

Assessment report
Limited Framework Programme Assessment

Master Information Science

Vrije Universiteit Amsterdam

Contents of the report

1. Executive summary	2
2. Assessment process	4
3. Programme administrative information.....	7
4. Findings, considerations and assessments per standard	8
4.1 Standard 1: Intended learning outcomes	8
4.2 Standard 2: Teaching-learning environment	10
4.3 Standard 3: Student assessment.....	13
4.4 Standard 4: Achieved learning outcomes	15
5. Overview of assessments.....	16
6. Recommendations	17

1. Executive summary

In this executive summary, the panel presents the main considerations which led to the assessment of the quality of the Master Information Science programme of Vrije Universiteit Amsterdam, which has been assessed according to the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, as published on 20 December 2016 (Staatscourant nr. 69458).

The panel regards the objectives of the programme to have students acquire knowledge, understanding and skills in information science as relevant. The programme objectives are firmly rooted in computer science and students are educated to approach information science subjects from the computer science perspective. This in itself may be considered to be a strong point of the programme. The objectives may, however, be regarded to be too close to the domains of applied computer science or business or system engineering. The programme objectives match the international requirements for the information science domain, but may be found at the borders of this domain. The panel advises to express the profile of the programme and the positioning vis-à-vis other programmes in The Netherlands and abroad more clearly, being more pronounced on the aforementioned strong points of the programme, but also being more explicit on the information science character of the programme and on the correspondence with the domain-specific reference framework.

The intended learning outcomes are in line with the programme objectives and are formulated in up-to-date terms. The intended learning outcomes conform to the master level, as exemplified by the Dublin descriptors for this level. The panel appreciates two specialisations being offered in the programme, allowing students to choose the specialisation of their preference. The panel welcomes the programme objectives to prepare students to enter the labour market for positions in the information science or information systems fields.

The panel regards the programme to be managed conscientiously.

The panel has established the curriculum of the programme to meet the intended learning outcomes and regards the curriculum to be up to standard. The panel noted not only domain-specific courses being offered, but also ample attention being given to research methods and techniques. The panel advises, however, to strengthen the business and information science components in the curriculum, as these are very limited. Although the two specialisations offered to the students are much appreciated, the panel encourages programme management to consider offering three specialisations, making use of the research being done within the Department of Computer Science. The curricula of the specialisations are coherent.

The panel is positive about the lecturers in the programme. They are strong researchers and experts in their fields, the field being mostly computer science. The panel noted however few lecturers are specifically experts in the information science domain and, therefore, advises to recruit lecturers with this expertise. The lecturers are considered by the panel to be qualified for lecturing. The panel is positive about the meetings of lecturers to discuss the programme, these meetings being organised well and taking place quite frequently.

The panel considers the admission requirements and procedures of the programme to be adequate. The exemptions policy for the programme is appropriate. The panel appreciates the pre-master programme.

Although the study methods are appropriate and meet the course contents, the panel proposes to explain the educational concept of the programme more clearly. The panel regards the study guidance in the programme to be adequate. The student success rates are appropriate.

The panel considers the examination and assessment policies for the programme to be up to standard. The formal position and the authority of the Examination Board are adequate as well.

The panel regards the choice of examination methods to be appropriate, these methods meeting the course goals and course contents. The panel suggests to adopt open-book examinations to increase the variety of examination methods and test students' understanding.

The measures taken by programme management to ensure the validity of examinations and the reliability of assessments are generally considered by the panel to be adequate. The panel suggests, however, to adopt test matrices for all of the courses.

The design and the assessment of the Master Project are adequate. The panel welcomes the organisation of the project and the intermediate and final products to be presented by the students as well as the assessments of these products by two examiners. The panel suggests to fill out the scoring forms more comprehensively.

The panel appreciates the Examination Board reviewing the Master Projects on a regular basis.

Having studied the examinations of a number of courses of the programme, the panel assessed all of these examinations to be up to standard.

None of the theses reviewed were assessed by the panel to be unsatisfactory. Some of the theses the panel considered to be strong. The grades of the theses were generally found to be consistent with the grades the panel would have given. In some specific cases, the panel assessed grades to be slightly too high. The contents of the theses were within the domain of the programme. Most of the theses, the panel observed, were more industry-related than research-oriented. Although the academic thinking and reasoning in the theses were up to standard, the panel recommends strengthening the research orientation of the Master Projects, this being in line with the intended learning outcomes of the programme.

In the panel's opinion, the programme succeeds in preparing the programme's graduates appropriately for positions in the relevant professional field.

The panel which conducted the assessment of the Master Information Science programme of Vrije Universiteit Amsterdam assesses this programme to meet the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, judging the programme to be satisfactory. Therefore, the panel recommends NVAO to accredit this programme.

Rotterdam, 16 April 2018

Prof. dr. ir. M.F.W.H.A. Janssen
(panel chair)

drs. W. Vercouteren
(panel secretary)

2. Assessment process

The evaluation agency Certiked VBI received the request by Vrije Universiteit Amsterdam to manage the limited framework programme assessment process for the Master Information Science programme of this University. This objective of the programme assessment process was to assess whether the programme would conform to the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, published on 20 December 2016 (Staatscourant nr. 69458).

Management of the programmes in the assessment cluster Information Sciences convened to discuss the composition of the assessment panel and to draft the list of candidates.

Having conferred with management of the Vrije Universiteit Amsterdam programme, Certiked invited candidate panel members to sit on the assessment panel. The panel members agreed to do so.

The panel composition was as follows:

- Prof. dr. ir. M.F.W.H.A. Janssen, full professor ICT and Governance, head of Information and Communication Technology research group, Faculty Technology, Policy and Management, Delft University of Technology (panel chair);
- Prof. dr. G. Poels, full professor Management Information Systems, director Business Informatics research unit, Department of Business Informatics and Operations Management, Ghent University (panel member);
- Prof. dr. U. Frank, full professor of Information Systems and Enterprise Modelling, Institute of Computer Science and Business Information Systems, University of Duisburg-Essen (panel member);
- C.J. Stam MSc, student Master Sustainable Development, Utrecht University (student member; recently graduated).

On behalf of Certiked, drs. W. Vercouteren served as the process coordinator and secretary in the assessment process.

All panel members and the secretary confirmed in writing being impartial with regard to the programme to be assessed and observing the rules of confidentiality. Having obtained the authorisation by the University, Certiked requested the approval of NVAO of the proposed panel to conduct the assessment. NVAO have given their approval.

To prepare the assessment process, the process coordinator convened with management of the programme to discuss the outline of the self-assessment report, the subjects to be addressed in this report and the site visit schedule. In addition, the planning of the activities in preparation of the site visit were discussed. In the course of the process preparing for the site visit, programme management and the Certiked process coordinator regularly had contact to fine-tune the process. The activities prior to the site visit have been performed as planned. Programme management approved of the site visit schedule.

Well in advance of the site visit date, programme management sent the list of final projects of graduates of the programme of the most recent years. Acting on behalf of the assessment panel, the process coordinator selected 15 final projects. The grade distribution in the selection was ensured to conform to the grade distribution in the list, sent by programme management. Additional criteria have been taken into account, if these had been found to be relevant for the programme.

The panel chair and the panel members were sent the self-assessment report of the programme, including appendices. In the self-assessment report, the student chapter was included. In addition, the expert panel members were forwarded a number of final projects of the programme graduates, these final projects being part of the selection made by the process coordinator.

A number of weeks before the site visit date, the assessment panel chair and the process coordinator met to discuss the self-assessment report provided by programme management, the procedures regarding the assessment process and the site visit schedule. In this meeting, the profile of panel chairs of NVAO was discussed as well. The panel chair was informed about the competencies, listed in the profile. Documents pertaining to a number of these competencies were presented to the panel chair. The meeting between the panel chair and the process coordinator served as the briefing for panel chairs, as meant in the NVAO profile of panel chairs.

Prior to the date of the site visit, all panel members sent in their preliminary findings, based on the self-assessment report and the final projects studied, and a number of questions to be put to the programme representatives on the day of the site visit. The panel secretary summarised this information, compiling a list of questions, which served as a starting point for the discussions with the programme representatives during the site visit.

Shortly before the site visit date, the complete panel met to go over the preliminary findings concerning the quality of the programme. During this preliminary meeting, the preliminary findings of the panel members, including those about the final projects were discussed. The procedures to be adopted during the site visit, including the questions to be put to the programme representatives on the basis of the list compiled, were discussed as well.

On 15 November 2017, the panel conducted a site visit on the Vrije Universiteit Amsterdam campus. The site visit schedule was in accordance with the schedule as planned. In a number of separate sessions, panel members were given the opportunity to meet with Faculty Board representatives, programme management, Examination Board representatives, lecturers and final projects examiners, and students and alumni.

In a closed session at the end of the site visit, the panel considered every one of the findings, weighed the considerations and arrived at conclusions with regard to the quality of the programme. At the end of the site visit, the panel chair presented a broad outline of the considerations and conclusions to programme representatives.

Clearly separated from the process of the programme assessment, the assessment panel members and programme representatives met to conduct the development dialogue, with the objective to discuss future developments of the programme.

The assessment draft report was finalised by the secretary, having taken into account the findings and considerations of the panel. The draft report was sent to the panel members, who studied it and made a number of changes. Thereupon, the secretary edited the final report.

The final report was presented to programme management to be corrected for factual inaccuracies. Programme management were given two weeks to respond. Having been corrected for these factual inaccuracies, the Certiked bureau sent the report to the University Board to accompany their request for re-accreditation of this programme.

3. Programme administrative information

Name programme in CROHO: M Information Science
Orientation, level programme: Academic Master
Grade: MSc
Number of credits: 60 EC
Specialisations: Business Information Systems
Web & Media
Location: Amsterdam
Mode of study: Full-time (language of instruction: English)
Registration in CROHO: 60255

Name of institution: Vrije Universiteit Amsterdam
Status of institution: Government-funded University
Institution's quality assurance: Approved

4. Findings, considerations and assessments per standard

4.1 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

Previously, programme management considered merging the programme with the master programme in this domain of University of Amsterdam. Although collaboration will continue, the programmes will not be merged.

The objectives of this Master programme are for students to acquire the knowledge, understanding and skills in the information science domain and in related disciplines, needed to work independently as professionals at the academic level or to become experts in research or development in this field.

The objectives of the programme are to prepare students for the labour market. Students are trained for positions as information scientists and information systems professionals. As the programme is firmly rooted in computer science, programme graduates are trained to approach subjects in the information science and information systems domains from the computer science perspective.

Programme management showed the programme objectives to meet the domain-specific reference framework for the programme, being the ACM MSIS 2006 Model Curriculum and Guidelines for Graduate Degree Programmes in Information Systems.

Two distinct specialisations are offered in the programme, being Business Information Systems and Web & Media. The Business Information Systems specialisation focuses on the optimisation of information technology in enterprise settings. The Web & Media specialisation is geared towards innovative web applications to retrieve, disclose and share information. The coming years, *Media* will be of diminishing importance, whereas the *Web* will continue to be one of the spearheads of the programme.

Programme management translated the objectives into a series of intended learning outcomes, specifying, among others, knowledge and understanding of themes and latest trends in information science, knowledge and skills to define, initiate and carry out advanced research projects independently, critical scientific attitude, written and oral communication skills with regard to advanced research projects and capabilities to acquire and use new information in information science and related fields. Depending upon the specialisation selected, students are educated in information science themes business process management, the semantic web, software services and architecture and user-centric data science.

Programme management presented a table to show the intended learning outcomes to correspond to the Dublin descriptors for master level programmes.

Considerations

The panel regards the objectives of the programme to have students acquire knowledge, understanding and skills in information science as relevant. The objectives of the programme are firmly rooted in computer science and students are required to approach information science subjects from the computer science perspective. This in itself may be considered to be a strong point of the programme. The objectives may, however, be regarded to be too close to the domains of applied computer science or business or system engineering.

The programme objectives are within the ACM MSIS 2006 Model Curriculum and therefore match the international requirements for the information science domain. The programme may, nevertheless, find itself at the borders of this domain.

The panel advises to express the profile of the programme and the positioning vis-à-vis other programmes in The Netherlands and abroad more clearly, being more pronounced on the aforementioned strong points of the programme, but also being more explicit on the information science character of the programme and on the correspondence with the domain-specific reference framework.

The intended learning outcomes are in line with the programme objectives and are formulated in up-to-date terms. The intended learning outcomes conform to the master level, as exemplified by the Dublin descriptors for this level.

The panel appreciates two specialisations being offered in the programme, allowing students to choose the specialisation of their preference and to go in-depth on specific information science themes and subjects.

The panel welcomes the programme objectives to prepare students to enter the labour market for positions in the information science or information systems fields.

Assessment of this standard

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

4.2 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

The Master Information Science programme is one of the programmes of the Faculty of Science of Vrije Universiteit Amsterdam. The programme is offered by the Department of Computer Science of this Faculty and is organised by the School of Information Sciences within the Faculty. On behalf of the Dean of the Faculty, the Teaching Director of the School is responsible for the quality of this and four other Master programmes. The curriculum director of the programme in close collaboration with the curriculum coordinator supervises the programme contents and quality on a day-to-day basis. The Teaching Committee, consisting of three lecturers and three students evaluate the programme quality and advise programme management in this respect. The Teaching Committee is shared by this programme and the Bachelor Information, Multimedia and Management programme. The Examination Board is responsible for overseeing the examination processes and the examinations and assessments.

The number of incoming students in the programme was about 40 students per year on average over the last four years, being the years 2013 to 2016.

Programme management presented a table to demonstrate the curriculum meeting the intended learning outcomes of the programme.

The curriculum has a study load of 60 EC and takes one year to complete. As has been indicated, the programme offers two distinct specialisations. The curriculum for the Business Information Systems specialisation includes courses on, among others, business process management, service oriented design, digital innovation and business process analytics. The curriculum for the Web & Media specialisation contains courses on, among others, intelligent interactive systems, knowledge and media, knowledge engineering, visual search engines, mobile systems and web search. This part of both curricula encompasses 30 EC and consists of compulsory courses (12 EC) and courses for the specialisation chosen (18 EC). These are all courses, offering domain-specific knowledge, understanding and skills. In addition, students of both specialisations are offered two compulsory courses on interdisciplinary research methods for information science (6 EC) and on thesis design (6 EC). In the first course, students are trained in qualitative, quantitative and design science research methods and techniques. In the thesis design course, students draft their Master Project proposal and work plan. Parts of this course are also the literature review and the research methods to be used in this project. Following the thesis design course, students complete their Master Project (18 EC).

The total number of lecturers from the Department of Computer Science teaching in three bachelor and five master programmes, among which this programme, amounts to 32 full-time equivalents and 170 persons. These lecturers have strong research track records, the Department of Computer Science having a solid scientific reputation and having been awarded the qualifications *very good* or *excellent* in the 2015 external research evaluation. Course coordinators know the state-of-the-art research in their field. Junior lecturers and teaching assistants may take part in lecturing and may supervise practical work. The number of University Teaching Qualification (BKO)-certified lecturers in the programme is quite substantial. Newly appointed tenured staff members are obliged to obtain the BKO-certificate. The lecturers meet frequently within the Department of Computer Science to discuss the programme.

The admission requirements for students are to have completed the bachelor programme in the field of information science of Vrije Universiteit Amsterdam or one of the other universities in The Netherlands. These students are unconditionally admitted to the programme. Students coming from abroad may enrol, if their prior education is equivalent to bachelor in information science programmes in The Netherlands. Students having completed bachelor programmes of universities of applied sciences, are required to take the pre-master programme. The study load of the pre-master programme is 30 EC and may be tailored to the individual knowledge and skills of the students who apply. Students may ask for exemptions. These requests are handled by the Examination Board.

The study methods offered in the curriculum to the students are primarily meant to acquaint them with the results of recent scientific articles in the field of information science. The predominant study methods are the classic classroom setting. In this way, students may be immersed in recent research in this field, preparing them for their own research in the Master Project. With regard to new and innovative study methods, there are no explicit policies on the part of the Faculty. These methods are, however, debated among lecturers. The student-to-staff ratio for the programmes of the Department of Computer Science together is 36 to 1, meaning one full-time equivalent of teaching capacity for 36 students. For guidance and assistance during the courses, students may turn to the programme coordinator. The Master Project is supervised by the supervisor and guidance during the Master Project is offered by the thesis coordinators, being one coordinator for each of the specialisations. The coordinators assist students in finding subjects and supervisors for the thesis. Although the curriculum is challenging, students expressed the programme being feasible.

The student success rates are 45 % for students completing the programme after one year and 69 % for students finishing after two years (average figures for the last four cohorts).

Considerations

The panel regards the programme to be managed conscientiously.

The panel has established the curriculum of the programme to meet the intended learning outcomes.

The panel regards the curriculum to be up to standard. The panel noted not only domain-specific courses being offered, but also ample attention being given to research methods and techniques. The number of courses related to business and information science aspects is, however, very limited in the curriculum. The panel, therefore, advises to strengthen the curriculum in this respect. Although the two specialisations offered to the students are much appreciated, the panel encourages programme management to consider offering three specialisations, making use of the research being done within the Department of Computer Science. The curricula of the specialisations are coherent.

The panel is positive about the lecturers in the programme. They are strong researchers and experts in their fields, the field being mostly computer science. The panel noted however few lecturers are specifically experts in the information science domain and, therefore, advises to recruit lecturers with this expertise. The lecturers are considered by the panel to be qualified for lecturing. The panel is positive about the meetings of lecturers to discuss the programme, these meetings being organised well and taking place quite frequently.

The panel considers the admission requirements and procedures of the programme to be adequate. The exemptions policy for the programme is appropriate as well. The panel appreciates the pre-master programme.

Although the panel considers the study methods to be appropriate and to meet the course contents, the panel advises to explain the educational concept of the programme more clearly. The panel regards the study guidance in the programme to be adequate. The student success rates are appropriate.

Assessment of this standard

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

4.3 Standard 3: Student assessment

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

Findings

The examination and assessment regulations for the programme are in line with the Faculty of Science assessment policy, which in turn complies with the Vrije Universiteit Amsterdam handbook on the quality of education. The Faculty of Science Examination Board has the authority to ensure and monitor the quality of the examinations and assessments and the corresponding processes of this programme. One of the sub-committees of this Board is especially responsible for monitoring the quality of examinations and assessments for this programme and the other programmes of the Department of Computer Science.

The course examination methods include written, closed-book examinations, practical work, usually involving programming assignments, written assignments, usually requiring solutions to exercises and presentations and written reports, testing the student's knowledge and understanding and their ability to communicate these. In the first years of the programme, written examinations dominate, whereas in the more advanced courses of the later years assignments may be the examination methods. Examinations meet the course goals and the course contents, so students informed the panel.

In all courses, two examiners are responsible for drafting the examinations. The examiners are appointed by the Examination Board. In some but not all of the course examinations, test matrices are used, aligning course learning goals and the examination questions. Fraud and plagiarism procedures for the programme are in place and cases detected are handled by the Examination Board.

For the Master Project, programme management designed a schedule of activities. At the end of the Thesis Design course, students are to have drafted their research proposal and give a presentation of this proposal. The thesis supervisor and the second reader grade this proposal. The Master Project itself is meant to take about five months. At the end of this period, students submit their written thesis and give an oral presentation about the thesis' contents. The supervisor and the second reader independently grade the quality of the research (50 % of the grade), the written product (33 % of the grade) and the presentation (17 % of the grade). The supervisor and the second reader decide on the grade, filling out the Master Project assessment form.

The Examination Board regularly reviews samples of Master Projects to ascertain the quality and level of these products.

Considerations

The panel considers the examination and assessment policies for the programme to be up to standard. The formal position and the authority of the Examination Board are adequate as well.

The panel regards the choice of examination methods to be appropriate, these methods meeting the course goals and course contents. The panel suggests to adopt open-book examinations to increase the variety of examination methods and test students' understanding.

The measures taken by programme management to ensure the validity of examinations and the reliability of assessments are generally considered by the panel to be adequate. The panel suggests, however, to adopt test matrices for all of the courses.

The design and the assessment of the Master Project are adequate. The panel welcomes the organisation of the project and the intermediate and final products to be presented by the students as well as the assessments of these products by two examiners. The panel suggests to fill out the scoring forms more comprehensively.

The panel appreciates the Examination Board reviewing the Master Projects on a regular basis.

Assessment of this standard

The considerations have led the assessment panel to assess standard 3, Student assessment, to be satisfactory.

4.4 Standard 4: Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

Findings

The panel studied the examinations of a number of courses of the programme.

The panel reviewed a total number of fifteen Master Projects or theses of graduates of the programme, the theses exhibiting a variety of grades, ranging from satisfactory to very good.

Alumni surveys conducted by programme management show graduates of the programme to have good opportunities on the labour market and find appropriate positions rather easily. Positions of graduates are, among others, management consultants, chief information officers, sourcing managers, web specialists, business analysts and systems analysts. Few graduates (3 % on average) start in PhD programmes. Alumni indicate to appreciate the programme as having prepared them well for their current positions.

Considerations

Having studied the examinations of a number of courses of the programme, the panel assessed all of these examinations to be up to standard.

None of the theses reviewed were assessed by the panel to be unsatisfactory. Some of the theses the panel considered to be strong. The grades of the theses were generally found to be consistent with the grades the panel would have given. In some specific cases, the panel assessed grades to be slightly too high. The differences with the grades the panel would have given, remained, however, relatively small. The contents of the theses were within the domain of the programme. Most of the Master Projects, so the panel observed, were more industry-related than research-oriented. Although the academic thinking and reasoning in the theses were up to standard, the panel recommends strengthening the research orientation of the Master Projects, this being in line with the intended learning outcomes of the programme.

In the panel's opinion, the programme succeeds in preparing the programme's graduates appropriately for positions in the relevant professional field.

Assessment of this standard

The considerations have led the assessment panel to assess standard 4, Achieved learning outcomes, to be satisfactory.

5. Overview of assessments

Standard	Assessment
Standard 1. Intended learning outcomes	Satisfactory
Standard 2: Teaching-learning environment	Satisfactory
Standard 3: Assessment	Satisfactory
Standard 4: Achieved learning outcomes	Satisfactory
Programme	Satisfactory

6. Recommendations

In this report, a number of recommendations by the panel have been listed. For the sake of clarity, these have been brought together below. These panel recommendations are the following.

- To express the profile of the programme and the positioning of the programme vis-à-vis other programmes in The Netherlands and abroad more clearly, being more pronounced on the strong points of the programme and being more explicit on the information science character of the programme and on the correspondence with the domain-specific reference framework.
- To strengthen the business and information science components in the curriculum.
- To consider offering three specialisations, making use of the three distinct lines of information sciences related research being done within the Department of Computer Science.
- To recruit lecturers, specifically with expertise in the information science domain.
- To explain the educational concept of the programme more clearly.
- To adopt test matrices for all of the courses.
- To fill out the scoring forms for the Master Projects more comprehensively.
- To strengthen the research orientation of the Master Projects, to bring these more in line with the intended learning outcomes of the programme.