



NVAO • THE NETHERLANDS

INITIAL ACCREDITATION

WO-MASTER

DATA SCIENCE AND BUSINESS ANALYTICS

University of Amsterdam

SUMMARY REPORT

21 JANUARY 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. Karen Aardal (*chair*), professor Optimization, Delft Institute of Applied Mathematics - DIAM (TUD);
- Dr. Lieven Quintens, Senior Lecturer; Marketing & Supply Chain Management, School of Business and Economics; Programme Leader BSc Business Engineering; Maastricht University;
- Prof. dr. ir. Jan Fransoo, Full Professor of Operations and Logistics Management; Tilburg University;
- Ruward Karper (*student member*), student Joint Master Data Science & Entrepreneurship, Tilburg University & Eindhoven University of Technology.

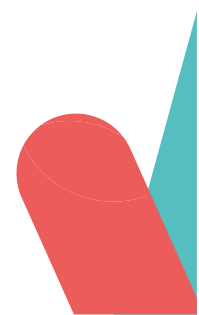
Assisting staff

Peter Hilderling (secretary)

Frank Wamelink (NVAO policy advisor and process coordinator)

Site visit (online)

7 december 2021



3 Outcome

The NVAO approved panel reaches a conditionally positive conclusion regarding the quality of Data Science and Business Analytics offered by the University of Amsterdam. The programme complies with two standards of the limited NVAO framework, and partially complies with one standard.

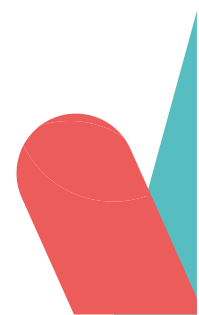
The new MSc Data Science & Business Analytics is a one-year interdisciplinary programme offered by the Faculty of Business and Economics. It aims to provide students with data science techniques to be applied in a business context, using insights from big data to design and improve the marketplaces from the future. The panel considers this to be an insightful profile that aligns well with the demands of the professional field. It recommends ensuring that this profile is shared throughout all levels of the programme. The aims of the programme have been summarized in an insightful collection of learning outcomes that reflect the academic orientation and master's level of the programme. The panel recommends elaborating the learning outcome describing the knowledge obtained by graduates with regard to the Analytics, Business and Computer Science (ABC) components of the programme, and rephrasing the learning outcome describing the level of research skills required.

The teaching-learning environment of the programme is generally of a high quality. The content of the courses is good, and offers a variety of teaching methods, appropriate student guidance and in particular a high-quality teaching staff. As the programme aims to be a follow-up MSc programme to the BSc Business Analytics, the curriculum should be improved with regard to the business analytics (operations research modelling and methods) content. Graduates from this BSc programme should be able to follow advanced level business analytics content. The recent hiring of three new full professors in OR/business analytics has already brought the programme in a good position to realize this. In the current design the programme does not provide sufficiently advanced courses in this subject for these BSc Business Analytics graduates, that builds on their BSc education. Alternatively, the programme could consider abandoning the position that the programme is a direct follow-up of this BSc, and communicate this clearly to prospective students. Furthermore, the programme should reconsider its admission requirements, in particular with regard to the level of business analytics (including OR and optimization) and data science/programming skills. The requirements should be adjusted to ensure that an advanced level in both business analytics and data science can be achieved for all students during the curriculum.

According to the panel, student assessment will be of sufficient quality. The programme has planned a variety of assessment methods and has developed an adequate assessment policy and assessment system. The faculty-wide Examinations Board is experienced, and the panel is confident that it will safeguard the quality of assessment in the programme.

The conditions to be met within a period of two years are the following:

1. The curriculum should be improved with regard to the business analytics content. The programme should include advanced level business analytics content to serve graduates from the BSc Business Analytics, or abandon the position that the programme is a direct follow-up of this BSc, and communicate this clearly to prospective students.
2. The programme should update its admission requirements, in particular with regard to the level of business analytics (including OR and optimization) and data science/programming skills. The requirements should be adjusted to ensure that an advanced level in both business analytics and data science can be achieved for all students during the curriculum.



In general, the panel is convinced that the quality of the programme for the first generation of students is ensured, in particular through the high-quality teaching staff, their explicit commitment to the programme, and their mutual alignment. It expects that the programme management, in consultation with the teaching staff, will be able to make the necessary adjustments to the programme.

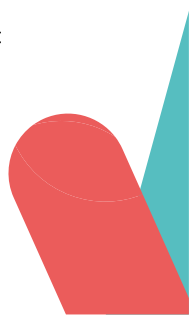
4 Commendations

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

1. The programme is very well aligned with the demands of the professional field, and can be expected to deliver graduates that are in high demand of the professional field
2. The introductory course at the start of the curriculum is a very good way to introduce students to the content and scope of the programme.
3. The interactive teaching methods are attractive to students, and are made possible by investments in recently hired teaching staff.
4. The teaching staff of the programme is excellent with regard to quality, expertise and enthusiasm for the programme, and are well-aware of the overall structure and profile of the programme
5. The new staff in OR/business analytics is a great investment, and allows for further strengthening of the programme in this direction.

5 Recommendations

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

1. The programme management and teaching staff should engage in further discussion to ensure that their vision on the programme becomes fully aligned; the excellent views of the teaching staff are a good starting point for these discussions.
 2. Improve the mapping of the courses to the learning outcomes by being more selective in which courses cover what learning outcome. Formulating learning lines through the courses and the associated assessment might be useful to achieve this. To this end, it may be useful to split ILO 1 into three more specific elements regarding analytics, business, and computer/data science, such that the overall matrix becomes more sparse.
 3. Expand the learning outcome describing the knowledge obtained by students, describing the particular knowledge that students should obtain in analytics, business, and computer science (ABC) respectively.
 4. Rephrase the learning outcome on research skills to better reflect the master level of the programme
 5. Drop the Quantum Computing elective from the curriculum until quantum computing has matured more. For a course such as quantum computing it will be essential to ensure that the students have sufficient background knowledge.
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6. Monitor the workload of thesis supervisors during the summer with regard to thesis deadlines in mid-summer.

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 onder voorwaarden over de kwaliteit van Data Science and Business Analytics van de Universiteit van Amsterdam 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 7 december 2021 .

De nieuwe masteropleiding leert studenten data science-technieken om toe te passen in het bedrijfsleven. Volgens het panel is het belangrijk dat dit gebeurt, omdat hier vanuit het bedrijfsleven veel vraag naar is. De opzet van de opleiding ziet er volgens het panel in grote lijnen goed uit. De vakken zijn van het juiste niveau en hebben veel interactieve elementen. Er is aandacht voor goede begeleiding van studenten, en de betrokken docenten zijn zeer bekwaam.

De opleiding zou nog wel preciezer moeten beschrijven welke vaardigheden studenten precies leren op het gebied van analyse, bedrijfskunde en informatica. Uit de omschrijving van de opleiding zouden aankomende studenten nu kunnen concluderen dat ze verdiepende kennis in business analytics aangeboden krijgen, terwijl de opleiding vooral data science onderwijst die toepasbaar is in bedrijfskundige context. Deze aanscherping is vooral belangrijk voor studenten die van de bacheloropleiding Business Analytics aan de UvA komen. De beoordeelde masteropleiding wil een directe opvolger voor deze bacheloropleiding zijn, maar heeft volgens het panel op dit moment nog niet genoeg inhoud op het gebied van business analytics om dit helemaal waar te maken. De opleiding zou daarom volgens het panel meer inhoud op dit terrein moeten aanbieden. De faculteit heeft kort geleden een aantal nieuwe hoogleraren op dit vakgebied aangenomen, en is daarmee volgens het panel goed voorbereid om deze belangrijke verbetering door te voeren. Een andere optie is dat de opleiding de huidige invulling in stand houdt, maar niet langer claimt een directe opvolger voor de bacheloropleiding Business Analytics te zijn. Verder zou de opleiding de toelatingseisen nog eens moeten bekijken. Volgens het panel zouden alle aankomende studenten voldoende ervaring met business analytics, data science en programmeren moeten hebben voordat ze aan de opleiding beginnen.

¹ <https://www.nvaio.net/nl/besluiten>

² <https://www.uva.nl/en>

