BSc Information Science
Utrecht University

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Project code P2220

Contents

Summary

Standard 1. Intended learning outcomes

The bachelor's programme Information Science centres around the interaction between computer technology, people and organizations/society. It focuses on designing effective technology that serves the interests of end users and organizations/society optimally. According to the panel, the programme has a clear and modern vision on information science as an interdisciplinary field of study. The three aspects of information sciences (computer technology, people and organizations/society) are integrated with the aim of aligning computer systems with people and organizations/society. Through its connection to the IS2020 framework the vision is well aligned with the (international) discipline of information science. The panel considers the 14 programme learning outcomes (PLOs) defined by the programme to be in line with the bachelor level and with the programme's vision. A fair proportion of graduates start working immediately after graduation, instead of continuing to follow a master's programme. These alumni find jobs relatively easily but notice that the professional field is not very familiar with (the language used in) the discipline of information science. To better prepare students for the labour market and reduce the 'gap' between the academic and professional field, the panel advises the programme to implement its plans to install a professional advisory board for systematic consultancy with the professional field. This will also contribute to further aligning the vision and PLOs with the expectations and needs of the professional field.

Standard 2. Teaching-learning environment

According to the panel, the curriculum is well structured, demonstrating solid constructive alignment. The three study paths reflect the programme's vision on information science and are nicely connected to subsequent master's programmes/tracks. Students have a lot of options to tailor the curriculum to their own interests. Although academic and professional skills are well embedded in the curriculum, the panel does advise the programme to take the students' suggestion about integrating a portfolio in the curriculum, especially in the Human Technology Interaction study path, into consideration. The didactic approach is based on the university's educational model and includes a focus on interaction and community building in small scale settings and the explicit choice for on-campus activities. The panel sees valuable elements of a didactic vision, but thinks the programme needs to develop a stronger overall didactic vision to guarantee sufficient and consistent quality of teaching across the courses.

During the programme, (student-)tutors are the first point of contact for students with questions and concerns about their study. Tutors can refer to the study advisor and other counsellors when necessary. The panel concludes that student guidance is well set up. Also, the study progress of students is in order. Although there is study delay, this is not out of the ordinary and does not seem to be caused by issues regarding the feasibility of the programme. According to the panel, the teaching staff is sufficiently qualified to teach the courses and supervise the projects. The panel is pleased to see the involvement of more full professors, at least in project supervision, since the previous accreditation. It commends the teaching staff for their positive and supportive attitude towards students, who feel heard and taken seriously. Most lecturers hold a University Teaching Qualification (UTQ). The panel underlines the plans to increase this number further. The panel is impressed by the lab facilities the programme offers, which create ample opportunity for students to carry out interesting projects and learn relevant skills.

Standard 3. Student assessment

Assessment in the programme is based on the faculty's sound assessment policy and thoroughly elaborated in the programme's assessment plan. A variety of test methods is applied in the programme and each course is assessed through multiple tests (both group and individual assessments). Formative assessment is

systematically embedded in the programme, a.o. by means of an intermediate assessment in each course. Theses are always assessed by two supervisors. The panel is very positive about the detailed assessment forms for the thesis and the rich feedback provided to students. The programme includes a lot of group work (though never as the sole test method in a course), which allows student to practice skills like cooperation. The panel suggests making use of peer assessment to gain insight into each individual student's contribution to the group result, in order to minimize the potential negative aspects of group assessment. To ensure that students are required to make an effort, the faculty applies a minimal grade clause. Although the panel agrees with this clause in principle, it does advise the programme to evaluate the effectiveness of the clause and to see to the correct implementation of the policy.

The programme employs student-assistants for supervision during some projects and workshops. These student-assistants also provide the students with feedback and have advisory role in the grading process for some projects within courses, while the lecturer always has final responsibility for the assessment. The panel concludes that the quality of the student-assistants varies and that grading criteria may not always be applied consistently. The programme is advised to ensure that all student-assistants are properly trained and proactively supervised by the responsible lecturers. The panel considers the Board of Examiners to be competent and in control. The Board succeeds at safeguarding the quality of assessment and the exit level, a.o. by means of annual reviews of samples of courses and theses.

Standard 4. Achieved learning outcomes

Based on the sample of 15 theses reviewed, the panel concludes that the level demonstrated in the theses is appropriate for an academic bachelor's programme. The panel appreciates the diversity of topics covered in the theses but thinks that the link to information technology can be strengthened and be made more explicit in some cases. It advises the programme to reflect on the scope of topics appropriate for the thesis, considering the programme's vision on information science, and to ensure that the theses always contain an information technology component.

The figures included in the documentation, and the interview with alumni show that graduates are successful and well-prepared for either a consequent master's programme or a job in the professional field.

Score table

The panel assesses the programme as follows:

B Information Sciences

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
Chair

Anne-Lise Kamphuis MSc
Secretary

Date: 24 January 2024

Introduction

Procedure

Assessment

On 5 and 6 October 2023, the bachelor's programme Information Science of Utrecht University was 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 20 July 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 programme composed a site visit schedule in consultation with the coordinator (see appendix 3). The programme selected representative partners for the various interviews. It also determined that the development dialogue would be made part of the site visit in the shape of thematic sessions. A separate development report was made based on this dialogue.

The programme provided the coordinator with a list of graduates over the period 2021 – 2023. In consultation with the coordinator, the panel chair selected 15 theses per programme, taking the diversity of final grades and examiners into account, as well as the various tracks. Before the site visit, Academion received the relevant documentation from the programmes, consisting of an extensive set of current documentation pertaining to the four standards of examination that, together with a cover letter and SWOT analysis, served as self-evaluation report. This included a comprehensive analysis of the programmes' strengths and weaknesses, and a separate and independent student chapter along with the required appendices. Before and during the site visit, the panel studied the additional documents provided by the programmes. An overview of these materials can be found in 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 report and the theses, as well as the division of tasks during the site visit. The panel was also informed on the assessment framework, the working method and the planning of the site visits and reports. The panel offered students and staff members an opportunity for confidential discussion during a consultation hour. No consultation was requested.

Site visit

During the site visit, the panel interviewed various programme representatives (see appendix 3). The panel used the final part of the site visit to discuss its findings in an internal meeting. Afterwards, the panel chair publicly presented the preliminary findings.

Report

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

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. Jos van Hillegersberg, professor of Data Science in Business, Jheronimus Academy of Data Science (Tilburg University and Eindhoven University of Technology);
- 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 bachelor's programme Information Science at Utrecht University 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. Alessandro Bozzon, professor of Human Centered AI, Delft University of Technology;
- Amber Pater BSc, master student Information Sciences, Radboud University – student member.

Information on the programme

Name of the institution:	Utrecht University
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
Specializations or tracks:	Informatiesystemen Mens-Technologie Interactie Kennis & Data Analytics
Location:	Utrecht
Educational minor:	Applicable
Mode(s) of study:	Fulltime
Language of instruction:	Dutch
Submission date NVAO:	1 May 2024

Description of the assessment

Recommendations previous panel

The documentation included an overview of how the programme followed up on the recommendations given by the previous accreditation's panel (2018). 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 generally content with the improvement measures taken and sees that these have contributed to improved quality of the programme. For some recommendations it became clear that the programme is still in the process of addressing these. These issues will be described in this report.

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

Vision
In response to recommendations from the previous accreditation's panel, a new vision for the programme was developed in 2019. In this process, the international 'Competency Model for Undergraduate Programs in Information Systems' (IS2020) served as a frame of reference. According to this new vision, the programme centres around the interaction between computer technology, people and organizations/society. It focuses on designing effective technology that serves the interests of end users and organizations/society optimally. Information science is approached as an interdisciplinary academic field, involving knowledge and skills from various domains, including cognitive psychology, sociology, linguistics, organizational science, mathematics, data science, programming and software engineering, human-computer interactions, ethics and research methodology. The new vision places more emphasis on the importance of equipping students with a strong background in experimental design and statistics and with a strong understanding of the ethical and societal implications of information technology systems. With regard to programming, the new vision focuses more on teaching the fundamentals of programming/scripting rather than teaching specific programming languages.

According to the panel, the programme has a clear and modern vision on information science as an interdisciplinary field of study. The panel appreciates how the vision integrates the three aspects of information sciences (computer technology, people and organizations/society) with the aim of aligning computer systems with people and organizations/society. Also, the panel agrees with the choice to focus on the fundamentals of programming instead of learning specific programming languages, as this is a more future-proof approach. Through its connection to the IS2020 framework the vision is well aligned with the (international) discipline of information science.

Programme learning objectives

In the Education and Examination Regulations for the faculty's bachelor's programmes (Undergraduate School of Sciences) a list of general objectives of the programmes is described. These are further specified in the appendix for Information Science. The programme formulated 14 programme learning objectives (PLOs) divided into the five categories of the Dublin descriptors (see Appendix 1). The panel considers the PLOs appropriate and in line with the vision. They clearly demonstrate the academic orientation and are well aligned with the bachelor's level as described in the Dublin descriptors.

Professional field

The goal of the programme is to prepare students for a subsequent master's programme or for employment in the professional field. Around a quarter of the students do not continue to follow a master's programme but start working immediately after graduation, as is evident from the documentation and the interviews during the site visit. Alumni indicated that there are many job opportunities for graduates of the bachelor's programme. Also, many employers offer courses and training for graduates to further specialize in their field(s) of interest, which may decrease the perceived need for a master's programme. Although most graduates find a job relatively easily, the alumni in the interview did mention that the academic field of 'information science' is not well known in the professional field. Because of this, it was not immediately evident to them what types of jobs would be suitable. Employers tend to use different types of words and labels than the language that graduates are familiar with. The panel recognizes this 'gap' between the professional and academic field. To reduce this gap and to better prepare students for the labour market, the panel advises the programme to implement its plans to install a professional advisory board. This will allow for systematic consultancy and discussion with the professional field. It will also contribute to further aligning the vision and PLOs with the expectations and needs of the professional field.

Considerations

According to the panel, the programme has a clear and modern vision on information science as an interdisciplinary field of study. The three aspects of information sciences (computer technology, people and organizations/society) are integrated with the aim of aligning computer systems with people and organizations/society. Through its connection to the IS2020 framework the vision is well aligned with the (international) discipline of information science. The panel considers the 14 PLOs defined by the programme to be in line with the bachelor level and with the programme's vision.

A fair proportion of graduates start working immediately after graduation, instead of continuing to follow a master's programme. These alumni find jobs relatively easily, but notice that the professional field is not very familiar with (the language used in) the discipline of information science. To better prepare students for the labour market and reduce the 'gap' between the academic and professional field, the panel advises the programme to implement its plans to install a professional advisory board for systematic consultancy with the professional field. This will also contribute to further aligning the vision and PLOs with the expectations and needs of the professional field.

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

The bachelor's programme Information Science consists of 180 EC and is offered as a full time, three-year programme (see Appendix 2 for a curriculum overview). The curriculum is built up according to the university-wide 'Utrecht Education Model'. This model prescribes a major of 135 EC and a free elective space of 45 EC. Also, courses should consist of 7.5 EC each. The major in this programme consists of compulsory courses (90 EC), a study path (30 EC) and constrained choice electives (15 EC). Students can choose one of three study paths: 'Information Systems' (which focuses on the connection between computer technology and organizations/society), 'Human Technology Interaction' (which focuses on the connection between people and computer technology) and 'Knowledge & Data Analytics' (which focuses on the connection between organizations/society and people). The study paths are designed to prepare students for specific master's programmes/tracks: 'Information Systems' prepares students for the 'Business Informatics' track in the master's programme Information Science, 'Human Technology Interaction' for the 'Human Computer Interaction' track in the same master's programme and 'Knowledge & Data Analytics' for the master's programme Applied Data Science. In the first year, students take only compulsory courses: five foundational courses and three track courses that introduce students to the three study paths. The second year consists of the study-path specific courses, the constrained choice electives and two compulsory courses. The third year includes the free elective space and the research project (15 EC) resulting in the thesis.

The free elective space allows students to follow courses at the Utrecht University or at another university in the Netherlands or abroad. As part of the free elective space, students can take a minor offered by other bachelor's programmes at the university. This includes an educative minor (bèta) offered by the university's Graduate School of Teaching. After completing this minor, students receive a second degree teaching qualification, allowing them to teach the school subject 'informatica' in secondary schools in the Netherlands. The programme offers an honour's programme of 45 EC. Besides completing several courses within the regular curriculum at honour's level (30 EC), these students take two extracurricular honour's courses (15 EC) from a faculty-wide honour's programme. Students are selected for the honour's programme after the first half year of the programme by a selection committee.

The panel thinks that the curriculum is well structured. It appreciates how the three study paths reflect the programme's vision on information science (the interaction between computer technology, people and organizations/society) and how they are connected to subsequent master's programmes/tracks. The panel is also positive about the many options students have within the curriculum to tailor it to their interests (study paths and electives) and about the faculty-wide honour's programme that stimulates interdisciplinary cooperation. The panel is pleased with the solid constructive alignment throughout the curriculum, as is demonstrated in the assessment plan. It is clear from the assessment matrix that all PLOs are covered in the curriculum. Furthermore, each course's intended learning outcomes (ILOs) are elaborately linked to the PLOs and the course's assessments/tests. According to the panel, academic and professional skills are well embedded in the curriculum. In the interview during the site visit, students mentioned that it would be helpful to build a portfolio during the programme to showcase their projects and skills, especially in the Human Technology Interaction study path. This would be an advantage when applying for jobs, as

employers often ask for a portfolio. The panel advises the programme to take this suggestion into consideration.

Didactic approach
The didactic approach is based on the university's educational model. In the interview the management explained that the faculty's educational vision is currently being refined. Some elements of the didactical vision include a focus on interaction and community building and the explicit choice for on-campus activities. The programme aims for small-scale settings and values the practical application of theoretical knowledge. Also, the courses contain a lot of group projects/assignments. Although this is identified as a weakness in the SWOT-analysis provided in the documentation (a.o. because of the risk of free rider behaviour), the panel appreciates the group projects as they contribute to learning skills like cooperation. This was recognized by the management in the interviews during the site visit. As part of standard 3 (student assessment), the panel will discuss a suggestion to reduce possible negative effects of group assignments as experienced by students and lecturers.

The panel considers the educational model adequate and appreciates the diverse didactical methods applied in the programme. The student chapter included in the documentation and the interviews with students and alumni show that students are somewhat critical of the teaching methods in some courses. The quality of the teaching (method) seems to depend to a large degree on the particular lecturer, resulting in a mixed picture and varying quality. The management indicated that it is difficult to work with one didactic concept in the programme because the courses are very diverse, requiring different didactic approaches. The panel understands this but thinks it is important for the programme to develop a stronger overall didactic vision, with sufficient room for the desired diversity with regard to specific teaching methods in courses. This overall didactic vision should be made more explicit to guarantee an appropriate didactic approach and sufficient quality of teaching across the courses.

Guidance
In the courses, students are primarily supervised and guided by the lecturers and, in some cases, student-assistants. For overall guidance during the study, a tutor system has been implemented. Students are appointed a tutor who is their first point of contact for any questions and concerns about their study. During the first year this tutor-role is fulfilled by senior students, also called 'stutors'. During the second and third year the tutors are staff members. Tutors can refer students to the study advisor or other counsellors when necessary. The study advisor is available for students with questions or concerns, and can also pro-actively contact students when concerned about study progress. Based on the interviews during the site visit, the panel concludes that students are content about the (s)tutors, study advisors and guidance in general. Also, they indicated that relevant information and documents are easy to find, a.o. on Canvas and Osiris. The panel is positive about how communication with students and student guidance has been set up in the programme.

Study success
The documentation indicates that about three-quarters of the students graduate within four years. The previous accreditation's panel recommended the programme to improve the study success rates. In response to this, based on an analysis of the study delay which pointed towards prolonged research projects, the management decided to install a research project coordinator and develop a clear protocol for the bachelor thesis, including deadlines. These measures initially appeared to lead to a decrease in study delay. However, because of the Covid pandemic the success rates have dropped again. Based on the documentation and the interviews during the site visit, the panel concludes that feasibility does not seem to be problematic. The panel appreciates the programme's successful efforts to reduce the duration of the

research projects. According to the panel, the present study delay is not out of the ordinary and appears to be caused by external factors, rather than by issues regarding the feasibility of the curriculum.

Teaching staff
The courses in the programme are taught by a lecturer team of about 25 (assistant or associate) professors and over 20 PhD candidates. At the start of each block there is a lecturer meeting in which topics like educational innovation, assessment and student wellbeing are discussed. Most of the lecturers are also involved in project supervision. Besides these lecturers, seven full professors are involved in project supervision. The panel is pleased to see the involvement of more full professors, at least in project supervision, which is an improvement following a recommendation from the previous accreditation. The panel thinks the teaching staff is sufficiently qualified and considers the teaching staff size to be sufficient. The panel appreciates how the many lecturers available for project supervision allows students to get acquainted with various backgrounds and expertise. To lower the workload in courses with high student numbers, student-assistants are deployed to assist the lecturers in supervising students during workshops/projects and giving feedback.

Although most lecturers hold a University Teaching Qualification (UTQ), the panel underlines the plans of the programme to further increase the proportion of lecturers who have obtained the UTQ, including the PhD candidates involved in teaching activities. The panel is positive about the university's policy regarding the professionalization of teaching staff and how new faculty lecturers are supported, e.g., through 'Start to teach', a mentoring programme for new lecturers.

The panel commends the teaching staff for their positive and supportive attitude towards students. In the interviews, students and alumni were generally very positive about the lecturers. They indicated that, overall, lecturers are very helpful, accessible, empathetic, and quick to respond. Also, students feel heard: their feedback is taken seriously and followed up on. The panel heard several examples of feedback from students that had led to improvements in the courses and programme.

Facilities
During the site visit, the panel was given a tour of some of the lab facilities the programme offers, including the Human-Centered Computing lab, the Virtual Reality and Motion Capture lab, Lily's Prototyping lab, and a lab for eye-tracking. The panel is impressed by these facilities and thinks the labs offer students ample opportunity to carry out interesting projects and learn relevant skills.

Considerations
According to the panel, the curriculum is well structured, demonstrating solid constructive alignment. The three study paths reflect the programme's vision on information science and are nicely connected to subsequent master's programmes/tracks. Students have a lot of options to tailor the curriculum to their own interests. Although academic and professional skills are well embedded in the curriculum, the panel does advise the programme to take the students' suggestion about integrating a portfolio in the curriculum, especially for the Human Technology Interaction study path, into consideration.

The didactic approach is based on the university's educational model and includes a focus on interaction and community building in small scale settings and the explicit choice for on-campus activities. The panel sees valuable elements of a didactic vision, but thinks the programme needs to develop a stronger overall didactic vision to guarantee sufficient and consistent quality of teaching across the courses.
During the programme, (student-)tutors are the first point of contact for students with questions and concerns about their study. Tutors can refer to the study advisor and other counsellors when necessary. The

panel concludes that student guidance is well set up. Also, the study progress of students is in order. Although there is study delay, this is not out of the ordinary and does not seem to be caused by issues regarding the feasibility of the programme.

According to the panel, the teaching staff is sufficiently qualified to teach the courses and supervise the projects. The panel is pleased to see the involvement of more full professors, at least in project supervision, since the previous accreditation. It commends the teaching staff for their positive and supportive attitude towards students, who feel heard and taken seriously. Most lecturers hold a University Teaching Qualification (UTQ). The panel underlines the plans to increase this number further.

The panel is impressed by the lab facilities the programme offers, which create ample opportunity for students to carry out interesting projects and learn relevant skills.

Conclusion

The panel concludes that the programme meets standard 2.

Standard 3. Student assessment

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

Findings

Assessment plan

Assessment in the programme is based on the faculty's assessment policy and elaborated in the assessment plan. The assessment plan contains an assessment matrix demonstrating which PLOs are assessed in each course. Also, it includes a course catalogue that describes for each course the content, the ILOs and how the ILOs relate to the PLOs and to the course's assessments. The panel appreciates the thorough elaboration and substantiation of assessment in the assessment plan. The panel thinks that the test methods used are appropriate. It is positive about the variety of test methods applied in the programme, including exams, assignments, (research) projects, (design) reports, prototypes, debates and presentations. Also, each course is assessed through multiple tests, and mostly through both group and individual assessments.

The panel notices that the programme includes a lot of group assignments/projects, which, according to the panel, is positive in light of practising skills like cooperation. The panel is pleased to see that group assessment is never the only test method in a course; it always constitutes only a part of the total grade as it is always combined with individual assessments. However, to further minimize the potential negative effects of group assessment (like free rider behaviour), the panel suggests integrating peer assessment in these assignments, allowing students to (anonymously) express their perception of each student's individual contribution to the group project. This peer assessment will allow lecturers to differentiate between grades awarded to individual students in group assessments when appropriate.

From the documentation and the interviews during the site visit the panel learnt that, following from the assessment policy, there is an intermediate assessment in each course, usually halfway through the course. This midterm assessment can be formative in nature, or the grade may count as a (small) percentage of the final overall grade for the course. The panel appreciates how formative assessment is systematically embedded in the programme. The interviews show that students are also positive about the intermediate

assessment as it provides them with formative feedback and helps them to study throughout the course and not just at the end.

The faculty-wide regulations described in the 'Onderwijs- en examenregeling Bacheloropleidingen' include a minimal grade clause: students only have the right to a resit if their grade is a 4 at minimum. The goal of this regulation is to ensure that students are required to make an effort. In the interviews with students, lecturers and the Board of Examiners, there was some confusion over the exact cases in which this regulation applies. For example, students mentioned that the minimal grade clause had also been applied to the intermediate assessment, while the Board of Examiners indicated it should only be applied to the overall final grade. The panel advises the programme to investigate (together with students) the effect of the minimal grade clause in the programme to reflect on whether it serves the goals it is intended for. Also, the programme, specifically the Board of Examiners, is recommended to investigate ensuring the correct execution of the policy.

Role of student-assistants in assessment
As mentioned earlier, several courses in the programme make use of student-assistants to support the lecturer(s) in supervising students in projects and workshops. It is clear from the documentation and the interviews that these students-assistants also have a role in the grading process of projects. The grades for projects are one of the components that make up the overall grade of a course. While the lecturer is always responsible for awarding grades, the student-assistants give feedback to the students regarding the projects and may advise the lecturer about the grade, based on their observations during the project supervision. The programme management mentioned in the interview that student-assistants are trained and work on the basis of clear rubrics and instructions by the lecturer. However, the interviews made clear that not all student-assistants attend the training. In the student chapter, students mentioned that the quality of student-assistants and their feedback varies considerably and that grading criteria are not always used consistently. This is echoed in the interview with students, some of whom also work as a student-assistant themselves, who explained that there are differences between lecturers regarding the supervision and instruction of student-assistants. Some are more proactive in this than others. Students recognize that the quality of the supervision and feedback during workshops/projects may depend on the individual student-assistant. The Board of Examiners indicated in the interview that it agreed that in some cases lecturers had relied too much on the assessments of student-assistants. The panel concludes that the programme needs to pay more attention to the contribution of student-assistants to the grading process, to ensure consistency. It advises the programme to see to it that all student-assistants are properly trained and instructed by the lecturer and that they are given adequate rubrics to work with. Also, lecturers need to be proactive in supervising the student-assistants and in checking the feedback and advice given by the student-assistants during assessment.

Thesis assessment
As part of the preparation for the site visit, the panel reviewed 15 theses from the programme, including the filled-in assessment forms. Theses are always assessed by the supervisor and a second assessor. Both fill out an assessment form. The component 'process', which counts for 30% of the final grade, is assessed by the supervisor only. Both assessors attend and assess the presentation, which makes up 10% of the final grade. Following the presentation, the assessors discuss their individual assessments and come to an agreement about the overall final grade. The panel is very positive about the extensive assessment forms that contain detailed rubrics. There are clear instructions on how to evaluate theses for both the first and second supervisor. Also, the forms examined by the panel were elaborately filled in and provided rich feedback to the students.

Board of Examiners

There is one joint Board of Examiners for all bachelor's programmes in the faculty and a chamber for each (cluster) of the programmes. The chamber chairs have a seat on the joint Board. The chamber responsible for the Information Science bachelor's programme comprises a chair, a secretary and two members. The chamber is responsible for monitoring and safeguarding the quality of assessment and the level of theses in the programme. In order to do this, the chamber annually reviews a sample of courses and theses to check if the assessments and grading meet the criteria set in the assessment policy. Also, the students' evaluations of the tests are considered. All findings are discussed with the involved lecturer and laid down in a report. Additionally, the chamber checks a sample of theses each year. Based on the documentation and the interviews, the panel is very positive about the Board of Examiners. The panel considers the Board of Examiners to be in control, and aware of issues in the programme. Also, the Board demonstrates a clear vision on the quality of assessment. Moreover, the panel appreciates the procedure by which the chamber reviews the quality of assessment in courses and safeguards the exit level as demonstrated in the theses.

Considerations

Assessment in the programme is based on the faculty's sound assessment policy and thoroughly elaborated in the programme's assessment plan. A variety of test methods is applied in the programme and each course is assessed through multiple tests (both group and individual assessments). Formative assessment is systematically embedded in the programme, a.o. by means of an intermediate assessment in each course. Theses are always assessed by two supervisors. The panel is very positive about the detailed assessment forms for the thesis and the rich feedback provided to students. The programme includes a lot of group work (though never as the sole test method in a course), which allows student to practice skills like cooperation. The panel suggests making use of peer assessment to gain insight into each individual student's contribution to the group result, in order to minimize the potential negative aspects of group assessment. To ensure that students are required to make an effort, the faculty applies a minimal grade clause. Although the panel agrees with this clause in principle, it does advise the programme to evaluate the effectiveness of the clause and to see to the correct implementation of the policy.

The programme employs student-assistants for supervision during some projects and workshops. These student-assistants also provide the students with feedback and have advisory role in the grading process for some projects within courses, while the lecturer always has final responsibility for the assessment. The panel concludes that the quality of the student-assistants varies and that grading criteria may not always be applied consistently. The programme is advised to ensure that all student-assistants are properly trained and proactively supervised by the responsible lecturers. The panel considers the Board of Examiners to be competent and in control. The Board succeeds at safeguarding the quality of assessment and the exit level, a.o. by means of annual reviews of samples of courses and theses.

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

Theses

The thesis, which is the end result of the research project in the third year, is regarded as the final student project, demonstrating the achieved level of students. The panel reviewed a sample of 15 theses from the programme. According to the panel, the level of all theses was appropriate for an academic bachelor's programme. The panel is very pleased to see that several theses led to publications in scientific venues. From the interviews, the panel learned that there is currently no clear policy on authorship in the event of publication. The panel suggests that the programme develop a policy that clearly prescribes how to determine the positions of first and second author for both the student and the supervisor(s).

The panel appreciates the diversity of the topics covered in the theses. However, the panel sometimes felt that although the theses were relevant to the programme's learning outcomes in general, the link to the domain of information science was not always very strong. According to the panel, some theses were primarily focused on related disciplines such as organization and/or social science without a clear and explicit connection to the field of information technology. The panel discussed this issue with the programme in several interviews. In these interviews, various opinions about the definition and scope of information science were exchanged. The panel concludes that these are not always clear and consistently interpreted by the lecturers involved. It advises the programme to reflect on the scope of topics appropriate for the thesis and to ensure that there is always an information technology component in the thesis. The scope of appropriate topics should reflect the programme's vision on information science.

Alumni

As mentioned earlier, about a quarter of the graduates enter the labour market immediately after completing the bachelor's programme. According to the documentation, about two-thirds of the graduates continue to follow a master's programme. The interview with alumni shows that graduates are generally content about the programme. They were positive about how the programme prepared them for a master's programme or the job market. Based on the interviews and the figures included in the documentation, the panel concludes that alumni prove to be successful after graduation, either in a consequent master's programme or in the professional field.

Considerations

Based on the sample of 15 theses reviewed, the panel concludes that the level demonstrated in the theses is appropriate for an academic bachelor's programme. The panel appreciates the diversity of topics covered in the theses but thinks that the link to information technology can be strengthened and be made more explicit in some cases. It advises the programme to reflect on the scope of topics appropriate for the thesis, considering the programme's vision on information science, and to ensure that the theses always contain an information technology component.

The figures included in the documentation, and the interview with alumni show that graduates are successful and well-prepared for either a consequent master's programme or a job in the professional field.

Conclusion

The panel concludes that the programme meets standard 4.

General conclusion

The panel's assessment of the bachelor's programme Information Science is positive.

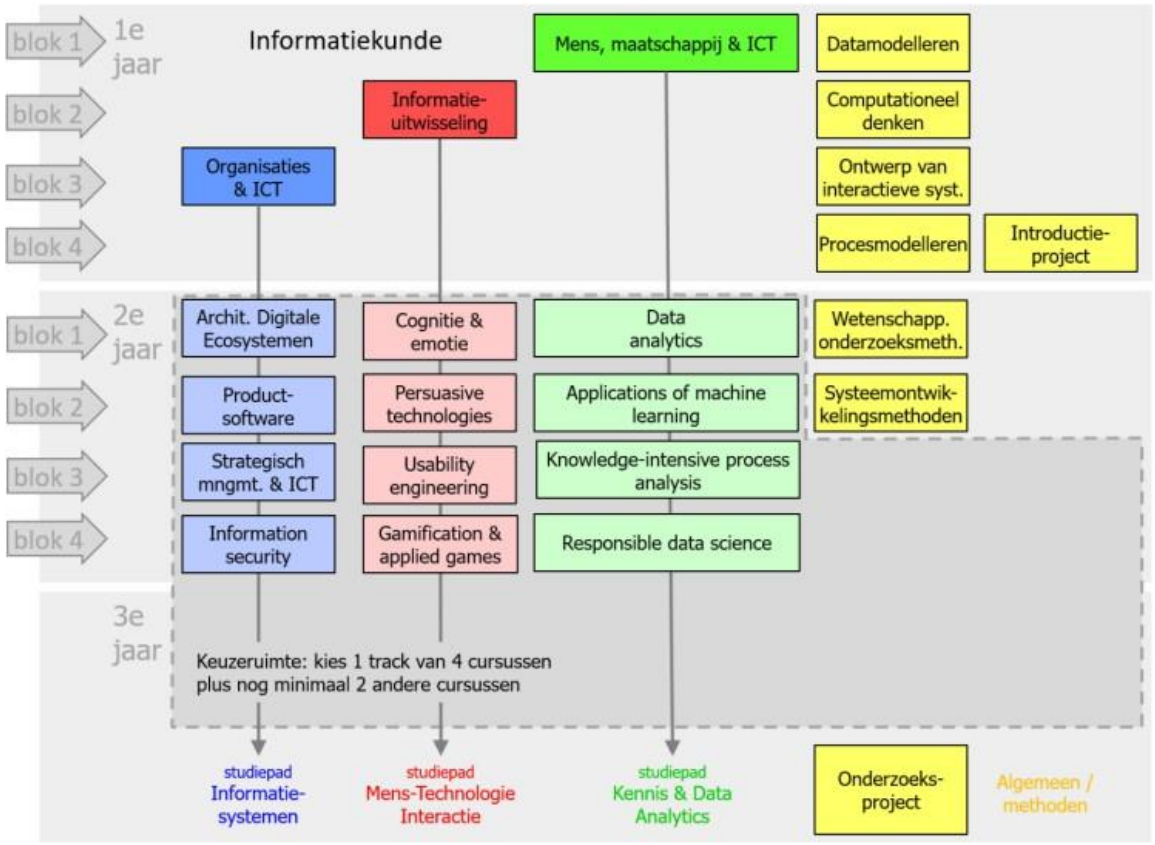
Development points

1. Implement the plans to install a professional advisory board for systematic consultancy with the professional field, to further align the vision and PLOs with the expectations and needs of the professional field.
2. Take the students' suggestion about integrating a portfolio into the curriculum, especially in the Human Technology Interaction study path, into consideration.
3. Develop a stronger overall didactic vision to guarantee sufficient and consistent quality of teaching across the courses.
4. In the case of group work, consider making use of peer assessment to gain insight into each individual student's contribution to the group result, in order to minimize the potential negative aspects of group assessment.
5. Evaluate the effectiveness of the minimal grade clause and see to the correct implementation of the policy.
6. Ensure that all student-assistants are properly trained and proactively supervised by the responsible lecturers.
7. Reflect on the scope of topics appropriate for the thesis, in light of the programme's vision on information science, and ensure that the theses always contain an information technology component.

Appendix 1. Intended learning outcomes

Kennis en inzicht
1. heeft kennis van en inzicht in de belangrijkste theorieën op het gebied van ICT, informatie, mens, maatschappij en organisatie in hun onderlinge samenhang; 2. heeft inzicht in methoden en technieken op het gebied van analyseren, modelleren, ontwerpen, ontwikkelen en evalueren van informatiesystemen, interactieve applicaties en datacollecties; 3. heeft inzicht in methoden en technieken voor de analyse van de menselijke interactie met en de organisationele context van informatiesystemen en applicaties; 4. heeft inzicht in de wetenschappelijke benaderingen van de disciplines die ten grondslag liggen aan de informatiekunde.
Toepassen van kennis en inzicht
5. weet maatschappelijke vraagstukken praktisch te vertalen naar beargumenteerde ICT-toepassingen; 6. is in staat om een brug te slaan tussen ICT en haar toepassing in werkprocessen, in complexe organisaties en in de maatschappij; 7. is hierbij in staat de methoden en technieken van de informatiekunde op passende wijze in te zetten.
Oordeelsvorming
8. is in staat mogelijkheden en beperkingen van ICT-oplossingen te beoordelen voor het vraagstuk waarop deze toegepast worden; 9. is in staat de persoonlijke, organisationele en maatschappelijke consequenties van het gebruik van ICT-toepassingen te beoordelen; 10. is in staat het eigen professioneel handelen te beoordelen in het kader van maatschappelijke, wetenschappelijke en ethische aspecten.
Communicatie
11. is in staat om informatie, ideeën en oplossingen uit te wisselen op het gebied van informatiekunde met een publiek van specialisten en niet-specialisten, gebruik makende van daartoe geëigende media; 12. is in staat effectief te communiceren met opdrachtgevers, gebruikers en andere belanghebbenden in ICT-gerelateerde projecten.
Leervaardigheden
13. is in staat zelfstandig relevante kennis en inzicht te verwerven in technologische ontwikkelingen en hun maatschappelijke toepassing; 14. is in staat zich zelfstandig nieuwe kennis, inzicht en vaardigheden te verwerven op het gebied van de informatiekunde.

Appendix 2. Programme curriculum



Appendix 3. Programme of the site visit

Schedule visitation Information Sciences – Utrecht University

Day 1: Thursday, 5 October

11.00	11.15	**Arrival and welcome**
11.15	11.45	Private panel meeting
11.45	12.30	**Interview programme management**
12.30	13.15	Lunch
13.15	14.15	**Interview students BSc + MSc**
14.15	15.15	**Lab tour**
15.15	15.30	Break
15.30	16.30	**Interview lecturers BSc + MSc**
16.30	16.45	Break
16.45	17.30	**Interview alumni**
17.30	18.00	Private panel meeting

Day 2: Friday, 6 October

09.00	09.30	**Interview Examination Board**
09.30	09.45	Break
09.45	11.45	**Thematic sessions** • Mental wellbeing of the students • Research orientation and the tension with respect to professionalization • Staff workload and increasing student applications • Visibility and definition of the information science field
11.45	12.45	Private panel meeting (incl. lunch)
12.45	13.15	**Final interview management and faculty**
13.15	14.45	Private panel meeting: preliminary conclusions, preparation of oral feedback
14.45	15.15	**Oral feedback on preliminary conclusions**

Appendix 4. Materials

Prior to the site visit, the panel studied 15 theses from the Bachelor's programme. Information on the theses is available from Academion upon request. The panel also studied other materials, which included:

- Leeswijzer, incl SWOT
- Studentenhoofdstuk
- Visie opleiding Informatiekunde
- UU Richtlijn Onderwijs
- IS2020 Referentiekader
- OER 2022-2023
- Overzicht instroom 2005-2022
- Bèta opleidingsvergelijker informatiekunde-informatica-kunstmatige intelligentie
- Informatiekunde brochure
- Informatiekunde Matching
- Opzet Matching Blackboard
- Matchingtoets
- From vision to tracks
- Toetsplan Informatiekunde 2022-2023
- Verslaglegging kwaliteitsmiddelen Informatica 2019-2022
- Handboek en RvO OC-UGD 22-23
- Jaarverslag OC-UGS 21-22
- Kwaliteitszorgplan Faculteit Bètawetenschappen
- Voorlichtingsbijeenkomst Onderzoeksproject
- Supervision of OZP Information Sciences
- Labs
- Manifest Studentenwelzijn
- Studentbegeleider – studieadviseur
- INCA INKU stutoraat draaiboek
- Stutorhandleiding
- Programma Stutortraining
- Tutorhandleiding
- Skillslab & Career Services
- Voorzieningen
- Governance Structure
- Handreiking verantwoordelijkheden kwaliteit opleidingen
- Jaarverslag UGS 2021-2022
- UU University Regulation UTQ STQ for Teaching Qualifications
- Supplementary UTQ and STQ procedures at the Faculty of Science
- Guidelines teaching tasks for 5-year PhDs
- Overview lecturers
- Staff numbers
- Presentaties docentoverleggen
- Toetsbeleid faculteit Bètawetenschappen
- Jaarverslag Examencommissie
- Workflow Kamer Informatica en Informatiekunde
- Onderzoektoetsen 2021

- Rubrics Onderzoeksproject
- Evaluatieformulier externe begeleider OZP
- Evaluatieformulier student OZP
- Report Intervision Information Science
- Toetsdossiers van 5 vakken
- Rendementscijfers
- Uitstroomcijfers
- Overzicht onderzoeksprojecten
- Diverse publicaties vanuit onderzoeksprojecten
- Information on courses via access to the Blackboard environment