



NVAO • THE NETHERLANDS

INITIAL ACCREDITATION

WO-BACHELOR

BSC COMPUTER SCIENCE

Universiteit Maastricht

SUMMARY REPORT

24 JUNI 2022

1 Peer review

The quality of a new programme is assessed by means of peer review. A panel of independent peers including a student reviews the plans during a site visit to the institution. A discussion amongst peer experts forms the basis for the panel's final judgement and the advisory report. The focus is on the curriculum, the teaching and learning environment, and student assessment.

The Accreditation Organisation of the Netherlands and Flanders (NVAO) takes a formal decision on the quality of the new programme based on the outcome of the peer review. This decision can be positive, conditionally positive or negative. Following a positive NVAO decision with or without conditions the institution can proceed to offer the new programme. Upon completion of the programme graduates are entitled to receive a legally accredited degree.

This summary report contains the main outcomes of the peer review. A full report with more details including the panel's findings and analysis is also available. NVAO bases an accreditation decision on the full report.

Both the full and summary reports of peer reviews are published on NVAO's website www.nvao.net. There you can also find more information on NVAO and peer reviews of new programmes.

Because of COVID-19 temporary measures apply for this peer review.

2 Panel

Peer experts

- Prof. dr. ir. Inald Lagendijk (*chair*), is Distinguished Professor in Computing-based Society at Delft University of Technology;
- Prof. dr. Lejla Batina, is full professor Digital Security and Director of Education, Institute for Computing and Information Sciences at the Radboud University;
- Dr. John Schavemaker, Technical Fellow at PTC Vuforia R&D and previous Computer Vision Field Lead;
- Ruward Karper (*student-panel member*), master student of the Joint Master Data Science & Entrepreneurship, at Eindhoven University of Technology and Tilburg University.

Assisting staff

Dr. Meg van Bogaert (secretary)

Karin Barendregt (NVAO policy advisor and process coordinator)

Site visit

17 May 2022 (online procedure)

3 Outcome

The NVAO approved panel reaches a positive conclusion regarding the quality of bachelor's programme in Computer Science offered by Maastricht University. The full-time curriculum of 180 EC will be offered in Maastricht.

The stakeholders involved in setting up this well-thought-out Computer Science bachelor's programme are enthusiastic, committed and knowledgeable. This applies to the management, lecturers, examination board and the professional field. The extensive experience within the faculty and department in setting up and running educational programmes ensures that Computer Science can, in some respects, 'jump on a moving train'. This is a great advantage, although there is the potential risk of thinking too easily about the introduction of a new programme.

The initiation of this programme is based on the need for computer scientists in the field, which subsequently led to the profile that was drawn up: a computer scientist who has knowledge, expertise and skills in computer science that are complementary to those of the graduates of the already existing Data Science Artificial Intelligence (DS-AI) bachelor's programme. The panel finds this a good approach to the profile, although the distinction between the two programmes in documentation and communication should be emphasised more strongly. The Intended Learning Outcomes (ILOs) are of the right level and orientation but may more explicitly emphasise the computer science side of the programme (including e.g., responsible computer science, security and systems aspect). The involvement of the Education Advisory Board (EAB) is impressive, resulting in a strong relationship with the (future) professional field. The EAB was asked for input several times during the process, after which suggestions were implemented.

The teaching and learning environment has many positive aspects: a good team of lecturers, a clear didactic concept that integrates theory and application, the international classroom and student guidance. The curriculum is solid and contains all the aspects that belong in a Computer Science bachelor's programme. The structure of the curriculum is clear, although the panel recommends making several aspects more explicitly visible, for example by means of learning lines. As with the profile and the ILOs, the panel emphasises that the computer science specific elements of the curriculum should be more distinctive compared to the DS-AI programme.

The programme has a good system of assessment, making use of the considerable expertise within the department and faculty. The procedures surrounding assessment and the associated quality assurance are in order. Variation in assessment methods is strived for, whereby the initiative lies with the examiner and the check is at the programme level. When expanding the assessment committee, the panel advises to increase the representation of computer science experts.

In conclusion, the panel's assessment of the Computer Science bachelor's programme is positive. The panel provides a number of recommendations to further develop and finetune the already good plans.

4 Commendations

The programme is commended for the following features of good practice.

1. The programme clearly meets a need for computer scientists in the professional field. The Intended Learning Outcomes (ILOs) – though general – are clear and relevant for a bachelor's degree in Computer Science. The ILOs emphasise the importance of the fundamentals (mathematics and science), pay attention to applications and societal relevance and a combination of hard skills and soft skills that are essential for future software engineers.
2. The panel is impressed by the strong involvement of the professional field by way of the Education Advisory Board (EAB). Regular participation of the EAB in the development of the programme ensures a broadly supported curriculum with room for both academia and application.

3. The Computer Science bachelor's programme is a diverse and international programme that includes knowledge and skills. The international classroom and the Project Centred Learning (PCL) approach both support and strengthen this approach.
4. The system of assessment, including procedures, assessment plan and quality assurance of assessment, is well organised. A variety of assessment methods is in place, including a balance between individual and group assessment.
5. The bachelor's thesis is to be written in the format of a scientific article and scheduled with a public presentation. The thesis is assessed by means of a clear and comprehensive rubric.
6. The panel commends the commitment and enthusiasm of all stakeholders involved in the initiation, development, and execution of this bachelor's programme.

5 Recommendations

For further improvement to the programme, the panel recommends a number of follow-up actions.

1. Profile and ILOs – Sharpen the profile to emphasise the distinction from the department's other bachelor's programme (DS-AI). Include this profile in the communication to internal and external stakeholders. In line with this, the panel suggests to explicitly include computer-science aspects in the ILOs.
2. Curriculum - In terms of content, the curriculum contains the right themes and topics. A number of aspects, specifically relevant to computer science, could be made more explicitly visible in the curriculum, e.g., in learning lines. The panel thinks, for example, of system aspects, security, and responsible computer science.
3. Quality assurance – Although stakeholders involved in the development of the programme are experienced and the department and faculty have good structures and procedures. The programme should be aware of issues that may arise, for example the need for practice-oriented examination methods for software engineering and security courses, software plagiarism, and staying in close contact with students and staff to organise the possibility of quick interventions.
4. Computer Science expertise – Ensure that sufficient - and appropriate - computer science expertise is in place. This applies to lecturers, which the programme management is already actively working on, but also to the expertise in, for example, the assessment committee.

6 What comes next?

NVAO grants initial accreditation to a new programme on the basis of a panel's full report. The decision is valid for a maximum of six years. For conditional accreditation other regulations apply. Upon accreditation the new programme will follow the NVAO review procedures for existing programmes. NVAO publishes the accreditation decision together with the full report and this summary report. ¹

Each institution has a system of quality assurance in place ensuring continuous follow-up actions and periodic peer-review activities. Peer reviews help the institution to improve the quality of its programmes. The progress made since the last review is therefore taken into consideration when preparing for the next review. The follow-up activities are also part of the following peer-review report. For more information, visit the institution's website. ²

¹ <https://www.nvao.net/nl/besluiten>

² <https://www.maastrichtuniversity.nl>

7 Summary in Dutch

Het panel oordeelt positief over de kwaliteit van de bacheloropleiding Computer Science van de Universiteit Maastricht. Dit is de uitkomst van de kwaliteitstoets uitgevoerd door een panel van peers op verzoek van de Nederlands-Vlaamse Accreditatieorganisatie (NVAO). Voor deze beoordeling heeft het panel gesprekken gevoerd met de opleiding op 17 mei 2022.

Aan de basis van deze opleiding Informatica ligt een grote behoefte vanuit het werkveld voor informatici. Het bijbehorende profiel is die van een afgestudeerde met kennis, expertise en vaardigheden in de informatica welke aanvullend zijn op die van de afgestudeerden van de andere bacheloropleiding van de afdeling. Het panel waardeert deze benadering, hoewel het onderscheid tussen de twee opleidingen sterker kan worden benadrukt, zowel in de documenten als in de communicatie. Het niveau en de oriëntatie van de beoogde leerresultaten zijn passend, al mag de formulering van een aantal informatica-aspecten explicieter zichtbaar worden gemaakt. De betrokkenheid van de onderwijsadviesraad (Education Advisory Board, EAB) is indrukwekkend en leidt tot een goede relatie tussen opleiding, academische wereld en werkveld. De EAB is gedurende de ontwikkeling van de opleiding regelmatig betrokken in het proces.

De onderwijsleeromgeving kent vele mooie onderdelen; een goed en enthousiast docententeam, een helder onderwijsconcept dat theorie en toepassing integreert, de 'international classroom' en de studiebegeleiding. Het curriculum is solide en bevat inhoudelijk relevante onderwerpen. De opbouw van het curriculum is helder, al mogen een aantal onderdelen beter zichtbaar zijn (bijvoorbeeld aan de hand van leerlijnen). Het panel vindt het belangrijk dat het curriculum zichtbaar voldoende onderscheidend is van andere opleidingen in de afdeling.

Het systeem van toetsing is goed, waarbij de opleiding gebruik maakt van de aanwezige expertise op de afdeling en faculteit. Procedures rondom (de kwaliteitszorg van) toetsing zijn op orde. Er is aandacht voor variatie in toetsvormen waarbij de examinerator de toetsvorm bepaalt en op opleidingsniveau een check plaatsvindt. Bij het uitbreiden van de toetscommissie benadrukt het panel het belang van voldoende kennis van informatica.

Concluderend, het panel heeft vertrouwen in het team van enthousiaste, betrokken en kundige opleidingsontwikkelaars en de grote ervaring binnen de faculteit met het opzetten van nieuwe opleidingen. De nieuwe opleiding kan aanhaken bij de vele bestaande structuren en procedures. Dit voordeel kan in potentie ook een valkuil zijn als er te weinig aandacht is voor de issues en bijzonderheden die bij specifiek deze opleiding kunnen voorkomen.

Meer informatie over de NVAO-werkwijze en de toetsing van nieuwe opleidingen is te vinden op www.nvaio.net. Voor informatie over de Universiteit Maastricht verwijzen we naar de website van de instelling.³

Als gevolg van de beperkende omstandigheden door COVID-19 geldt voor deze kwaliteitstoets een tijdelijke procedure.

³ <https://www.maastrichtuniversity.nl/>

