



NVAO • THE NETHERLANDS

## INITIAL ACCREDITATION

HBO-BACHELOR

B APPLIED DATA SCIENCE AND ARTIFICIAL  
INTELLIGENCE

Zuyd Hogeschool

SUMMARY REPORT

14 DECEMBER 2023

## 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](http://www.nvao.net). There you can also find more information on NVAO and peer reviews of new programmes.

## 2 Panel

### Peer experts

- Prof. Dr. Rob Koper, (*chair*), University professor at the Open University, focusing on educational innovation educational sciences, ICT in education and data science;
- Fiona Schrage MSc, Programme manager Bachelor Creative Media & Game Technology. Former Project leader (TNO) Associate degree Mechatronics in the Smart Industry and former teacher of Professional Skills Engineering (Ad and B);
- Drs. Frans van den Akker, Business developer at Industry BL Digital RHDHV. Programme manager Digitalisation TKI E&I, TKI Nieuw Gas and Liason officer NL AI Coalition. Member research & innovation working group NL AI coalition;
- Justin Saaman (*student*), studies HBO-ICT at HZ University of Applied Sciences.

### Assisting staff

Yvet Blom (secretary)

Frank Wamelink (NVAO policy advisor and process coordinator)

### Site visit

9 november 2023, Zuyd University of Applied Sciences in Maastricht

### 3 Outcome

The NVAO approved panel reaches a positive conclusion regarding the hbo-bachelor Applied Data Science & Artificial Intelligence offered by Zuyd University of Applied Sciences. The programme complies with all standards of the limited NVAO framework.

The ADS&AI programme has a workload of 240 ECTS and trains students to become professionals who are capable of solving complex, data-related societal challenges. Zuyd works closely together with the industry, universities (of applied sciences), and knowledge centres. These field representatives are excited about the programme. They have contributed to its development and will play an active role in its implementation.

Throughout the four-year programme, the focus lies on data science and Artificial Intelligence. Students develop skills in data engineering, human-computer interaction, mathematics, and programming, applying their acquired data science and AI skills in real-life situations. Practical assignments are carried out within learning communities, where students collaborate with and learn from each other. An active feedback culture is being developed, in which students receive regular feedback from teachers, fellow students, and company supervisor to improve their performance. Teachers are closely involved and possess relevant knowledge and experience to guide students adequately. Students work on practical assignments following the Design Science Method (R&D). Zuyd teaches this method due to its focus on developing innovative products and services.

Assessment consists of formative, and especially a significant amount of summative assessment. The panel recommends reducing the number of summative assessments and creating a better balance between summative and formative assessment. The examination committee possess a lot of knowledge about the structure of ADS&AI and the assessment methods, ensuring effective quality assurance of assessments.

In conclusion, Zuyd introduces a well-designed, practical study programme with the hbo bachelor's programme ADS&AI. Students have the opportunity to use data science and AI to solve problems of organisations and the larger society. The panel concludes that this new programme meets the required quality standards.

### 4 Commendations

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

1. Relevant programme – The Dutch region of (South) Limburg has a shortage of skilled technical personnel. Zuyd aims to attract Dutch and international students, with the hope that future professionals will settle permanently in (South) Limburg region after graduation.
2. Strong network – Zuyd has a strong network consisting of regional businesses, companies, educational partners and knowledge centres. This network contributes by providing Zuyd with input on the curriculum, and is dedicated to offering assignments, internships, and graduation projects for students.
3. Curriculum – Zuyd has aligned its curriculum with the ADS&AI national programme. The ADS&AI curriculum is well-structured in terms of complexity of the programme and the level of autonomy expected from students.
4. Learning communities – Students form learning communities where they work together on assignments. These learning communities have been designed to facilitate a strong learning environment, where students learn with and from each other.
5. Teaching team – Zuyd put together an excited and knowledgeable teaching team for the ADS&AI bachelor's programme. Teachers have expertise in both the ADS&AI field and didactics. They, along with the study career counsellor, will guide students intensively throughout the four years of the ADS&AI programme.

6. Assessment assurance system – Zuyd ensures the quality of assessments through a closely involved examination committee, the principle of multiple examiners (eight eyes) during final assessments, and regular calibration.

## 5 Recommendations

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

1. Intended learning outcomes – Clarify and communicate that the ADS&AI performance-indicators can be seen as intended learning outcomes.
2. Professional field consultations – Consistently and systematically organise gatherings with representatives of the professional field to keep the curriculum up-to-date. Especially with small to large businesses, including experts from major IT suppliers and companies using data science.
3. Mathematics and IT – Consider connecting math and IT related topics more to data science and AI. This will probably increase students' enthusiasm about the programme and successfully completing the programme.
4. Onboarding international students – Contribute to ensuring international students feel truly at home and help them become familiar with the language and culture of the South Limburg region.
5. Information – Clearly outline the expectations for both students as well as teachers throughout the programme. Emphasise the programme's strengths, including the close collaboration with regional companies, and the programme's focus on developing soft skills and ethics. These unique selling points should be better highlighted by Zuyd.
6. Assessments - Create a balance between formative and summative assessments. Zuyd currently administers a significant number of summative assessments. Introducing too many 'hurdles' in the programme puts significant pressure on students and increases workload of teachers.

## 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<sup>1</sup>.

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<sup>2</sup>.

## 7 Summary in Dutch

Het panel van de Nederlands-Vlaamse Accreditatieorganisatie (NVAO) beoordeelt de kwaliteit van Applied Data Science & Artificial Intelligence aan de Zuyd Hogeschool als positief. De opleiding voldoet aan de drie standaarden van het NVAO-kader voor beperkte toetsing.

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<sup>1</sup> <https://www.nvao.net/nl/besluiten>

<sup>2</sup> <https://www.zuyd.nl/en>

De hbo-bacheloropleiding ADS&AI heeft een studielast van 240 ECTS en leidt studenten op tot professionals die in staat zijn om complexe, datagerelateerde maatschappelijke uitdagingen op te lossen. Zuyd werkt nauw samen met het werkveld, hogescholen en universiteiten, en kenniscentra. De samenwerkingspartners zijn enthousiast over de opzet van het programma, hebben bijgedragen aan de ontwikkeling ervan en zullen een actieve rol spelen bij de uitvoering.

Gedurende het vierjarige programma staan de expertisegebieden data science en Artificial Intelligence centraal. Studenten ontwikkelen zich onder meer op het gebied van data engineering, human-computer interaction, wiskunde en programmeren en passen hun verworven data science en AI-vaardigheden toe in de praktijk. Praktijkopdrachten worden uitgevoerd binnen learning communities, waar studenten samenwerken om van elkaar te leren. Studenten ontvangen tijdens het werken aan opdrachten regelmatig feedback van docenten, medestudenten en praktijkbegeleiders om hun prestaties te verbeteren. Docenten zijn zeer betrokken en beschikken over de benodigde inhoudelijke en didactische kennis en ervaring om studenten adequaat te kunnen begeleiden. Studenten werken aan praktijkopdrachten volgens de Design Science Method (R&D). In de R&D-methodiek staat de ontwikkeling van innovatieve producten en diensten centraal.

Toetsing bestaat uit formatieve maar vooral ook veel summatieve toetsing. Het panel adviseert om het aantal summatieve toetsen te verminderen en een betere balans tussen summatieve en formatieve toetsing te creëren. De vertegenwoordigers van de examencommissie zijn goed op de hoogte van de opzet van de ADS&AI en de toetsmethoden. Dat geeft het panel vertrouwen in een goede kwaliteitswaarborging en beoordeling van toetsen.

Al met al introduceert de Hogeschool Zuyd met de hbo-bachelor ADS&AI een goed ontwikkeld, praktijkgericht programma. Studenten krijgen de mogelijkheid om data science en AI toe te passen om problemen van organisaties en maatschappelijke vraagstukken op te lossen. Het panel concludeert dat deze nieuwe opleiding voldoet aan het vereiste kwaliteitsniveau.

Meer informatie over de NVAO-werkwijze en de toetsing van nieuwe opleidingen is te vinden op [www.nvao.net](http://www.nvao.net). Voor informatie over de Zuyd Hogeschool verwijzen we naar de website van de instelling<sup>3</sup>.

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<sup>3</sup> <https://www.zuyd.nl/>

