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BSc Information Science
MSc Business Process Management and IT
Open Universiteit

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Summary

Standard 1. Intended learning outcomes

The profile and aims of the BSc Information Science and MSc BPMIT are fitting for academic bachelor's and master's programme in Information Science. The programmes have relevant and strong aims, and offer a unique opportunity for students to study in a flexible and accessible way at any moment in their life. The goals of both programmes have been well-translated into two coherent sets of intended learning outcomes that are aligned with the requirements of the academic and professional fields. The BSc is a broad programme on Information Sciences, preparing students for a wide range of positions in business and IT. The panel recommends regular reflection on a curriculum level to ensure that the broad basis of the programme remains relevant and up-to-date. The MSc focuses on the management of IT systems in organizations, aligning well with the professional context of most students. The overarching aims of the programme and the connection between the individual courses could be more explicitly communicated to students: the panel recommends to work on this.

Standard 2. Teaching-learning environment

The curricula of the BSc Information Science and the MSc BPMIT reflect the intended learning outcomes of the programmes. Courses are offered using the educational concept of activating online education, combining curriculum flexibility with guidance and support. The panel appreciates this, and encourages the programme to keep developing this concept in the coming years.

The BSc curriculum provides core knowledge in information science and the adjoining disciplines and skills. The curriculum is very open and flexible in set-up, with courses that have little to no dependency on each other, allowing students to study when and wherever they want. Keeping courses aligned with each other in this set-up is challenging. The panel recommends to keep investing in this and further structure this to keep courses aligned within the curriculum. The curriculum is feasible, and students are well-supported by the programme over the course of the programme. The open and flexible set-up of the curricula makes the programmes attractive to many students combining the part-time programme with other major activities. This inevitably leads to a long average study duration on paper; the panel is however very impressed by the students who managed to graduate by studying for many years, often alongside a job, and views this as additional proof that the programme continues to keep students engaged. The panel recommends to keep this up, and also continue to inform students at the start of the programme what is expected of them in terms of level and time investment.

The MSc curriculum allows students to specialize in the management of IT systems and the associated skills, with the opportunity to further develop themselves through electives and specialization courses. The panel gives the programme into consideration to reflect on the role of the variants, and whether they could be replaced by a more open elective space with suggested elective packages. Support and guidance in the programme are well-organized. Students appreciate the group work in the courses that keep them engaged, and the feedback provided by tutors. Success rates of the MSc are impressive considering the set-up and nature of the programme.

The teaching staff of both programmes is well-qualified, both in terms of academic activities and teaching qualifications. For both programmes, the panel recommends setting up a structure to accommodate regular reflections between teaching staff members on how to incorporate developments in the field into the curricula. It also advises to invest in more proactive communication to students, and investigate the use of other media beyond written student evaluations to collect student feedback on courses.

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Standard 3. Student assessment

Both programmes have a reliable, valid and transparent system of assessment in place. There are adequate procedures for design and quality assurance of exams, assignments and the BSc and MSc theses, and assessment promotes student learning. The Board of Examiners (CvE) fulfills all of its legal duties. The panel recommends considering the introduction of peer assessment in the group projects in the MSc to account for differences in individual contributions of students. Furthermore, thesis assessment procedures could be improved by storing the contributions of individual assessors separately in the BSc, and by introducing a more transparent translation between the three-point scores on the separate assessment criteria and the final thesis grade. The panel recommends the CvE to more closely monitor the execution of its mandated responsibilities, and develop further policies on the use of AI on the use of AI assistance tools in assignment.

Standard 4. Achieved learning outcomes

The BSc and MSc theses show that students of the programme realize the intended learning outcomes of their programme. The alumni of both programmes are generally satisfied with their education, and indicate that their education helped them further shape their career in business and IT.

Score table

The panel assesses the programmes as follows:

B Informatiekunde

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

M Business Process Management and IT

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. Olga De Troyer   Peter Hildering MSc
Chair   Secretary

Date: 24-11-2023

Introduction

Procedure

Assessment

On 19 and 20 September 2023, the bachelor's programme Information Science and the master's programme Business Process Management and IT of the Open Universiteit were assessed by an independent peer review panel as part of the cluster assessment Information Science. The assessment cluster consisted of 8 programmes, offered by the Open Universiteit, Radboud University, University of Twente, Utrecht University and Vrije Universiteit Amsterdam. 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 Information Science. Peter Hildering acted as both coordinator and secretary, and Anne-Lise Kamphuis and Linda te Marvelde 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 July 20 2023, the NVAO approved the composition of the panel. The coordinator instructed the panel chair on her role in the site visit according to the Panel chair profile (NVAO 2016).

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

The programmes provided the coordinator with a list of graduates over the period 2017– 2022. In consultation with the coordinator, the panel chair selected 15 theses of the master's programme and all available theses (5 in total) of the bachelor's programme, taking into account the diversity of final grades and examiners. Prior to the site visit, the programmes provided the panel with the theses and the accompanying assessment forms, as well as the self-evaluation reports and additional materials (see appendix 4).

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

Site visit

During the site visit, the panel interviewed various programme representatives (see appendix 3). The panel also offered students and staff members an opportunity for confidential discussion during a consultation hour. Two persons made use of this opportunity. 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.

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The secretary wrote a draft report based on the panel's findings and submitted it to a colleague at Academion for peer review. Subsequently, the secretary sent the report to the panel for feedback. After processing this feedback, the secretary sent the draft report to the programmes 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 Open Universiteit.

Panel

The following panel members were involved in the cluster assessment:

- Prof. Olga De Troyer, emeritus professor of Computer Science, Vrije Universiteit Brussel – chair;
- Prof. Geert Poels, professor of Management Information Systems, Ghent University;
- Prof. Alessandro Bozzon, professor of Human Centered AI, Delft University of Technology;
- Prof. dr. Jos van Hillegersberg, scientific director Jheronimus Academy of Data Science Den Bosch (TU/e en TiU), professor Design and Implementation of Information Systems , University of Twente.
- Prof. Jürgen Ziegler, professor of Interactive Systems, University of Duisburg-Essen;
- Prof. Barbara Pernici, professor of Computer Science and Engineering, Politecnico di Milano;
- Prof. Remco Dijkman, professor of Information Systems, Eindhoven University of Technology;
- Prof. Marijn Janssen, professor of ICT and Governance, Delft University of Technology;
- Kelly Kurowksi BSc, master student Business Informatics, Utrecht University – student member;
- Amber Pater BSc, master student Information Sciences, Radboud University – student member.

The panel assessing the Information Science programmes at the Open Universiteit consisted of the following members:

- Prof. Olga De Troyer, emeritus professor of Computer Science, Vrije Universiteit Brussel – chair;
- Prof. Geert Poels, professor of Management Information Systems, Ghent University;
- Prof. dr. Jos van Hillegersberg, scientific director Jheronimus Academy of Data Science Den Bosch (TU/e en TiU), professor Design and Implementation of Information Systems , University of Twente.
- Amber Pater BSc, master student Information Sciences, Radboud University – student member.

Information on the programmes

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

Programme name:	B Informatiekunde (Information Science)
CROHO number:	56842
Level:	Bachelor
Orientation:	Academic
Number of credits:	180 EC
Location:	Heerlen
Mode(s) of study:	Parttime

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Language of instruction: Dutch
Submission date NVAO: May 1, 2024

Programme name: M Business Process Management and IT
CROHO number: 60094
Level: Master
Orientation: Academic
Number of credits: 60 EC
Location: Heerlen
Mode(s) of study: Parttime
Language of instruction: Dutch
Submission date NVAO: 1 May 2024

Description of the assessment

Previous accreditation panel's recommendations

The documentation included an overview of how the programme followed up on the recommendations given by the previous accreditation panel (2017), as well as the additional assessment of standard 4 for the BSc Information Science (2020) . Also, several recommendations and their follow-up actions were discussed with the programme during the site visit. The panel concludes that the recommendations have been seriously acted upon by the programme. The panel is content with the improvement measures taken and sees that these have contributed to improved quality of the programme. The follow-up of some recommendations are highlighted in this report under the applicable standards.

Standard 1. Intended learning outcomes

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

Findings

Profile and aims
The BSc Information Science and the MSc Business Process Management and IT (BPMIT) are offered by the Faculty of Science of the Open Universiteit (OU). The OU is a university with a special assignment to develop, innovate and offer open academic education. Students at the OU typically study part-time in order to combine study with work, care or other activities, and often start studying at a later stage in life. The programmes have a high degree of flexibility, with no minimum amount of credits to obtain in a year and very few entry requirements for courses. Students compose a personal study plan in consultation with a study advisor in line with their ambitions and possibilities. Courses are primarily offered online. Students form a virtual community, with opportunities to meet fellow students and work on projects through online tools or face-to-face meetings in one of the 17 OU study centers throughout the Netherlands and Flanders. All programmes of the OU are primarily offered in Dutch, in order to minimize the language barriers for prospective students. The BSc typically attracts 75 new students per year, and the MSc 200 students.

The *BSc Information Science* aims to educate students to become scientific professionals who can contribute to the design and implementation of information systems in an organizational and societal context. It is an interdisciplinary programme integrating elements from information science, computer science and management science. Graduates should be able to work at the interface of business and IT, finding IT-based solutions for organizational and societal challenges. In defining these solutions, they should be able to balance the requirements of different stakeholders, and take into account the ethical aspects related to the use of data and information systems in a particular usage context. Typical positions for graduates are business analyst, solutions designer, enterprise architect or project manager.

The *MSc Business Process Management and IT* aims to teach students to contribute to the improvement of IT-based work systems, in an organizational environment characterized by rapidly changing IT technologies and the increasing availability of large amounts of data. This includes organizations in both the public and private domain. Students typically already have work experience as specialist in a functional area or in a

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lower management position, and have a professional or academic BSc degree in IT or business. They usually choose the programme with the aim to further develop their competences in projects and tasks that require the integration of business and IT, such as IT process owner or business analyst and contribute to changes in the organization and its business processes.

After studying the profile and aims of the programmes, and discussing these with various representatives during the site visit, the panel was impressed by the set-up and overall goals of the programmes. They offer a very flexible and accessible part-time programme that allows students to study when and wherever they want. This offers students who would otherwise be unable to study (for instance because of work or personal circumstances), the possibility to obtain a bachelor's or master's degree. This was very much appreciated by students and named as the main reason for studying at the OU.

According to the panel, the BSc Information Science is a solid, broad programme on information systems, incorporating both IT and business elements. The panel learnt from the interviews that this broadness is a deliberate choice, as the BSc aims to provide students with knowledge and skills for a wide range of positions on the interface of business and IT. The panel agrees with this broad approach, and believes that this fits the nature of the OU and the goals of most students, which was confirmed by students and alumni that the panel interviewed. At the same time, the panel challenges the programme to keep reflecting on what this broad basis should cover and what not. It found that this is frequently done on a course level, but less structurally on a curriculum level. The field of information science is constantly evolving, and a regular check with the core teaching staff on whether the progamme overall still reflects the state-of-the-art in the field will be worthwhile. This will be further discussed under standard 2.

The panel found that the MSc BPMIT has a clear focus on the management of IT systems. Students learn to evaluate, improve and design IT systems, contributing to the improvement of business processes in organizations. The panel considers this is a relevant profile, especially considering that many students already work in a role where this is relevant. The students confirmed this to the panel and told that the programme is well-aligned with the needs in their professional work. At the same time, the panel noted that the overall aims of the programme, and how the different courses contribute to this aim, were less obvious to students. Students considered the MSc to be a collection of interesting and relevant courses, but thought that the overall message and coherence of the courses could be brought better to light. The panel recommends working on formulating a clear main message for students that connects the different curriculum elements, and communicate this explicitly to students. A good opportunity for this would be the study days when students meet at the start of the programme, or during the first courses of the curriculum.

Intended learning outcomes
The aims of the BSc are translated into eleven intended learning outcomes (see Appendix 1) describing the knowledge and skills that students obtain throughout the programme. The MSc programme has translated its aims into two core competencies related to research ('Independent execution of scientific research') and responsible application ('The ability to independently apply business principles, information and IT, in order to achieve organizational goals and societal objectives in a responsible manner'). These core competencies have been further specified into seven intended learning outcomes (see Appendix 1).

In defining intended learning outcomes, the programmes used the Information Systems model curriculum developed by the Association for Computing Machinery (ACM) and the Association for Information Systems (AIM) in 2020. This international framework has been used for many years by academic programmes worldwide. The programmes provided the panel with an overview that demonstrates how the curricula cover the requirements of the ACM/AIS framework for BSc and MSc programmes. In a similar overview, the

programmes showed that the intended learning outcomes also cover the Dublin Descriptors for academic programmes. Alignment with industry requirements is demonstrated using the European e-Competence Framework (ECF), a framework that covers the competences of various jobs in the IT industry. The ECF is used in shaping several courses in the BSc and MSc programme, ensuring that they cover the requirements of the field. Furthermore, the programmes share an Advisory Board consisting of representatives of the IT industry, that regularly discusses requirements concerning the programmes.

The panel studied the intended learning outcomes of both programmes, and concludes that they are well-formulated and fit the field-specific requirements of the ACM/AIS and ECF frameworks. An overview provided by the programmes show that the ILOs are aligned with the Dublin Descriptors for academic programmes, demonstrating the level and orientation of the programme. Furthermore, the panel appreciates that the programmes align their goals with the professional field through input from the external Advisory Board.

Considerations

The profile and aims of the BSc Information Science and MSc BPMIT are fitting for academic bachelor's and master's programme in Information Science. The programmes have relevant and strong aims, and offer a unique opportunity for students to study in a flexible and accessible way at any moment in their life. The goals of both programmes have been well-translated into two coherent sets of intended learning outcomes that are aligned with the requirements of the academic and professional fields. The BSc is a broad programme on Information Sciences, preparing students for a wide range of positions in business and IT. The panel recommends regular reflection on a curriculum level to ensure that the broad basis of the programme remains relevant and up-to-date. The MSc focuses on the management of IT systems in organizations, aligning well with the professional context of most students. The overarching aims of the programme and the connection between the individual courses could be more explicitly communicated to students: the panel recommends to work on this.

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: BSc Information Science
The curriculum of the BSc Information Science starts with two introductory courses 'Inleiding Informatica' and 'Inleiding Informatiekunde'. (10 EC) These courses are intended as an introduction in the field. They also serve as a demonstration of the level of knowledge and skills required for the remainder of the curriculum. As the BSc requires no specific pre-education, students often base their decision whether or not to continue with the programme on their experience with these courses. After this introduction, 120 EC of courses are clustered into six learning trajectories:
- Programming and technology
- Modeling and system development
- Data and information management
- Project management

- Management and organization
- Academic competences and research

The first five learning trajectories cover the focus areas of information science, whereas the sixth represents the academic focus of the BSc. The courses cover multiple disciplines, and in some cases are taken together with students from the BSc Computer Science or Management Science. Furthermore, students have 30 EC of elective space, in which they can choose any courses, for instance to further develop their competences in computer science or business science. Students complete the curriculum with a 20 EC graduation project (5 EC preparation + 15 EC execution). This is a Design Science Research project, which was developed after 2017 following the recommendations of the previous panel to further structure the bachelor's thesis. Students design an information science artefact, such as a system, method, model or technique, often related to their own organization. They perform one iteration of the design process, with a first design, evaluation and proposal for redesign. In the preparatory course, they learn about Design Research Projects, and devise a first proposal for a project. An academic staff member supervises the student, with the student being responsible for the planning and execution of the project.

The full curriculum is provided in Appendix 2. The order presented in this overview is a recommended order, but students can compose a personal study plan that fits their desired study pace. The study advisor helps students ensuring that the order of courses meets the entry requirements of subsequent courses, as well as keeps meeting the requirements of the full curriculum as formulated in the Teaching and Exam Regulation. The programme aims to keep this dependency of courses and entry requirements at a minimum in order to maintain maximum flexibility.

The panel studied the curriculum of the BSc Information Science, including the content of a number of courses, and discussed this with students and staff of the programme. It concludes that the curriculum covers the intended learning outcomes of the BSc, and provides suitable, varied and attractive content in information science. It demonstrates sufficient attention to the various disciplines relevant to information science (most prominently computer science and management science), as well as their interconnection. The panel particularly appreciates that the curriculum includes attention to ethics of information science and information security, which are increasingly relevant topics for information specialists. The electives allow students to tune the curriculum to their individual preferences. The Design Science approach structures the thesis project, and is an appropriate response to the recommendations of the previous accreditation committee. Students can choose their own project, often inspired by their own professional environment, that adds to the relevance and feasibility of the curriculum for students combining the programme with a job in IT.

The panel learnt from students that the flexibility of the curriculum is highly appreciated. The limited dependency between courses allows for scheduling the curriculum to complement other activities and life events. At the same time, the panel noted this set-up has the associated challenge of maintaining the coherence of the curriculum. It has the impression that although the programme is generally successful in this, some coherency issues occasionally slip in. Students mentioned that there can be overlap in content between courses, and that alignment between courses can decrease when courses change over time. The panel recommends keeping this topic on the agenda, and have regular alignment sessions with the teaching staff of the programme to ensure that the courses complement each other. These sessions could also be used to keep the curriculum up-to-date regarding new technologies and trends (see below under Curriculum development).

Curriculum: MSc Business Process Management and IT
The MSc Business Process Management and IT covers 60 EC. This consists of two mandatory courses Enterprise Architecture and Business Processes (15 EC), one out of three elective courses (7.5 EC), two specialization courses (15 EC) in one of the three variants (Systems, Data or Sourcing), a thesis preparation course (7.5 EC) and a thesis project (15 EC). The courses are independent from each other with respect to content, so students can take the courses in any order, with exception of the thesis, which is required to be the last curriculum element to complete. The mandatory courses provide the basis of the programme, with the elective and variants providing opportunities to tailor the programme to the preferences and the professional context of the student. The Systems variant covers business logic and IT governance, the Data variant addresses data analysis and governance, and the Sourcing variant provides students with insights in performance measurement and sourcing governance. The Sourcing variant was introduced on the advice of the external advisory board, which found that the topic of sourcing in the context of IT required more attention in the programme. In the thesis preparation course, students gather and analyze literature related to their topic of choice. Students choose a topic from a list provided by the programme, which contain projects closely related to the research activities of the supervisors. After approval of their research proposal, students continue with the execution of their thesis project. Students are typically supervised in groups of 4-6 students working on a similar topic, with more one-on-one supervision in the final stage of the project. The thesis project culminates in a written report and an oral presentation followed by a discussion.

After studying the curriculum and discussing this with staff and students, the panel concludes that the MSc BPMIT has a solid curriculum that allows students to specialize in the management of IT systems. The core courses cover the central elements of this topic, whereas the electives and specialization courses allow students to develop themselves in a direction of choice. The thesis projects are well-connected to academic research. The panel concluded from discussions with students and alumni that, although the choice of thesis topics is restricted to current projects offered by OU researchers, students feel that there is sufficient choice to find a suitable and attractive topic for each student.

During the site visit, the panel discussed the role of the three variants in the curriculum with several programme representatives. The panel thinks that the specialization courses offered in the variants are attractive and relevant, but that the choice to offer the courses in bundles of two might be unnecessarily restrictive. The panel can envision other relevant combinations of specialization and elective courses that might be attractive for students, but are currently not possible within the curriculum. It suggests the programme to critically reflect on these variants, and see whether the specialization part of the curriculum can be opened up more. For instance, the variants could be integrated in suggested coherent packages of specialization and elective courses, with additional other combinations beyond the current three.

Curriculum development
As mentioned under standard 1, the panel believes that both programmes would benefit from frequent reflections among the core teaching staff on the content of both curricula. Most teachers adapt their courses annually with regard to the developments in the field, but the panel found that this is less structurally done on a curriculum level. The panel recommends setting up a structure to facilitate this. It underlines that this does not mean that courses have to be added or dropped on an annual basis to reflect the current trends in IT. Teaching staff members could discuss what new technologies are relevant to the curricula and which are starting to become outdated, and see which courses should be adapted to incorporate these changes. A possible way to introduce new technologies to students without major curriculum adjustments could be to invite guest lecturers for upcoming technologies in relevant courses.

Didactics and skills
All BSc and MSc courses are organized as online distance education. To keep students engaged in distance education, the programmes focus on activating online education. This includes frequent mid term-assignments during the courses to keep students active, and feedback and support from lecturers and tutors. The MSc BPMIT makes frequent use of group work in the courses. During most courses, students work in small groups of 3-5 students on assignments and projects.

The panel approves of the didacts of the programmes. It learnt that the OU educational model of 'Activerend Academisch Afstandsonderwijs (AAA)' or Activating Academic Distance Education was introduced in 2021 and is expected to be implemented further in the programmes in the coming years. The panel found that most students appreciate the activating online education. Group work is sometimes hard to organize practically due to the time constraints of students, but are recognized as a valuable method to keep up study pace and engage in peer learning. Students like that they can often use cases from their own professional background in the courses, which allows students to learn from each other's professional backgrounds. The panel found that the exact meaning of online activating education was not yet fully clear to all students, and they could not yet discern a shared approach throughout the courses beyond group work and mid-term assignments. This is understandable to the panel, considering the relatively recent introduction of AAA. It encourages the programmes to keep developing the AAA model, and present it more explicitly to students.

Academic skills are taught in an integrative way throughout the courses. Students practice different academic skills in multiple courses, culminating into the thesis preparation and thesis project where students demonstrate that they are able to set-up and execute a research project. The programmes define academic skills as both competencies in an academic context (academic reading, writing and presentation, research skills and statistics) as well as a working in accordance with academic standards: asking critical questions, reflect on methods and outcome, as well as one's own shortcomings, biases and predispositions. The programmes provided the panel with an overview describing which course elements cover specific academic skills. The panel concludes that academic skills are sufficiently incorporated in both programmes.

Language and internationalization
The educational language at the OU is Dutch in order to minimize language barriers for students. The programme name is in English, as the use of English to indicate fields, skills and jobs in IT is wide-spread and more recognizable than Dutch. In some cases, courses later in the programme can be taught by international staff members in English, where students still keep the opportunity to do assignments and exams in Dutch. The panel found that this worked well in practice for staff and students. During the site visit the panel learnt that the OU has connections to similar universities in Europe through the European Association of Distance Teaching Universities (EADTU). It considered that it might be interesting to investigate optional internationalization opportunities for students, for instance through inter-university project groups in courses.

Guidance and feasibility
As discussed above, the curricula of both programmes have a high degree of flexibility, aimed at helping students to meet their study goals alongside their other responsibilities in for instance work and family. Courses are scheduled in specific periods in which online lectures are organized and guidance from course instructors is available. The course materials are however offered for a longer period of time, and course instructors are available for grading and assessment throughout the year. Some courses, especially in the BSc, are organized without any group work or other real-time elements, so that they can be followed as self-study courses at any moment. Study load of courses is carefully monitored through course evaluations to ensure that this fits the amount of EC of the course. Through the online learning system, the teacher of a

course is notified of students that are inactive for a longer period of time, and proactively approaches these students to see whether they need additional help to stay on track. The MSc BPMIT employs tutors for its courses, which are specifically hired for student and team supervision. They are often recruited from the MSc alumni, and provide support and assistance in the context of the course. After training, they are also allowed to assess and give feedback on student assignments under supervision of a teaching staff member.

The programmes see that students are highly self-motivated to organize the combination of work, study and private life. Even then, students often struggle with completing the programme. Especially in the BSc, completion rates are very low, and study duration is on average 8-9 years. Between the start of the programme in 2013 and 2023, five students have graduated. Studying part-time for six years is demanding, and many students take longer or stay inactive for a longer period of time. On top of that, since there are no requirements for registering in the BSc due to the special assignment of the OU, many of the students that register in the BSc ultimately find out that they lack the skills, level or time to complete the full programme. The MSc has significantly higher success rates, with 70% of enrolled students completing the programme within approximately 2-3 years.

The panel concludes that the guidance at both programmes is at a high level. Students expressed to be very satisfied with the efforts of the programmes to help students combine study, work and family. They feel well-supported, and appreciate the supervision and support available at the OU. The panel considers the curricula to be feasible. The panel found the success rates of the MSc to be impressive considering the nature and set-up of the programme. The long study duration and low success rates in the BSc were found by the panel to be to a large extent a feature of the programmes rather than an issue. The accessibility and flexibility of the courses is a conscious choice to make the BSc as open as possible, and requires a high amount of motivation and self-discipline from students. The panel is very impressed by the students that manage to complete the BSc, often by studying for many years alongside a job. It is convinced that the programmes do what is in their power to help students complete the programme. It was happy to learn that the OU is increasingly investing in course and programme completion, including the earlier mentioned AAA educational model, increase of group work and proactive approach of inactive students. The panel learnt that prospective BSc students have an intake interview before starting the programme to inform them on expected level and time investment. Students can self-diagnose through tests and assignment whether they have the required level. According to the panel, this is an important feature to make prospective students aware of the level of the programme and prevent mismatches.

During the site visit, the panel spoke during multiple interviews about communication to students in the programmes. The flexible set-up of the curricula and the distance education makes it hard to achieve a sense of community between students and programme. The programmes struggle with collecting student feedback and find suitable communication channels to inform students about developments and procedures within the programmes. Students mentioned to the panel that they would prefer more proactive communication on behalf of the OU on several issues. This includes for instance the follow-up on course evaluations, activities of the programme committee, curriculum choices and the possibilities and limitations of studying with a functional disability. All information is ultimately available through the digital learning environment, but sometimes requires an active approach from students to find this. On the other hand, the programme management found it hard to collect student feedback on courses, as course evaluations typically have very low response rates. The panel encourages the programme to investigate other means of communication, such as social media or the use of focus groups. It learnt that there are already some pilots to use focus groups rather than written student evaluations to evaluate courses. The panel recommends further investing in this.

Teaching staff

The teaching staff is largely associated with the Information Sciences department at the OU. Per 2022, this department consisted of 24 staff members involved in teaching, of which 23 hold a PhD. All either hold a University Teaching Qualification (UTQ) or are working on obtaining this. The BSc also uses several courses organized by the Computer Science and Management Science departments in its curriculum, and therefore has a higher number of staff members (47 in total) associated with the programme.

Teaching staff members develop and teach courses that are close to their area of expertise, and usually also participate in research in the areas in which they teach. The expertise of the teaching staff ranges from Information Science to Computer Science and Management Science. Some staff members have worked in industry for a part of their career and bring in practical experience from the professional field. Due to the nature of the OU, staff members are employed throughout various locations in the Netherlands. The department takes care that there are several opportunities per year to meet in person to discuss the curricula and exchange knowledge. Teaching professionalization beyond the UTQ is provided through the internal Personal Education programme, where staff members can spend 40 hours per year on education-related courses and training.

The panel considered the composition of the teaching staff and concludes that the staff is appropriate in terms of both quality and quantity. The MSc has relatively high student numbers (typically 150-200 students per course), but through the use of tutors for group work and the spread of the workload over the year this is kept manageable. Teaching staff members are directly involved in academic research in the field, adding to the relevance of their expertise. They have sufficient opportunities for training their educational skills through the UTQ and the Personal Education programme. The panel observed that there is relatively few teaching staff on the full professor level in the programmes. There are two full professors in the department, one of whom is currently not available for teaching. The panel thinks that the programme would benefit from an additional full professor associated with the programme. The earlier mentioned recommendation to increase coherence between courses and keep the curricula up-to-date would ideally be tied to the research agendas of the research groups in the department. The panel fully understands that this might not be feasible at the moment, and underlines that this is not a shortcoming of the programme, but given the opportunity, the panel thinks that this would be a good investment.

Considerations

The curricula of the BSc Information Science and the MSc BPMIT reflect the intended learning outcomes of the programmes. Courses are offered using the educational concept of activating online education, combining curriculum flexibility with guidance and support. The panel appreciates this, and encourages the programme to keep developing this concept in the coming years.

The BSc curriculum provides core knowledge in information science and the adjoining disciplines and skills. The curriculum is very open and flexible in set-up, with courses that have little to no dependency on each other, allowing students to study when and wherever they want. Keeping courses aligned with each other in this set-up is challenging. The panel recommends to keep investing in this and further structure this to keep courses aligned within the curriculum. The curriculum is feasible, and students are well-supported by the programme over the course of the programme. The open and flexible set-up of the curricula makes the programmes attractive to many students combining the part-time programme with other major activities. This inevitably leads to a long average study duration on paper; the panel is however very impressed by the students who managed to graduate by studying for many years, often alongside a job, and views this as additional proof that the programme continues to keep students engaged. The panel recommends to keep

this up, and also continue to inform students at the start of the programme what is expected of them in terms of level and time investment.

The MSc curriculum allows students to specialize in the management of IT systems and the associated skills, with the opportunity to further develop themselves through electives and specialization courses. The panel gives the programme into consideration to reflect on the role of the variants, and whether they could be replaced by a more open elective space with suggested elective packages. Support and guidance in the programme are well-organized. Students appreciate the group work in the courses that keep them engaged, and the feedback provided by tutors. Success rates of the MSc are impressive considering the set-up and nature of the programme.

The teaching staff of both programmes is well-qualified, both in terms of academic activities and teaching qualifications. For both programmes, the panel recommends setting up a structure to accommodate regular reflections between teaching staff members on how to incorporate developments in the field into the curricula. It also advises to invest in more proactive communication to students, and investigate the use of other media beyond written student evaluations to collect student feedback on courses.

Conclusion
The panel concludes that that the programme meets standard 2.

Standard 3. Student assessment

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

Findings

System of assessment
Both programmes aim to combine formative and summative assessment to support student learning. Courses often offer reflective tests and assignments to help students evaluate their progress. Each course is concluded with a summative test to assess whether the learning objectives are met. Early in the BSc curriculum, when courses cover fundamental knowledge and understanding, this is often a written exam with multiple choice and open questions. These are often taken online or at one of the study centers of the OU. Later in the BSc and in the MSc, courses more often use assignments that allow students to demonstrate skills and application of knowledge. In the case of group work, which is prominent in most MSc courses, the programme takes care that group assignments are always combined with individual assessment, so that courses cannot be completed based on group work alone.

Assessment in both programmes is embedded in an assessment policy that outlines procedures and quality assurance mechanisms. This includes assessment plans per course that links assessment to course objectives, a four-eye principle in the composition of tests, and extensive rules and regulations to prevent fraud. In courses with multiple examiners, the grading model for open questions and assignments is discussed before grading with all examiners, and a random sample of responses is discussed afterwards amongst the staff members to promote consistency. As a substantial part of assessment is conducted at a distance, fraud prevention has a prominent place in the OU's assessment policy. Measures include explicit discussion of scientific integrity in an information science context at the start of each programme, identity checks during online assessment, and oral evaluation and discussion of intermediate and final products with students in the case of assignments and the thesis project.

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The panel concludes that the OU has a solid system of assessment in place. The assessment policies are carefully designed, and promote valid, reliable and transparent assessment. Quality assurance mechanisms such as co-design of exams, the combination of group and individual assignments and attention to and prevention of fraud add to the reliability of assessment. The combination of formative and summative assessment promotes student learning.

During the site visit, the panel spoke with staff, students and the Board of Examiners about the assessment of group projects in the MSc BPMIT. Some students felt that individual contributions to group projects were not always fully recognized in assessment, especially in cases where differences in the group were not severe enough to be reported as freeriding. The panel thinks that including peer assessment in group projects would remedy most of these issues. This would allow a differentiation in grades between students resulting from the amount and quality of work contributed, according to the students themselves. The panel recommends investigating whether this system could be used in the MSc.

Thesis assessment
The BSc and MSc thesis is assessed independently by two assessors (the supervisor and a second reader), following the four-eye principle. Students report on their results in a thesis report, which is an extension of the report of the thesis preparation phase. The report is assessed on the basis of assessment criteria (i.e., a rubric) which are assessed on a three-point scale (insufficient, sufficient, good). The graduation project is completed with an oral presentation by the student followed by a discussion between student, thesis supervisor and second reader. One of the assessors is the examiner, having final responsibility for the assessment. In the case of the final thesis report, the final grade is determined after an oral presentation and a defense in the presence of the supervisor and second reader. To further increase independence in the assessment of thesis projects, the assessors work in alternating compositions.

The panel approves of the thesis assessment procedures of both programmes. Using two independent assessors that work in alternating compositions promotes a reliable and valid assessment of each thesis. The rubrics promote consistency in grading. As part of its preparation for the site visit, the panel studied 5 BSc projects and 15 MSc projects and the associated assessment. It concludes that the theses are generally assessed fairly, and the grades are in line with the panel's own assessment. It noted a slight difference in assessment procedures between BSc and MSc theses: where the MSc stores the individual assessments of the two assessors in two separate forms, the BSc uses one form with the joint assessment of both assessors. The panel recommends introducing the MSc procedure for the BSc as well, as it considers this to be more transparent. Furthermore, the panel thinks that the translation between the three-point assessment of the criteria and the resulting grade on a ten-point scale could be more transparent. The panel understood that there are no fixed rules for this, and that this is left to the individual assessors. While the panel found that the final grades are usually appropriate, it has the associated risk of introducing subjectivity in the grading. It recommends a more structural translation between scores on the assessment criteria and the final grade. This could for instance be achieved by transforming the rubric from a three-point scale to a ten-point scale, and/or attach fixed weights to the different criteria.

Board of Examiners
The OU has a central Board of Examiners (CvE) with representatives from each faculty, as well as an independent chairperson and an examination expert. The CvE is mainly concerned with assessment policy, exemptions, complaints and cases of fraud. Execution of the examination quality control was delegated to the faculties in 2021. The Faculty of Science has recently introduced a three-year cycle, where in each year a sample of exams is selected and re-evaluated with staff involved, with help of the Expertisecentrum

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Onderwijs of the OU. The first year focuses on thesis reports, the second on open exam questions and the third year on assignments. The panel has interviewed the CvE and concludes that the Board fulfills all of its legal duties. The policies and procedures, as well as the checks and balances are well-organized.

As a result of the central organization and the mandates to the faculty for quality control, the CvE is situated relatively far from the individual programmes. The panel recommends ensuring that this does not result in a too large gap between assessment policies and actual practice in the programmes. The panel for instance learnt that due to personal circumstances, the three-year cycle for exam quality control was not fully introduced in the faculty until 2023, after delegation of this task in late 2021. The panel feels that the CvE could have been more proactive in monitoring the execution and results of its mandated responsibilities. Nevertheless, the panel was happy to learn that examination quality control in the faculty is now active and structurally embedded in the faculty's workflow.

During the site visit, the panel spoke with the CvE on policies on the use of AI tools such as ChatGPT for the generation of texts. It learnt with appreciation that, after an initial phase of labeling the use of AI in assignments as fraud, the Board is now working on a more nuanced policy on possibilities and limitations of using AI assistance tools in assignments. The panel encourages the Board to continue working on this, as it reckons that AI is here to stay for the longer term.

Considerations

Both programmes have a reliable, valid and transparent system of assessment in place. There are adequate procedures for design and quality assurance of exams, assignments and the BSc and MSc theses, and assessment promotes student learning. The Board of Examiners (CvE) fulfills all of its legal duties. The panel recommends considering the introduction of peer assessment in the group projects in the MSc to account for differences in individual contributions of students. Furthermore, thesis assessment procedures could be improved by storing the contributions of individual assessors separately in the BSc, and by introducing a more transparent translation between the three-point scores on the separate assessment criteria and the final thesis grade. The panel recommends the CvE to more closely monitor the execution of its mandated responsibilities, and develop further policies on the use of AI assistance tools in assignments.

Conclusion

The panel concludes that that the programme meets standard 3.

Standard 4. Achieved learning outcomes

> The programme demonstrates that the intended learning outcomes are achieved.

Findings

Thesis quality

Prior to the site visit, the panel studied all five BSc theses that were available at the time of the site visit, and a selection of 15 MSc theses. It concludes that thesis quality in both programmes is good. The BSc theses showed a systematic approach through the Design Science Research method (see Standard 2: Curriculum), which the panel found to be well aligned with the focus on design and implementation of information systems in the programme. The theses covered original and both academically and professionally relevant topics, and were generally well written. The MSc theses were elaborate, and clearly related to current academic research, as well as to professional practice. All theses made appropriate use of academic

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literature and research methods, and showed that students were able to successfully formulate and investigate an academic research question.

Alumni
During the site visit, the panel spoke with alumni from the BSc as well as the MSc. They all indicated to be satisfied with their education. The programmes helped them to further develop their career, and in some cases led to promotions or new jobs in IT relevant to the programme. This was confirmed by the results of a recent MSc alumni survey, where alumni mentioned that the programme helped them further shape their career and improve their own work. Furthermore, several of the BSc alumni enrolled in the MSc BMPIT. The panel considers it an impressive proof of student satisfaction that after completing a 6+ year parttime BSc, students are still motivated to engage in another 2 year parttime MSc at the same institution. The panel learnt during the site visit that the programmes aim to further strengthen the ties to their alumni. The panel encourages this, as it thinks that the network of the alumni and the input they provide can help in the continuous improvement of the programmes.

Considerations
The BSc and MSc theses show that students of the programme realize the intended learning outcomes of their programme. The alumni of both programmes are generally satisfied with their education, and indicate that their education helped them further shape their career in business and IT.

Conclusion
The panel concludes that that the programme meets standard 4.

General conclusion
The panel's assessment of the BSc Informatiekunde and the MSC Business Processes Management and IT is positive.

Development points

1. Engage in more structural reflection on a curriculum level between teaching staff members to ensure that the profile and curricula of both programmes remains up-to-date and aligned. This includes:
   a. Communicating the overarching aims of the MSc and the connection between individual courses more explicitly to students throughout the curriculum
   b. Keeping the BSc courses aligned with each other and prevent possible overlap in content
   c. Incorporating developments in the field into the curricula

2. Invest in more proactive communication to students, and investigate the use of other media beyond written student evaluations to collect student feedback on courses.

3. Consider the introduction of peer assessment in the group projects in the MSc to account for differences in individual contributions of students.

4. Improve thesis assessment procedures by storing the contributions of individual assessors separately in the BSc, and by introducing a more transparent translation between the three-point scores on the separate assessment criteria and the final thesis grade.

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5. Ensure that the gap between the central Board of Examiners and the individual programmes does not become too large, for instance by more closely monitoring the execution of exam quality control responsibilities mandated to the faculties.

Appendix 1. Intended learning outcomes

BSc Information Science

a To possess profound knowledge of and insight into the relevant concepts that play a role in the design and implementation of information systems in organizations and/or society.

b To have sufficient insight in (core) computer science topics to be able to evaluate if proposed IT solutions are efficient and can be deployed in a certain context.

c To have the ability to model and specify information systems.

d To evaluate the organizational impact of IT projects, also in relation to the organizational goals.

e To analyze issues concerning the implementation of information systems in organizations and/or society, using abstract models and methods, and to evaluate possible solution strategies, using insights from theory.

f To formulate a research question, select an appropriate research method and establish a scientific argument.

g To reflect in a multi-disciplinary team on solutions proposed by the team and those of other teams, reach consensus concerning a specific solution and realize the solution.

h To have the ability to work in a systematic and project-based way.

i To independently monitor recent developments in the discipline by reading magazines and academic literature, determine which trends are important given a certain situation, develop a vision based on these insights and apply and share this within the profession.

j To express oneself clearly, both written and orally, at an academic level as well as a practical level, taking into account the level of knowledge of the audience.

k To take into account the societal consequences of IT projects and adhere to professional and ethical standards, with special attention to durability.

MSc Business Process Management and IT

A Be able to responsibly research problems and opportunities for improvement in the area of interaction between business processes and IT, in light of alignment with both business and IT strategy, while taking into account any social consequences.

B Use a wide range of theories and models when investigating problems and opportunities for improvement and, within a given application domain, be able to make a reasoned choice from them that is appropriate to that domain.

C Be able to properly balance the interests of various stakeholders when investigating problems and opportunities for improvement.

D Reflect with others on one's own solutions and the solutions of others and jointly arrive at a substantiated choice and implement it.

E Be able to keep up independently with the latest developments in the professional field (both via professional journals and academic literature) and be able to assess which developments are relevant in a given situation, develop one's own vision on this and then apply and propagate it within professional practice.

F Be able to clearly express oneself, both in writing and orally, at an academic level and taking into account the background and knowledge level of the audience.

G Be able to conduct independent scientific research within the scope of the program.

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Appendix 2. Programme curriculum

BSc Information Science

Schematic overview 2022-2023

	Kwartiel 1	Kwartiel 2	Kwartiel 3	Kwartiel 4
Jaar 1	IB0102 (5 EC) *vast* Inleiding informatica[1]	IB0202 (5 EC) *vast* Inleiding informatiekunde[2]	IB0302 (5 EC) *vast* Relationele databases	IB0502 (5 EC) *vast* Model-driven development
	IB0402 (5 EC) *variabel* Logica, verzamelingen en relaties		MB0202 (5 EC) *variabel* Organisatiekunde	
Jaar 2	IB1102 (5 EC) *vast* Objectgeoriënteerd programmeren	IB1002 (5 EC) *vast* Objectgeoriënteerd analyseren en ontwerpen	IB2102 (5 EC) *vast* Enterprise modeling	MB0902 (5 EC) *vast* Management accounting
	MB0612 (5 EC) *vast* Basis academische vaardigheden		IB3802 (5 EC) *variabel* Projectmanagement: inrichten van projecten	
Jaar 3	IB3302 (5 EC) *vast* Business analytics	MB1302 (5 EC) *vast* Gedrag in organisaties	IB4202 (5 EC) *vast* Practicum requirements voor informatiesystemen	IB3902 (5 EC) *vast* Ethiek in digitale innovatie
	IB4102 (5 EC) *variabel* Kwaliteits- en procesmanagement		IB4302 (5 EC) *variabel* Projectmanagement: beheersen van projecten	
Jaar 4	MB0216 (15 EC) *vast* Methoden en technieken van onderzoek[1]		IB1402 (5 EC) *variabel* Communicatie-vaardigheden	IB4002 (5 EC) *vast* Informatiebeveiliging: een socio-technische benadering
			IB4402 (5 EC) *variabel* Projectmanagement: implementeren van ERP-systemen	
Jaar 5	Vrije ruimte (5 EC)	Vrije ruimte (5 EC)	Vrije ruimte (5 EC)	Vrije ruimte (5 EC)
	Vrije ruimte (5 EC)		Vrije ruimte (5 EC)	
Jaar 6	IB3402 (5 EC) *vast* Strategisch informatie-management	IB9702 (5 EC) *vast* Voorbereiden afstuderen Informatiekunde[2]	IB9806 (15 EC) *vast* Afstudeerproject bachelor Informatiekunde[1]	
	IB3112 (5 EC) *vast* Software engineering			

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Verplicht deel (15 studiepunten)

| IM0003 | Enterprise architecture _(Enterprise Architecture)_ | 7,5 |
| IM1003 | Business Processes _(Business Processes)_ | 7,5 |

Te kiezen één van de volgende drie keuzevakken (7,5 studiepunten)

IM1103	Business Intelligence _(Business Intelligence)_	7,5
IM1203	Digital Transformation _(Digital Transformation)_	7,5
IM1303	Information Security Management _(Information Security Management)_	7,5

Te kiezen één van de volgende drie varianten (15 studiepunten)

1: Variant Data Science Management

| IM0503 | Data Analytics _(Data Analytics)_ | 7,5 |
| IM1403 | Data Governance _(Data Governance)_ | 7,5 |

2: Variant Information Systems Management

| IM1503 | IT-Governance _(IT Governance)_ | 7,5 |
| IM0403 | Rule-Based Design _(Rule-Based Design)_ | 7,5 |

3: Variant Sourcing Management

| IM1603 | Performance Measurement _(Performance Measurement)_ | 7,5 |
| IM1703 | Sourcing Governance _(Sourcing Governance)_ | 7,5 |

Afstudeertraject (22,5 studiepunten)

IM1803 Voorbereiden afstudeeropdracht BPMIT   7,5
(Preparation on the Master Project BPMIT)
IM9806 Afstudeeropdracht Business Process Management and IT   15
(Graduate Thesis Business Process Management and IT)

Appendix 3. Programme of the site visit

Dag 1: di 20 sept 2023

12.30	14.00	Aankomst en intern paneloverleg (incl. lunch)
14.00	15.00	**Interview management**
15.00	15.30	Pauze
15.15	16:00	**Interview studenten BSc**
16.15	17.00	**Interview docenten BSc**
17.00	17.30	Afronding

Dag 2: wo 21 sept 2023

08.45	09.15	Aankomst en voorbereiding
09.15	10.00	**Interview studenten MSc**
10.15	11.00	**Interview docenten MSc**
11.00	11.30	Pauze
11.30	12.00	**Interview examencommissie**
12.00	13.00	Intern overleg (incl. lunch)
13.00	13.30	**Eindgesprek formeel verantwoordelijken**
13.30	15.00	Opstellen voorlopige bevindingen
15.00	15.30	**Mondelinge rapportage voorlopig oordeel**
15.30	16.15	**Ontwikkelgesprek**
16.15	16.30	Afronding en vertrek

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Appendix 4. Materials

Prior to the site visit, the panel studied 5 BSc theses and 15 MSc theses. Information on the theses is available from Academion upon request. The panel also studied other materials, which included:

- Report previous accreditation committee
- Final attainment levels versus courses in the bachelor program
- Match against ACM/AIS curriculum
- Match against European e-Competence Framework
- Schematic overview curriculum BSc and MSc
- Interaction between education and research in the MSc
- Planned changes
- Staff involved in the programmes
- Setup of courses in the bachelor program: working method, mentoring, and testing
- Digital learning environment
- Examples of BSc and MSc course materials
- Course plan Bsc and MSc thesis project
- Short description of courses
- Academic Skills overview
- Assessment policy
- Scientific integrity document for students
- Recent reports Programme Committee and Board of Examiners