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Geacht College,

Hierbij ontvangt u 15 exemplaren van het eindrapport van de visitatie Biomedische wetenschappen OW 2012 (cluster), Biomedical Sciences.

Wij vertrouwen erop hierbij aan onze verplichtingen te hebben voldaan.

Met vriendelijke groet,



drs. S. Looijenga  
waarnemend directeur

Bijlagen:  
- rapporten Biomedische wetenschappen OW 2012 (cluster)

12 2112

# **Biomedical Sciences**

**Faculty of Health, Medicine and Life Sciences  
the transnationale Universiteit Limburg**

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This report was finalized on 12 December 2012



# Report on the master's programme Biomedical Sciences of the transnationale Universiteit Limburg

This report takes the NVAO's Assessment Framework for Extensive Programme Assessments as a starting point.

## Administrative data regarding the programme

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### Master's programme Biomedical Sciences

Name of the programme:	Biomedical Sciences
CROHO number:	66990
Level of the programme:	master's
Orientation of the programme:	academic
Number of credits:	120 EC
Specializations or tracks:	Clinical Molecular Sciences; Cardiovascular Biology and Medicine; Nutrition & Metabolism; Oncology and Developmental Biology.
Location(s):	Maastricht
Mode(s) of study:	full time
Expiration of accreditation:	30 September 2015

The visit of the assessment committee Biomedical Sciences to the Faculty of Health, Medicine and Life Sciences of the transnationale Universiteit Limburg took place on 18-19 September 2012.

## Administrative data regarding the institution

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Name of the institution:	the transnationale Universiteit Limburg
Status of the institution:	legal body providing higher education
Result institutional quality assurance assessment:	not applied

## Quantitative data regarding the programme

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The required quantitative data regarding the programme are included in Appendix 5.

## Composition of the assessment committee

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The committee that assessed the master's programme Biomedical Sciences consisted of:

- Prof. dr. Frans Kroese (chair), professor Education and training in the medical sciences, department of Rheumatology and Clinical Immunology, University of Groningen/University Medical Center Groningen;
- Prof. dr. Dirk Snyders, professor, department of Biomedical Sciences, University of Antwerp, Belgium;

- Prof. dr. Jannie Borst, professor Experimental Oncology, University of Amsterdam;
- Koen van de Ven, master's student Biomedical Sciences, University of Amsterdam.

The committee was supported by drs. L.C. te Marvelde and dr. J. Corporaal. The latter acted as secretary. Prof. dr. Janke Cohen-Schotanus, who acted as chair for the other site visits in the Biomedical Sciences cluster was unable to make the site visit due to personal circumstances. She did pass on her comments on the critical reflection to the committee before the visit. She also read and commented on the final report.

Appendix 1 contains the curricula vitae of the members of the committee.

## **Working method of the assessment committee**

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### *Preparation*

After receiving the critical reflection, the project manager checked the quality and completeness of the information provided. After approval, the critical reflection was forwarded to the committee, in both printed form and digitally. In addition, the committee members selected and read a total of 15 theses for each programme that was assessed (see Appendix 7).

Before the site visit the project manager created a draft programme for the interviews (see Appendix 6). The draft programme was discussed with the chair of the committee and the coordinator of the educational institute. As requested by QANU, the coordinators of the programmes carefully composed and selected a representative panel for all interviews.

### *Site visit*

During the initial meeting at the start of each site visit, the committee members discussed their findings regarding the critical reflection and the theses among themselves. They also discussed their task and working methods and the proposed domain specific requirements (see Appendix 2).

During the site visit, interviews were held with representatives of the programme, students, staff members, the educational committee and the examining board. The committee also received additional information, for example, study books, exams, evaluation reports and reports from the meetings of the educational committee. This information was examined during the site visit. When considered necessary, committee members could read additional theses during the site visit. A consultation hour was scheduled to give students and staff of the programme the opportunity to talk to the committee. No requests were received for the consultation hour.

The committee used part of the final day of the site visit to discuss the assessment of the programmes and to prepare a preliminary presentation of the findings. The site visit concluded with an oral presentation by the chairman of the general assessment in which he addressed several specific findings and impressions of the programme.

### *Report*

After the site visit the secretary wrote a draft report based on the committee's findings. The draft was first commented upon by the committee members and then sent to the faculty to check for factual irregularities. All comments made by the faculty were discussed with the

chair of the committee and, if necessary, with the other committee members. After revision, the report became official.

#### *Decision rules*

In accordance with the NVAO's Assessment Framework for Extensive Programme Assessments (as of 22 November 2011), the committee used the following definitions for the assessment of both the standards and the programme as a whole.

#### **Generic quality**

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

#### **Unsatisfactory**

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

#### **Satisfactory**

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

#### **Good**

The programme systematically surpasses the current generic quality standards across its entire spectrum.

#### **Excellent**

The programme systematically well surpasses the current generic quality standards across its entire spectrum and is regarded as an (inter)national example.



## Summary judgement

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This report provides the findings and considerations of the Biomedical Sciences committee on the master programme in Biomedical Sciences at the transnationale Universiteit Limburg. The committee assessment is based on information in the critical reflection, interviews during the site visit and a selection of theses. For one of the sixteen standards, the committee has assessed the programme as 'unsatisfactory'. For two of the sixteen standards, the programme was assessed as 'good'. The rest of the programme was assessed as satisfactory.

### *Intended Learning Outcomes*

The master's programme Biomedical Sciences (M-BMS) is a joint programme offered by and taught at Maastricht and Hasselt University. It aims at training professional researchers who are able to 'help unravel the molecular and cellular mechanisms that underlie health and disease'. The M-BMS programme aims to combine specialization and multidisciplinary. It is the result of a merger of different (research) master's programmes, now combined in one master's programme, Biomedical Sciences. Its main focus is a broad knowledge of the molecular and cellular mechanisms that determine health and disease. The aim of the programme has been translated into a set of intended learning outcomes which are explicitly linked to the Dublin descriptors.

The committee is of the opinion that the M-BMS programme aims at high quality and is well aware of the wishes of the professional field. The intended learning outcomes are satisfactory, but broad. According to the committee, the level and orientation of the programme's objectives are at an academic master level. The committee is positive about the fact that the programme pays explicit attention in its learning outcomes to designing and writing an academic research project.

Towards the end of the programme, students choose between one of four specialization tracks. The committee finds that more attention should be paid to these different tracks. It advises the programme to choose between (earlier) specialization and multidisciplinary. If the programme aims to maintain various specialization tracks, the committee advises developing track-specific objectives and intended learning outcomes in order to clearly differentiate between the tracks as well as to highlight common aspects between them. The possible development of new specialization tracks only makes more urgent the call for elaboration of the current tracks in the objectives and profile of the programme. The committee advises the programme management to take time to reformulate these objectives.

### *Programme*

The curriculum of the master's programme Biomedical Sciences consists of five blocks: three in the first and two in the second year. Of these five blocks, three have a theoretical and introductory character. The last blocks of both years are reserved for, respectively, a junior and senior internship. The senior internship defines the specialization.

The programme fulfils the criteria described in the Dublin descriptors for master's programmes. Research forms an essential element of the programme. Students are taught in an international academic environment by formulating and working on their own research questions. At an international level, the programme ties in with the international field of biomedical sciences by: teaching on two campuses (in Maastricht and Diepenbeek, Belgium), by its increasing number of international students and staff, and by using the university's international network to provide students with a choice of host laboratories abroad for their (junior or senior) internship.

The committee does have a few critical remarks about the orientation of specific parts of the curriculum. The committee is convinced that the first two blocks are of a too general

character and need to be reconsidered. Furthermore, students should be able to choose a certain specialization track much earlier in the programme.

The committee is aware that, at both a national and international level, the M-BMS programme holds a special position in the Netherlands, as a joint programme of Maastricht University and Hasselt University. The committee is convinced that the unique possibilities this co-operation provides should be exploited and stimulated more. Following the advice of both the staff and the Educational Committee, the committee urges the programme to mix student from Maastricht and Hasselt in tutor groups. Only by working together will students come to appreciate the complementary expertise of both universities which are brought together in their master's programme.

A point of concern for the assessment committee is the amount of attention that is paid to ethics in the programme. Thinking critically about the ethical implications (and practical limitations) of using animal models should be a compulsory part of the programme. In general, the understanding of ethical issues should be addressed more extensively in the programme.

The committee concludes that the chosen didactic form (Problem Based Learning) is beneficial for the programme as a whole. By working in small groups, students and teachers feel very much involved and appreciate each other's input. The committee thinks that the possibilities that the Problem Based Learning sessions provide could be explored even more widely, for instance by paying more attention to methodology, professional behavior, ethical issues and feedback.

The M-BMS programme is aimed at students who have successfully completed a bachelor's degree in a relevant field, at university or non-university level, either in the Netherlands or abroad. A distinction is made between different categories of applicants. Some students will have to undergo an additional admission procedure. The committee appreciates that insufficient knowledge can be brought up to standard in the first part of the curriculum. However, it also finds that certain skills (such as laboratory skills and generic academic skills) cannot be acquired so easily. Therefore, it strongly advises the programme to offer additional training in the form of a pre-master or summer school courses.

Completion grades for the M-BMS programme are very high. The committee thinks that the didactic form, the different work forms and good supervision create a positive study climate which prevents students as much as possible from dropping out.

### *Staff*

The programme is organized and delivered by a team of 16 core staff members based at Maastricht and Hasselt University, together with tutors and guest lecturers from the different departments within the Faculty of Health, Medicine and Life Sciences (FHML) and the professional field. The committee has gained a positive image of the staff's research and educational expertise.

The committee is especially impressed with the staff policy of the Faculty of Health, Medicine and Life Sciences. The M-BMS teaching staff is well supported by the professional organization and structure of various departments and task groups designed especially for this task. The staff is more than sufficiently equipped to deliver the programme and reach the attainment targets. Tutors seem easily accessible to students. Staff and students both attest to a positive study climate, which the committee considers beneficial for the programme as a whole.

### *Services and facilities*

At Maastricht University, the M-BMS programme benefits from good accommodation, facilities and services to deliver its programme. Lecture rooms and ICT-facilities such as Student Desktop Anywhere are of a high standard, laboratory rooms are adequately equipped and so are the University Library and computer rooms. Because the concept of Problem Based Learning entails consulting various sources, the programme makes use of a Learning and Resource Centre. The facilities tie in well with the aims of the programme.

One point for improvement, the committee concludes, is the electronic provision of study information. Despite the fact that there is an abundance of practical and useful information available in various advanced electronic systems, the committee concludes that students do not know where to find this information. The programme should take a more active role in providing students with the necessary information regarding their study. Information should be offered in a more concise manner and guidance should be offered when necessary.

### *Internal quality assurance*

The M-BMS programme makes use of an evaluation cycle, consisting of four steps: gathering and processing evaluation data (1), discussing them with relevant parties (2) summarising important findings and formulating action points (3) and inspection if the action points have been implemented and have resulted in improvements (4). Various evaluation data are collected and processed by external parties and by the programme itself. The committee appreciates the efforts to gather as much information as possible, which might lead to improvement measurements. However, it concludes that the evaluation system is fragile and insufficiently formalized. Firstly, it depends too much on the efforts of one person. Secondly, because the current evaluation system is insufficiently formalized, not all stakeholders who might be able to contribute to the process of quality assurance are involved. The Educational Committee is too often overlooked and is not as well informed or consulted as often as it should be. For instance, it does not see evaluation data and does not have regular meetings with the programme management. The committee urges the programme to reconsider and formalize its quality assurance cycle and to formulate attainment targets for different parts of the evaluation process.

### *Testing and final qualifications*

The committee concludes that the programme does have an adequate assessment system in place. It also concludes that students achieve the intended learning outcomes. The master's programme aims at preparing students for a career in research and/or the professional field. The majority of students (66%) goes on to carry out PhD-research.

The committee is impressed with the active role of the Board of Examiners, proof of which is given by a number of measurements the Board has taken, such as exam training for staff members and close involvement with exam evaluations. During the visit, the Board of Examiners put forward a few ideas for further improving the quality of examining in the master's programme. The committee is positive about these plans and advises the Board to carry them out.

Before and during the site visit, the committee looked at a random sample of 15 master's theses and a number of block exams. It considers the quality of the thesis and exams sufficient. The block exams tie in with the intended learning outcomes. A point of concern for the assessment committee is the assessment of the master's thesis. The committee was surprised to learn that the senior internship, although individually marked and a prerequisite for graduation, plays no role in the assessment of the master's thesis. The committee

considers practical laboratory techniques essential for future researchers. Therefore, it urges the programme to not only mark the senior internship individually, but to include this mark in the final mark for the thesis.

The committee assesses the standards from the Assessment Framework for Extensive Programme Assessments in the following way:

**Intended learning outcomes**

Standard 1 satisfactory

**Curriculum**

Standard 2 satisfactory

Standard 3 satisfactory

Standard 4 satisfactory

Standard 5 satisfactory

Standard 6 satisfactory

Standard 7 satisfactory

**Staff**

Standard 8 good

Standard 9 good

Standard 10 satisfactory

**Services and facilities**

Standard 11 satisfactory

Standard 12 satisfactory

**Quality assurance**

Standard 13 satisfactory

Standard 14 satisfactory

Standard 15 unsatisfactory

**Assessment and achieved learning outcomes**

Standard 16 satisfactory

**General conclusion**

satisfactory


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

Date: 12 December 2012



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Prof. dr. Frans Kroese, chair



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Dr. J. Corporaal, secretary



## Description of the standards from the Assessment Framework for Extensive Programme Assessments

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### Intended learning outcomes

**Standard 1**

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

**Explanation:**

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

### 1.1 Findings

In November 2011 the national committee of academic Biomedical Studies in the Netherlands decided on a domain specific framework of reference and national intended learning outcomes for all its educational programmes. The framework states that Biomedical Sciences (in Dutch: BMW) aim at a translational approach of research questions concerning health and disease in humans and animals. In doing so, Biomedical Sciences integrate elements of both the natural sciences, especially (human) biology, chemistry, pharmacy, physics and mathematics, and the medical sciences (see Appendix 2).

The committee has studied the domain specific framework of reference and discussed this during its initial meeting. It states that the framework describes the biomedical field in a correct, but very global manner. As such, the framework does not give much direction for the organization of educational programmes within BMS. The committee agrees with the view expressed in the critical reflection of the master's programme Biomedical Sciences, that the biomedical sciences are currently going through important changes. They are becoming an autonomous area of research and might become as a catalyst for a whole new course of industrial developments. With respect to these developments, the committee holds the opinion that a more specific vision regarding the domain of the Biomedical Sciences itself and regarding the role educational programs play in this domain could be beneficial.

The primary aim of the master's programme Biomedical Sciences (until September 2012 known as Molecular Life Sciences), according to the critical reflection, is 'to train professional researchers who, using state-of-the-art techniques and work methods, are able to help unravel the molecular and cellular mechanisms that underlie health and disease'. The programme is a collaborative effort between Maastricht University and Hasselt University, and is hosted by the transnationale Universiteit Maastricht. By combining forces, the programme aims to provide extended expertise in the field of biomedical sciences. Contrary to Maastricht University, Hasselt University has a faculty of natural sciences, which offers expertise in the areas of systems biology, nanotechnology and bio electronics. Because the programme is embedded in the Faculty of Health, Medicine and Life Sciences (FHML) of Maastricht University, the master's programme Biomedical Sciences is clearly medically-oriented. Its main focus and the starting point for the development of new insights is a broad knowledge of the molecular and cellular mechanisms that determine health and disease.

Within the programme, students specialize in one of the following four subjects:

1. Clinical Molecular Sciences;
2. Cardiovascular Biology and Medicine;
3. Nutrition and Metabolism;
4. Oncology and Developmental Biology.

The aim of the programme has been translated into a set of intended learning outcomes. These intended learning outcomes are listed in Appendix 3. The critical reflection provides an overview which shows that all Dublin descriptors are reflected in the intended learning outcomes. In a broader context, the intended learning outcomes of the programme have been based on the above mentioned 'domainspecific framework of reference'.

## 1.2 Considerations

The committee considers that the programme aims at high quality and is well aware of the wishes of the professional field. From the information the committee received, however, it was unclear whether the programme has chosen to focus on specialization or on multi- and interdisciplinarity.

The interviews revealed that the programme aims to combine specialization and multidisciplinary. The management pointed out that the programme is the result of a merger of different (research) master's programmes, now combined in one master's programme, Biomedical Sciences. Because of this historical background, different research schools aim to maintain their original profile in the new programme. That explains the existence of four specialization tracks. The specialization track is mentioned on the list of grades, not on the master's certificate.

The committee advises the programme to choose between specialization and multidisciplinary. If the programme aims to maintain various specialization tracks, the committee advises developing track-specific objectives and intended learning outcomes to clearly differentiate between the tracks as well as to highlight common aspects between them.

The intended learning outcomes are satisfactory. According to the committee, the level and orientation of the programme's objectives are without doubt at academic master level. The committee is particularly positive about the fact that the programme pays explicit attention in its learning outcomes to designing and writing an academic research project.

A development that the committee appreciates, is the possible start of a specialization track for entrepreneurship/management, possibly together with economical sciences and following a first onset in the bachelor's programme. During the site visit, the committee learned that the possibilities of this track within M-BMS are currently being explored. At the same time, the committee stresses that the possible development of a new specialization track only makes more urgent the call for elaboration of the current tracks in the objectives and profile. The committee advises the programme management to take time to reformulate these objectives.

## 1.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 1 as **satisfactory**.

## Curriculum

### Standard 2

The orientation of the curriculum assures the development of skills in the field of scientific research and/or the professional practice.

### Explanation:

The curriculum has demonstrable links with current developments in the professional field and the discipline.

### 2.1 Findings

The curriculum of the master's programme Biomedical Sciences consists of five blocks: three blocks in the first and two blocks in the second year. Of these five blocks, three (1.1, 1.2 and 2.1, each 12 EC) have a theoretical and introductory character. The last blocks of both years (1.3 and 2.2) are reserved for a junior practical training (36 EC) and a senior practical training period (48 EC). An overview of the programme can be found in Appendix 4.

According to the critical reflection, in the first two blocks of year 1 the programme intends to provide students with a 'basic knowledge of molecular mechanisms in disease and disease development, as well as disease screening, diagnosis, prevention and therapy'. Because the master's programme is open to students from different backgrounds, the first two blocks are designed in such a way that students from different backgrounds can fill in gaps in their knowledge if necessary.

Practical/experimental skills are trained in block 1.3, when students follow their 22-weeks junior practical training. Block 1.3 consists of two components: compulsory and elective courses and participation in laboratory research (15-19 weeks). Compulsory are courses on laboratory animal research (replaceable by a certified course on laboratory animal science) and safe microbiological techniques for students without a valid certificate. Also compulsory is the course 'Explore and Focus', a two-week introductory course aimed at preparing students for choosing their specialization in year two. Elective courses are, for instance, those on 'microscopy' and 'working with radionuclides (Dutch Article 5b)'.

Block 2.1 focuses on designing and defending a research project. Students formulate a research question and design a research project which will be carried out under supervision at a research group during the senior internship. Additionally, the programme offers training in scientific English writing and presentation skills in 2.1.

In their senior practical training, students choose one of four specializations:

1. Clinical Molecular Sciences (the molecular mechanisms in health and disease that govern chronic diseases);
2. Cardiovascular Biology and Medicine (the cardiovascular aspects of chronic diseases);
3. Nutrition and Metabolism (metabolism-related diseases and nutritional interventions);
4. Oncology and Developmental Biology (the mechanisms in normal and abnormal (e.g. cancer) development).

According to the critical reflection, all four specialization-tracks concentrate on two questions: 'How is scientific knowledge obtained?' and 'How is new knowledge applied in practice?' In senior practical training, students work on their self-designed research project. Subsequently, they present their results at the 'International Life Sciences Master Students Research Conference' by means of a poster presentation. The poster presentation is defended

in front of peers and judged by a jury of experts. Finally, students write their master's theses on the basis of the project outcomes of their senior internship.

At a national level, the programme ties in with other Biomedical Sciences master's programmes by basing its intended learning outcomes on the skills and knowledge required of students going on to start a PhD or of academic professionals (e.g. teachers or policy advisers) working in the field of biomedical research. The programme fulfils the criteria described in the Dublin descriptors for master programmes. In this academic programme, research forms an essential element. Students are taught in an international academic environment by formulating and working on their own research questions. Approximately 66% of graduates go on to start a PhD, either at Maastricht University (37%) or elsewhere (29%).

At an international level, the programme ties in with the international field of biomedical sciences by: teaching on two campuses (in Maastricht and Diepenbeek, Belgium), by having an increasing number of international students and staff, and by using the university's international network to provide students with a choice of host laboratories abroad for their (junior or senior) internship.

## **2.2 Considerations**

To train research professionals, a programme is required that provides students with both research skills and general knowledge and with basic academic skills for the working environment, for example the ability to discuss and present the methodology of their work or the ability to reflect and comment on ethical issues connected with research. The committee concludes that the orientation of the programme is strongly geared towards a future career in research. By introducing students to the latest developments in the field of biomedical sciences, and by allowing them to carry out their own research project, the committee finds the links of the programme with current developments in the professional field demonstrable. At the same time, and as already mentioned (see standard 1), because biomedical scientists work with applicable research results and are becoming increasingly dependent on the corporate world the committee would welcome an additional 'entrepreneurship/management' track in the programme geared towards the business world. Finally, the committee finds that students specialize too late in the programme to justify the existence of four specialization tracks.

On the whole, the committee is impressed with the contents and design of the curriculum. The committee appreciates the way in which the programme activates students to design their own research project, together with a supervisor, and defend it. The poster presentation at a conference at the end of the second year is also valued positively by the committee. Finally, the committee is positive about the possibility for students to obtain important certificates, specifically those for working with radioactive material (Dutch article 5b) and performing animal experiments (Article 9).

The committee made a few critical remarks about the orientation of specific parts of the curriculum. From talking to students, teachers and the programme management, the committee has learned that although some students appreciate the general introduction to Biomedical Sciences in the first two blocks of the curriculum most of them expressed the wish to specialize (much) earlier in the programme, starting in year 1.

Part of the interview the committee held with the teachers was used to get a clearer picture of which learning outcomes and skills are being trained in the first blocks of the curriculum. The



M-BMS teachers explained that the first two blocks of the curriculum have proven to be challenging because a general introduction to and overview of the field of BMS inevitably leads to some overlap with courses that students have had in their previous educational programmes. Block 1.2 takes as a thematic background as a starting point; different illnesses and clinical pictures are being introduced from different molecular approaches. In addition, the first two blocks are aimed at ensuring that incoming students all acquire the same level of knowledge and academic skills before starting their junior internship.

The main objection students put forward to blocks 1.1 and 1.2 was that although they appreciate the didactic form (see standard 4), they would like to see more interaction between acquiring (or recapitulating) knowledge and training practical research skills (see standard 5). They therefore put forward the suggestion to the committee that the introductory blocks could be shortened to provide space for earlier specialisation courses and practical laboratory courses.

The committee is convinced that the first two blocks still leave room for improvement and need to be reconsidered, despite recent efforts by the programme management to improve block 1.1 and 1.2. They could either be shortened to make space for earlier specialization courses, or organised differently, for instance by integrating practical skills training.

From talking to the students and alumni, the committee has concluded that they are very positive about the English writing and presentation course in block 2.1. Seeing as the master's programme is entirely in English, the committee does advise the programme to consider offering this course earlier in the programme. Also, the elective course for the senior internship (Explore and Focus), now offered during the junior internship in block 1.3, could be brought forward, as students have expressed the wish to already choose their junior internship with a certain specialization track in mind. The committee is glad to hear from the programme coordinator that this point of critique has already been taken on board and that in the future the course will be offered not during but before block 1.3. Finally, alumni were very positive about the knowledge and skills they acquired during their internships.

The committee is aware that, at both a national and international level, the M-BMS programme holds a special position in the Netherlands, as it is a collaborative effort between Maastricht University and Hasselt University. During the site visit, the committee learned that this co-operation is most appreciated by the teaching staff, who clearly see the advantages in terms of benefitting from each other's research experience and sharing organizational responsibilities for the master's programme. Students are more critical. According to the programme management and the programme coordinators this is because students are reluctant to travel to and from Hasselt University. To meet students' objections to traveling, tutor groups from Maastricht and Hasselt are not mixed. The committee is convinced that the unique possibilities the co-operation provides should be used and stimulated more. Following the advice of both the staff and the educational committee (OC), the committee urges the programme to mix student from Maastricht and Hasselt in tutor groups. Only by working together will students come to appreciate the complementary expertise of both universities that come together in their master's programme. Considering both the positive aspects and critical remarks, the committee assesses standard 2 positively.

## 2.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 2 as **satisfactory**.

**Standard 3**

The contents of the curriculum enable students to achieve the intended learning outcomes.

**Explanation:**

The learning outcomes have been adequately translated into attainment targets for (components of) the curriculum. Students follow a study curriculum which is coherent in terms of content.

**3.1 Findings**

In the appendices file of the critical reflection, the programme has shown how the intended learning outcomes of the M-BMS programme are linked to the different blocks and courses. For instance, learning outcome 2, 'Detailed knowledge of the molecular processes involved in gene expression (transcription, translation, post-translation, epigenetics)' is dealt with in course 1.1, 'Molecular Mechanisms in Health and Disease', whereas learning outcome 9, 'Understanding of the basic principles of entrepreneurship and intellectual property', is integrated in course 2.1, 'Designing Scientific Research'. The final learning outcome, 'Ability to independently maintain and extend professional knowledge and competences' (learning outcome 25) is recurrently dealt with in all five blocks.

According to the critical reflection, the two-year's programme is based on 'a multi- and interdisciplinary approach that uses a variety of teaching methods in the form of task-, problem- and project-based learning'. The curriculum has been developed along 1) academic, (2) conceptual, (3) educational and (4) international principles:

- *Ad 1. Academic:* the programme focuses on the relationship between biomedical sciences and human health;
- *Ad 2. Conceptual:* the programme is based on a multidisciplinary and interdisciplinary approach;
- *Ad 3. Educational:* the programme uses a range of Problem Based Learning (PBL)-oriented teaching methods. Specific to the programme furthermore is the integration of courses and two (junior and senior) practical internships.
- *Ad 4. International:* the programme benefits from an international environment, which increases the international orientation of its graduates and helps them develop intercultural skills.

The curriculum is designed by a number of planning groups, consisting of a chair, assisted by two to four staff members with complementary expertise. The combined expertise is meant to ensure 'sound coverage of the key contents of each programme course'. Planning groups are encouraged to consult additional experts for advice on for example literature or task assignments.

The learning outcomes have been defined on the basis of recent developments in the field of biomedical sciences and the professional field, together with the teachers of the different courses and the different research schools which feature in the programme. To ensure that all learning outcomes are represented in the programme, the programme works with an annual plan ('Nominaal plan'), which consists of a description and a summary of every individual course, the intended learning outcomes per course, and the different ways in which the courses (and therefore the intended learning outcomes) are being assessed.

The annual plan allows teachers to see how their courses fit in with the block, and how the block fits in with the programme as a whole. This ensures that students follow a coherent

study programme. If a member of staff wants to make a suggestion for a change to his or her course, they are referred to their respective block coordinators or the coordinator of the master programme.

### 3.2 Considerations

The committee considers that students M-BMS follow a programme that is coherent in terms of content. Learning outcomes have been adequately translated to courses and to attainment targets for parts of the curriculum. The matrix linking courses to learning outcomes convincingly shows the coherence of the programme in terms of difficulty and structure. For instance, the first two blocks focus primarily on learning outcomes from the category 'knowledge and understanding', whereas the last year focuses on 'applying knowledge and understanding'. Communication and learning skills are assessed throughout the programme. On the one hand, the committee understands that those skills are being trained during the programme. On the other hand, if particular skills feature in all courses, it is unclear to the committee how the students' accomplishments and progress in these skills is assured. A second-year student should be expected to debate in academic discussions at a different level than a first-year student. The students themselves also raised this issue. For instance, in the journal clubs or in individual assignments, they were not always sure to what extent or in how much depth a subject should be dealt with. A way of solving this problem would be to further differentiate within a specific learning outcome for the level of skill expected from a first- and a second-year student. Generally, the attainment targets for different parts of the master's programme, the committee feels, can be made even more explicit.

A special point of concern for the assessment committee is the amount of attention that is paid to ethics in the M-BMS programme, or more specifically, the translation of learning outcome 8 ('Understanding of ethical issues related to the use of animals in experiments') in the curriculum. Because students work with animal and human materials, the committee finds it important that educational programmes of biomedical studies pay substantial attention to matters of ethics. In the M-BMS programme, attention to ethical issues is limited to block 1.3. Within that block, students either follow an obligatory three-week course on 'Laboratory animal research' or a theoretical course on 'Laboratory animal science'. Both courses focus on the conditions for carrying out laboratory animal testing, but differ in the amount of attention that is given to ethical issues. Most attention to ethics is paid in the theoretical course, where students compare animal models for studying human diseases and analyse their respective strengths and weaknesses. In the practical course, students are encouraged to reflect on the ethical implications of using animal models by writing a research request to a committee (DEC – Dier Ethische Commissie) concerned with animal welfare. The committee feels that thinking critically about the ethical implications (and practical limitations) of using animal models should play just as much a role in the practical course as in the theoretical course. The committee therefore suggests that the theoretical course could be made obligatory for all students. More importantly, in general the committee finds that the 'understanding of ethical issues' should be addressed more extensively in the master's programme. It pleases the committee to hear that the programme management shares their concern and is planning to take steps to ensure a change in this respect.

### 3.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 3 as **satisfactory**.



**Standard 4**

The structure of the curriculum encourages study and enables students to achieve the intended learning outcomes.

**Explanation:**

The teaching concept is in line with the intended learning outcomes and the teaching formats tie in with the teaching concept.

**4.1 Findings**

The two-year's master's programme BMS aims at 'training students in relevant skills for their future careers in combination with deepening their scientific background and knowledge'. To achieve these aims, it uses a teaching concept which consists of a variety of teaching methods in the form of task-, problem- and project-based learning.

In the first two blocks of the curriculum, for instance, students are made familiar with the circular scientific process (formulating a testable research question, performing experiments to test the formulated hypothesis, assessing the results, formulating new questions and hypotheses) through a combination of general lectures and discussions/assignments in smaller groups. In the last block of the first year, during their junior internship, students are encouraged to put the acquired knowledge into practice by partaking in supervised laboratory research and familiarizing themselves with current research techniques.

In the critical reflection, the following teaching formats are distinguished:

- *Lectures*: Used to introduce a topic or outline relevant topics and explain difficult parts of the subject;
- *Journal clubs* (tutorial group of no more than 10 students): Discussion of a recent scientific article from a field relevant to the module topic, either in the form of a round table discussion or by small student-led presentations about different aspects of the paper. Journal clubs are scheduled in the first two blocks of the curriculum and guided by a tutor;
- *Task assignments* (tutorial group of no more than 10 students): Students work in small groups of different sizes (two to three or nine to ten students) on a specific task and present the results in a presentation and a short written report;
- *Topic-related lectures* (all students): An expert on a particular subject discusses the most recent developments of an aspect of the module topic;
- *Research seminars* (all students): Lecture and discussion lead by a postdoc or an advanced PhD student who is active in a project that relates to the module topic. Students prepare for the lecture by reading a recent article;
- *On the job training (individual)*: Internships and thesis supervision.

Maastricht University is renowned for working with Problem Based Learning. To successfully apply this didactic form, the teaching staff is well supported by the organizational structure of the programme and that of the Faculty of Health, Medicine and Life Sciences. The different educational forms of the programme are meant to 'relate to and complement each other'. An example the programme gives in the critical reflection is how in journal clubs students might be discussing opposing scientific data to that presented in the lectures. Students acquire knowledge, while at the same time training practical skills (e.g. debating articles, presenting ideas, questioning methodology).

To prepare students for a scientific career, over the course of the curriculum group assignments are gradually replaced by individual assignments. This is reflected in two figures

in the critical reflection, showing the student-staff-ratio over the two years of the curriculum. In year 1 for instance, 59% of the curriculum is offered in student groups of over 25 students, whereas 18% of the teaching is on a one-to-one basis. In year 2, the amount of teaching in groups of over 25 students is reduced to 28%, while the amount of one-to-one teaching has increased to 46%.

#### 4.2 Considerations

The committee is impressed with the positive study climate attested to by both students and teachers. According to the committee, the University in Maastricht is nationally and internationally renowned for its experience with Problem Based Learning. It appreciates how the teaching staff is well supported by the organizational structure of the programme and that of the Faculty of Health, Medicine and Life Sciences.

The committee feels that the chosen didactic form is beneficial for the M-BMS programme as a whole. By working in small groups, both teachers and students feel very much involved. The different work forms seem appropriate to the committee for achieving the main goals of the programme. 'Relevant skills for future careers' are trained in journal clubs, task assignments and in both internships, whereas the additional lectures and research seminars seem suitable for contributing to and deepening the students' scientific background and knowledge.

During the visit, the committee discovered that students are especially positive about the journal clubs. Students find them a useful addition to the lectures. They particularly appreciate the different insights different students bring to the discussion.

On two points, the committee sees room for improvement. A critical remark the teachers made, concerned working with four different tutors in block 1.2. Block 1.2 is divided into four times two weeks. Every two weeks, the students see a different tutor. This makes it hard for tutors to monitor students' progress and take action if necessary. More continuity in this block would also be advisable from the perspective of the students. The committee agrees with the teachers and suggests that their proposal for working with one and the same tutor during eight weeks should be looked into.

Finally, the committee is under the impression that the possibilities that Problem Based Learning provide could be even explored more widely. The journal clubs, for instance, also seem opportune occasions for discussing ethical issues (currently underrepresented in the curriculum), methodology and professional behavior. Also, as already mentioned by the programme itself as a point for improvement, the way in which feedback is given in the PBL-sessions could be standardized more. This could for instance be done by recording the feedback in a digital dossier and, by doing so, making it accessible for students, other teachers and the Board of Examiners.

#### 4.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 4 as **satisfactory**.

**Standard 5**

The curriculum ties in with the qualifications of the incoming students.

**Explanation:**

The admission requirements are realistic with a view to the intended learning outcomes.

**5.1 Findings**

The M-BMS programme is aimed at students who have successfully completed a bachelor's degree in a relevant field. The number of enrolling students has gradually increased from 11 a year in 2005 to 69 in 2011. Since 2006 the proportion of foreign students has increased from 4% to approximately 30%. The programme management aims at a student intake of approximately 100 per year. A distinction is made between three categories of applicants. Direct access to the programme is granted to students who have received a bachelor's degree in Biomedical Sciences from Maastricht University or Hasselt University. Furthermore, the programme management has identified a number of bachelor's programmes which grant direct access to the master's programme. These include: Molecular Life Sciences, Biomedical Sciences, Medicine and Biology at a Dutch or Flemish university. Finally, the last category of applicants consists of two groups of students which are invited to apply, but will be individually assessed by a Board of Admission. These are students with a university bachelor's degree in a relevant field, either from the Netherlands, Belgium or abroad, and students with a non-university bachelor's degree in a relevant domain issued by a Dutch, Flemish or German higher education programme.

The selection procedure for foreign students or for students without a university degree consist of an interview, conducted in English, in which the Board of Admission (the programme coordinator and the chairman of the Board of Examiners) judges whether applicants are eligible on the basis of the courses they have followed during their bachelor's programme. Non-native English speakers who have not previously followed a programme taught in English must also submit proof of their English proficiency by passing an IELTS or TOEFL-test. The programme deliberately does not provide a bridging year or summer school courses. During the visit, the programme management explained to the committee that they feel that such a pre-master should not be needed, because it is their experience that in the Problem Based Learning sessions students from different backgrounds are able to learn from one another. Students from Hasselt University, for instance, on the whole seem to have a more thorough knowledge of different aspects of the field, whereas students from Maastricht, as a consequence of PBL, are generally better trained in critical thinking and debating skills.

According to the critical reflection, in 2011/2012 a total of 39% of 69 students started the M-BMS programme after following a Dutch non-university (HBO) bachelor's degree (9%) or a foreign bachelor's degree (30%). The programme management and students estimated that the mix of Dutch/Belgian and foreign students is currently around 50-50%. From studying the numbers provided in the critical reflection the committee concludes that the percentage-rates are more likely around 80-20 or 70-30%.

**5.2 Considerations**

The M-BMS programme wishes to be more than a follow-on master for its own bachelor's students. The programme management explained to the committee that they want to contribute to an increase in student mobility, which is also the intention of the bachelor-master's structure of higher education. As mentioned before, the committee sympathizes with this 'open-door policy' for incoming students. It also appreciates that students can learn a lot from one another, and is satisfied with the programme management's explanation that

insufficient knowledge can reasonably be expected to be brought up to standard in the first two blocks of the curriculum, for instance by additional reading.

However, from talking to both students and alumni, the committee also saw their opinion confirmed that certain skills (such as laboratory skills for students without a certain amount of laboratory experience) and certain academic competences (for instance debating and presenting one's ideas) are less easy to acquire. For that reason, the committee does advise the programme management to offer students with insufficient skills or competences additional training in the form of summer school courses.

The committee was pleased to hear that the programme management would reconsider offering a pre-master to those students might benefit from it in the form of a summer school providing such courses. The management suggested that the programme could participate in the existing summer schools of the Faculty of Health, Medicine and Life Sciences. Courses that the programme should consider, in the opinion of the committee, are laboratory skills such as microscopy, statistics (also for students who wish to brush up their knowledge), academic skills and English. The committee is well aware of the fact that Dutch and Belgian students cannot be required to take additional lessons in English. However, upon registration, all students could be offered a voluntary self-test of English. If the test shows that the level of English is insufficient or leaves room for improvement, it would be up to the responsibility of the students themselves to consider following a summer school course or taking lessons.

On the whole, however, the committee finds that the curriculum ties in well with the qualifications of incoming students. The admission policy ties in with the primary goal and the didactic concept of the programme: a fruitful exchange of theory and practice.

### 5.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 5 as **satisfactory**.

#### Standard 6

The curriculum is feasible.

#### Explanation:

Factors pertaining to the curriculum and hindering students' progress are removed as far as possible. In addition, students with functional disabilities receive additional career tutoring.

### 6.1 Findings

The study load of the M-BMS programme of 120 EC is divided equally over the two years of the curriculum. In year 1, students can obtain 24 EC in the first 16 weeks (theoretical blocks 1.1 and 1.2) and 36 EC in the last 22 weeks (block 1.3, the junior internship). A comparable division is visible in the second year, where the first eight weeks (theoretical course 2.1) represent 12 EC and the last 30 weeks (2.2, the senior internship) 48 EC.

The division of the study load is mirrored in the amount of supervision students receive. They are most intensively supervised during the two practical internships, often on a one-to-one basis. The critical reflection does not list the amount of contact hours per block or per year. Appendix N in the critical reflection does show the hours students spend on self-studying during blocks 1.1, 1.2 and 2.1. The hours of self-study range from 11,6 to 23,3 per week. Adding up these figures with the student-staff ratio in both study years, illustrates that the programme combines an increase in student's responsibility with an increase in face-to-face teaching towards the end of the programme.



During the interview students were asked about their study load. Students on average spend 40 hours per week on their studies. They mentioned that the study load differs for students with a university degree from those with a non-university degree. The latter need more time, for instance for additional reading, to reach the required level of competence. In general, the students find their study challenging, but doable.

The critical reflection provides an overview of the success rates of the programme over the past six years. Dropout numbers are low, and reached a peak in 2010 when 12% of students stopped after the first year. According to the critical reflections, students who drop out are mainly conditionally admitted students and HBO-graduates. Reasons for discontinuation, the programme states in the critical reflection, are various, and range from not seeing a future in academic or laboratory research to personal reasons.

With dropouts excluded, 92% or more of the students who enrolled between 2005 and 2009 graduated within three years. The cohorts of 2005 and 2008 were especially successful, as is attested by their succession rates. Of the cohort of 2008, 100% graduated after three years, whereas the first cohort (2005) all managed to graduate after two years. The high completion rate should probably be linked to the fact that the number of enrolling students was relatively small in 2005 (11 students). Of the cohort who started in 2010, 88% went on to study after the first years. Similar figures may be expected for the years 2011 and 2012, as the number of enrolling students has yet again increased, from 42 students in 2010 to 69 in 2011.

## 6.2 Considerations

The committee concludes that the programme manages to maintain high completion grades in a number of ways. Firstly, the admission procedure for foreign and HBO-graduates enables prospective students to get a realistic impression of the programme. Secondly, the committee thinks that the chosen didactic form, working in small tutor groups of different composition, adds in a positive way to students' progress. Thirdly, the considerable amount of time that is spent on practical internships in professional, international research groups and the supervision students receive during their internships seems to contribute to them staying actively involved. In short, the committee concludes that the programme has managed to create a positive study climate which prevents students as much as possible from dropping out.

The committee does think that, seeing as most of students stopping after one year are HBO-graduates and conditionally admitted students, offering a pre-master might further decrease dropout numbers.

## 6.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 6 as **satisfactory**

### Standard 7

The programme meets statutory requirements regarding the scope and duration of the curriculum.

#### Explanation:

Scope and duration:

- Bachelor's programmes (professional orientation): 240 credits;
- Bachelor's programmes (academic orientation): in principle, a minimum of 180 credits;
- Master's programmes (professional orientation): in principle, a minimum of 60 credits;
- Master's programmes (academic orientation): in principle, a minimum of 60 credits, depending on the programme.



### 7.1 Findings

The master's programme of Biomedical Sciences consists of 120 EC over two years. The programme is only offered full-time, according to the critical reflection because 'the nature of the programme and the educational format do not allow for part-time study'.

### 7.2 Considerations

The programme meets the formal criteria regarding scope and duration of a master's programme with an academic orientation (minimum of 60 EC).

### 7.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 7 as **satisfactory**.

## Staff

### Standard 8

The programme has an effective staff policy in place.

#### Explanation:

The staff policy provides for the qualifications, training, assessment and size of the staff required for the realisation of the curriculum.

### 8.1 Findings

Teachers for the M-BMS programme are drawn from research schools from both Maastricht University and Hasselt University. The 4 Hasselt research schools are:

- Biomed – Biomedical Research Institute;
- CenStat – Centre for Statistics;
- IMO- Institute for Material Research;
- CMK – Centre for Environmental Sciences.

In Maastricht, Biomedical Sciences are part of the Faculty of Health, Medicine and Life Sciences. FHML consists of 44 departments and 5 research schools:

- CAPHRI - School for Public Health and Primary Care;
- NUTRIM - School for Nutrition, Toxicology and Metabolism;
- CARIM - School for Cardiovascular Diseases;
- GROW - School for Oncology and Developmental Biology;
- MHeNS - School for Mental Health and Neuroscience.

The Maastricht research schools are responsible not only for training researchers, but also for providing education. To see to this role, the research schools provide extensive possibilities for teacher training. In general, Maastricht University holds a staff policy in which teaching plays an important role. This is reflected in the staff policy of the M-BMS programme.

The training of all teachers within FHML is the responsibility of a 'Staff development task group' (Docprof), who participate in an 'Educational Research and Development department' (EDUC). According to the critical reflection, the goals of the EDUC are threefold:

1. Supporting educational development;
2. Offering educational training programmes;

### 3. Conducting educational research.

The role of the EDUC, in short, is to facilitate the realization of the FHML educational philosophy of Docprof.

New staff members in the M-BMS programme are required to familiarize themselves with the concept of Problem Based Learning by attending a PBL course and a tutor course. Next to these compulsory courses, there are various teacher training courses and workshops available, for instance on assessing student work, providing feedback and using the computer as a teaching tool. To improve the quality of exams, examiners are offered training in assessment methods.

Part of the FHML staff policy is the so-called 'Teaching careers policy'. This policy is a teaching-focused career path for researchers who specifically ask for 'specific research and teaching commitments in education'. The 'Teaching careers policy' has created an additional path along which staff members can develop their career through teaching.

The teaching staff of the M-BMS programme is assessed in two ways: by the head of the department in an annual meeting ('annual appraisal interview') and by the students in standard student questionnaires. The student evaluations focus on teaching and are discussed during the annual appraisal interview. The head of department adds his opinion on the performance of the staff member in question in the fields of education, research and administration. The annual meeting results in a written report, which concludes with agreements reached during the conversation about development and improvement. If a member of staff wishes to follow specific teacher training courses, this is also put down on paper.

## 8.2 Considerations

The committee is very impressed with the staff policy of the Faculty of Health, Medicine and Life Sciences. It is clear that the faculty considers its educational policy to be very important, and that the teaching staff is supported well by the professional organization and structure of various departments (such as EDUC) and task groups (such as Docprof) designed especially for this task. Within the M-BMS programme, it appears to the committee, this policy seems to have a positive effect on both teaching staff and students.

The committee especially appreciates the various teacher training possibilities available to the staff. It also values the way in which educational performance is linked to an additional educational career path, alongside the traditional research career path.

The committee sees two minor points for improvement. In accordance with national agreements, as of 2009 all university teachers are required to obtain a University Teacher Qualification (BKO). Three years after that date, only 130 faculty members of FHML have acquired the BKO, which means that not all members of staff of the M-BMS have yet acquired this qualification. The committee would like to stress that the programme should make it a priority that at least all tenured staff acquire the BKO within the following year.

A final remark can be made regarding training in assessment methods. This training course in 'exam or question construction' has been newly established at the instigation of the Board of Examiners. The committee is positive about this initiative, and thinks it might contribute to the quality of exams. From talking to the Board, however, the committee learned that so far only a handful of teachers has followed the course. The committee regrets this, because in its opinion the course could contribute to the quality of the testing system. The committee

suggests that the programme management should encourage at least all current examiners to follow the course.

Weighing up the positive impressions of the staff policy and the points of criticism, the committee assesses the staff policy as 'systematically surpassing the current generic quality standards across its entire spectrum'. It therefore assesses standard 8 as good.

### 8.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 8 as **good**.

#### Standard 9

The staff is qualified for the realisation of the curriculum in terms of content, educational expertise and organisation.

#### Explanation:

The factual expertise available among the staff ties in with the requirements set for professional or academic higher education programmes.

### 9.1 Findings

In its critical reflection, the programme states which qualifications it desires from its teaching staff: extensive research expertise in a relevant domain as well as educational expertise. The committee concludes that the teaching staff meet these criteria.

All tenured staff have both educational and research tasks. As mentioned under standard 8, all M-BMS teachers are researchers conducting research at one of the research schools at Maastricht or Hasselt, thus ensuring a strong relation between education and state-of-the-art research. Furthermore, the faculty holds the policy that in principle, all tenured faculty members must have a PhD-degree.

According to the curricula vitae provided in the critical reflection, all sixteen core staff members do indeed have extensive academic research and educational experience. All members of staff have obtained their PhD-degree. Two of them hold positions as professor, seven as associate professor and five as assistant professor. Four core staff members are employed at Hasselt University. All core staff members are experienced in designing educational programmes and coordinating parts of the educational programme. Approximately 25% of staff comes from abroad.

By combining the expertise of two universities and nine research schools, the committee finds it convincing that indeed 'a broad spectrum of biomedical, clinical, social scientific and general nutrition- and health-focused and technical expertise is available'.

### 9.2 Considerations

The committee appreciates how the M-BMS programme has been developed by all stakeholders with an enormous drive. Teachers are closely involved and very committed. The committee is also impressed by the curricula vitae provided in the appendices. It is clear that the core staff members of the programme are active researchers, who manage to combine their educational and organizational task in the M-BMS programme with supervising PhD's, publishing, acquiring funding and initiating new research projects. The committee does not doubt that the staff is well equipped and qualified for realizing the curriculum.

### 9.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 9 as **good**.

<b>Standard 10</b>
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The size of the staff is sufficient for the realisation of the curriculum.
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### 10.1 Findings

The M-BMS programme distinguishes between two types of teaching roles: general roles and roles for programme execution. Roles for programme execution are those for delivering the programme and include coaching journal clubs, presenting lectures or supervising master's theses. General roles include being a member of the Board of Examiners, the Educational Board or the Board of Admissions.

The number of different educational roles and the number of enrolling students, the critical reflection explains, together result in a total number of hours required to run the M-BMS programme. For instance, 93 students were registered for the year 2010/2011. The programme was delivered on the basis of 5,17fte, resulting in a staff-student ratio of 1:18. It did therefore stay within the FHML benchmark for master's programmes, which is defined at 1:18.

### 10.2 Considerations

From talking to the teachers the committee concludes that the work load is high but manageable. The committee finds the size of the staff sufficient for the realization of the programme.

### 10.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 10 as **satisfactory**.

## Services and facilities

<b>Standard 11</b>
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The accommodation and the facilities (infrastructure) are sufficient for the realisation of the curriculum.
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### 11.1 Findings

According to the critical reflection, the didactic concept of Problem Based Learning requires specific physical facilities, for example, enough rooms for tutor groups. The master's programme of BMS shares the facilities provided by the Faculty of Health, Medicine and Life Sciences. For housing its tutor groups, it makes use of two buildings at Universiteitssingel 40 and 60, in which a total of 60 tutorial rooms are available – rooms equipped with the latest ICT-facilities for tutorial group sessions of 10 to 14 persons. Also, at Universiteitssingel 40 and 60, there are twelve 'communication skills training rooms' available, as well as four laboratories for training practical skills and one laboratory for conducting research. General lectures and seminars which attract bigger groups are held in the lecture and seminar halls located at Universiteitssingel 40 (rooms for 35-400 people), Universiteitssingel 50 (65-250) and Debyplein 1 (40-175).

In the collection provided by the University Library, located at Universiteitssingel 50, the programme has its own collection of books and other materials recommended by the course coordinators in a so-called 'Learning and Resource Centre'. To support the concept of



Problem Based Learning, the Learning and Resource Centre offers students a selection of titles per topic and multiple copies per title. These books cannot be borrowed to ensure that they are permanently available for use.

Students can access a computer at three places on the campus. The Learning and Resource Centre houses 165 PCs, the Computer Resource Centre another 225, as well as 60 laptops. Together with the University Library's internet café (LINK), where students can consult the internet and send e-mails, there is a considerable number of computers available.

Finally, the programme uses a server-based computer system, 'Student Desktop Anywhere', which enables students to access the library facilities, and also desktop software such as Office and EndNote and specific education software (for instance SPSS), from every computer with internet access.

### 11.2 Considerations

The committee appreciates that the didactic concept of Problem Based Learning entails consulting various sources and taking in different views. It is positive about the use of a Learning and Resource Centre with various titles per subject and various copies per title and the concept of Student Desktop Anywhere. From talking to the students, the committee learned that there are indeed sufficient titles present, even in exam periods.

From a tour around the buildings, library and laboratories, the committee also concluded that the lecture rooms are of a high standard, that there are sufficient computers available (probably also due to the fact that most students have their own laptop) and that the laboratory rooms are adequately equipped for developing practical skills and performing research. In general, the committee is under the impression that the accommodation and facilities tie in well with the aim and profile of the programme.

### 11.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 11 as **satisfactory**.

<b>Standard 12</b>
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Tutoring and student information provision bolster students' progress and tie in with the needs of students.
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### 12.1 Findings

The M-BMS programme, according to the critical reflection, is committed to coaching and informing its students well. The critical reflection contains an impressive list of members of staff and facilities involved with coaching students and providing them with information: tutors, block coordinators, student advisers, the Institute for Education (IfE), internationalization officers, the UM's electronic learning environment (EleUM), the study and administration system (Student Life-Cycle Management, SLM), the Information and Service Desk, and, finally, the university and faculty's websites.

#### *Tutoring*

*Tutors* coach tutorial groups, support students to 'actively direct their own learning' and function as easy accessible members of staff for questions. *Block coordinators* answer general questions and questions to do with programme content, and organize exam viewings. The block coordinators of blocks 1.3 and 2.2 also assist students with finding a practical training project (junior or senior internship) and a supervisor. For this purpose, an electronic database has been developed with all available internships of the Master's programme. *Student advisers*

offer students guidance with study-related problems. They can refer students to specialists such as the student psychologist or a career adviser.

#### *Student information*

The *Institute for Education* offers information about faculty and university regulations. It is accessible through a front desk or electronically via EleUM. It also offers group training courses for students who have been referred there by the student advisers to work on certain study skills. *International officers* answer practical questions of M-BMS students who intend to study abroad. All students of Maastricht University who wish to follow part of their studies abroad can apply for financial support. M-BMS students who plan to take an internship abroad can also apply for additional funding to cover travel, housing and living expenses. The *Information and Service Desk* is a central office for all student questions and requests. *EleUM*, comparable to Blackboard, is the UM's electronic learning environment. It is used for providing learning material to the students, communication to and between students and uploading tasks, assignments, presentations and progress meetings. EleUM is used in block 2.1. It is not compatible with Blackboard, used by Hasselt University and applied in blocks 1.1 and 1.2. Study results are monitored in a programme called *SLM (Student Life-Cycle Management)*. It can be registered via the UM website and is also used to register for blocks and exams.

### **12.2 Considerations**

It is clear to the committee that the programme is very dedicated to providing its students with good guidance and study information. Electronically, there is a lot of practical and useful information available. Furthermore, students can benefit from various favorable arrangements, ranging from study skills training to receiving practical and financial support when travelling abroad. Finally, it is also clear that student's questions and requests are taken seriously.

In spite of the praiseworthy level of information, however, during its visit the committee learned that students often do not know where to find certain information. For instance, students were critical of the process of re-registration, which proved to be complicated, especially for foreign students. The graduates the committee spoke to were unaware of the existence of alumni association Xist. They also remarked that the cum-laude procedure (the criteria to be met, and how the mark for practical skills fits in with the total list of marks) could be clearer. In general, graduates found that more information on the graduation procedure would be desirable. Finally, it surprised the committee that, despite the existence of internationalization officers, an electronic database with all available internships and EleUM, master's students criticized the lack of information on internships abroad and on the year planning in general.

The committee concludes that the programme should improve its provision of information by taking on a more active role. It is clear to the committee that the problem is not a lack of information. Rather, it is difficult for students to find and access that information. Important improvement measurements that the programme could easily adopt are to provide timetables and practical information in a more concise manner and to offer guidance at the beginning of each year on where to find which information, especially for foreign students. The committee is glad to hear from the programme management that it was aware of the problems concerning re-registration and that it employed student mentors to help students. However, here too the committee would rather see the problems solved than dealt with.

## 12.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 12 as **satisfactory**.

## Quality assurance

### Standard 13

The programme is evaluated on a regular basis, partly on the basis of assessable targets.

#### Explanation:

The programme ensures the quality of the intended learning outcomes, the curriculum, the staff, the services and facilities, the assessments and the learning outcomes achieved through regular evaluations. The programme also collects management information regarding the success rates and the staff-student ratio.

### Standard 14

The outcomes of these evaluations constitute the basis for demonstrable measures for improvement that contribute to the realisation of the targets.

Maastricht University makes use of a quality assurance cycle consisting of four steps. Steps 1 and 2 involve gathering and processing evaluation data and discussing them with relevant parties. Steps 3 and 4 entail 'summarising important findings and formulating action points' and 'inspection in the following year to ascertain whether the action points have been implemented and have resulted in improvements'. In this evaluation cycle, all four steps are closely tied together. Improvement measurements (step 3), for instance, provide the basis for new evaluations (step 1) and steps 2 and 3 (discussing data with relevant data and formulating action points) are also closely bound together. For that reason, these standards are assessed together here.

## 13.1 and 14.1 Findings

In the master's programme, different aspects of the educational programme (for instance, the facilities, the programme as a whole, parts of the programme) are evaluated by different parties and in different ways. The critical reflection gives an overview of the various types of evaluation and the different parties involved:

### 1. Flycatcher

#### *Evaluation of facilities*

All educational programmes within FHML are annually evaluated by an independent research agency, 'Flycatcher'. Flycatcher focuses on facilities. It measures how satisfied students are with ICT-facilities, the University Library, the infrastructure of their programme, information facilities and supervision. The results are submitted to the dean of Maastricht UMC+/FHML and to the IfE Management Team.

### 2. Programme Evaluation Taskforce

To gain insight into student satisfaction with the curriculum as a whole, the programme, like all FHML-programmes, collaborates with the Department of Educational Development and Research (EDUC). Part of the EDUC is the so-called 'Programme Evaluation Taskforce', which organizes evaluations of overall curricula and parts of programmes. Similar to Flycatcher, the Programme Evaluation Taskforce works with electronically issued questionnaires via the web-based Information System for Academic Quality (IWIO). The Programme Evaluation Taskforce is involved in the following evaluations:

#### *A. Programme evaluation*

Every two years, the Programme Evaluation Taskforce asks M-BMS graduates to fill in a questionnaire concerning the structure and composition of the programme, academic cohesion, the development of general academic skills and preparation for the labor market. The evaluation results are submitted to the programme's Director of Education and the Educational Committee.

#### *B. Block evaluation and evaluation of teaching staff*

To assess the different blocks, a questionnaire is composed by the block coordinator and planning group and executed and processed by the Programme Evaluation Taskforce. Students fill in a questionnaire at the end of each block. The questionnaire consists of a combination of closed and open questions, covering both the components and contents of each block and the way in which it was taught (task assignments, didactic form and tutor performance) and assessed. The evaluation results are submitted to the Director of Education of Biomedical Sciences, the Educational Committee, all involved block coordinators and the planning group.

#### *C. Evaluation of senior internship*

The evaluation of the senior internship is part of the overall curriculum evaluation. Additionally, the internship is also evaluated at the halfway stage ('short-term evaluation senior stage'). The evaluation results are submitted to the Director of Education and the Educational Committee.

### *3. Master Coordinator – evaluation of (parts of) the programme*

Complementary to these standardized and anonymous evaluations, the master's programme coordinator (also called: Master Coordinator), together with the block coordinator, holds monthly meetings with three to six different students, a so-called Student Evaluation Committee. These meetings have an informal character and are considered to be very helpful in terms of information. As of 2012/2013, students are offered a special training for evaluation purposes. Since the programme coordinator is also part of the Biomedical Sciences Management Team, she reports relevant information from these meetings directly to the Management Team.

### *4. Research Centre for Education and the Labour Market (ROA) and programme coordinator – study results and level achieved*

As of 2012, for evaluating study results the programme will be able to use the annual reports by the Research Centre for Education and the Labour Market (data before 2012 do not yet include the M-BMS programme). This research centre gathers information on the career development of all Maastricht University graduates in a 'labour market monitor'. It collects data per faculty, not per programme. In addition to these general evaluations, the programme coordinator collects data on the start position of BMS-graduates. According to the critical reflection, the programme management regularly evaluates and discusses the completion rates and efficiency figures.

The results of the first two types of evaluations (facilities, programme, blocks and internship) are discussed by the block coordinators and the block planning groups. They draft a report containing the most important findings and points of action and send it to the Director of Education and the programme coordinator. The Director of Education sends the report on to the BMS Management Team and the Educational Committee.



The last two types of evaluation are only discussed within the Management Team and in an annual meeting between the Director of Education and the programme coordinator. Improvement plans are incorporated in an 'annual plan' (a draft for the following educational year with the main objectives per block period), which is presented to the management team. The final responsibility for ensuring that the intended improvement measures are successfully implemented, lies with the Director of Education.

The programme identifies a few strengths and weaknesses connected with the current evaluation cycle. An important disadvantage of electronic questionnaires, it concludes, is the low response rates compared to paper-based evaluations made directly after exams. Secondly, it concludes that, although there is an extensive programme and block evaluation in place, 'the efficient execution of these procedures in a systematic and timely fashion is sometimes a point of concern'. Furthermore, the programme regrets that the informal meetings of the programme coordinator with students have not yet been implemented in the quality assurance system. Finally, despite the availability of evaluation data on (parts of) the curriculum, the programme finds it difficult to assess tutor performance on the basis of these evaluation results.

### **13.2 and 14.2 Considerations**

The assessment committee has paid special attention to the process of quality assurance, because it is an important part of an Extensive Programme Assessment. During the site visit, the committee spoke with the programme coordinator of the master's programmes about quality assurance within the educational programme. It concludes that maintaining and improving the quality of the master's programme is clearly important to all parties concerned. It also concludes that in the master's programme a lot of evaluation data are being gathered, processed and discussed by various parties. The committee especially appreciates the hard work and dedication of the programme coordinator to stay closely involved with the students (by organizing round table meetings and setting up a Student Evaluation Committee) and experience first-hand which improvement measurements might be desirable.

In addition to what the programme has identified as strengths and weaknesses of the current evaluation system, the assessment committee also points out a few problems. Firstly, the committee is of the opinion that, apart from evaluations carried out by external parties such as Flycatcher or the Programme Evaluation Taskforce, the evaluation of the programme relies too much on the efforts of one person, the programme coordinator. This makes this part of the evaluation system very fragile. Furthermore, the information the programme coordinator gathers in the informal meetings with students is passed directly on to the management team, in which the programme coordinator also takes part. Due to time constraints, formal reports of the meetings are not always kept, which makes it hard to assess which evaluation targets are aimed for. Secondly, the committee finds that, by not informing the Educational Committee of the contents of these meetings, the management team fails to recognize the importance of closely involving the Committee in the process of quality assurance. To see to their statutory task, the Educational Committee should be informed of all formal and informal evaluations taking place. Thirdly and most importantly, from talking to the Educational Committee, the committee learned that this Committee does not have formal access to any evaluation results, contrary to how the system is formally set up and described.

The assessment committee has identified two necessary measures for improvement:

1. The evaluation system in the master's programme ought to be fully formalized. The committee appreciates that the Student Evaluation Committee might prove to be a

valuable addition to the questionnaires. However, the targets of the meetings with the Student Evaluation Committee should be discussed and properly recorded. It should be clear what the aims of the meetings are and how targets can be assessed, also by external parties such as the Board of Examiners and the Educational Committee. The Educational Committee should be consulted in the process of formulating these targets.

2. The programme management should involve and inform the Educational Committee more closely of evaluation results regarding all aspects of the programme. Also, it should consult and inform the Educational Committee of improvement measures, not only once a year, but on a regular basis. The assessment committee finds it very undesirable that the Educational Committee in the current system is unable to contribute to the process of quality assurance.

Finally, seeing that it is a relatively new programme that is still being shaped and improved, the committee advises the programme to assess the curriculum as a whole every year, instead of once every two years. Of course, these evaluation data should also be provided to and discussed with the Educational Committee.

Although the current evaluation system depends too much on the efforts of one person and needs to be critically assessed and formalized further, the committee does acknowledge that the programme formulates improvement measures on the basis of evaluation data, feedback and internal discussions, which lead to an overall improvement of the quality of the programme. The committee especially values the 'annual plan' which the programme has put in place to ensure that all learning outcomes are reached and that all blocks and exams fit together. Consequently, the committee assesses standards 13 and 14 as satisfactory.

### 13.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 13 as **satisfactory**.

### 14.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 14 as **satisfactory**.

#### Standard 15

Programme committees, examining boards, staff, students, alumni and the relevant professional field of the programme are actively involved in the programme's internal quality assurance.

### 15.1 Findings

In the critical reflection the M-BMS programme lists the different parties involved in the programme's internal quality assurance: (1) staff, (2) students, (3) alumni and (4) the professional field.

#### *Ad 1. Staff*

Staff involvement, according to the programme management, is ensured via staff representation in several academic and non-academic bodies. In addition staff who do not participate, according to the critical reflection, should be able to contribute to the process of quality assurance by their interaction with for example students and the programme coordinator. Tutors should be able to put forward bottom-up suggestions on the basis of their close contacts with students in the PBL-sessions.

#### *Ad 2. Students*

The input of students in the process of quality assurance consists of expressing their opinions and ideas on the quality of education via a representative in one of the following bodies: Maastricht UMC Executive Board (1 student adviser), the Institute for Education Management (3 student members) or the Faculty Council (9 student members).

Within the M-BMS programme, students can turn to the Biomedical Sciences Management Team (2 student advisers), the Biomedical Educational Committee (5 student members) or the Board of Examiners (1 student adviser)

#### *Ad 3. Alumni*

The Institute for Education financially supports several alumni circles within Maastricht University. The M-BMS alumni association is called Xist. According to the critical reflection, alumni circles can help 'transfer professional and academic knowledge and skills within certain specializations'. Maintaining close contacts with alumni could contribute to the programme's process of quality assurance. However, the programme also concludes that the participation of alumni in the M-BMS programme should be increased.

#### *Ad 4. The professional field*

The M-BMS programme holds ties with the professional field by its connections with various research institutes, by regularly inviting guest lecturers and by its participation in the Life Sciences Career Event (LSCE).

### **15.2 Considerations**

During its visit, the assessment committee has been able to conclude that all stakeholders concerned feel very much involved with the programme. There appears to be a tight, highly committed group of both staff and students with an open, healthy critical attitude towards the programme. The committee feels that the commitment of staff and students contributes to the process of quality assurance.

The committee also concludes that there are a number of parties who should be involved more closely, first of all the programme's graduates. The committee found it significant that the alumni they interviewed were unaware of the existence of an alumni association. Furthermore, an important role in the process of quality assurance is reserved for two bodies whose role, strikingly, is not explicitly mentioned in this respect in the critical reflection: the Board of Examiners and the Educational Committee. The assessment committee was impressed with the active role the Board of Examiners has taken on in the process of quality assurance, for instance by setting up exam trainings for staff and by checking the quality of theses. The committee also talked to the Educational Committee, who also in the eyes of the committee are trying to function as well as possible, given the fact that they are not properly informed on all aspects of the master's programme. As mentioned before, the assessment committee concludes that the programme management involves the Educational Committee insufficiently, both in terms of providing them with evaluation data as in terms of consulting them timely with regards to improvement measurements to the programme or other important changes.

The committee attaches great importance to the role that the Educational Committee, together with all other stakeholders involved, should play in the process of quality assurance. Unfortunately, on the basis of the evaluation cycle, it therefore has to conclude that not all stakeholders are actively involved. It especially regrets that the Educational Committee is sometimes overlooked, for instance when not being informed on the contents of the meetings of the Student Evaluation Committee by the programme management. The



assessment committee is convinced that this is not due to bad will, but due to staff members switching between different tasks and roles. However, to perform its statutory role, the Educational Committee must be adequately informed and be involved in the programme's internal quality assurance cycle. On the basis of the current situation, the committee is unable to assess standard 15 as satisfactory.

### 15.3 Conclusion

*Master's programme Biomedical Sciences:* the committee assesses Standard 15 as **unsatisfactory**.

## Assessment and achieved learning outcomes

### Standard 16

The programme has an adequate assessment system in place and demonstrates that the intended learning outcomes are achieved.

#### Explanation:

The level achieved is demonstrated by interim and final tests, final projects and the performance of graduates in actual practice or in post-graduate programmes. The tests and assessments are valid, reliable and transparent to the students.

### 16.1 Findings

In accordance with statutory regulations, the M-BMS programme has laid down its assessment system in an 'Education and Examination Regulations' (EER) document. The programme's Board of Examiners is responsible for drawing up and enforcing these rules and regulations. Students can consult the Education and Examination Regulations online at EleUM. The document provides them with information on, for instance, the criteria to be met to enter and register for tests, exam dates and assessment instruments.

In the critical reflection, the programme makes a distinction between block assessments and the assessment of the junior and senior internship. *Block assessments* are composed by the block coordinators of both Maastricht and Hasselt University. According to the critical reflection, the different assessment instruments that are used tie in with the PBL approach to learning, by focusing on three learning concepts: contextual, constructive and collaborative learning. Knowledge and skills, the application of knowledge and skills and professional behaviour are assessed in a number of ways. The programme uses (1) exams with essay and multiple-choice questions, (2) written reports, (3) presentations, (4) individual papers and (5) group papers. Exams are held during and at the end of each block. The halfway assessments consist, for the first two blocks for instance, of actively partaking in the journal clubs, conducting group assignments and giving presentations. In the first two blocks, participation and assignments in the journal clubs account for 25% of the final grade. In all cases, the individual assessments determine at least 50% of the final block result. The block assessments are reviewed by staff members, who base the scores on the description of the objectives of each block.

The *junior and senior internships* are assessed by supervisors in the laboratory, according to the critical reflection 'upon consultation with all people involved in the daily supervision'. The 'practical training assessment form' shows which 9 aspects supervisors are asked to take into account in their final mark, e.g. 'commitment', 'theoretical background knowledge', 'development of independence' and 'usage and care of equipment'. Additionally, on the back of the form supervisors are requested to name strong qualities and suggestions for improvement. To allow students to improve their professional functioning, both internships

are assessed twice: halfway and at the end of the practical training period. Professional attitude is assessed with a special assessment form.

The research conducted during the senior internship results in a *poster presentation*, to be defended at the International Molecular Life Sciences Master Student Conference, and a *master's thesis*. The poster presentation is assessed by a jury of four to six members of staff of UM and UH. The requirements and procedure for the master's thesis can be accessed via EleUM. Rules are laid down for layout, length and structure, reference styles, submission and assessment. The master's thesis is assessed by the thesis supervisor and a second examiner, who give their marks independently. Each of the examiners gives five marks, one for form, four for content (form-content relation, definition of the problem, argumentation and subject knowledge). The programme has recently adopted a new Master Thesis Assessment Form. Both the old and the new form are added to the critical reflection. In the old form, the marks for all five categories are visible. In the new form, the categories for content are extended to seven (for instance also: quality of the abstract, justification models, and interpretation and discussion of results) and result in one mark, which accounts for 80% of the final grade.

To assess how students are performing after graduation, the programme manager keeps track of their positions on the labor market. At the time of writing the critical reflection, 66% of B-BMS graduates held a position as PhD-student, 37% at Maastricht University, 29% elsewhere.

The Board of Examiners, the assessment committee learned, has taken a few measurements to ensure that the learning outcomes are achieved. Firstly, it bases the Education and Examination Regulations on the 'annual plan'. (As mentioned before, this document is composed by the block planning groups, the programme coordinator and the programme management and serves as a guideline for the following academic year. It includes, amongst other things, intended learning outcomes.) Secondly, the Board plans to build in an extra quality inspection by checking exams before they are held. This year, for instance, the Board will meet with the planning group of the first two theoretical blocks to assess the quality of the first block exams. Thirdly, the Board of Examiners has taken the initiative of offering exam trainings to the members of staff who are responsible for setting exams. And finally, the Board checks the quality of theses by carrying out a random sample survey.

## 16.2 Considerations

The committee has assessed whether the programme has an adequate assessment system in place and whether students achieve the intended learning outcomes. To assess the level achieved by graduates, the committee has looked at a random sample of 15 master's theses. The committee concludes that the theses meet the criteria for form and content that may be expected of a master's thesis at academic level. A few theses were considered to be exceptionally good. The committee is also very positive about the programme management's decision to let students defend their master's thesis with a poster presentation at an academic conference.

The assessment committee has also looked at the overview of where graduates are employed. The master's programme aims at preparing students for a career in research and/or the professional field. This is reflected in the marks provided in the critical reflection. The three graduates the committee spoke with during the site visit all hold positions as PhD-students. The committee sees it as a good sign that they were positive about the ways that the master's programme ties in with their current positions. The graduates expressed the opinion that they were well equipped for a research career, both in terms of knowledge and techniques.

The committee has also paid special attention to the role of the Board of Examiners. The committee is impressed with the active role the Board has adopted, in accordance with their new, statutory task. The Board discusses the student evaluations of exams (the assessment of exams is part of the block evaluation) and takes appropriate measures if necessary. The quality assessment of tests has been very well organized in the bachelor's programme. Teachers can consult a 'test coordinator' for advice on how to compose and word exam questions and all exams are assessed before they are held. During the visit, the Board of Examiners has expressed the wish to employ the same working method in the master's programme. The committee encourages this plan, and is equally positive about the plan to assess the quality of exams before they are taken.

During the site visit, the committee also looked at a few block exams, as well as at the evaluations of these exams. It considers the quality of the exams and the connection with the intended learning outcomes sufficient. The committee did have one critical remark on a test which, as a consequence of the language policy of Hasselt University, consisted of questions in both Dutch and English. This resulted in a test which to the committee seemed confusing for students who had to skip the Dutch text. From talking to the students, this indeed appeared to have been the case. The committee strongly advises the programme to in future avoid mixing Dutch and English texts. Instead, the Dutch and English text should be given separately.

A special point of concern for the assessment committee is the assessment of the master's thesis. Initially, the committee was confused by a number of things: the different Assessment Forms for the master's thesis, the composition of the final mark of the master's thesis and who the two examiners of the master's thesis are. The direct supervisors in the laboratory who assess the senior internship, the committee learned, only play an advisory role. The thesis is subsequently assessed by the thesis' supervisor and an independent second examiner. Both only assess the thesis. In other words: the senior internship, the poster presentation and the master's thesis are assessed and marked individually.

The assessment committee would like to make two critical remarks on the assessment procedure of the master's thesis. Firstly, it favors the old assessment form for the master's thesis over the new one. In the new form, contrary to the old one, it is unclear how the (seven) different content-categories are individually weighed to arrive at 80% of the final mark. The old form forced supervisors to mark the content categories individually. Students should be able to understand how their final mark has been established. A positive aspect of both forms, the committee finds, is that they provide the necessary room to set out the reasons for the assessment. Secondly, the committee was very surprised to learn that the senior internship, although individually assessed and marked, plays no role in the assessment of the master's thesis. The committee especially considers practical laboratory techniques essential for future researchers. Therefore, it urges the programme to include the mark for the senior internship in the final mark for the thesis.

### **16.3 Conclusion**

*Master's programme Biomedical Sciences:* the committee assesses Standard 16 as **satisfactory**.

## **General conclusion**

### **Conclusion**

The committee assesses the *master's programme Biomedical Sciences* as **satisfactory**.



## APPENDICES





## Appendix 1: Curricula Vitae of the members of the assessment committee

**Frans Kroese** studeerde medische biologie aan de Vrije Universiteit te Amsterdam. Hij promoveerde (1987) aan de Medische Faculteit van de Rijksuniversiteit Groningen met het proefschrift *The generation of germinal centers*. Aansluitend was hij post-doc aan de Stanford University in Californië, USA. Vervolgens werd hij in Groningen aangesteld als universitair docent bij de afdeling Histologie en Celbiologie waar zijn immunologisch onderzoek zich vooral richt(te) op de biologie van B lymfocyten bij gezondheid en ziekte, met name in relatie tot bouw en functie van lymfoïde weefsels. Naast onderzoek is hij ook zeer betrokken bij alle mogelijke facetten van onderwijs. Hij vervulde vele rollen als docent, was lid van de projectgroep, die verantwoordelijk was voor het ontwikkelen van het nieuwe curriculum (G2010) voor de Geneeskunde opleiding in Groningen en was lid van de Raamplancommissie voor de herziening van de arts opleiding. Een aantal malen werd hij uitgeroepen tot docent van het jaar. In 2002 werd hij benoemd aan het UMCG tot hoogleraar Onderwijs en Opleiding in de Medische Wetenschappen. Thans is hij onder meer voorzitter van de Opleidingscommissie Geneeskunde. Sinds oktober 2011 is hij aangesteld bij de Afdeling Reumatologie en Klinische Immunologie van het UMCG. Naast zijn uitgebreide activiteiten op het gebied van onderwijs is hij actief betrokken bij onderzoek naar de pathogenese van auto-immuunziekten.

**Dirk Snyders** studeerde geneeskunde aan de Universiteit van Antwerpen (MD, 1980), gevolgd door de specialisatie in de cardiologie (1985). Na een postdoctoraal fellowship aan de University of California in San Francisco (84-86), was hij verbonden aan Vanderbilt University (Nashville, TN), onder meer als *associate professor with tenure* (1995). Zijn werk is gericht op de moleculaire biofysica en farmacologie van de cardiale ionenkanalen, eerste native natrium kanalen in myocyten en later gekloonde voltage-gated kalium (Kv) kanalen. Hij promoveerde aan de Universiteit Leiden (1998) en werd in datzelfde jaar - met de steun van het VIB (Vlaams Instituut voor Biotechnologie) - benoemd tot hoofd van het laboratorium voor moleculaire biofysica, fysiologie en farmacologie in Antwerpen. Snyders is sinds 2005 gewoon hoogleraar in de biomedische wetenschappen. Hij oefent tevens een aantal administratieve functies uit binnen de universiteit (o.m. voorzitter van het departement in de Biomedische Wetenschappen, vice-voorzitter van de Onderzoeksraad, Lid van de Raad van Bestuur) en erbuiten (o.m. voorzitter van het reviewpanel fysiologie en pathofysiologie van het Fonds Wetenschappelijk Onderzoek Vlaanderen, FWO; lid commissie wetenschapsbeleid VRWI; Belgisch vertegenwoordiger in ESF & EMBL werkgroepen). Hij is lid van de Biophysical Society, Society of General Physiologists en andere professionele organisaties. Zijn onderzoek was in de afgelopen tien jaar gericht op de moleculaire structuur-functie relaties in Kv-kanalen, functionele analyse van LQT mutaties en het klonen en de studie van de 'stille' Kv subeenheden. Recent ontdekte zijn groep een nieuwe bindingsplaats voor lipofiele toxines in Kv kanalen.

**Jannie Borst** heeft een mastergraad behaald in Biologie met Scheikunde aan de Universiteit van Leiden in 1980. Zij heeft aansluitend haar promotieonderzoek in de moleculaire immunologie gedaan op Harvard Medical School in Boston. Dit werk werd vervolgd aan de afdeling Immunologie van het Nederlands Kanker Instituut (NKI) in Amsterdam. Zij behaalde haar doctoraat (PhD) aan de Universiteit van Leiden in 1985. In 1987 begon zij haar onafhankelijke carrière als leider van een onderzoeksgroep, met behulp van een vijfjarige persoonlijke beurs van NWO. In 1992 werd zij wetenschappelijk stafid van het NKI en in 2002 werd zij hoofd van de afdeling Immunologie. Vanaf 1999 tot heden is zij hoogleraar in de Experimentele Oncologie aan de Universiteit van Amsterdam. Zij is decaan van de masterstudenten in het NKI en voorzitter van de Onderwijscommissie. Jannie Borst is het

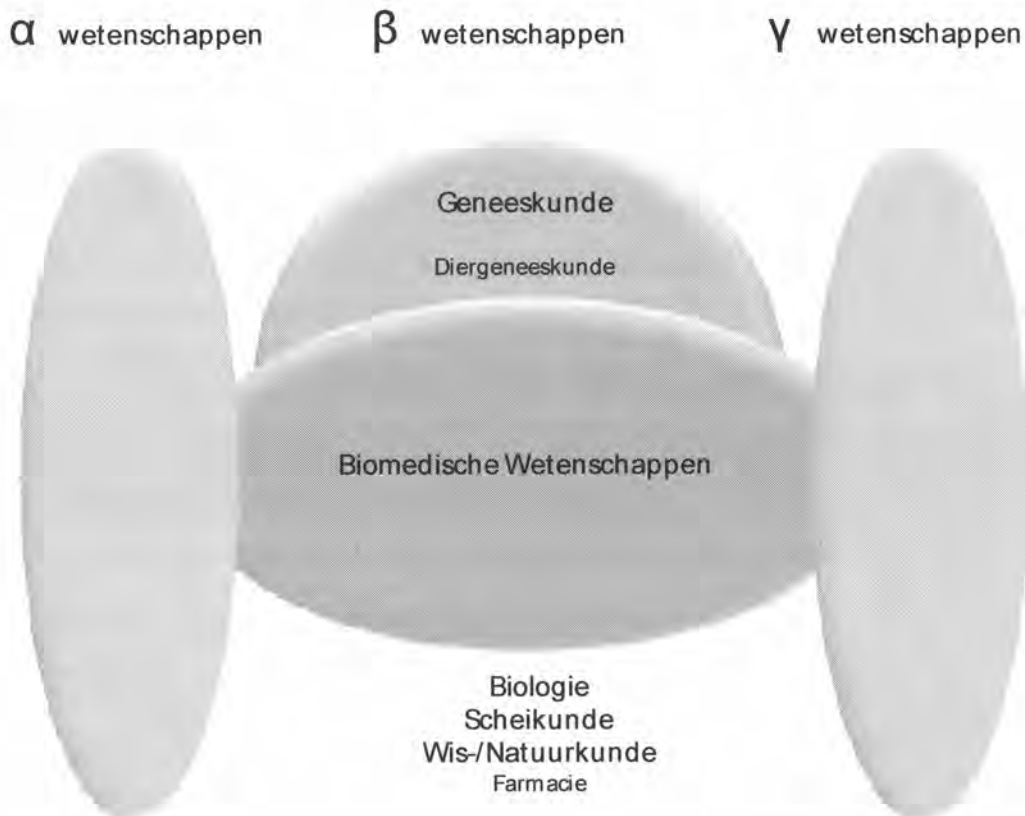
hoofd van een onderzoeksgroep van ongeveer 10 mensen (promovendi, postdocs, analisten en masterstudenten) en is de auteur van meer dan 150 artikelen in internationale, gerefereerde tijdschriften. Zij heeft belangrijke bijdragen geleverd aan de identificatie van membraanreceptoren op lymfocyten. Zij bestudeert momenteel de moleculaire basis van celoverleving en celdood in lymfocyten en kankercellen. Dit werkt beoogt de radio- en immunotherapie van kanker te bevorderen.

**Koen van de Ven** startte in 2009 met de bacheloropleiding Biomedische Wetenschappen aan de Universiteit van Amsterdam. Dit combineerde hij met een interdisciplinair honoursprogramma. In september 2012 begon hij aan zijn masteropleiding Biomedische Wetenschappen aan dezelfde universiteit. Hiernaast is hij in het studiejaar 2012-2013 practicumbegeleider voor 2e-jaars bachelorstudenten Biomedische Wetenschappen.

## Appendix 2: Domain-specific framework of reference

*Zowel het domeinspecifiek referentiekader als de landelijke eindtermen zijn in november 2011 vastgesteld door de landelijke commissie Biomedische Wetenschappen.*

De Biomedische Wetenschappen (BMW of BW) richten zich op een translationele benadering van onderzoeksvraagstukken van ziekte en gezondheid bij mens en dier. De BMW integreren hierbij enerzijds elementen van de natuurwetenschappen, met name de (humane) biologie, scheikunde, farmacie, natuurkunde en wiskunde, en anderzijds van de medische wetenschappen. Een voortdurende interactie tussen elementen uit deze elkaar aanvullende disciplines geeft de BMW zijn translationeel karakter, waarin het verwerven van inzicht in processen op het niveau van het molecuul, de cel, het orgaan en het totale organisme in zowel de gezonde als de zieke situatie een centrale positie inneemt. Het onderzoeksterrein omvat verder ook het niveau van de populatie, waarbij epidemiologische en maatschappij-gerichte ( $\gamma$ -)onderzoeksbenaderingen gebruikt kunnen worden. Verder kunnen ook elementen uit de  $\alpha$ -wetenschappen een rol spelen (zie onderstaand schema).



Een zekere demarcatieproblematiek speelt rondom elke wetenschappelijke discipline, en zeker ook bij een integrerende discipline zoals de BMW. Echter, in het geval van het BMW-domein wordt het translationele karakter juist onderstreept door het tot stand brengen van een verbindende combinatie van onderdelen van verscheidene wetenschappelijke disciplines en het doen vervagen van grensvlakken tussen deze disciplines. Het BMW-domein omvat dus weliswaar veel elementen van de wetenschappen ten opzichte waarvan het is gepositioneerd, maar het wordt vooral gekenmerkt door de versterkende integratie hiervan.



De BMW richten zich hierbij primair op de vertaling van klinische problemen of problemen op het terrein van de volksgezondheid naar onderzoekstrategieën die het inzicht in de onderliggende biologische processen beogen te vergroten. Het doel is om hiermee de wetenschappelijke basis te vormen voor de verbetering van de diagnose, behandeling en preventie van ziekte.

De masteropleidingen BMW kennen bij sommige universiteiten een afstudeerrichting (variant) in Management, Communicatie en/of Educatie. Binnen onderhavig referentiekader wordt hierbij de nadruk gelegd op respectievelijk het organiseren van onderzoek, de maatschappelijke aspecten van onderzoek en kennisverwerving.

*Positie van de diverse opleidingen BMW ten opzichte van het domeinspecifiek referentiekader*

De diverse universitaire bachelor- en masteropleidingen BMW in Nederland verschillen onderling met betrekking tot de facultaire inbedding van de opleiding en, mede daardoor, in de omvang van de bijdragen uit verschillende disciplines aan het curriculum. Deze 'couleur locale' versterkt de betreffende opleiding, maakt voor studenten een bewuste keuze mogelijk, en wordt daarom gekoesterd.

## Appendix 3: Intended learning outcomes

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### *Knowledge and understanding*

Graduates have a broad and thorough academic knowledge of biomedical sciences and the expertise to make original contributions to extending this knowledge through scientific research.

### *Application of knowledge and understanding*

Using the knowledge and understanding gained in the programme, graduates are able to work in various professions in the field of biomedical sciences. In particular, they will have the knowledge and skills to embark on and successfully complete a PhD research project or pursue a career in teaching or policy advising. They may also enter relevant professions in the industrial sector (e.g. researchers or other staff members in biomedical/biotechnological companies) or the health sector (e.g. Clinical Research Associate). The multidisciplinary approach and problem- and project-based learning focus help to prepare graduates well for their professional lives.

### *Forming opinions*

The problem-solving approach enables graduates to formulate solutions to complex problems, taking into account social and ethical responsibilities. Using the competences gained in the programme, they are able to critically reflect on proposed solutions and develop new insights.

### *Communication*

Communication of novel knowledge in the field of Biomedical Sciences is a central theme in the curriculum. Graduates are able to discuss the various aspects of their discipline, in oral presentations and academic reports, with scientists from their own or related fields or with general social groups.

### *Learning skills*

Their extensive experience with different didactic methods enables graduates to independently maintain, and if necessary extend, their professional knowledge and skills. Graduates are thus optimally prepared for professional life by learning essential skills such as lifelong learning and working in (multidisciplinary) teams. Graduates are trained as researchers who have hands-on experience with various research methods.

The programme objectives have been specified in programme-level intended learning outcomes, which are listed below.

<b><i>Knowledge and understanding</i></b>	
	Broad and thorough knowledge and understanding of the molecular processes involved in homeostasis, cell–cell communication, signal transduction, cell metabolism, cell proliferation and cell death
	Detailed knowledge of the molecular processes involved in gene expression (transcription, translation, post-translation, epigenetics)
	Knowledge of relevant modern technologies (genomics, proteomics and bioinformatics/systems biology)
	Knowledge of the main molecular and cellular pathobiological theories and models for the onset of acute and chronic diseases
	Knowledge and understanding of important environmental factors that can threaten or benefit health, as well as of the molecular processes that lead to their biological availability and/or interaction at target protein level in the human body

	Knowledge of the developments in clinical diagnostics and treatment of chronic diseases (CMS), cardiovascular biology and medicine (CBM), nutrition and metabolic diseases (N&M), or molecular mechanisms in normal and abnormal growth and differentiation (ODB)
	Understanding of and experience with processing research results (including biostatistics) from laboratory and/or population studies
	Understanding of ethical issues related to the use of animals in experiments
	Understanding of the basic principles of entrepreneurship and intellectual property
<b><i>Applying knowledge and understanding</i></b>	
	Insight into and experience with designing and writing an academic research project
	Understanding of and experience with independently setting up and carrying out scientific research (hypothesis, problem definition, study/experimental design, experimental approach)
	Practical experience in a broad range of modern laboratory techniques for biomedical research
	Fundamental knowledge and practical skills for working safely in a potentially hazardous laboratory environment
	Experience in designing and evaluating experimental research models and theories (evidence based, logical reasoning)
	Experience in reporting research results in a precise and clear manner according to generally accepted scientific standards
	Experience in planning and organising research (independent setup of research, including the methods and materials needed)
	Active participation in academic discussions (progress reports, research planning)
<b><i>Forming an opinion</i></b>	
	Critical analysis of scientific publications or research proposals (hypothesis, problem definition, approach, interpretation of results, conclusions, limitations)
	Interpretation and critical evaluation of research results obtained, derivation of new scientific insights
<b><i>Communication</i></b>	
	Ability to communicate (through oral presentations and detailed academic reports in English) with academics from their own and related disciplines
	Ability to cooperate in multidisciplinary teams with focused assignments
	Ability to meet deadlines
<b><i>Learning skills</i></b>	
	Optimal extraction of information provided by/resulting from lectures, group assignments, journal clubs, etc. using PBL
	Work experience in various (international) research laboratories
	Ability to independently maintain and extend professional knowledge and competences

## Appendix 4: Overview of the curriculum

Table 1 Curriculum of the master's programme in Biomedical Sciences (M-BMS)

<b>Year 1</b>	
<b>Block 1.1: Molecular Mechanisms in Health and Disease (8 weeks)</b> <ul style="list-style-type: none"> <li>• Methodology and approaches to scientific research.</li> </ul>	12 ECTS
<b>Block 1.2: Molecular Approaches to Diagnosis and Therapy of Disease (8 weeks)</b> <ul style="list-style-type: none"> <li>• Current methodology and innovative research in disease screening, diagnosis, prevention and therapy.</li> </ul>	12 ECTS
<b>Block 1.3: Junior practical training (22 weeks)</b> <ul style="list-style-type: none"> <li>• Laboratory animal research (three-week course, obligatory). (This course can be replaced by a three-week certified course on laboratory animal science);</li> <li>• Safe microbiological techniques (1 week course, obligatory for students who are not in possession of a valid certificate);</li> <li>• Explore and Focus: specialisations in the Biomedical Master at Maastricht University (two-week course, obligatory);</li> <li>• Working with radionuclides (certified) (two-week course, elective)</li> <li>• Microscopy (one-week course, elective);</li> <li>• Participation in laboratory research and application of modern research techniques (15-19 weeks).</li> </ul>	36 ECTS
<b>Year 2</b>	
<b>Block 2.1: Designing Scientific Research (8 weeks)</b> <ul style="list-style-type: none"> <li>• The scientific process: designing a research project (research proposal).</li> </ul>	12 ECTS
<b>Block 2.2: Senior practical training and master thesis (30 weeks)</b> <ul style="list-style-type: none"> <li>• Laboratory internship based on the research proposal prepared in block 2.1.;</li> <li>• Writing the master's thesis and presenting the data at the annual International Molecular Life Sciences Master Student Conference.</li> </ul>	48 ECTS





## Appendix 5: Quantitative data regarding the programme

### Data on intake, transfers and graduates

Table 2: intake of M-BMS students by gender in academic years 2005-2012

Cohort	Intake		Male		Female	
	N	%	N	%	N	%
2005/06	11		4	36%	7	54%
2006/07	25		19	76%	6	24%
2007/08	28		13	46%	15	54%
2008/09	29		13	45%	16	55%
2009/10	48		15	31%	33	69%
2010/11	42		12	29%	30	71%
2011/12	69		33	48%	36	52%

Table 3: intake of M-BMS students by previous education in academic years 2005–2012

Cohort	University Bachelor		Professional Education		Foreign Bachelor		Master	
	N	%	N	%	N	%	N	%
2005/06	6	55%	5	45%	0	0%	0	0%
2006/07	21	84%	3	12%	1	4%	0	0%
2007/08	23	82%	3	11%	2	7%	0	0%
2008/09	23	79%	1	3%	5	17%	0	0%
2009/10	34	71%	8	17%	6	13%	0	0%
2010/11	25	60%	9	21%	7	17%	1	2%
2011/12	42	61%	6	9%	21	30%	0	0%

Table 4: M-BMS survival and completion rates

Cohort	Intake	Dropouts	Survival		Completion rate									
			N	%	After 2 years (n)		After 3 years (n+1)		More than 3 years		Pending		Stopped after more than 1 year	
	N	N	N	%	N	%	N	%	N	%	N	%	N	%
2005/06	11	1	10	91%	10	100%								
2006/07	25	1	24	96%	21	88%	22	92%					2	8%
2007/08	28	2	26	93%	15	58%	24	92%					2	8%
2008/09	29	1	28	97%	24	85%	28	100%						
2009/10	48	1	47	98%	42	89%	44	94%			1	2%	2	4%
2010/11	42	5	37	88%							37	100%		
2011/12	69										69	100%		

## Teacher-student ratio achieved

Table 5: M-BMS staff-student ratio per academic year

	2005/06*	2006/07*	2007/08	2008/09	2009/10	2010/11
Registered students	11	33	52	56	85	93
Staff in FTEs	*	*	2,68	3,54	5,82	5,17
Staff-student ratio	*	*	19	16	15	18

\*There is no reliable data regarding the staff in FTE involved for academic years 2005/06 and 2006/07 as the programme was under construction then.

## Average amount of face-to-face instruction per stage of the study programme

Figure 1: teaching formats applied in year 1 grouped by teacher/student ratio

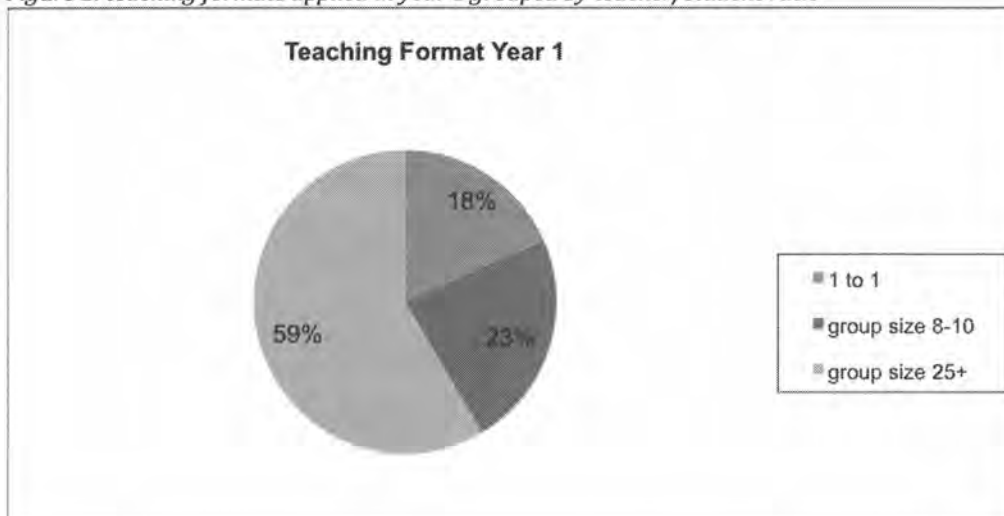
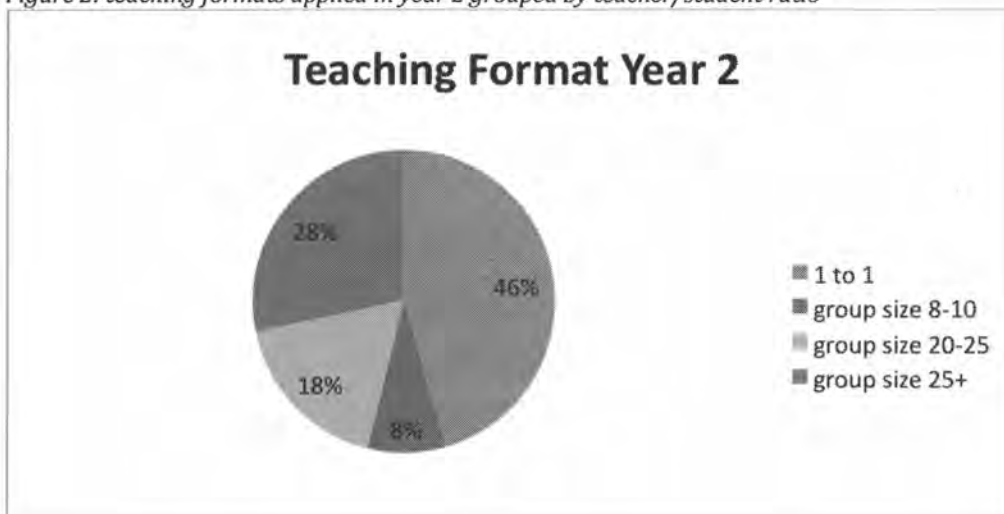


Figure 2: teaching formats applied in year 2 grouped by teacher/student ratio



## Appendix 6: Programme of the site visit

MAANDAG 17 SEPTEMBER		
		Aankomst commissieleden
DINSDAG 18 SEPTEMBER		
08.45	09.00	<b>Ontvangst commissie (portiersloge UNS40, 1<sup>e</sup> etage)</b> 1. Prof. J. Glatz – Opleidingsdirecteur BMW 2. G. Bendermacher, MSc. – beleidsmedewerker Onderwijsinstituut FHML 3. M. Cruijssen, MSc. – beleidsmedewerker Onderwijsinstituut FHML
9.00	12.00	Vorbereidende bijeenkomst commissie
12.00	12.45	<b>Bestuur onderwijsinstituut/opleidingsmanagement</b> 1. Prof.dr. Ellen Blaak – Coördinator bachelor BMW 2. Prof.dr. Mirjam oude Egbrink – Wetenschappelijk Directeur Onderwijsinstituut FHML 3. Prof.dr. Jan Glatz – Opleidingsdirecteur BMW 4. Dr. Eleonore Köhler – Coördinator Master BMS 5. Prof.dr. Jean-Michel Rigo – vice-decaan School voor Levenswetenschappen, toekomstige vice-rector onderwijs (UHasselt) 6. Prof.dr. Albert Scherpbier – Decaan FHML 7. Prof.dr. Veerle Somers – toekomstige vice decaan School voor Levenswetenschappen (UHasselt)
12.45	13.45	<b>Studenten Bachelor BMW</b> <i>Jaar 1:</i> <ul style="list-style-type: none"> <li>• Joost van der Heijden</li> </ul> <i>Jaar 2:</i> <ul style="list-style-type: none"> <li>• Valerie van Meegen (MLW)</li> <li>• Loret Keulers (BGK)</li> <li>• Hakan Deveci (MLW)</li> </ul> <i>Jaar 3:</i> <ul style="list-style-type: none"> <li>• Bryan Adriaanse (MLW)</li> <li>• Maik Sliepen (BW)</li> <li>• Frank Raven (MLW)</li> <li>• Robin de Bot (BGK)</li> <li>• Pim Jansma (BW)</li> </ul>
13.45	14.30	<b>Docenten Bachelor BMW</b> 1. Dr. Herma Roebertsen (Academische Vorming) 2. Dr. Joghum Plat (o.a. coördinator richting BGK) 3. Dr. Hans Savelberg (coördinator richting BW) 4. Dr. Gijs Goossens (o.a. lid planningsgroep, tutor, collegegever, practica, begeleider junior stage) 5. Dr. Joost van Delft (o.a. voormalig coördinator Major/Minor, begeleider stage, collegegever) 6. Dr. Roger Godschalk (o.a. blokcoördinator 1.5, tutor, collegegever begeleider stages)
14.30	15.00	<b>Pauze</b>



15.00	16.00	<b>Studenten Master BMS → (voertaal Engels)</b> <i>Jaar 1:</i> <ul style="list-style-type: none"> <li>• Joël Guillaume, B.Sc. (doostroom)</li> </ul> <i>Jaar 2:</i> <ul style="list-style-type: none"> <li>• Nuria Casas Vila, B.Sc. (Internationale vooropleiding, profiel ODB)</li> <li>• Jill Hikspoors, B.Sc. (doostroom, profiel NuMe)</li> <li>• Harry Freitag, B.Sc. (Internationale vooropleiding, profiel NuMe)</li> <li>• Max Vogel B.Sc. (doorstroom, CBM)</li> </ul>
16.00	16.45	<b>Docenten Master Biomedical Sciences</b> <ul style="list-style-type: none"> <li>• Dr. Wilfred Germeraad (Coördinator blok 1.2 – tutor – collegegever – begeleider)</li> <li>• Dr. Niels Hellings (Blokcoördinator UHasselt – lezinggever)</li> <li>• Dr. Andreas Herrler (begeleider)</li> <li>• Dr. Ramon Langen (Coördinator blok 2.1 – tutor – collegegever – begeleider)</li> <li>• Dr. Jos Prickaerts (begeleider)</li> <li>• Dr. Ronit Sverdlov (tutor-begeleider)</li> <li>• Dr. Ir. W. Voncken (Coördinator blok 2.1 – tutor – collegegever – begeleider)</li> </ul>
16.45	17.00	Pauze
17.00	17.30	<b>Alumni</b> <ul style="list-style-type: none"> <li>• Carla Bellinghausen, M.Sc. (CMS – PhD student at the departments of Pulmonology and Medical Microbiology)</li> <li>• Yvonne Oligschläger, M.Sc. (ODB – PhD Student Genetic Maastricht UMC+)</li> <li>• Patrick Kuipers (ODB – recent afgestudeerd)</li> <li>• Roel Vink (NuMe – PhD Department of Human Biology)</li> <li>• Muriel Draht, M.Sc. (ODB - PhD student Pathologie Maastricht UMC+)</li> <li>• Robin Hermans, M.Sc. (CBM - Clinical Studies Specialist at Medtronic Vascular)</li> </ul>

## Appendix 7: Theses and documents studied by the committee

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

374490  
5007607  
623768  
623784  
124559  
308374  
355283  
360996  
379077  
402362  
439673  
449598  
6007716  
6010707  
6011805

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

### 1. Onderwijsmateriaal en literatuur B-BMW

- a. Een overzicht van basisliteratuur
- b. Voorbeeld van een blokboek
- c. Voorbeeld van een tutorinstructie
- d. Een aantal basisboeken ter illustratie
- e. Richtlijnen voor het schrijven van verslagen in de B-BMW
- f. Informatie over het Electronic Portfolio Assessment and Support System (E-Pass)

### 2. Onderwijsmateriaal en literatuur M-BMS

- a. Een selectie van relevante artikelen voor *journal clubs*
- b. Voorbeeld van een studenteninstructie
- c. Voorbeeld van een tutorinstructie

### 3. Kwaliteitszorg

- a. Documentatie ter illustratie van het systeem voor interne kwaliteitszorg
- b. Verslagen van overleg in relevante commissies / organen (opleidingscommissie en examencommissie)
- c. Flycatcher – Monitor UM Student Satisfaction
- d. Informatie over het project Basiskwalificatie Onderwijs (BKO)
- e. Beschrijving van onderwijsrollen FHML stafleden
- f. Training en begeleiding student tutoren BMW
- g. Documentatie docenttevredenheid.
- h. Alumni/exit-enquête ROA
- i. Update van gegevens programma-evaluatie uit zelfstudie

#### 4. Toetsing

- a. Een aantal voorbeelden van toetsen (Bachelor)
- b. Een aantal voorbeelden van toetsen (Master)
- c. Draaiboek toets
- d. Toetsanalyses/voorlopige uitslagen jaar 1 (B-BMW)

#### 5. Achtergrondinformatie

- a. Heel de mens, een eerste kennismaking met Maastricht UMC<sup>+</sup>
- b. Better health in a different world. Corporate brochure Maastricht UMC<sup>+</sup>
- c. Leading in learning. Corporate brochure of Maastricht University
- d. Magazine: About education and research at Maastricht University. Alumni magazine
- e. Focus and Care Chains. Research and top-level specialised medical care at Maastricht UMC<sup>+</sup>
- f. Continuity and Coherence. Profile of the Faculty of Health, Medicine and Life Sciences
- g. Annual report of the School for Public Health and Primary Care (CAPHRI)
- h. Annual report of the School for Nutrition, Toxicology and Metabolism (NUTRIM)
- i. Annual report of the School for Oncology and Developmental Biology (GROW)
- j. Annual report of the School for Mental Health and Neuroscience (MHeNS)
- k. Annual report of the School for Cardiovascular Diseases (CARIM)
- l. Student Charter Maastricht University
- m. HRM Strategy documents UM and/or FHML:
  1. Mobilising Minds – Towards talent-driven HR management
  2. Carrièrebeleid onderwijs, UM-FHML
  3. Beleidskader Hoogleraren Maastricht UMC<sup>+</sup>
- n. Lessons from Problem-based Learning'. Henk van Berkel et al (2010), Oxford University Press

#### 6. PR en marketing

- a. Brochure van FHML Bachelor programma's
- b. Brochure van FHML Master programma's
- c. FHML student recruitment plan 2012-2013
- d. PowerPoint presentatie Jaarplan Bachelor 2013
- e. Evaluatie Bachelor open dag
- f. Evaluatie Verdiepingsdag BMW

Via de laptop in kamer 6.538 hebben panelleden toegang tot:

- website van de Bachelor Biomedische Wetenschappen door middel van een shortcut op de desktop;
- website van de Master Biomedical Sciences door middel van een shortcut op de desktop;
- website van de Electronic learning environment (EleUM) door middel van een shortcut op de desktop. Login gegevens:
  - Username;
  - Password;
- E-Pass PowerPoint Presentatie;
- E-Pass door middel van een shortcut op de desktop. Login gegevens:
  - Username: Visitatiecommissie-BMW;
  - Password: september181912;

- catalogus van de Universiteitsbibliotheek en E-journals door middel van een shortcut op de desktop;
- website van studentenvereniging Helix door middel van een shortcut op de desktop.





## Appendix 8: Declarations of independence



### ONAFHANKELIJKHEIDS- EN GEHEIMHOUDINGSVERKLARING

INDIENEN VOORAFGAAND AAN DE OPLEIDINGSBEOORDELING

ONDERGETEKENDE

NAAM: FGM Kroen

ADRES: De Savornin Lohmanusweg 22, Groningen

IS ALS DESKUNDIGE / SECRETARIS GEVRAAGD VOOR HET BEOORDELEN VAN DE OPLEIDING:

ZIE BIJLAGE

AANGEVRAAGD DOOR DE INSTELLING:

ZIE BIJLAGE

VERKLAART HIERBIJ GEEN (FAMILIE)RELATIES OF BANDEN MET BOVENGENOEMDE INSTELLING TE ONDERHOUDEN, ALS PRIVÉPERSOON, ONDERZOEKER / DOCENT, BEROEPSBEOEFENAAR OF ALS ADVISEUR, DIE EEN VOLSTREKT ONAFHANKELIJKE OORDEELSVORMING OVER DE KWALITEIT VAN DE OPLEIDING TEN POSITIEVE OF TEN NEGATIEVE ZULDEN KUNNEN BEINVLOEDEN;

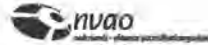
VERKLAART HIERBIJ ZODANIGE RELATIES OF BANDEN MET DE INSTELLING DE AFGELOPEN VIJF JAAR NIET GEHAD TE HEBBEN;

VERKLAART STRIKTE GEHEIMHOUDING TE BETRACHTEN VAN AL HETGEEN IN VERBAND MET DE BEOORDELING AAN HEM/HAAR BEKEND IS GEWORDEN EN WORDT, VOOR ZOVER DE OPLEIDING, DE INSTELLING OF DE NVAO HIER REDELLIJKERWIJS AANSPRAAK OP KUNNEN MAKEN.

VERKLAART HIERBIJ OP DE HOOGTE TE ZIJN VAN DE NVAO GEDRAGSCODE

PLAATS: Groningen DATUM: 13-04-2012

HANDTEKENING:



### ONAFHANKELIJKHEIDS- EN GEHEIMHOUDINGSVERKLARING

INDIENEN VOORAFGAAND AAN DE OPLEIDINGSBEOORDELING

ONDERGETEKENDE

NAAM: DIRK SHYDERI

ADRES: PRINZENLAAN, 6 36 810 ANWEAAR BELGIE

IS ALS DESKUNDIGE / SECRETARIS GEVRAAGD VOOR HET BEOORDELEN VAN DE OPLEIDING:

ZIE BIJLAGE

AANGEVRAAGD DOOR DE INSTELLING:

ZIE BIJLAGE

VERKLAART HIERBIJ GEEN (FAMILIE)RELATIES OF BANDEN MET BOVENGENOEMDE INSTELLING TE ONDERHOUDEN, ALS PRIVÉPERSOON, ONDERZOEKER / DOCENT, BEROEPSBEOEFENAAR OF ALS ADVISEUR, DIE EEN VOLSTREKT ONAFHANKELIJKE OORDEELSVORMING OVER DE KWALITEIT VAN DE OPLEIDING TEN POSITIEVE OF TEN NEGATIEVE ZULDEN KUNNEN BEINVLOEDEN;

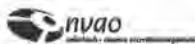
VERKLAART HIERBIJ ZODANIGE RELATIES OF BANDEN MET DE INSTELLING DE AFGELOPEN VIJF JAAR NIET GEHAD TE HEBBEN;

VERKLAART STRIKTE GEHEIMHOUDING TE BETRACHTEN VAN AL HETGEEN IN VERBAND MET DE BEOORDELING AAN HEM/HAAR BEKEND IS GEWORDEN EN WORDT, VOOR ZOVER DE OPLEIDING, DE INSTELLING OF DE NVAO HIER REDELLIJKERWIJS AANSPRAAK OP KUNNEN MAKEN.

VERKLAART HIERBIJ OP DE HOOGTE TE ZIJN VAN DE NVAO GEDRAGSCODE

PLAATS: ANWEAAR DATUM: 12-APR-2012

HANDTEKENING:



### ONAFHANKELIJKHEIDS- EN GEHEIMHOUDINGSVERKLARING

INDIENEN VOORAFGAAND AAN DE OPLEIDINGSBEOORDELING

ONDERGETEKENDE

NAAM: Koen van de Ven

ADRES: h. Cleyndertweg 33-49 1025 DG Amsterdam

IS ALS DESKUNDIGE / SECRETARIS GEVRAAGD VOOR HET BEOORDELEN VAN DE OPLEIDING:

ZIE BIJLAGE

AANGEVRAAGD DOOR DE INSTELLING:

ZIE BIJLAGE

VERKLAART HIERBIJ GEEN (FAMILIE)RELATIES OF BANDEN MET BOVENGENOEMDE INSTELLING TE ONDERHOUDEN, ALS PRIVÉPERSOON, ONDERZOEKER / DOCENT, BEROEPSBEOEFENAAR OF ALS ADVISEUR, DIE EEN VOLSTREKT ONAFHANKELIJKE OORDEELSVORMING OVER DE KWALITEIT VAN DE OPLEIDING TEN POSITIEVE OF TEN NEGATIEVE ZULDEN KUNNEN BEINVLOEDEN;

VERKLAART HIERBIJ ZODANIGE RELATIES OF BANDEN MET DE INSTELLING DE AFGELOPEN VIJF JAAR NIET GEHAD TE HEBBEN;

VERKLAART STRIKTE GEHEIMHOUDING TE BETRACHTEN VAN AL HETGEEN IN VERBAND MET DE BEOORDELING AAN HEM/HAAR BEKEND IS GEWORDEN EN WORDT, VOOR ZOVER DE OPLEIDING, DE INSTELLING OF DE NVAO HIER REDELLIJKERWIJS AANSPRAAK OP KUNNEN MAKEN.

VERKLAART HIERBIJ OP DE HOOGTE TE ZIJN VAN DE NVAO GEDRAGSCODE

PLAATS: Amsterdam DATUM: 09-04-2012

HANDTEKENING:



### ONAFHANKELIJKHEIDS- EN GEHEIMHOUDINGSVERKLARING

INDIENEN VOORAFGAAND AAN DE OPLEIDINGSBEOORDELING

ONDERGETEKENDE

NAAM: JANNIE BERTS

ADRES: PRINZENGRACHT 52 1015 BW AMSTERDAM

IS ALS DESKUNDIGE / SECRETARIS GEVRAAGD VOOR HET BEOORDELEN VAN DE OPLEIDING:

ZIE BIJLAGE

AANGEVRAAGD DOOR DE INSTELLING:

ZIE BIJLAGE

VERKLAART HIERBIJ GEEN (FAMILIE)RELATIES OF BANDEN MET BOVENGENOEMDE INSTELLING TE ONDERHOUDEN, ALS PRIVÉPERSOON, ONDERZOEKER / DOCENT, BEROEPSBEOEFENAAR OF ALS ADVISEUR, DIE EEN VOLSTREKT ONAFHANKELIJKE OORDEELSVORMING OVER DE KWALITEIT VAN DE OPLEIDING TEN POSITIEVE OF TEN NEGATIEVE ZULDEN KUNNEN BEINVLOEDEN;

VERKLAART HIERBIJ ZODANIGE RELATIES OF BANDEN MET DE INSTELLING DE AFGELOPEN VIJF JAAR NIET GEHAD TE HEBBEN;

VERKLAART STRIKTE GEHEIMHOUDING TE BETRACHTEN VAN AL HETGEEN IN VERBAND MET DE BEOORDELING AAN HEM/HAAR BEKEND IS GEWORDEN EN WORDT, VOOR ZOVER DE OPLEIDING, DE INSTELLING OF DE NVAO HIER REDELLIJKERWIJS AANSPRAAK OP KUNNEN MAKEN.

VERKLAART HIERBIJ OP DE HOOGTE TE ZIJN VAN DE NVAO GEDRAGSCODE

PLAATS: AMSTERDAM DATUM: 13-04-2012

HANDTEKENING:

Q300.



**ONAFHANKELIJKHEIDS- EN GEHEIMHOUDINGSVERKLARING**

INDIENEN VOORAFGAAND AAN DE OPLEIDINGSBEOORDELING

ONDERGETEKENDE

NAAM: Linda te Marvelde

ADRES: G.A.M., Catharijnesingel 56, Utrecht

IS ALS DESKUNDIGE / SECRETARIS GEVRAAGD VOOR HET BEOORDELEN VAN DE OPLEIDING:

ZIE BIJLAGE

AANGEVRAAGD DOOR DE INSTELLING:

ZIE BIJLAGE

VERKLAART HIERBIJ GEEN (FAMILIE)RELATIES OF BANDEN MET BOVENGENOEMDE INSTELLING TE ONDERHOUDEN, ALS PRIVÉPERSOON, ONDERZOEKER / DOCENT, BEROEPSBEOEFENAAR OF ALS ADVISEUR, DIE EEN VOLSTREKT ONAFHANKELIJKE OORDEELSVORMING OVER DE KWALITEIT VAN DE OPLEIDING TEN POSITIEVE OF TEN NEGATIEVE Zouden KUNNEN BEÏNVLOEDEN.

VERKLAART HIERBIJ ZODANIGE RELATIES OF BANDEN MET DE INSTELLING DE AFGELOPEN VIJF JAAR NIET GEHAD TE HEBBEN.

VERKLAART STRIKTE GEHEIMHOUDING TE BETRACHTEN VAN AL HETGEEN IN VERBAND MET DE BEOORDELING AAN HEM/HAAR BEKEND IS GEWORDEN EN WORDT, VOOR ZOVER DE OPLEIDING, DE INSTELLING OF DE NVAO HIER REDELIJKERWIJS AANSpraak OP KUNNEN MAKEN.

VERKLAART HIERBIJ OP DE HOOGTE TE ZIJN VAN DE NVAO GEDRAGSCODE.

PLAATS:

Utrecht

DATUM:

1 april 2012

HANDTEKENING:



**ONAFHANKELIJKHEIDS- EN GEHEIMHOUDINGSVERKLARING**

INDIENEN VOORAFGAAND AAN DE OPLEIDINGSBEOORDELING

ONDERGETEKENDE

NAAM: Joke Looijend

ADRES: wasserhof 2007, 6525 LA Nijmegen

IS ALS DESKUNDIGE / SECRETARIS GEVRAAGD VOOR HET BEOORDELEN VAN DE OPLEIDING:

ZIE BIJLAGE

AANGEVRAAGD DOOR DE INSTELLING:

ZIE BIJLAGE

VERKLAART HIERBIJ GEEN (FAMILIE)RELATIES OF BANDEN MET BOVENGENOEMDE INSTELLING TE ONDERHOUDEN, ALS PRIVÉPERSOON, ONDERZOEKER / DOCENT, BEROEPSBEOEFENAAR OF ALS ADVISEUR, DIE EEN VOLSTREKT ONAFHANKELIJKE OORDEELSVORMING OVER DE KWALITEIT VAN DE OPLEIDING TEN POSITIEVE OF TEN NEGATIEVE Zouden KUNNEN BEÏNVLOEDEN.

VERKLAART HIERBIJ ZODANIGE RELATIES OF BANDEN MET DE INSTELLING DE AFGELOPEN VIJF JAAR NIET GEHAD TE HEBBEN.

VERKLAART STRIKTE GEHEIMHOUDING TE BETRACHTEN VAN AL HETGEEN IN VERBAND MET DE BEOORDELING AAN HEM/HAAR BEKEND IS GEWORDEN EN WORDT, VOOR ZOVER DE OPLEIDING, DE INSTELLING OF DE NVAO HIER REDELIJKERWIJS AANSpraak OP KUNNEN MAKEN.

VERKLAART HIERBIJ OP DE HOOGTE TE ZIJN VAN DE NVAO GEDRAGSCODE.

PLAATS: Nijmegen

DATUM: 22/10/11

HANDTEKENING: