400
312100400Y	Reflection Course: Scientific Conduct	1	no	400
312100510Y	Career orientation	2	no	400
3125FOS-variable-Y	Choice of: Frontiers of Science	12	yes	500
312200400Y	Course on Laboratory Animal Science	4	yes	400
312200100Y	Research Proposal Biomedical Sciences	5	no	600
312200200Y	JRP2I Research Internship	40	yes	600
312200300Y	Scientific Review Biomedical Sciences	6	yes	600
	Elective area	13		≥ 400

The compulsory components of the **Management** specialization are:

Code	Component	ECTS	Practical	Level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project 1	29	yes	500
312100300Y	How to Write a Research Proposal	2	yes	400
312100400Y	Reflection Course: Scientific Conduct	1	no	400
312100510Y	Career orientation	2	no	400
3125FOS-variable-Y	Choice of: Frontiers of Science	12	yes	500
4603BSMK3	Marketing Science	3	yes	500
4603BSOM4	Operations Management	4	yes	500
4603BSSF3	Strategic Financial Management	3	yes	500
4603BSSY5	Strategy and Technology	5	yes	500
312300100Y	Project Proposal Management internship	3	yes	600
312300200Y	JRP2I Management Internship	26-42	yes	600
	Elective area	8-24		≥ 400

The compulsory components of the Communication specialization are:

Code	Component	ECTS	Practical	Level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project 1	29	yes	500
312100300Y	How to Write a Research Proposal	2	yes	400
312100400Y	Reflection Course: Scientific Conduct	1	no	400
312100510Y	Career orientation	2	no	400
3125FOS-variable-Y	Choice of: Frontiers of Science	12	yes	500
4603SCRSCY	Research in Science Communication	4	yes	500
4603SCISEY	Informal Science Education	4	Yes	500
4603SCPDSY	Policy & Development in Science and Society	4	Yes	500
4603SCSJ4Y	Science Journalism	4	Yes	500
4603SCRPDY	Science Communication product development	4	yes	500
4603SCNV3Y	Scientific Narration and Visualization	3	yes	500
4603SCSPPY	SCS Project Proposal	3	yes	600
variable	JRP2 SCS Internship	23-34	yes	600
	Elective area	8-19		≥ 400

The compulsory components of the Education specialization are:

Code	Component	ECTS	Practical	Level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project 1	29	yes	500
312100300Y	How to Write a Research Proposal	2	yes	400
312100400Y	Reflection Course: Scientific Conduct	1	no	400
312100510Y	Career orientation	2	no	400
3125FOS-variable-Y	choice of: Frontiers of Science	12	yes	500
	Elective area	8		≥ 400
variable	ICLON lerarenopleiding Biologie	60	yes	600

The compulsory components of the Health specialization are:

Code	Component	ECTS	Practical	Level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project 1	29	yes	500
312100300Y	How to Write a Research Proposal	2	yes	400
312100400Y	Reflection Course: Scientific Conduct	1	no	400
312100510Y	Career orientation	2	no	400
3125FOS-variable-Y	choice of: Frontiers of Science	12	yes	500
312400200Y	Clinical internship (semi-arts stage)	22	yes	600
312400100Y	JRP2 Health internship	29-40	yes	600
	Elective area	6-17		≥ 400

Specialization and diversity

The Master's program of each student should cover a diverse spectrum of research methods. In order to accomplish this required diversity, the combination of the student's Junior Research Projects 1 and 2, and FOS courses should cover the areas of research methodology listed in the Procedure for Training Periods Biomedical Sciences 2023-2024.

[\(back to standard 2\)](#)

Appendix 3. Programme of the site visit

Dag 1: 15 november

09.00	09.30	Inloop panel en welkom (9:15-9:25) door decaan en PFH's
09.30	10.30	Vooroverleg panel (intern) & open spreekuur
10.30	11.00	Gesprek opleidingsmanagement BW en BMS
11.00	11.30	Gesprek examencommissie
11.30	13.00	Intern overleg panel (incl. lunch)
13.00	13.45	Gesprek BSc studenten
13.45	14.30	Gesprek BSc docenten
14.30	15.00	Pauze
15.00	15.45	Gesprek MSc studenten
15.45	16.30	Gesprek MSc docenten
16:30	17:00	Overleg panel

Dag 2: 16 november

09.00	09.45	Themasessie 1 Bachelor BW
09.45	10.30	Themasessie 2 Master BMS
10.30	11.15	Intern overleg panel
11.15	11.45	Eindgesprek opleidingsmanagement
11.45	13.30	Opstellen bevindingen (panel intern) incl. lunch
13.30	14.00	Mondelinge rapportage

Appendix 4. Materials

Prior to the site visit, the panel studied 15 theses. Information on the theses is available from Academion upon request. The panel also studied other materials, which included:

- Critical Reflection
- Student poster
- Overview teaching staff
- Assessment policy
- Assessment plan
- Programme map
- BMS alumni survey 2023