INITIAL ACCREDITATION

HBO-MASTER

APPLIED DATA SCIENCE

Hogeschool van Arnhem en Nijmegen

SUMMARY REPORT
18 NOVEMBER 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.

2   Panel

Peer experts
- dr. ir. Marlies van Steenbergen (*chair*), Professor Digital Ethics at HU University of Applied Sciences Utrecht;
- dr. Celia van Gelder, Programme Manager Learning at Dutch Techcentre for Life Sciences (DTL);
- Tristan Fransen, Head of department PXL-Digital at PXL University of Applied Sciences and Arts;
- ir. Wietske Rem (*student*), (graduated in 2021) MSc Mechanical Engineering in Design & Construction at University of Twente, currently working as Junior Mechanical Engineer.

Assisting staff
Anne-Lise Kamphuis (secretary)
Frank Wamelink (NVAO policy advisor and process coordinator)

Site visit
20 October 2022, HAN University of Applied Science

3   Outcome

The NVAO approved panel reaches a positive conclusion regarding the quality of Applied Data Science offered by HAN University of Applied Science (HAN). The professional Master's programme consists of 60 EC and is offered as a two-year part-time programme at the HAN-campus in Arnhem. The programme is primarily targeted at professionals with several years of work experience. The programme is taught in English.

The programme aims to train professionals to develop and deploy effective data science solutions for businesses and organisations. The panel is pleased with the professional profile of the programme and sees that it aligns well with the discipline of (applied) data science and with the needs of the professional field. Representatives of the professional field clearly confirm the need for professionals in applied data science who can operate as a bridge between data scientists/engineers and other stakeholders in organisations.
The final qualifications (intended learning outcomes) are well defined and appropriate for a professional Master's programme. The final qualifications are divided into six areas: problem understanding, data understanding, data analytics, deployment, professional skills and research. The panel appreciates the way the programme has integrated the two 'worlds' of business and research in data analytics solutions, which underpins the applied nature of the programme.

The curriculum, consisting of four successive units of study, is thoroughly thought-out, covering all final qualifications. The first three units of study consists of lectures, workshops and a real-life (research) project in applied data science that students work on in groups. Typically, students spend one day a week at the HAN location, while the rest of the time is spent on self-study. The fourth unit of study is the Graduation project, in which students carry out a data science project individually.

The learning environment is based on self-directed learning, focusing on the student's own learning process, which fits well with the target group. Lecturers act as coaches and expert partners to support the individual student's developments. Multiple feedback moments are scheduled in each unit of study to facilitate this. Also, extra time is allocated for lecturers to be able to provide individual coaching.

The admission requirements and procedures are appropriate. Also, the panel is pleased with the competence, enthusiasm and strong team spirit demonstrated by the lecturer team. A number of lecturers work in the professional field as well.

The programme's assessment policy and vision are adequate and embedded in existing policy and structures within HAN. The assessment plan includes a fine variety of test methods. Also, the programme takes adequate measures to enhance the reliability of grading, like the four-eyes-principle, calibration sessions and using detailed assessment forms/rubrics. The Board of Examiners is professional and competent. There are good structures and procedures in place to assure the quality of assessment.

The panel concludes that the programme's profile and final qualifications are appropriate and in line with the needs and expectations of the discipline and professional field. The teaching-learning environment is well designed and tailored to the target group. Also, the lecturer team is competent and enthusiastic. The programme's assessment policy and plan are adequate and assessment quality is properly monitored and safeguarded by the Board of Examiners.

4   Commendations

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

1. Professional profile – The programme aims to educate professionals in applied data science who can operate as a bridge between data scientists/engineers and other stakeholders in organisations, which aligns well with the needs and expectations of the professional field.

2. Applied research – The programme has integrated the two 'worlds' of business and research in data analytics solutions. Both research skills and the business perspective are included and integrated in the data science life cycle. The systematic approach is well represented in the Schema Applied Data Science developed by the programme, which is the basis for all project work in the programme.

3. Curriculum – The curriculum is well thought-out, with each unit of study building on the previous one.

4. Research environment – The programme is embedded in a strong research environment within HAN.

5. Lecturer team – The lecturers are engaged and motivated and the proposed programme is clearly the result of a prolonged team effort. All required disciplinary expertise and didactical qualifications are covered in the lecturer team. Also, several lecturers are still working in the professional field and the team includes ample lecturers with a PhD, some of whom also work at an academic university.

6. Assessment – The assessment policy and vision are clear and well-embedded in existing policy and structures within HAN. The variety of test methods used is balanced, supporting the student's own learning process.

7. Board of Examiners – The Board of Examiners is professional and competent in monitoring and safeguarding the quality of assessment and the exit level of the programme. The new programme will be well embedded in existing structures and procedures to assure quality of assessment.

5   Recommendations

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

1. Professional profile – Intensify connections with the HBO-i network and align the professional profile with the HBO-i domain description of applied data science.

2. Overview curriculum design – Develop a more straightforward and coherent instrument to synchronise all aspects of the curriculum design (like the final qualifications, learning outcomes, BoKs, etc.) and maintain the overview.

3. Online learning environment – Make a clear choice for one existing platform (as opposed to working with multiple platforms) in advance and make use of existing online content where possible.

4. Workplace – Contact the student's employer, at the latest in the second year, to inform the employer about the programme and graduation project and to align expectations regarding facilitation and coaching in the workplace.

5. English proficiency lecturers – Incorporate English proficiency in the professionalisation policy and formalise the demonstration of English proficiency by having lecturers get a certificate.

6. Design of tests and rubrics – Pay sufficient and timely attention to the design of tests and rubrics and make this a team effort and responsibility.

7. Board of Examiners – Recruit a new (external) member who has experience and expertise regarding assessment on master level.

8. Advisory Board – Establish an Advisory Board as soon as possible. This committee will play a very important role in reflecting on the development of the curriculum and validating the intended learning outcomes.

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]

7   Summary in Dutch

Het panel oordeelt positief over de kwaliteit van Applied Data Science van Hogeschool van Arnhem en Nijmegen. 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 20 oktober 2022.

De opleiding beoogt studenten op te leiden tot professionals die effectieve data science oplossingen ontwikkelen en toepassen voor bedrijven en organisaties. Het panel is positief over het professionele profiel van de opleiding en ziet dat dit past bij het vakgebied van data science en bij de behoeften van het werkveld. Werkveldvertegenwoordigers bevestigen de behoefte aan professionals in toegepaste data science die een brugfunctie kunnen vervullen tussen datawetenschappers/engineers en andere stakeholders in de organisatie. De eindkwalificaties van de opleiding zijn goed omschreven en passen bij een hbo-master. Het panel waardeert hoe de opleiding de twee 'werelden' van business en onderzoek in data analytics heeft geïntegreerd. Dit onderstreept het toegepaste karakter van de opleiding.

Het curriculum, dat bestaat uit vier opvolgende onderwijseenheden, is goed doordacht. De eerste drie onderwijseenheden bestaan uit colleges, workshops en een real-life (onderzoeks)project op het gebied van toegepaste data science waar studenten in groepen aan werken. In de regel zijn studenten één dag per week op de HAN-locatie aanwezig en besteden ze de rest van de tijd aan zelfstudie. De vierde onderwijseenheid is het afstudeerproject, waarin de studenten individueel een data science project uitvoeren.

De leeromgeving is gebaseerd op zelfsturend leren, waarbij de focus ligt op het eigen leerproces van de student. Dit past goed bij de doelgroep van de opleiding. Docenten fungeren als coaches en expert-partners om de individuele ontwikkeling van de student te ondersteunen. In elke onderwijseenheid zijn meerdere feedbackmomenten ingebouwd om dit te faciliteren. Daarnaast is er extra tijd beschikbaar voor docenten, zodat ze de individuele coaching kunnen realiseren.

De toelatingscriteria en -procedure zijn op orde. Ook is het panel positief over de bekwaamheid, het enthousiasme en de sterke teamgeest die het docententeam laat zien. Verschillende docenten zijn ook werkzaam in het beroepenveld.

Het toetsbeleid en de toetsvisie van de opleiding zijn in orde en goed ingebed in de bestaande (beleids)structuur van de HAN. Het toetsplan bevat een mooie variatie aan toetsvormen. Ook neemt de opleiding adequate maatregelen om de betrouwbaarheid van beoordeling te vergroten, zoals het vier-ogenprincipe, kalibratiesessies en het gebruik van gedetailleerde beoordelingsformulieren/rubrics. De examencommissie is professioneel en bekwaam. Er zijn goede structuren en procedures aanwezig om de kwaliteit van toetsing te borgen.

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[1] https://www.nvao.net/nl/besluiten
[2] https://www.han.nl

Aanbevelingen
- Overzicht curriculumontwerp – Ontwikkel een eenduidig en coherent instrument om alle aspecten van het curriculumontwerp (zoals de eindkwalificaties, leerresultaten, BoKs, etc.) te synchroniseren en het overzicht te bewaren.
- Ontwikkeling van toetsen en rubrics – Besteed tijdig voldoende aandacht aan de ontwikkeling van toetsen en rubrics. Zorg dat dit een gezamenlijke taak en verantwoordelijkheid is van het docententeam.

Meer informatie over de NVAO-werkwijze en de toetsing van nieuwe opleidingen is te vinden op www.nvao.net. Voor informatie over de Hogeschool van Arnhem en Nijmegen verwijzen we naar de website van de instelling. [3]

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[3] https://www.han.nl

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