

Assessment report
Limited Programme Assessment

Bachelor Informatiekunde

University of Amsterdam

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1. Executive summary

In this executive summary, the panel presents the main considerations with respect to the assessment of the quality of the Bachelor Informatiekunde programme of University of Amsterdam, this programme having been assessed according to the Assessment Framework (22 November 2011) of NVAO (Dutch-Flemish Accreditation Organisation).

The programme management has taken up the suggestions for improvement, made in the course of the previous accreditation procedure in 2007. The position and role of the economics, business and social sciences disciplines have been clarified, the relation with the professional field has been intensified and the evaluations' mechanisms have been strengthened, following the Faculty of Science's guidelines.

The panel considers the programme's objectives to be adequate, as these address both the domain-specific knowledge and skills and the academic and research skills, which are considered relevant for the graduates of an information studies bachelor's programme. The programme objectives meet the requirements of the international ACM-AIS model curriculum, which ensures that these objectives reflect contemporary international domain-specific requirements of the information studies field. Although the programme management articulates not to assent to the Web-Science curriculum but only wants to incorporate specific topics of this curriculum, like datamining, crowd sourcing and image retrieval, the panel would advise to be cautious about implementing this curriculum or parts thereof and to avoid diverging from the ACM-AIS model curriculum, in particular to avoid excluding core courses of the ACM-AIS model curriculum.

The intended learning outcomes of the programme are appropriate representations of the programme's objectives, specifying the required domain-specific knowledge as well as the research and academic skills of the graduates. The intended learning outcomes meet external frameworks like the ACM-AIS curriculum as well as the Dublin-descriptors. The panel considers the learning outcomes to fully comply with the requirements of a bachelor's level programme. The profile of the programme is satisfactory addressing the core information studies disciplines, being, technology, social sciences and economics and aiming at an interdisciplinary approach of information studies subjects. The programme management, adequately, prepares the graduates for master's programmes in the information studies field and, also, monitors developments in the labour market to see if graduates may obtain positions there.

The panel considers the entry requirements for the programme to be relevant and the admission process to be well-organized. The programme management approaches the admission process very seriously, as the removal of a newly introduced standardized test demonstrates.

All of the intended learning outcomes have been appropriately covered in the curriculum. The course contents are adequate and of academic bachelor's level. The curriculum, being organized in five components, adequately addresses knowledge about technology, human factors and organizational aspects and also includes the integration of these disciplines. The students are offered a multidisciplinary perspective on information field subjects and problems. The panel is satisfied the programme management does not want to decrease the weight of the economic and business administration aspects in the curriculum and recommends to maintain this policy. Although the general academic skills, research skills and the modeling and design skills are addressed in the curriculum, the first two could be strengthened.

With regard to the general academic skills, the panel recommends to reinforce the project management and consultancy skills of the students. With respect to the research skills, the panel advises to strengthen the research-oriented attitude of the students. The professional practice is satisfactorily covered in the curriculum but the relations with the professional field could be intensified. The coherence of the curriculum is satisfactory in terms of design, but requires further implementation. The programme management adequately improves the curriculum and keeps the course contents up-to-date.

The lecturers in the programme are considered well positioned to convey relevant and in-depth knowledge and skills to the students, drawing upon their strong research background. All of the lecturers are active researchers in their fields. The educational skills of the lecturers are up-to-standard, as may be deduced from the substantial number of lecturers who will have a BKO-certificate from the year 2013/2014 onwards.

In the opinion of the panel, the educational model of the programme and the matching study methods, encourage students to actively engage in their learning processes, to take part in group learning and to direct their own learning processes. The information provision and the study guidance are adequate. The lecturers, student mentors and student advisor all contribute to accomplish a good study guidance system. The students have also expressed their appreciation of these aspects. The panel advises to increase the number of contact hours as well, as this may improve the programme. The panel is positive about the housing and the material facilities for the programme and is, also, positive about the formal and informal evaluation mechanisms the programme management has put in place.

The panel regards the assessment policy of the programme to be appropriate, the regulations being in line with the University's and Faculty's policy. The programme's board of examiners monitors appropriately the quality of the examinations as well as the quality and the level of the bachelor theses. Not only does the board of examiners study, randomly, examinations and bachelor theses but members of the board attend bachelor thesis defenses as well. The examination methods which the programme management has chosen (being written examinations, presentations, essays and reports) are valid methods to test the students' results. The panel has studied the examinations and has found the quality and level to be appropriate, meeting the learning objectives of the courses. The programme management is taking appropriate measures to improve the transparency, validity and reliability of the examinations. Peer-reviews of the examinations and the assessment schemata are proper instruments to ensure the quality and level of the examinations. The panel adds that in a number of cases, the assessment results were not available within the required time-frame.

The panel regards the bachelor thesis project process to be well-organized. During the thesis process meetings between the students and their supervisors are scheduled. The assessment of the theses is appropriate. The assessment criteria are relevant and the assessment process, implying the assessment by two qualified examiners is up-to-standard.

The panel finds the quality of the theses satisfactory and, in some cases, good or even very good. In fact, no thesis was found to be unsatisfactory. The contents of the theses are relevant for the information studies field. The scientific structure and quality, including the research problem statements and the methodology, are up-to-standard. The level of complexity of the theses meets the requirements of a thesis at bachelor's level. The panel considers the graduates to be well-prepared for completing a master's programme in the information studies field.

The panel has assessed each of the standards of the NVAO Assessment Framework for the Bachelor Informatiekunde of University of Amsterdam to be satisfactory. Therefore, the panel advises the NVAO to prolong the accreditation the Bachelor Informatiekunde of University of Amsterdam, assessing the programme to be satisfactory.

Rotterdam, 17 October 2013

Chair of the assessment panel
Prof. E.W. Berghout Ph.D.

Secretary
W.J.J.C. Vercouteren MSc, RC

2. Assessment process

Certiked VBI has received a request to conduct an assessment for the accreditation of the Bachelor Informatiekunde programme of University of Amsterdam.

Certiked has requested the approval by NVAO of the proposed panel of experts to conduct this assessment. NVAO have given their approval. The panel consisted of (for more detailed information please refer to Annex 4: Composition of the assessment panel):

- prof. E.W. Berghout Ph.D., panel chair, professor of Information Systems at University of Groningen;
- prof. W. Van Grembergen Ph.D., panel member, professor of Information Systems at University of Antwerp and executive professor at Antwerp Management School;
- prof. A. Nijholt Ph.D., panel member, professor of Human-Computer Interaction at University of Twente;
- Y. Oualhadj, student member, studying the master programme Dutch Language and Culture at Leiden University.

On behalf of Certiked, W. Vercouteren MSc, RC was responsible for the process co-ordination and for drafting the panel's report. The panel members and the secretary have signed a statement of independence and confidentiality.

The panel has conducted this assessment in accordance with the NVAO Assessment Framework (22 November 2011).

The following procedure has been adopted. The members of the panel studied the documents presented beforehand by the programme management, including a number of theses (please refer to Annex 2 and 3: Documents reviewed and Theses reviewed). As the programme is offered in a full-time study mode, 15 theses of full-time students have been selected. The theses were selected randomly in pre-specified strata of grades, to ensure a fair distribution of grades.

Prior to the site visit, every one of the panel members and the process co-ordinator/secretary discussed their preliminary findings concerning the quality of the programme and with respect to the quality and the level of the theses. The panel members presented a number of questions to be put to the programme representatives during the site visit. On the basis of this input, the secretary drew up a complete list of questions.

On 25 June 2013, the panel conducted a site visit at the premises of the programme on the campus of the Faculty of Science of University of Amsterdam. The site visit was conducted in accordance with the schedule drawn up beforehand (please refer to Annex 1: Schedule of site visit). The programme management communicated the open office hours to the lecturers, the students and other persons involved in the programme. No one presented themselves during the open office hours.

Immediately after the meetings of the site visit, the members of the panel shared their considerations for each of the standards of the NVAO Assessment Framework. These considerations were based on the findings during the site visit, building upon the evaluation of the documents submitted by the institution. At the end of the site visit, the chair of the panel presented a broad outline of the findings to the programme representatives.

A draft version of this report was finalised by the secretary, having taken into account the information presented as well as the findings and considerations of the panel. The draft report was, then, sent to the members of the panel. The panel members corrected and amended the draft report. Finally, the secretary drew up the final report. This report was sent to the programme management to correct for any errors. After having been corrected the errors, the report was sent to the programme management to accompany their request for re-accreditation.

3. Overview of the programme

3.1 Basic information about the programme

Administrative information about the programme:

Name programme as in CROHO:	B Informatiekunde
Orientation and level programme:	Academic Bachelor
Grade:	Bachelor of Science
Number of credits:	180 EC
Specializations:	n.a.
Location:	Amsterdam
Mode of study:	Full-time
Registration in CROHO:	56842

Administrative information about the institution

Name of institution:	University of Amsterdam
Status of institution:	Publicly funded university
Institution's quality assurance test:	Positive

Quantitative data about the programme

Percentage of students who dropped out after one year

Cohort	2008	2009	2010
Percentage of students	8%	33%	22%

Percentage of students who continued their study in the second year and who have completed the programme in four years

Cohort	2006	2007	2008
Percentage of students	18%	50%	unknown

Percentage of lecturers with the following qualifications

Qualification	Master's degree	Ph.D.	BKO
Percentage of lecturers	81%	52%	25%

The student-to-staff ratio is 23,2 : 1.

Number of contact hours per week for each of the study years

Study year	Year 1	Year 2	Year 3
Contact hours	14.9	9.9	9.6

3.2 Main facts about the institution

The Bachelor Informatiekunde programme is one of the programmes of the College of Science of the Faculty of Science of University of Amsterdam. The College of Science Graduate includes nine bachelor programmes, ranging from disciplinary to more multi-disciplinary programmes. Informatiekunde is one of the most multi-disciplinary programmes of the College of Science.

The Faculty of Science is one of the seven Faculties of University of Amsterdam. The Faculties are the Faculties of Humanities, Economics and Business, Social and Behavioural Sciences, Law, Science, Medicine and Dentistry. The University of Amsterdam was founded in 1632. It is one of the largest comprehensive universities in Europe, having 35,000 students, over 5,000 staff members, a yearly number of 400 doctorates and a budget of 600 million Euros (figures of 2011/2012).

University of Amsterdam seeks to offer an inspiring international academic environment in which both staff and students can develop their talents. Characterized by a critical, creative and international atmosphere, the University wants to maintain a tradition of open-mindedness and engagement with social issues, in keeping with the spirit of the city with which it is linked.

Within each of the Faculties, teaching and research take place in separate institutes. University of Amsterdam strives for international prominence as a research university, aiming to maintain and strengthen the University's reputation in both fundamental and socially relevant research. The University's doctoral programmes are meant to provide a foundation for engaging in high-quality teaching and research.

3.3 Intended learning outcomes

The intended learning outcomes of the Bachelor Informatiekunde (Information Studies) programme have been listed below. The graduate:

- Knows the main theories underlying the Information Studies discipline and is familiar with those parts of the social sciences, economics and informatics and the combinations thereof which have informed Information Studies.
- Knows and understands the social and organizational effects of implementing advanced information and communication technology systems (ICT).
- Knows how to model, design, develop, evaluate and manage interactive information systems, these systems either being part of a network or standing alone.
- Understands the social and economic aspects of information and knowledge and knows how to apply information systems and knowledge systems in organizations.
- Has academic research skills, being able to design theoretical and professional research, adopting qualitative and quantitative research methods, conducting a literature study and assessing research results critically.
- Has general academic skills, being able to communicate, write, present, analyze and manage projects.
- Knows how to think and work in an interdisciplinary way.

3.4 Outline of the curriculum

In the table below the curriculum 2012 – 2013 of the programme is presented.

First year	
Programmeren IK	6.0 EC
Informatie, Multimedia en Management in Vogelvlucht	6.0 EC
Netwerkanalyse	6.0 EC
Analysemethoden en –technieken	6.0 EC
Webprogrammeren en Databases	6.0 EC
Interactieontwerp	6.0 EC
Multimediaontwerpproject	6.0 EC
Collectieve Intelligentie	6.0 EC
Informatie- en organisatieontwerp	6.0 EC
Analyseproject	6.0 EC
Total credits first year	60.0 EC
Second year	
Netwerkorganisaties	6.0 EC
Semantic Web	6.0 EC
Datamining	6.0 EC
Netwerkorganisaties	6.0 EC
Cognitie en Perceptie	6.0 EC
Databases IK	6.0 EC
E-business	6.0 EC
Modelleren en Ontwerpen	6.0 EC
Reflectie op Digitale Cultuur	6.0 EC
Onderzoeksmethoden en –technieken	6.0 EC
Total credits second year	60.0 EC
Third year	
Zoekmachines	6.0 EC
Informatie- en Kennismanagement	6.0 EC
Kennisgebaseerde Media	6.0 EC
Minorruimte	24.0 EC
Bachelor Thesis	18.0 EC
Total credits third year	60.0 EC
Total credits of curriculum	180.0 EC

4. Overview of the assessments

Standard	Assessment
Standard 1. Intended learning outcomes	Satisfactory
Standard 2: Teaching-learning environment	Satisfactory
Standard 3: Assessment and achieved learning outcomes	Satisfactory
Programme as a whole	Satisfactory

5. Findings, considerations and assessments per standard

5.1 Standard 1: Intended learning outcomes

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

Findings

The objectives of the bachelor Informatiekunde (in English: Information Studies) programme are to analyze, design and manage the interaction between humans and sophisticated computer systems, the interaction studied from the perspective of society, organizations and individuals. The graduates of the programme are to know the main theories underlying the information studies domain and are to be able to assess and evaluate these theories critically. Additionally, the graduates are to be able to do research in this domain.

The programme's objectives include knowledge and skills of three disciplines, namely technology (information and communication technology), social sciences and economics. The problems which the information studies domain addresses, nearly always touch upon aspects of one or more of these disciplines and, therefore, require knowledge and skills thereof. As both knowledge and skills of these disciplines and skills to integrate these disciplines are required, the programme may be characterized as an interdisciplinary programme.

The programme's objectives have been derived from both the Croho-identification of the information studies field and the domain-specific framework for this field the programme management has drafted. The domain-specific framework is identical for both the Master Information Studies and the Bachelor Informatiekunde programmes. In the Croho-description, the information studies field has been specified as being the study of effectively organizing, processing and distributing information and of the role of ICT in this respect. The information processes are studied from a technical, cognitive, social and economic perspective. The domain-specific framework is predominantly based upon the international model for information systems curricula, designed by Association for Computing Machinery (ACM) and Association for Information Systems (AIS). This model requires information studies programmes to include objectives, such as understanding and addressing information requirements, designing and managing enterprise architecture, identifying and evaluating solution and sourcing alternatives, understanding, managing and controlling IT risks and exploiting opportunities created by technology innovations. On top of the international ACM-AIS model curriculum, the programme's objectives encompass ICT-specific goals, like explaining and applying appropriate information technologies to assist individuals or organizations in achieving their goals, managing the information technology resources, anticipating the changing direction of information technology and communicating the use of new technologies to individuals and organizations. The programme management has studied the relatively new Web-Science curriculum and has derived subjects which correspond to their own research tradition, being human-computer interaction, artificial intelligence and organizational science, to be supplemented with new topics like social media.

The intended learning outcomes which the programme management has drafted and which have been listed in paragraph 3.3 of this report reflect the objectives of the programme. As may be deduced from paragraph 3.3, the learning outcomes address the information studies domain and the disciplines which contribute to this domain. In addition, the intended learning outcomes specify the graduates ought to be able to do research in the information studies field, to adopt research methods and techniques and to assess the outcome of research. Also, the graduates are to command academic skills, such as analytical skills, communication skills, orally and in writing and project management skills.

The programme management has presented a table showing the intended learning outcomes to meet the learning outcomes as specified in the above mentioned external frameworks, such as the ACM-AIS curriculum.

Also, the programme management has made a comparison between the intended learning outcomes and the Dublin-descriptors. From this description may be derived that the learning outcomes meet the Dublin-descriptors and, therefore, meet the bachelor's level. Each of the Dublin-descriptors is addressed by more than one of the learning outcomes.

There are no comparable bachelor's programmes in the information studies field abroad. There are, however, quite a few similar programmes in the Netherlands. For the programmes in the Netherlands, the programme management has compared their own programme to the programmes of the other universities. The University of Amsterdam programme addresses design and modeling, highlighting areas like human-computer interaction, artificial intelligence and organizational science and, in the near future, social media. The programme aligns with the Faculty of Science's research focus *Information and Meaning, Image, Text and Inference*, in the near future to be succeeded by *Informatics for a Data Rich World*.

The programme's objective of the programme is to enable the graduates to enter a master's programme in this field. The bachelor's programme is not, primarily, regarded by the programme management to prepare for the labour market. Nevertheless, the programme management watches these developments closely, maintaining relations with a number of organizations and enterprises.

Considerations

The panel considers the programme's objectives to be relevant for a bachelors's programme in the information studies field. The programme's objectives address both the domain-specific knowledge and skills and the academic skills, relevant for the graduates of an information studies bachelor's programme.

The panel has verified the programme's objectives to meet the requirements of the international ACM-AIS model curriculum and is very content that this is the case. Meeting these international requirements ensures the programme to have objectives which are internationally state-of-the-art and which reflect the international domain-specific requirements of the information studies field. Moreover, in following the ACM-AIS model curriculum so closely, the programme management ensures the objectives to be up-to-date. Although the programme management articulates not to assent to the Web-Science curriculum but only wants to incorporate specific topics of this curriculum, like datamining, crowd sourcing and image retrieval, the panel would advise to be cautious about implementing this curriculum or parts thereof and to avoid diverging from the ACM-AIS model curriculum, in particular to avoid excluding core courses of the ACM-AIS model curriculum.

The panel regards the intended learning outcomes of the programme to be appropriate representations of the programme's objectives. The learning outcomes specify the required domain-specific knowledge as well as the research and academic skills of the graduates. The learning outcomes ensure the graduates to be able to do research at a bachelor's level and to interpret research outcomes. Also, the graduates are to have acquired academic skills at a bachelor's level, like analytical, communication and project management skills.

From the programme management's comparison and from their own inspection, the panel has concluded the intended learning outcomes to meet the external frameworks like the ACM-AIS curriculum as well as the Dublin-descriptors. The panel considers the learning outcomes to comply fully with the requirements of a bachelor's level programme.

The panel is positive about the profile of the programme, addressing the information studies disciplines technology, social sciences and economics and aiming at solving information studies problems in an interdisciplinary way. The programme's focus on design and modeling is regarded by the panel to be appropriate.

For the panel, preparing the graduates for a master's programme in the information studies field, rightly, is the primary focus of the programme. In the opinion of the panel, keeping track of developments in the labour market, as the programme management does, is useful.

Assessment of this standard

These considerations have led the assessment panel to rate the standard 1 *Intended learning outcomes* to be satisfactory.

5.2 Standard 2: Teaching-learning environment

The curriculum, staff and programme-specific services and facilities enable the incoming students to achieve the intended learning outcomes.

Findings

The number of students enrolled in the programme was about 20 students in the years from 2003 to 2009. In recent years, the number of incoming students increased, from 27 students in 2011 to 37 students in 2012 and to 46 students in 2013.

The programme management informs candidate-students about the programme. The prerequisites for being admitted to the programme are a VWO-diploma (Dutch secondary education), Each of the VWO-profiles is allowed, provided the candidates have appropriate mathematical knowledge (either Wiskunde A or Wiskunde B). Students who have a different prior education are only admitted, if their deficiencies have been remedied.

In the admission process, the candidates fill out an on-line questionnaire and take part in a three- to four-week introduction period which comprises participating in practical sessions and attending lectures. Previously, the programme management introduced a standardized test in the process. Since the results of this test did not prove to be a reliable predictor of the study success of the students, the programme management removed the test. Students may apply for exemptions. The board of examiners rules on these requests.

The programme management has drafted an overview of the curriculum in which they have presented the relations between the intended learning outcomes and the courses. From this overview may be deduced that all of the learning outcomes have been represented in the curriculum and that each of the learning outcomes is represented in more than one course. In the course descriptions, the learning goals, the course contents, the study methods, the literature and the examination methods have been specified.

The curriculum has been organized in five separate components, each of these components consisting of a number of interdependent, consecutive courses. The components are technology, business administration, human aspects, academic skills and integration. The technology component is addressed in courses, like Programmeren, Databases, Semantic Web and Datamining. In this component the students are acquainted with aspects of information and communication technology systems. In the business administration component, consisting of courses like Informatie- en Organisatieontwerp, Netwerkorganisaties and Informatie- en Kennismanagement, the students are taught subjects regarding information management and knowledge management in organizations. The human aspects component, including courses like Netwerkanalyse, Collectieve Intelligentie and Toegepaste Kennis- en Communicatiesystemen, relates to human aspects of the introduction and usage of information and communication technology systems, like social robots, serious gaming, e-culture and augmented reality. The academic skills component has been subdivided in research skills, design skills and modeling skills and general academic skills. The students are taught research skills, being an introduction to statistics and research methods and techniques in courses like Analysemethoden en –technieken and Onderzoeksmethoden en –technieken. Design skills and modeling skills include designing interfaces, drafting functional specifications and modeling and designing organizational structures, in courses like Interactieontwerp, Multimediaontwerptraject and Informatie- en Organisatieontwerp. General academic skills include communication skills, analytical skills and project management skills, which are addressed in courses like Reflectie op Digitale Cultuur.

In the integration component, the students are taught how to integrate technology, human aspects and organizational aspects and how to analyze and solve multidisciplinary problems. The integration component is represented in courses like Informatie, Multimedia en Management in Vogelvlucht, Analyseproject and Reflectie op Digitale Cultuur and, of course, the bachelor thesis.

In the courses, the students are required to study handbooks and, from the second year onwards, to study articles in scientific journals as well. The students have to be able to understand, interpret and evaluate the contents of these articles.

The students complete assignments, which constitute real-world problems. A number of organizations and enterprises with whom the programme management is building a relationship, provide real-world assignments and send their employees as guest lecturers to address specific topics from a business perspective. The number of bachelor theses addressing professional practice problems remains relatively limited.

The programme management intends to keep the curriculum up-to-date, by adapting to changes in the ACM-AIS curriculum and by introducing elements of the Web-Science curriculum,. Also, the programme management intends to introduce new topics like social media. In the coming years, the Faculty of Science of University of Amsterdam and the Faculty of Science of VU University Amsterdam will be integrated. The programme management intends to offer more specializations, as the collaboration between the Faculties may make offering these specializations feasible.

Previously, the programme was a joint venture of the Faculty of Economics and Business and the Faculty of Science. Due to organizational changes in the Faculty of Economics and Business, the collaboration was discontinued from the year 2012/2013 onwards. A number of lecturers from this Faculty has, however, remained in the programme, covering the economic and business perspectives of the information studies field. The lecturers are experienced researchers in their field of expertise. Apart from the ones already mentioned, the disciplines covered by the lecturers are, among other, informatics, artificial intelligence and psychology. Nearly all of them have a master's degree and 52% of them hold a Ph.D. degree. Lecturers have to complete a Basic Teaching Qualification-trajectory (in Dutch: BKO). At present, the number of lecturers having a BKO is 25% but this number will rise to 83% in 2013 – 2014. Besides the core staff lecturers, guest lecturers from the professional practice highlight specific topics. The core staff lecturers meet to discuss the contents of the courses and to balance the curriculum components.

The programme management has adopted as the main educational principle the cognitive-constructive learning principle. Elements of the principle include, among other, encouraging students to actively participate in the learning processes, organizing learning in a social context and learning students to direct their own learning processes. The study methods which are offered, include lectures, tutorials, supervised practical sessions, projects, presentations and self-tuition. The study modes are geared towards individual learning but also, frequently, working on group projects and presenting the results in class.

The programme is offered in a full-time study mode. The students have a year-schedule of 12 months which has been divided in two semesters. The semesters are made up of three blocks each, the first two blocks having eight weeks per block and the third block taking four weeks. The students take two courses of 6 EC each in the first two blocks and one 6 EC course in the last block. At the end of the curriculum, the students write their bachelor thesis.

The students are informed about the programme by means of e-mail and blackboard. They may obtain additional information at the Education Service Center of the Faculty of Science. The lecturers guide the students through the courses and counsel them on difficult topics in the courses. The number of contact hours is about 15 hours per week in the first year, and nearly 10 hours per week in the second and the third year. The students with whom the panel has spoken, were content about the study load of the programme and the study guidance by the lecturers. A number of students who perform above average take honours' courses, implying an additional study load of 30 EC. The programme management promotes taking honours' courses.

As may be deduced from the tables in paragraph 3.1 of this report, the number of students completing the programme has been below the University's target for 2014 of 70% of the students who start in the second year and then complete the programme within four years. The programme management has taken measures to raise the completion rate. These measures include:

- Strengthening the student mentorship. The student mentors are elder students assisting the students in improving their study skills. In the first semester of the first year the student mentors and the students meet every week. In the second semester the meetings are biweekly. In the second and third year the students are expected to organize their study more by themselves.
- Offering additional practical sessions, if a satisfactory study progress pace would be lacking.
- Introducing the study advice. At the end of the first study year, the students are informed about their study results (the number of credits they have been awarded). Depending upon this score, they are advised by the programme management to either go on, to meet with the student advisor or to discontinue their study. For the year 2014 - 2015, the programme management intends to make these advices binding.
- Offering the services of the student advisor. The students may turn to the student advisor for advice on study-related problems. The student advisor helps the students in drafting study schedules and in improving their study progress.

The programme is located at the Science Park campus where all of the Faculty of Science teaching and learning activities are located. The campus has classrooms, larger lecture rooms, computer rooms, rooms for self-study and a library.

Following the Faculty of Science guidelines, the programme management evaluates the courses by means of formal, written surveys and by means of informal meetings between the students and the programme management. The outcomes of these surveys are discussed in the programme's educational committee. In case of disappointing results, the programme management makes plans and takes measures for improvements. The results concerning the course contents are, generally, satisfactory to good but are less satisfactory regarding items such as scheduling and the publishing dates of grades.

Considerations

The panel considers the entry requirements for the programme to be relevant. The admission process is organized in a well-structured way. The panel feels the programme management approaches the admission process very seriously, as the removal of the newly introduced standardized test demonstrates.

The panel has verified that all the intended learning outcomes have been covered in the curriculum and that each of the learning outcomes is represented appropriately. The panel is positive about the course contents and considers the courses to be at an academic bachelor's level. The five components of the curriculum address adequately the knowledge about the constituent parts of the information studies field, namely technology, human factors and organizational aspects. Although the economic and business administration aspects in the curriculum are satisfactorily represented, the panel advises to monitor the weight of these aspects. The panel considers the students to achieve the integration of the three main disciplines of the information studies field. The students are offered a multidisciplinary perspective on information field subjects and problems.

The general academic skills, modeling and design skills and research skills are addressed as well. The panel, however, feels the general academic and research skills ought to be strengthened further. With regard to the general academic skills, the panel recommends to reinforce the project management and consultancy skills of the students. With respect to the research skills, the panel advises to strengthen the research-oriented attitude of the students. Some of the lecturers and students with whom the panel has spoken, have expressed similar views. The panel considers the coherence of the curriculum to be satisfactory in terms of design but needing further elaboration in terms of implementation.

The panel regards the professional practice to be satisfactorily represented in the curriculum but advises to intensify the relations with the professional field, to offer more assignments and thesis' projects derived from the professional practice and to invite more guest lecturers from organizations and enterprises.

The panel feels the programme management adequately improves the curriculum and keeps the course contents up-to-date. The panel has seen a number of examples thereof.

In the eyes of the panel, the lecturers in the programme are well positioned to convey relevant and in-depth knowledge and skills to the students, drawing upon their strong research background. All of the lecturers are active researchers in their fields. The educational skills of the lecturers are up-to-standard, as may be deduced from the substantial number of lecturers who will have a BKO-certificate from the year 2013/2014 onwards.

The panel is positive about the educational model of the programme and the study methods derived from this model, as these encourage students to actively engage in their learning processes, to take part in group learning and to organize their learning processes in a self-directed way.

The panel finds the information provision and the study guidance to be adequate. The lecturers, student mentors and student advisor all contribute to accomplish a good study guidance system. The role of the student advisor is important, especially in case of study problems. The students have expressed being content about these aspects. Nevertheless, the panel advises to increase the number of contact hours, as this measure may improve the programme and may raise the number of students completing the programme.

The panel regards the housing and the material facilities to be appropriate for the programme.

Also, the panel is positive about the formal and informal evaluation mechanisms the programme management has put in place.

Assessment of this standard

These considerations have led the assessment panel to assess the standard 2 *Teaching-learning environment* to be satisfactory.

5.3 Standard 3: Assessment and achieved learning outcomes

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

Findings

The University of Amsterdam has drafted an assessment policy document for all of the university's programmes and courses. The Faculty of Science has drawn up a number of examinations guidelines. The programme management is committed to comply with the university's and faculty's examination policies. The programme's teaching and examination regulations (OER) include these regulations. The board of examiners of the programme is responsible for the quality and the level of the examinations and for the graduates having achieved the intended learning outcomes of the programme. Therefore, the board of examiners, randomly, selects examinations as well as bachelor theses and studies these to check their quality and level. Members of the board attend bachelor thesis defenses as well.

In the courses, knowledge and skills are being tested by means of written examinations, essays, reports and presentations. In by far most of the courses, the course completion depends on a number of different examinations, being either individual examinations or group work. There is only a limited chance to compensate for an unsatisfactory mark for one of the examinations, as in most cases each of the separate course examinations has to be satisfactory. Completing a course is dependent upon either an individual examination or the combination of individual and group work. The individual component in the course examination prevents students from completing a course, only on the basis of group work.

The programme management is implementing a number of measures to improve the quality of the examinations and of the assessments. The rising number of BKO-certified lecturers constitutes an improvement of the quality of the examinations, as these lecturers are trained in this respect. The examinations are brought in line with the learning goals of the courses more accurately, to improve the transparency and the validity of the examinations. The examinations and the corresponding assessment schemes are peer-reviewed by other lecturers to ensure reliable and inter-subjective assessments. The programme management has adopted a plagiarism policy, including penalties in case of violation.

The bachelor thesis project is an individual project. In extraordinary cases, the project may be a group work of two students. During the thesis writing process, the students have a supervisor, being a core staff lecturer. The grade for the thesis is a weighted average of the written report, the presentation, the student's defense and the thesis writing process, the last component being assessed by criteria like self-direction, planning and creativity. For each of the components a number of standardized assessment criteria have been listed. The criteria are to reflect the bachelor's level. The assessment of the final thesis is performed by two examiners, being the supervisor and an independent member of the core staff. In the periode 2010 – 2012, the average grade of the bachelor theses was 7.6.

As has been mentioned in standard 2 above, the number of students completing the programme has been below the University's target for 2014 of 70% of the students who start in the second year, completing the programme within four years. The programme management takes measures to raise this number.

Having completed the programme, the majority of the graduates choose to continue their studies at an information studies programme at master's level, either in Amsterdam or elsewhere. The prospects on the labour market job for master graduates in information studies, now and in the foreseeable future, are positive.

Considerations

The panel regards the assessment policy of the programme to be appropriate, the regulations being in line with the University's and Faculty's policy. In the opinion of the panel, the programme's board of examiners monitors appropriately the quality of the examinations as well as the quality and the level of the bachelor theses. Not only does the board of examiners study, randomly, examinations and bachelor theses but members of the board attend bachelor thesis defenses as well.

The panel regards the examination methods (being written examinations, presentations, essays and reports) the programme management has chosen to be valid methods to test the students' results. The panel has studied the examinations and has found the quality and level appropriate, meeting the learning objectives of the courses. In the panel's opinion, the programme management is taking appropriate measures to improve the transparency, validity and reliability of the examinations. Peer-reviews of the examinations and the assessment schemata are proper instruments to ensure the quality and level of the examinations. The panel adds that in a number of cases, the assessment results were not available within the time-frame, as required.

The panel regards the bachelor thesis project process to be well-organized. During the thesis process meetings between the students and their supervisor are scheduled. The assessment of the theses is appropriate. The assessment criteria are relevant and the assessment process, implying the assessment by two qualified examiners is up-to-standard.

The panel finds the quality of the theses satisfactory and, in some cases, good or even very good. In fact, no thesis was found to be unsatisfactory. The contents of the theses are relevant for the information studies field. The scientific structure and quality, including the research problem statements and the methodology, are up-to-standard. The level of complexity of the theses meets the requirements of a thesis at bachelor's level.

The panel is considers the graduates to be well-prepared for completing a master's programme in the information studies field.

Assessment of this standard

The considerations have led the assessment panel to assess standard 3 *Assessment and achieved learning outcomes* to be satisfactory.

Annex 1: Schedule of site visit

Amsterdam, 25 June 2013

08.30 h. – 09.30 h.	Arrival and deliberations panel (closed session)
09.30 h. – 10.00 h.	Dean and senior management Prof. C.J.M. Schoutens Ph.D. (dean Faculty of Science), J. Meerburg LL.M. (director Education, Faculty of Science), J.B. Goedkoop Ph.D. (director College of Science), A.D. Pimentel Ph.D. (director Graduate School of Informatics), A. Haker Ph.D. (programme director master Information Studies), J.A.C. Sandberg Ph.D. (programme director bachelor Informatiekunde)
10.00 h. – 11.20 h.	Programme management and core team A. Haker Ph.D. (programme director Master Information Studies), J.A.C. Sandberg Ph.D. (programme director Bachelor Informatiekunde), F.M. Nack Ph.D. (co-ordinator master track HCM), prof. T.M. van Engers Ph.D. (co-ordinator master track BIS)
11.30 h. – 12.15 h.	Board of examiners Prof. H. Afsarmanesh Ph.D. (chair), C. Monz Ph.D. (member), M. Worrying Ph.D. (member), R. Kellermann Deibel MSc (student advisor)
12.15 h. – 13.30 h.	Lunch, deliberations panel and documents review (closed session), including open office hours 12.15 h. – 12.45 h.
13.30 h. – 14.30 h.	Lecturers, including member of educational committee M.J. Marx Ph.D. (lecturer Informatiekunde, member educational committee), A.J. Bouwer Ph.D. (lecturer Informatiekunde, Information Studies), A. Vreeken MSc (lecturer Informatiekunde, Information Studies), prof. T.M. van Engers Ph.D. (lecturer Information Studies), F.M. Nack Ph.D. (lecturer Informatiekunde, Information Studies, member educational committee), A.W. Abcouwer MSc (lecturer Informatiekunde, Information Studies), prof. J.M. Akkermans Ph.D. (Vrije Universiteit, lecturer Information Studies)
14.30 h. – 15.30 h.	Students and alumni, including member of educational committee J.M. Sijs (bachelor student), P. Schrijver (bachelor student), Th. Kloosterman BSc (master student, track HCM), F. Peresadilo (bachelor student), T. el Masri MSc (master alumnus, track BIS), M. Wolbert BSc (master student, member educational committee)
15.30 h. – 17.15 h.	Deliberations panel and documents review (closed session)
17.15 h. – 17.45 h.	Presentation of main findings by panel's chair to programme management

Annex 2: Documents reviewed

The assessment panel has studied the following documents, presented prior to the site visit:

- Critical reflection of bachelor's programme Informatiekunde
- Domain-specific framework Information Studies/Informatiekunde programmes University of Amsterdam (in Dutch)
- Curriculum verview
- Education and Examination Regulations 2012/2013
- Staff overview
- List of graduates of the last two years
- Main professional field relations
- Gender-specified student intake
- Relations between Dublin-descriptors and intended learning outcomes
- Assessment form bachelor thesis
- Bachelor thesis manual
- Introduction to College of Science
- Bibliography
- Educational for academic skills
- Results student survey Informatiekunde, first block, 2010 – 2012
- Overview of informatiekunde programmes and related programmes in the Netherlands
- Matching of intended learning outcomes and standard curricula Information Technology, Information Systems and Web Science
- Intended learning outcomes Informatiekunde related to Dublin-descriptors 2013 – 2014

On the day of the site visit, the programme management presented the following documents:

- Course descriptions
- Course material
- Literature
- Assignments
- Examinations
- Letter concerning binding recommendation on continuation of studies
- Curricula vitae of lecturers
- Course evaluations
- Board of examiners documentation
- Educational committee documentation
- University of Amsterdam and Faculty of Science Policy documents

Annex 3: Theses reviewed

The theses of the following students have been selected for review by the panel:

- 0111007
- 5922127
- 0572632
- 0221864
- 5819016
- 5909813
- 5745667
- 0238538
- 5699685
- 5734266
- 5994918
- 6211577
- 5801850
- 0514632
- 5886910

Annex 4: Composition of the assessment panel

The assessment panel had the following composition:

- prof. E.W. Berghout Ph.D., panel chair, professor of Information Systems at University of Groningen;
- prof. W. Van Grembergen Ph.D., panel member, professor of Information Systems at University of Antwerp and executive professor at Antwerp Management School;
- prof. A. Nijholt Ph.D., panel member, professor of Human-Computer Interaction at University of Twente;
- Y. Oualhadj, student member, studying the master programme Dutch Language and Culture at Leiden University.

Prof. E.W. Berghout Ph.D., panel chair

Professor Berghout, currently, is full professor of Information Systems at the Faculty of Economics and Business of University of Groningen as well as an independent advisor and auditor. He obtained his Ph.D. from Delft University of Technology. He also lectures at Tilburg University and Erasmus University Rotterdam. In the past, he was employed at Philips Electronics and held was visiting professor at the London School of Economics and Political Sciences. Professor Berghout is president of the Benelux Chapter of the Association for Information Systems. His main research interests are IT economics, IT strategy, IT efficiency and effectiveness, IT governance, IT control and IT auditing.

Prof. W. Van Grembergen Ph.D., panel member

Professor Van Grembergen, currently, is a full professor of Information Systems at the Economics and Management Faculty of University of Antwerp and an executive professor at Antwerp Management School. He teaches information systems at a master and executive level. Within the IT Alignment and Governance Research Institute, he conducts research on IT governance and supports the continuous development of COBIT and VAL IT. He is involved in the development of COBIT 5. His main research interests are IT governance, IT strategy, IT performance management and IT balanced scorecard.

Prof. A. Nijholt Ph.D., panel member

Professor Nijholt started his professional life as a programmer at TNO-Delft. He studied civil engineering, mathematics and computer science at Delft University of Technology and did his Ph.D. in theoretical computer science at Vrije Universiteit Amsterdam. He held positions at, among other, University of Nijmegen, McMaster University (Canada), Vrije Universiteit Brussels and NIAS in Wassenaar. Presently, he is a member of the Human Interaction Group of University of Twente. His main research interests are multi-party interaction, multimodal interaction, brain-computer interfacing and entertainment computing.

Y. Oualhadj, student member

Mr Oualhadj is studying the master programme Dutch Language and Culture at Leiden University since 2011. Previously, he studied Public Administration/Public Management at Haagse Hogeschool. He was the founder and chairman of the Student Union of The Hague. Also, he was a policy advisor and a member of the board of the Landelijke Studenten Vakbond. Mr Oualhadj is a trainer and discussion leader on a free-lance basis.

Annex 5: Declarations of independence