



MSc Oncology
Vrije Universiteit Amsterdam

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Summary

Standard 1. Intended learning outcomes

The MSc Oncology is a research-focused, and small-scale programme focused on educating cancer researchers. The learning outcomes are broadly formulated to encompass the relevant competencies of junior researchers and are clearly at an academic master's level. The goals align with expectations in the field. The panel encourages the programme to continue to invest in this alignment, as rapid developments in the field require constant efforts to keep the programme relevant and up-to-date.

Standard 2. Teaching-learning environment

The MSc Oncology curriculum is coherent and develops knowledge and skills in cancer research in an impressive set of courses connected with state-of-the-art wet-lab research. Students have considerable flexibility to shape the curriculum to their preferences. In addition, the core courses and the Academic Core module tie the curriculum components together. The education is delivered in a small-scale, intensive setting by motivated and suitably qualified teaching staff who are active oncology researchers. The courses, research internships and close collaboration with researchers grant students many opportunities to develop as junior researchers. The programme is taught in English, which aligns with the international orientation of the research field and the global labour market. Sufficient attention is paid to English-language proficiency for staff and students.

The panel asks the programme management to consider exploring a broader scope of cancer research, for example, cancer epidemiology and cancer prevention. The learning outcomes allow for a wider interpretation of oncology beyond wet-lab research, providing students with a wider range of knowledge and skills should they wish to pursue an alternative career to laboratory researcher. The curriculum is feasible with appropriate support for students throughout the programme. Although students usually find an internship position in time, the search can be a challenging experience. The panel recommends that the programme management closely monitors the situation and provides a safety net for students who struggle to find an internship position. Furthermore, the programme should ensure that longer internships, which organizations sometimes offer to students as an option, do not become the norm in the expectations of internship supervisors or organizations.

Standard 3. Student assessment

The panel is impressed with the master's programme's clear and transparent assessment policy and practice and considers it an efficient and firm assessment system that supports students by making assessments clear, transparent and accessible and aids teachers in making well-founded assessment decisions. The panel examined the master's thesis assessment procedure and concluded that it is transparent and robust. The programme has a solidly functioning examination board that is active and allocates sufficient time for its activities, reporting issues and initiating actions when necessary. The panel recommends the board reflect on its visibility and approachability for students and invest in this where necessary.

Standard 4. Achieved learning outcomes

The panel finds that the master's theses and the alumni job prospects demonstrate that the programme's learning outcomes are achieved. A high number of students continue in academia, highlighting the programme's research focus. The panel praises the programme for this high level. At the same time, it recommends ensuring that career pathways outside of research remain within the MSc's focus after graduation or after finalizing a PhD.

Score table

The panel assesses the programme as follows:

M Oncology

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

General conclusion positive

Prof. Hans van Leeuwen
Chair

Jessica van Rossum MSc
Secretary

Date: 22 December 2023

Introduction

Procedure

Assessment

On 3- 5 October 2023, the master's programme Oncology of the Vrije Universiteit Amsterdam was assessed by an independent peer review panel as part of the cluster assessment Biomedical Sciences. The assessment cluster consisted of 18 programmes, offered by Wageningen University, Free University Amsterdam, University of Amsterdam, Leiden University, Radboud University, Maastricht University and Utrecht University. The assessment followed the procedure and standards of the NVAO Assessment Framework for the Higher Education Accreditation System of the Netherlands (September 2018).

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

Preparation

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

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

The programme provided the coordinator with a list of graduates over the period 2020 – 2022. In consultation with the coordinator, the panel chair selected 15 theses, taking the diversity of final grades and examiners into account. Prior to the site visit, the programme provided the panel with the theses and the accompanying assessment forms. The panel members also received the relevant documentation from the programme, consisting of an extensive set of current documentation pertaining to the four standards of examination that, together with a programme description and SWOT analysis, served as self-evaluation report. An overview of these materials can be found in Appendix 4.

Site visit

During the site visit, the panel interviewed various programme representatives (see appendix 3). The panel also offered students and staff members an opportunity for confidential discussion during a consultation hour. No consultation was requested. The panel used the final part of the site visit to discuss its findings in an internal meeting. Afterwards, the panel chair publicly presented the preliminary findings.

Report

The secretary wrote a draft report based on the panel's findings and submitted it to an Academion colleague for peer assessment. Subsequently, the secretary sent the report to the panel for feedback. After processing this feedback, the secretary sent the draft report to the programme in order to have it checked for factual irregularities. The secretary discussed the ensuing comments with the panel chair and changes were

implemented accordingly. The panel then finalised the report, and the coordinator sent it to the Vrije Universiteit.

Panel

The following panel members were involved in the cluster assessment:

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

The panel assessing the master's programme Oncology at the Vrije Universiteit Amsterdam consisted of the following members:

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

Information on the programme

Name of the institution:	Vrije Universiteit Amsterdam
Status of the institution:	Publicly funded institution
Result institutional quality assurance assessment:	Positive

Programme name:	M Oncology
CROHO number:	60811
Level:	Master
Orientation:	Academic
Number of credits:	120 EC
Location:	Amsterdam
Mode(s) of study:	Fulltime
Language of instruction:	English
Submission date NVAO:	1 May 2024

Description of the assessment

Previous accreditation panel's recommendations

The documentation includes an overview of how the programme management has followed up on the recommendations given by the previous accreditation panel (2017). Furthermore, several recommendations and their follow-up actions were discussed with the programme management during the site visit. The panel concludes that the programme management has genuinely acted upon the recommendations. The panel is satisfied with the improvement measures and recognizes that these have improved the quality of the programme. The programme management is still in the process of addressing several recommendations. These issues are described in this report.

Organisation

The Master of Oncology is embedded in the Faculty of Medicine at the Vrije Universiteit Amsterdam. The faculty is affiliated with Amsterdam UMC, location VUmc. The Faculty of Medicine at VU Amsterdam closely collaborates with the Faculty of Medicine at the University of Amsterdam and is part of the Education Platform of Amsterdam UMC. A broad educational institute has been formed within the alliance of VUmc and AMC, in which cooperation between the two medical centres is maintained and strengthened.

The master's programme is embedded in the Amsterdam UMC – Cancer Centre Amsterdam (CCA). In the merger between the former VUmc and AMC University hospitals in 2018, all academic oncology research and treatment within the CCA became centred in the VUmc location at the Boelelaan in Amsterdam. The CCA closely collaborates with international and national centres of excellence in the area of oncology, such as the Netherlands Cancer Institute (NKI).

Standard 1. Intended learning outcomes

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

Profile and aims

The MSc Oncology programme aims to educate students with a bachelor's degree in biomedical sciences or related programmes to become scientific researchers in oncology. The programme focuses on a multidisciplinary approach of research questions pertaining to the diagnosis, therapy, health and prevention of cancer, integrating aspects of biology, medicine, physics, health sciences and other related disciplines. The programme aims to understand the causes of cancer and develop novel diagnostic and therapeutic modalities. It also aims to prepare students to become skilled cancer researchers, which includes developing, executing, organizing, evaluating and valorizing scientific research. It is a selective programme, in which students are personally guided by professionals in the field in a small-scale setting and trained to become independent researchers dedicated to cancer research. Students have a high degree of freedom to compose a tailor-made curriculum from specialized master's courses and research projects.

The programme is one of the few master's courses in the world in which oncology is the focus rather than a specialization in an existing biomedical sciences or molecular biology programme. The programme has a

professional field committee comprising external stakeholders, including employers and alumni, that advises the programme on the goals and curriculum content to keep the programme aligned with expectations in the field. The learning outcomes focus on the ability to address complex research questions and perform independent state-of-the-art research. The qualifications comply with international academic standards and the demands of daily oncology research practice for an early-stage researcher. Four early career researcher roles have been defined within the Master of Oncology program, in line with the Canadian Medical Education Directions for Specialists systems and have been adapted towards research. The four roles are scholar, collaborator, communicator and manager. Each role requires distinct competencies and indicators, which form the final qualifications and are linked to the Dublin descriptors.

The panel studied the programme's profile, aims and learning outcomes. It concludes that the MSc Oncology is a focused, multidisciplinary programme that aims to develop students as cancer researchers. The programme is embedded in a small-scale educational context focused on personal guidance and customization. The learning outcomes are clearly formulated at an academic master's level and broadly describe the competencies of a junior researcher. During the site visit, the panel and programme representatives discussed the broad learning outcomes regarding the programme's narrow focus on oncology. According to the programme management, the aim is to prepare students to become researchers in the field. The specific knowledge and skills students acquire depend on their chosen courses and projects. Furthermore, the broad set of learning outcomes allows students to choose different careers after graduation. The panel understands and approves of this choice. However, it also observes that this approach is not explicitly visible in the curriculum, which predominantly comprises courses directly linked to oncology research. This issue is further discussed under Standard 2.

The panel recognizes that the programme aligns the curriculum with its goals through the Professional Field Committee. It considers its connection to the broader field crucial as the field of oncology and related technologies undergo rapid change as a result of, for example, the opportunities afforded by artificial intelligence and trends towards personalized medicine. The panel encourages the programme management to continue to invest in this connection, keeping the programme sufficiently broad and flexible to make it future proof. For example, the programme could investigate whether the profile could be extended to include more elements from cancer prevention and epidemiology in addition to laboratory-related research.

Considerations

The MSc Oncology is a research-focused, and small-scale programme focused on educating cancer researchers. The learning outcomes are broadly formulated to encompass the relevant competencies of junior researchers and are clearly at an academic master's level. The goals align with expectations in the field. The panel encourages the programme to continue to invest in this alignment, as rapid developments in the field require constant efforts to keep the programme relevant and up-to-date.

Conclusion

The panel concludes that the programme meets Standard 1.

Standard 2. Teaching-learning environment

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

Findings

Curriculum and teaching methods

The programme curriculum consists of 120 EC divided over two study years. The first semester of the programme contains compulsory courses (30 EC) that explore different aspects of oncology, immunology research and biostatistics necessary to organize and conduct scientific research or review published research data. The first four compulsory courses follow a logical sequence based on their subject matter: from the molecular level to clinical translation. The courses involve direct contact with lecturers in the research field, programme management and CCA research institute. Students can begin a minor internship (30 EC) after finishing the compulsory courses and obtaining at least 18 EC during the first semester. During this minor internship, which they complete at Amsterdam UMC, the Netherlands Cancer Institute (NKI) in Amsterdam or the Prinses Maxima Centre in Utrecht. During the internship, students apply the knowledge and skills they learned in the compulsory courses. Students conduct epidemiological, bioinformatic, clinical or wet-lab research as part of the minor internship. Teaching methods focus on small-scale, interactive education, such as interactive lectures, working groups, journal clubs and laboratory or clinic visits.

In the second year of the programme, students follow optional courses (12 EC) and complete a literature study (9 EC). For the optional courses, students can choose from a list of over 100 master's courses offered by the AUMC, other faculties, and other universities nationwide and abroad. Alternatively, students can choose other courses with a minimum level of 400 but these courses need approval first. The examination board has appointed an examiner responsible for all optional courses, who must grant students approval for their choice of courses. The final part of the programme comprises a major internship (36 EC), which has a similar format to the minor internship but takes longer to complete. In addition to an academic internship, the programme offers opportunities for a major internship in a company to accommodate students interested in a career outside academia. The programme helps students find a research internship within pharma and biotech companies.

The Academic Core (3 EC) is a learning pathway that runs throughout the curriculum. It enables students to develop their academic and transferable skills, including career development, financial management, legal and ethical judgment, presentation skills, conference participation and networking. The Academic Core contains content and assignments to expand these skills, such as a lecture on research ethics, a visit to a scientific conference, scientific lectures, a presenting workshop, a visit to a role model seminar and an interview with a role model of their choice. Students complete an Academic Core portfolio to demonstrate their development, and this is evaluated by the Academic Core examiner. Students pass this course after completing the portfolio and a final meeting with the examiner.

The panel studied the MSc Oncology curriculum and a selection of courses. It concludes that the curriculum is coherent and develops knowledge and skills in cancer research throughout the courses. The panel considers the course content one of the programme's key strengths, as it directly relates to the CCA's main multidisciplinary research themes and strongly aligns with state-of-the-art research. Students have considerable flexibility to shape the programme to their preferences through optional courses and both research internships. The Academic Core ties the programme together and provides a common thread throughout the curriculum, which the panel also values for its community-forming effect. The teaching

methods are very well suited to the programme goals and provided in a small-scale interactive setting. Students mentioned that they appreciated the close guidance in the courses and the many opportunities to practice their research skills and build a network of oncology researchers due to their close connection to the academic field.

During the site visit, the panel discussed with the programme management the relationship between the broad learning outcomes, which aim to develop junior researchers, and the focused curriculum, which immerses students in wet-lab oncology research. As discussed in Standard 1, the programme management considers developing researchers to be the programme's main goal; students should also be able to pursue a career other than oncological researcher after graduation. The panel appreciates this aim, but thinks that in this light, the curriculum would benefit from a broader approach to cancer research, demonstrating to students the opportunities outside wet-lab research. For example, the panel believes that cancer epidemiology and cancer prevention could be valuable additions to broaden the curriculum from the laboratory to a full clinical setting. Next to disease treatment, prevention has gained increased attention in societal debates about healthcare. While students and alumni mentioned that they very much enjoyed the current curriculum and considered it highly suited to their development as researchers, at the same time, they felt that attention to broader skills useful in other careers could be expanded in the curriculum. They mentioned data science as a possible addition, as this has become increasingly relevant in biomedical research and in the professional arena. The panel recommends the programme management to reflect upon the curriculum content regarding the learning outcomes to determine whether the curriculum's scope should be expanded and in what direction.

Language and internationalization

During the site visit, the panel discussed the use of English as the language of instruction and the programme name with the programme management. The panel considers English an appropriate choice given the international orientation of the research field and the global labour market. English language proficiency (level C1) is an academic staff recruitment requirement. Students are satisfied with the fact that the programme is taught in English and evaluate the teaching staff's level of English positively. Foreign students entering the programme must meet the English language proficiency requirements as part of their admission.

Feasibility and guidance

In the admission procedure, an admission board assesses prospective students' knowledge, skills and motivation based on their previous education and an interview to ensure they match the level and ambition of the MSc programme. Students entering the programme obtained a biomedical or related bachelor's degree at an institution of academic higher education, basic knowledge of molecular biology, oncology and immunology, and research laboratory skills.

The programme supports students throughout the curriculum via direct and close contact with staff during the courses and internships. In addition to providing a study advisor for personal issues and guidance, the MSc programme has a mentorship scheme as part of the Academic Core. Mentors are senior lecturers working at Amsterdam UMC. A mentor is assigned to each student who must schedule at least one meeting with their mentor each academic year. This meeting provides one-to-one guidance. Students can discuss career opportunities with their mentor and ask for advice on curriculum choices. Since 2023, the programme has implemented a study career coach who helps students orientate themselves towards their future career paths. During the internships, students have a supervisor from within the AUMC. In the case of an external internship, the internship organization can provide a daily supervisor. The project, organization and supervisor must be approved by the examination board, which checks that the project and supervision align

with the programme requirements. An interim assessment of the possibility of successfully finishing the internship project within the given time frame is conducted after six weeks to ensure the project's feasibility.

Based on the reviewed documentation and discussions with students, the panel concludes that the curriculum is feasible, and students are well-supported throughout the programme. Study delay is mostly because of student's own choices to follow an additional second master's programme or starting with medical training. Students appreciate having close contact with teaching staff. However, several practical issues pose challenges to completing the curriculum within two years. The most common issue is finding a suitable internship. The number of positions is limited and competition between students from different programmes and institutions in the Amsterdam region is strong. Students themselves are responsible for finding an internship, as the programme management feels it is valuable for master's students to learn to take charge. The programme management has addressed competition in the Amsterdam region by recently including the Prinses Maxima Centre in Utrecht as a third option for the minor internship to increase the number of opportunities. Students commented that finding an internship can be challenging. However, they are usually successful, largely because oncology students are highly regarded, and the programme has a strong network that students can use when necessary. Nevertheless, students would welcome more support in finding an internship. In particular, an early warning that internships are difficult to find, and students should start their search early (i.e. not later than students in other, related programmes) would be welcome.

The panel understands the programme's position that students should take charge of their search for an internship but also thinks this requires careful communication and a safety net should students struggle. A safety net is currently in place informally through the teaching staff's network. However, the panel believes it could be formalized, for example, by creating several backup internships with preferred partners for students who fail to find a position in time. The panel recommends that the programme management set this up and ensure students are informed about what to expect so that they can begin their search in time. The panel also learned that the internship supervisor sometimes ask students to stay longer to execute a larger, partially extracurricular, project. The panel asks the programme management to monitor this situation closely and to ensure that longer internships do not become the norm in the expectations of internship supervisors. Preventing study delay because of prolonging the internship is not only in the interest of students and society, but also to safeguard fair and reliable internship assessment of equivalent projects, and to prevent internship capacity taken up by prolonged stays.

During the site visit, the panel understood from students that they felt comfortable giving informal feedback to the programme management and teaching staff due to the programme's small scale and the short lines of communication with teaching staff. Conversely, the panel learned that the programme committee would welcome more formal responses to their recommendations regarding curriculum and programme improvements. Although the programme management and course coordinators appear to frequently take up recommendations, the committee would like to close the feedback loop by receiving responses on how their recommendations are used. The panel recommends the programme management take this matter up with the programme committee and devise a communication channel to close the feedback loop.

Teaching staff

The MSc Oncology core teaching team consists of senior researchers and clinicians from Amsterdam UMC who are actively involved in the CCA research programmes. In addition, PhDs, postdoctoral researchers and researchers working outside Amsterdam UMC, for example, at the NKI and Prinses Maxima Centre, are involved in the programme as experts in the field of oncology and immunology. They work under the responsibility of Amsterdam UMC staff. Minor and major internship supervisors are required to be assistant, associate or full professors at Amsterdam UMC. Several (international) guest and company lecturers also

participate in delivering the courses. Almost all the course coordinators have obtained or are in the process of obtaining their University Teaching Qualification (UTQ). New course coordinators are encouraged to obtain their UTQ as soon as possible.

Based on the reviewed documents and discussions during the site visit, the panel concludes that the teaching staff are suitably qualified to teach the programme. The panel highlights the teaching staff's strong research profile: all teaching staff members are actively involved in the CCA research programmes and are experts in oncology and immunology. Sufficient attention is devoted to teacher professionalization, which is reflected in the commitment to obtaining teaching qualifications. The panel has the impression that the teaching team is highly motivated and collegial, with frequent informal contact among teaching staff members. The panel considers this to be a strong asset of the programme.

Considerations

The MSc Oncology curriculum is coherent and develops knowledge and skills in cancer research in an impressive set of courses connected with state-of-the-art wet-lab research. Students have considerable flexibility to shape the curriculum to their preferences. In addition, the core courses and the Academic Core module tie the curriculum components together. The education is delivered in a small-scale, intensive setting by motivated and suitably qualified teaching staff who are active oncology researchers. The courses, research internships and close collaboration with researchers grant students many opportunities to develop as junior researchers. The programme is taught in English, which aligns with the international orientation of the research field and the global labour market. Sufficient attention is paid to English-language proficiency for staff and students.

The panel asks the programme management to consider exploring a broader scope of cancer research, for example, cancer epidemiology and cancer prevention. The learning outcomes allow for a wider interpretation of oncology beyond wet-lab research, providing students with a wider range of knowledge and skills should they wish to pursue an alternative career to laboratory researcher. The curriculum is feasible with appropriate support for students throughout the programme. Although students usually find an internship position in time, the search can be a challenging experience. The panel recommends that the programme management closely monitors the situation and provides a safety net for students who struggle to find an internship position. Furthermore, the programme should ensure that longer internships, which organizations sometimes offer to students as an option, do not become the norm in the expectations of internship supervisors or organizations.

Conclusion

The panel concludes that the programme meets Standard 2.

Standard 3. Student assessment

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

Findings

Assessment system

The various types of assessment used in the MSc Oncology are designed to cover all the content and competencies described in the learning outcomes. In the first semester of the programme, assessment tests knowledge, insight, and the ability to apply them in examinations and assignments. From the second semester onwards, assessment focuses on the context of the scientific research environment. Therefore, in addition to examinations and theoretical assignments, the student is assessed on activities that display practical laboratory skills, research skills, communication skills, active use of knowledge, innovative ideas, self-reflection, collaboration and general academic skills such as scientific writing and presenting. An assessment plan outlines the relationship between the learning outcomes and assessment methods in the curriculum. An assessment guide describes the test cycle and the associated principles and procedures for examiners, students and other involved individuals.

The panel studied the MSc Oncology assessment system, including the assessment plan and guide. It concludes that the programme has a clear assessment policy. The panel appreciates that the assessment plan explains how each component of the programme is evaluated, including the type of assessment and the weighting of individual components in the final grade. Furthermore, the panel notes that the assessment plan is evaluated annually and appreciates this continuous monitoring. These combined features give the panel the impression of an efficient and solid assessment system that supports students by making assessments clear, transparent, and accessible and aids teachers in making well-founded assessment decisions.

Research internship assessment

The minor and major internships have a similar mode of assessment, where the major internship is considered the programme's master's thesis. They are independently assessed by the student's supervisor and a second assessor. The supervisor is a teaching staff member of Amsterdam UMC or one of the associated partners (NKI and Prinses Maxima Centre) who has supervised the student on a daily basis. The assessor is a programme teaching staff member who is formally responsible for grading. The assessor and supervisor grade the thesis using a rubric. Afterwards, the student gives an oral presentation of the work, after which the supervisor and assessor jointly decide upon the final grade, which is calculated using a 40-40-20% division for laboratory practice, the final report and oral presentation, respectively.

As part of the preparation for the site visit, the panel studied several major research internship reports and their assessment forms. It found that thesis assessment was carried out transparently, and the assessment gave students insight into its different elements and underlying feedback. The panel also observed that both assessors independently gave similar grades for different components of the thesis assessment. Therefore, the panel appreciates the soundly performed thesis assessment.

Examination board

The programme shares an examination board with the master's programmes in Epidemiology and Personalized Medicine, the Examination Board Science Masters. The examination board's tasks include appointing examiners, deciding students' individual learning paths, monitoring and reporting on quality and investigating fraud cases. The board delegates several executive tasks to the assessment committee,

including evaluating course examinations and undertaking an independent assessment of a random selection of MSc theses once every three years.

Based on the reviewed documentation and an interview with the board during the site visit, the panel concludes that the examination board safeguards the quality of assessment appropriately and proactively. The board is active and allocates sufficient time for its activities, reporting issues and initiating actions when necessary. The collaboration between the three MSc programmes promotes critical mass for the board and sufficient distance between the members and the programme. The panel considers this to be crucial for a small-scale programme to prevent staff members from wearing too many hats at once. The student interview gave the panel the impression that several students experienced a threshold for directly contacting the board with their questions. The panel recommends the board reflect on its visibility and approachability for students and invest in this where necessary.

Considerations

The panel is impressed with the master's programme's clear and transparent assessment policy and practice and considers it an efficient and firm assessment system that supports students by making assessments clear, transparent and accessible and aids teachers in making well-founded assessment decisions. The panel examined the master's thesis assessment procedure and concluded that it is transparent and robust. The programme has a solidly functioning examination board that is active and allocates sufficient time for its activities, reporting issues and initiating actions when necessary. The panel recommends the board reflect on its visibility and approachability for students and invest in this where necessary.

Conclusion

The panel concludes that the programme meets Standard 3.

Standard 4. Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

Findings

Theses

As part of its preparation for the site visit, the panel studied the major internship reports of 15 students, which are the final products of the programme. The panel concludes that the internship reports are of good quality and convincingly display the (specialized) knowledge and insights gained by students. The theses demonstrate that students achieve the learning outcomes and the level and quality expected of a master's thesis.

Alumni

In the past five years, the programme management has invested in creating a connection and knowledge exchange between alumni, students and the programme. Since the previous accreditation, the programme management has begun conducting alumni surveys, organizing yearly role-model seminars, in which alumni share their experiences with students, and making use of LinkedIn to connect. Moreover, the alumni provide input into the programme as part of the working field committee and the admission board for matching new students. In a recent survey of alumni that graduated between 2018 and 2022, the programme management found that most (88%) graduates continued in academia, 80% as PhD students and 8% in other positions, such as research technician. The remaining 12% of graduates found positions in healthcare, industry, the

government, policy or teaching, among others. The alumni reported feeling suitably prepared for a position in oncology research.

The panel appreciates the performance of the programme's graduates, particularly the high number of alumni finding a career in academia. This finding clearly aligns with the programme's learning outcomes. The panel deems this prominent research focus a significant accomplishment. However, it also suggests that attention to a career outside academia is lacking. Considering a substantial number of PhD researchers might not ultimately work in academia in the long term, the panel believes that attention to alternative career paths could be increased. This point was also discussed under Standards 1 and 2. The panel recognizes that the programme management has strengthened its relationship with alumni in recent years. It encourages them to continue efforts to form a community and exchange knowledge and ideas with alumni.

Considerations

The panel finds that the master's theses and the alumni job prospects demonstrate that the programme's learning outcomes are achieved. A high number of students continue in academia, highlighting the programme's research focus. The panel praises the programme for this high level. At the same time, it recommends ensuring that career pathways outside of research remain within the MSc's focus after graduation or after finalizing a PhD.

Conclusion

The panel concludes that the programme meets Standard 4.

General conclusion

The panel's assessment of the MSc Oncology is positive.

Development points

1. Continue to align with the professional and academic fields to keep the programme up-to-date and relevant, as the field is rapidly evolving.
2. Explore a broader scope of cancer research beyond wet-lab research, for example, in the direction of cancer epidemiology and prevention.
3. Carefully monitor the process of finding suitable internships to prevent study delays in the competitive context of student internships and ensure longer internships do not become the norm in the expectations of internship supervisors or organizations.

Appendix 1. Intended learning outcomes

2.1 Learning outcomes

Within the Master program, four roles of the early stage researcher have been defined in line with the CanMEDS (Canadian Medical Education Directions for Specialists) system, and adapted for research (Table 1). The four roles are *scholar*, *collaborator*, *communicator* and *manager*. Each role requires distinct competences and indicators, which form the final qualifications (appendix 1)

Table 1: Roles of the early stage researcher.

Role 1 Scholar	
The early stage researcher keeps his/her own knowledge and skills up-to-date and transfers scientific knowledge to others. He/she works independently in a professional manner in the process of drafting, implementing and evaluating areas of research. The early stage researcher steers the own professional development.	
1.1	The early stage researcher keeps his/her own knowledge up-to-date.
1.2	The early stage researcher performs research independently.
1.3	The early stage researcher efficiently familiarizes him- or herself with a new area of research.
1.4	The early stage researcher exhibits adequate professional behavior.
1.5	The early stage researcher is able to steer his/her own professional development.
Role 2 - Collaborator	
The early stage researcher participates effectively and appropriately in a multidisciplinary research team and in the inter-collegial peer review processes. He/she is able to build a network of contacts and to use them adequately.	
2.1	The early stage researcher participates effectively in a multidisciplinary research team.
2.2	The early stage researcher makes adequate use of networks in the research field.
2.3	The early stage researcher participates in the inter-collegial peer review process.
Role 3 - Communicator	
The early stage researcher gives oral and written reports of the research to colleagues in their own discipline and to other stakeholders. The early stage researcher participates in scientific discussions and debates and takes a position in such discussions and debates.	
3.1	The early stage researcher provides verbal and written reports of the research to colleagues in his/her own discipline and to other stakeholders.
3.2	The early stage researcher participates in scientific discussions on research.
3.3	The early stage researcher participates in the public debate on research.
Role 4 - Manager	
The early stage researcher organizes his/her own research adequately within the applicable quality and financial frameworks, in order to achieve the set goals.	
4.1	The early stage researcher can organize and manage scientific research.
4.2	The early stage researcher understands the financial aspects of research.
4.3	The early stage researcher contributes to the quality improvement of research and of the research institute.

Appendix 2. Programme curriculum

Master Oncology - Optional Courses

Omschrijving

The optional courses in oncology are intended to deepen the knowledge acquired in the compulsory courses. These options cover both theoretical and practical aspects of oncology. Your choice of courses will depend on your own interests and the focus of your practical training. In principle you will be given the greatest possible freedom to choose, however the board of examiners has to approve your choice.

Vakken

Naam vak	Periode	Credits	Code
Biobusiness Course		3.00EC	M_OBIOBUS10
Externe Module 4		17.00EC	M_OEXTMO05
Externe Module 4		17.00EC	M_OEXTMO06
Macroscopic, microscopic and pathological anatomy of the mouse		3.00EC	M_OMAMIPAT18
Advanced Molecular Immunology and Cell Biology	P1	6.00EC	AM_470656
Genomes and Gene Expression	P1	6.00EC	AM_470614
Protein Science	P1	6.00EC	AM_470145
Science and Communication	P1	6.00EC	AM_470587
Clinical Immunology	P2	6.00EC	AM_470655
Science Journalism	P2	6.00EC	AM_471014
Proteomics in Biomedical Research	P3+4+5	3.00EC	M_CPROTB109
Caput Structural Biology	P4+5+6	6.00EC	AM_470607

Master Oncology - Compulsory Courses

Omschrijving

The first semester of the programme is filled with compulsory courses which will give you the basic knowledge about the main themes in cancer development, research and treatment. The last two courses will help you improve your academic skills. Master Oncology students need to at least positively conclude three of the first four oncology compulsory courses to start their internship or literature study.

Vakken

Naam vak	Periode	Credits	Code
Oncogenesis	P1	6.00EC	M_OONC03
Tumor Immunology	P1	6.00EC	M_OTUMIM10
Innovative Tumor Therapies	P2	6.00EC	M_OITT03
Tumor Biology and Clinical Behaviour	P2	6.00EC	M_OTBCB03
Biostatistics	P3	3.00EC	M_FBIOSTA16
Writing a Research Proposal	P3	3.00EC	M_FWRP18

Opleidingsdelen

- [Academic Core Oncology](#)

Academic Core Oncology

Vakken

Naam vak	Periode	Credits	Code
Academic Core Oncology 1st year	Ac. Year (sept)	0.00EC	M_OACCOREA14
Academic Core Oncology 2nd year	Ac. Year (sept)	3.00EC	M_OACCOREB14

Appendix 3. Programme of the site visit

Bezoekprogramma VU

Di 3 okt

14.30	15.30	Intern overleg panel + inloopspreekuur
15.30	16.15	Gesprek met inhoudelijk verantwoordelijken M Oncology
16.15	17.00	Gesprek met studenten en alumni M Oncology
17.00	18.00	Themagesprekken M Oncology

Wo 4 okt

08.45	09.00	Aankomst
09.00	09.30	Examencommissie M Oncology
09.30	10.00	Intern overleg panel
10.00	10.30	Eindgesprek formeel verantwoordelijken M Oncology
10.30	11.00	Intern overleg panel
11.00	11.45	Gesprek met inhoudelijk verantwoordelijken B BMS
11.45	12.30	Gesprek met studenten en alumni B BMS
12.30	13.30	Lunch + intern overleg panel
13.30	14.30	Themagesprekken B BMS
14.30	15.00	Gesprek Examencommissies Bèta
15.00	15.30	Intern overleg panel
15.30	16.00	Eindgesprek formeel verantwoordelijken B BMS
16.00	16.30	Intern overleg panel
16.30	17.15	Gesprek met inhoudelijk verantwoordelijken B G&L
17.15	18.00	Gesprek met studenten en alumni B G&L

Do 5 okt

08.45	09.00	Aankomst
09.00	10.00	Themagesprekken B G&L
10.00	10.30	Intern overleg panel
10.30	11.00	Eindgesprek formeel verantwoordelijken B G&L
11.00	11.30	Intern overleg panel
11.30	12.15	Gesprek met inhoudelijk verantwoordelijken M BMS
12.15	13.00	Gesprek met studenten en alumni M BMS
13.00	14.00	Lunch + intern overleg panel
14.00	15.00	Themagesprekken M BMS
15.00	15.30	Intern overleg panel
15.30	16.00	Eindgesprek formeel verantwoordelijken M BMS
16.00	17.30	Intern overleg panel
17.30	18.00	Mondelinge terugkoppeling en afronding

Appendix 4. Materials

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

- Report previous accreditation committee
- Student chapter
- Exit qualifications
- Schematic overview curriculum
- Staff involved in the programmes
- Examples of course materials
- Assessment policy
- Recent reports Board of Examiners