

Hogeschool Utrecht

M Data-driven Design

Limited Framework Assessment

Summary

In May 2023 the study programme Data-driven Design was visited by an audit panel from NQA. This one-year full-time master programme is offered by Hogeschool Utrecht. The programme is taught in English at the main location in Utrecht. The audit panel assesses the quality of the study programme as **positive**.

The study programme offers a unique opportunity to learn how to apply data science in designing products, systems and/or services. The educational approach is open and flexible. This is positive and appropriate for a programme in which design research, human-computer interaction, media studies, psychology and data science are combined. The teaching-learning community is international and diverse, which is valuable for the education of data-driven designers. That students are invited to explore and to go off the beaten path, is a strength of the programme. The programme is well connected to relevant research groups and takes the relation with the professional field seriously. The staff invests in obtaining valuable assignments for the students. This commitment is positive and leads to graduates who are able to find positions where they bring the data-driven perspective in design.

Intended Learning Outcomes

The programme profile is relevant for the professional domain of data-driven design. The focus is on combining data science, psychology and design processes. The competencies are in correspondence with the professional master level. The competences have been formulated at a general level and are elaborated in one or two learning objectives with corresponding job roles. The vision on (the) Research (method), e.g., in terms of acceptable design and research processes, could be elaborated more towards the data-driven design process itself and the ethical implications of data-driven design could be expressed better in the intended learning outcomes.

Teaching-Learning Environment

In this curriculum students are invited to experiment and are challenged to explore/learn design data-driven concepts and tools in a creative and playful manner. Students come from various international and educational backgrounds. This leads to an inspiring international active learning community where students learn with and from each other. Significant differences in prior education are handled well in the study programme. Autonomy and self-reliance are encouraged by a team of committed lecturers. The teaching-learning environment offers students the freedom to experiment. To ensure appropriate student growth, the development of some indication on how to realise a desired balance between data science and design is advised.

Assessing

Student assessment is well organised and executed. All summative assessments are individual. Mostly these assessments are based on written material. A better balance with other ways of substantiation, such as more diverse media, such as presentations or videos, could further improve the assessment quality. Students can prepare themselves well for assessments via clear rubrics and formative assessments of assignments. Also, the quality of assessing is adequately ensured, via applying the four-eye principle, calibration sessions and well-documented grading procedures.

Achieved Learning Outcomes

Based on the documentation and graduation projects examined, the findings are that the intended learning outcomes are achieved. The graduation projects demonstrate that diverse concepts and tools are designed by the students. The projects are of a good quality and give graduates a good starting position to work as designers with data engineering skills. Work field professionals see alumni operate as an intermediary bringing the data-driven perspective into the design. This role is considered to be valuable in the rapidly developing domain of data-driven design.

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Introduction

This is the assessment report of the study programme Data-driven Design offered by Hogeschool Utrecht. The assessment was conducted by an audit panel compiled by Netherlands Quality Agency (NQA) commissioned by Hogeschool Utrecht. Prior to the assessment process the audit panel has been approved by NVAO.

In this report NQA gives account of its findings, considerations and conclusions. The assessment was undertaken according to the *Assessment Framework for the Higher Education Accreditation System of the Netherlands* of NVAO (September 2018) and the *NQA Guideline 2022 for Limited Study Programme Audit*. First an agenda setting visit took place on 18 April 2023 and the audit visit took place on 11 May 2023.

The audit panel consisted of:

Name:	Role:	Main profession:
Prof. dr.ir. M.M. Bekker	Chair and domain expert	Professor Technologies for Playfulness and Motivation, faculty Industrial Design, Eindhoven University of Technology,
Dr. C.A. Detweiler	Domain expert	Senior lecturer User Experience Design, Communication & Multimedia Design and professorship (lector) Philosophy in Professional Practice, Haagse Hogeschool,
Dr. ing. M.M. Zoet	Domain expert	Owner EDM Competence Centre, professorship Future Proof Financial and associate professorship Data Driven Hospitality Zuyd Hogeschool,
M. Afkhami Khaleghdar MSc	Student member	Student Master program Digital Design, Hogeschool van Amsterdam.

Ir. A.B.C. (Alfons) Hoitink, NQA auditor, acted as secretary of the panel.

The study programme Data-driven Design is a unique programme in the Netherlands. Therefore, there is no assessment cluster with comparable programmes. The audit panel has been instructed by NQA about the NVAO assessment framework. The assessment criteria calibrated between Hobéon and NQA are part of this instruction.

Method of working of the panel and process

For the assessment, the study programme offered a critical reflection with appendices. For the assessment of the achieved learning outcomes, the panel studied fifteen graduate products of graduates who recently finished their studies. These fifteen graduate products have been selected from the list of alumni of the last two academic years. In this selection, the variety in grading, modes of study and learning paths have been taken into account.

Three weeks before the site visit the preliminary meeting was held, incorporating the document study at the location of the study programme. During this agenda-setting visit the panel met representatives of the programme. In the preliminary meeting, the panel members have been instructed about NQA's method of working and about the *NVAO-Assessment Framework*. In this meeting panel members also discussed their tentative findings. During both the agenda setting visit and the site visit, panel members shared their findings with each other continuously. During the site visit the panel spoke with various stakeholders of the study programme, such as students, alumni, lecturers, examiners and representatives of the work field, see appendix 1 for the programme of the site visit. At the end of the site visit the panel incorporated all the information it had obtained in an overall picture and in a tentative substantiated assessment. In the final oral feedback session, the panel chairperson communicated the conclusive assessment and the major findings of the panel. The development dialogue took place at a later moment. Staff members and students of the study programme have had the opportunity to approach the panel (via mail) in confidence to bring to the attention of the panel those matters they deem of importance to the assessment. No staff member or student made use of this opportunity.

After the site visit a draft report was formulated, which was presented to the panel. Based on the panel's input a second draft was made, which was presented to the study programme for a check on factual inaccuracies. The panel members have taken note of the reaction of the study programme and if necessary, adapted the report. Subsequently, the report was established as definitive. With all information provided (orally and in writing) the panel has been able to make a deliberate judgement.

The audit panel declares that the assessment of the study programme was carried out independently.

Utrecht, *September 26, 2023*

Panel chairman



Prof. dr.ir. M.M. Bekker

Panel secretary



Ir. A.B.C. Hoitink

Characteristic Features of the Study Programme

The master programme Data-driven Design (MDDD) is carried out by the Institute for Media of Hogeschool Utrecht. Besides this master programme, this institute offers the bachelor programme Journalism and the bachelor programme Communication & Multimedia Design. Also, a new master specialisation Data-driven Journalism is going to be offered from September 2025 onwards. These programmes together with MDDD are cooperating closely with several research groups of the Centre of Expertise Digital Business & Media of Hogeschool Utrecht, such as the research group Co-Design and Human Experience & Media Design (HEMD).

The aim of MDDD is to offer a master programme that is attractive for national and international students who want to create value for users using a data-driven design process. The study programme was offered for the first time in 2018 as a one-year full-time programme of 60 EC. The first group consisted of 23 students coming from the Netherlands and abroad. In the following years this number increased rapidly to around 65 students per year. Since the start in 2018, around 150 students have already graduated from this study programme. In 2021 MDDD also started to offer a flexible study route, to provide the option to study this programme as a part-time student. Just before this accreditation was conducted, it was decided to no longer offer this flexible study route due to the decision of the government to discontinue this pilot.

At the moment of the panel visit MDDD is in the process of redesigning the study programme. The aim is to offer students more opportunities for collaboration and co-creation with stakeholders and to cater better to the different backgrounds of the students. The new redesigned programme is planned to start from September 2023 onwards. Since the description of the redesigned programme was not included in MDDD's self-evaluation report, the panel's assessment is based on the current one. However, the panel did take the first features and ideas of the new programme into account. This mainly concerns the teacher-learning environment.

Basic Data of the Study Programme

Name of study programme as in CROHO	M Data-driven Design
ISAT-code	49297
Orientation and level study programme	Higher profession-oriented education
Level study programme	Master
Degree	Master of Arts
Number of study credits	60 EC
Variant	Full time
Location(s)	Utrecht
Teaching language	English

Retrospective of the Previous Accreditation

At the initial accreditation in 2018, the panel recommended more explicit attention to the ethical and societal aspects of data research and to ensure that these are reflected in both programme and assessments. The panel also advised to give research a greater place and to frame it in a clear policy, e.g., by setting out longer lines of research with a number of partners from the field. Next to this it was advised to monitor closely the study load since the program requires more than 20 contact hours per week, a considerable number of assignments and a serious reading list.

The panel notes that the recommendations of the initial accreditation have been taken into account by the programme. In the learning outcomes attention is given to data research and ethical and societal aspects. Also, in the learning-teaching environment there is clearly attention for research, ethics and societal aspects. The panel also sees opportunities for further development. According to the panel ethical considerations are relevant for the whole design process. This could be expressed more in the intended learning outcomes where ethics at the moment mainly is mentioned as an element of Strategic Communication. Concerning the recommendations on Research it is noted that the programme is well connected with research groups and partners of the programme. In the curriculum there is enough attention to Research, however, the panel advises to connect it more with the design process itself. Concerning the study load of the programme, the panel notes that study progress is well monitored. Next to this, students and staff experience that the curriculum can be completed within the given time.

Assessment NVAO-standards

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.

Conclusion

The study programme **meets** the generic quality requirements for this standard. The programme profile is relevant for the professional domain of design, media, communication and data science. The programme focuses on bridging these domains and aims to educate professionals who are able to combine data science, with psychology and design processes. The overall competencies descriptions have been elaborated in relevant learning objectives and are related to specific job roles. This is in line with the broad perspective of the professional domain. However, the panel advises to further specify the rather generally formulated research competence. A more explicit view on what are appropriate research and design-research approaches in the context of data-driven design is advised. Also, the ethical considerations of using data in design could be more visible in the learning objectives. At present, the ethical aspects are a part of the competence Strategic Communication. However, ethical considerations should also be included in some of the other competences (or phases of the design process), such as during competence 1 (research, analyse and understand), 2 (develop data driven concepts), and 4 (evaluate). A more explicit emphasis on ethics in the intended learning outcomes is recommended as well as the incorporation in other elements of the research process.

Substantiation

Professional Profile

The panel agrees with the professional profile of the programme. The aim is to educate professionals who can bridge media design with data science. This implies that these professionals are human-centred designers who can work with technologies and algorithms like e.g., machine learning. It is important that they are able to gather and analyse data in order to translate e.g., user experience information into quantitative data. After completing the programme graduates are intended to work as data-driven designers in interdisciplinary teams as designers, consultants or connectors between design, media and data science.

Programme Profile

The panel sees that in this programme user experience designing is combined with data engineering. This combination is according to the panel, a unique and valuable feature of the programme. The aim to educate T-shaped professionals in order to bridge design and data science is recognised by the panel. In this programme, bachelor students with deep knowledge in either Communication, Journalism, Media Design or Information Technology are educated to translate this knowledge to the professional domain in which media, data and technology are combined.

Competencies and Learning Outcomes

The competences and learning outcomes developed by this programme are unique, since MDDD is a study programme that only is offered by Hogeschool Utrecht. The programme formulated the competencies and learning outcomes in close cooperation with the professional field of media, journalism and communication & media design. Also, the other study programmes of the Institute for Media and the research group HEMD were involved in formulating these competencies. The MDDD programme uses the following five competencies:

1. Research, analyse and understand data-driven concepts, their users, and the user experience,
2. Develop original data-driven concepts,
3. Develop and test functioning prototypes (code, interface, User Experience),
4. Evaluate and reflect on data-driven research methods, and innovative technology,
5. Strategic Communication, be articulate discourse partners on data-driven concepts, ethical aspects of datafication, etc.

The panel acknowledges that these competencies are on Master level. The programme demonstrates in the TNO NVAO application file that the competencies match the Dublin descriptors for master programmes. Moreover, it is required that these competencies are demonstrated in new, unfamiliar and multidisciplinary environments. Students are expected to adequately handle complex and unforeseen circumstances and are expected to study in a self-directed in an autonomous way. The panel also agrees with the view on internationalisation, since this dimension is a critical aspect of the creative industries. From the international perspective, The Netherlands has a leading position and in order to maintain this position the international dimension is of importance.

The panel agrees with the fact that the competencies are broadly formulated, since this is in line with the master level and the professional domain. In the programme study guide the competencies are detailed into learning outcomes and job roles. Although the panel sees that there is sufficient attention for the research competence, like recommended at the previous accreditation, the panel would welcome reformulating this competence more towards the design process itself. The current view on research; 'to train professionals who use research to improve their own performance in practise and that practise itself', is rather general and can lead to different views and approaches within the programme. A more specific view, related to the data-driven design is therefore advised by the panel. Concerning the ethical aspects of data-driven design, the panel sees that explicit attention has been given, but the panel finds these aspects so core, that it recommends including ethics more explicitly in the description of the other learning outcomes. At the moment the ethical aspects are mentioned only in the competence Strategic Communication, whereas a more prominent position in the other competencies is suitable and therefore recommended.

Tuning with the professional field

The panel finds the learning outcomes to be more than sufficiently adjusted to the professional field. The study programme has installed a Professional Field committee. Members of this committee represent the field of media and design like NPO, DPG Beeld & Geluid, Bol.com. Regularly meetings are held to discuss developments in the professional field of data-driven design and the members closely work together with the programme, providing student projects and guest lectures. Recently, plans to redesign the programme have been discussed in detail

with the Professional Field Committee and feedback of the committee has been taken into account. The study programme also intends to further intensify cooperating with research groups throughout the Hogeschool Utrecht. The panel encourages this, since it can support the development of the advised specification of the design research approach for the data-driven design context.

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.

Conclusion

The study programme **meets** the generic quality requirements for this standard. Students experience freedom to experiment and are challenged to design data-driven concepts and tools in a creative and playful manner. The panel is impressed by the way significant differences in prior education are handled in the study programme. This diversity in student backgrounds is considered to be an asset and is vital for the study programme. The design of the current curriculum is adequate for students to develop the intended learning outcomes. The panel experienced the students as engaged learners who are well facilitated by the curriculum, staff and facilities offered by the Institute for Media. The redesign of the current curriculum for more flexibility and a more integrated approach of data-driven design is supported by the panel. Although the panel supports the offered freedom to experiment, it believes that some indication on the desired balance between design and data science is advisable. For example, to what extent coding should be used in data-driven design. The panel also notes that there is no ethical procedure available for research proposals related to user experience and user data, such as research proposals being approved by an ethical review committee. It is common practice in the Netherlands that proposals for research involving human subjects are reviewed by Ethical Review Committees. In data-driven design, often user data are used to improve user experiences, therefore the panel recommends setting up a procedure for reviewing of ethical aspects in data-driven research.

Substantiation

Design of the current curriculum

The current curriculum has a clear design. The programme is divided into four blocks of ten weeks each with a different focus. In the first block, the focus lies on the implications of datafication for society and on designing. This perspective on macro-level shifts in the second block to the implications of technology on users and how to connect them with each other. The focus in this block lies on how to increase user experiences and user engagement through data-driven design. Subsequently, the curriculum focuses in the third block on how digitalisation and datafication can lead to changes in organisations and processes. Finally in the fourth block all the previous perspectives are to be combined in the development of a data-driven concept.

To support the continuity of the learning process three learning tracks are developed. In each block the learning track Concept, Technology and Human can be distinguished. The Concept track concerns the concepts and transformations that shape digital society. This track aims to offer to students an interdisciplinary, critical and design focused perspective on these concepts and transformations. The Technology track provides knowledge and skills to work with data in the design process. The aim of this track is to let students experience the significant consequences that technology decisions can have in design processes. In the third track the individual aspect is

highlighted. Students learn that interactions of humans with digital technology are subject to social, cultural and psychological factors. They experience that these factors have a major effect on how humans use technology and how technical designs interact with humans. On the intersections of these three tracks and the first three blocks the study programme offers 5 EC courses. This leads to a curriculum of in total nine courses and the graduation project in which the three learning tracks are combined. Figure 1 gives an overview of the current curriculum.

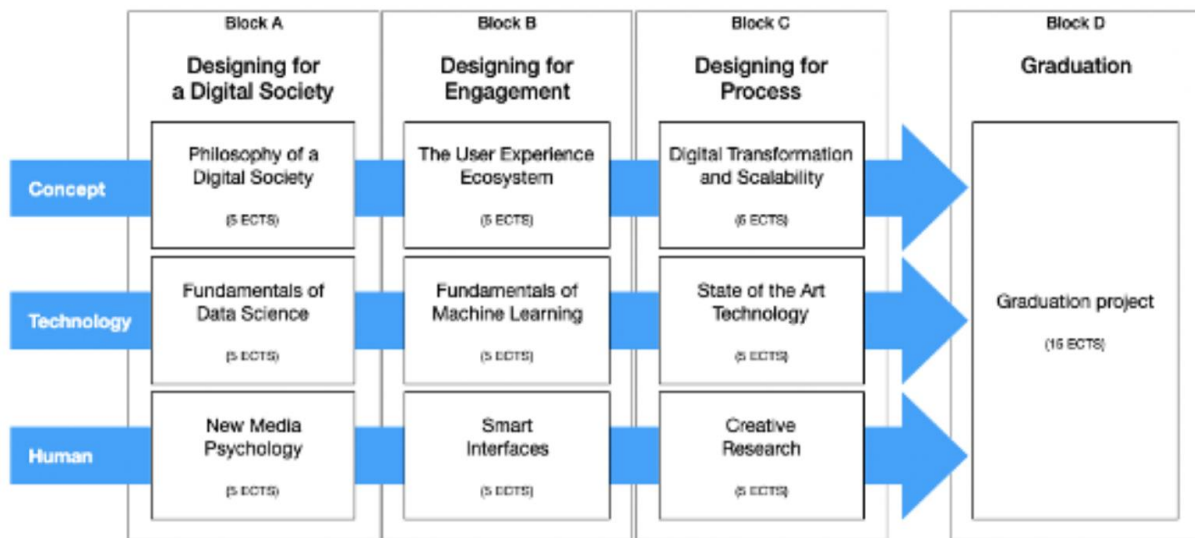


Figure 1: The current curriculum (Self-evaluation report, MDDD, March 2023)

Design of the new curriculum

During the preliminary preparation meeting at the location of the study programme, the study programme reported that a new curriculum was designed in order to offer students more flexibility and to overcome better the differences in prior education between students. The panel took note of the outline of this new curriculum and supports the plans and ideas of the new teaching-learning environment. The curriculum elements are based on the current curriculum and the curriculum has a similar length and study load. It consists of four components: Bootcamp, Learning tracks, Client project and Learning teams. The beginning of this curriculum starts with a bootcamp, where the focus lies on overcoming differences and gaps in knowledge and skills. After this Bootcamp the curriculum continues with five learning tracks and the Client project. For the Client project students reside at a company or organisation that commissions a project. The project work is supported by five learning tracks running throughout the whole curriculum. In addition to these learning tracks, students meet up with others in learning teams to focus on personal and professional development throughout their study career. In figure 2 an outline of this new curriculum is presented.

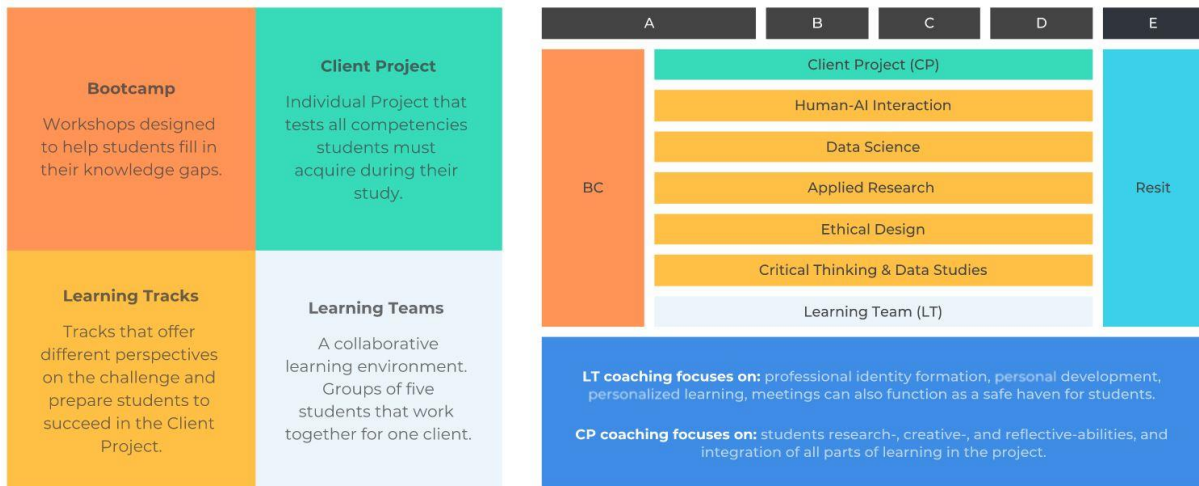


Figure 2: The redesigned new curriculum

Teaching methods.

The teaching methods applied are well developed and suitable to educate students in data-driven designing. In each block students follow three courses providing knowledge and skills. Next to these courses students work on various assignments to integrate the knowledge and skills learned. Students are supported in their project work by several lecturers with different expertise. The aim is for students to collaborate together on the assignments and projects. The panel notes that students are invited to shape their own learning processes and that they are individually supported in their learning process. During the site visit and the meeting with students the panel experienced that the students are engaged to become data-driven designers. A true learning community is created with students not only learning from experts but also from each other. Good examples are the clubs that are set up for students who need additional support in coding or in writing. The panel notes that in teaching, students are stimulated to share their knowledge and to learn from each other. As such, the diversity in educational backgrounds is cherished by the study programme. The panel agrees that this diversity is beneficial for the design processes.

Lecturers apply the data-driven feedback loop in teaching. This loop entails that there is an ongoing dialogue between user and service. For the study programme this loop is a model to understand what data-driven design can accomplish in the professional domain. It also is applied on the curriculum itself. In this way students as users, experience the feedback loop in the education as the service offered by the programme. Next to this attention on the feedback loop lecturers are well connected with the relevant academic and professional domains. Regularly guest lecturers from the work field, representatives and scientists from other universities offer workshops and lectures in this programme.

Content of the study programme

The panel sees that content on design and user experience is combined with content about data engineering. This makes the content of this study programme specific. The panel finds it unique that students do not need to have studied computer science to successfully study the programme as is demonstrated by the evaluations and study results. All the students with different educational backgrounds share their interest in using data in design. The strong focus on the digital society at the beginning of the curriculum in the first block is recognised and appreciated

by the panel. It stimulates the development of critical thinking early in the programme. The panel also notes that the content of the first block is a reality-check, because students are expected to study a significant amount of literature at the start in order to successfully continue the study programme. The panel advises to maintain these features of the content in the new curriculum.

The panel finds the T-shaped profile to be well chosen since design and data science is to be combined. Students develop this profile in various group assignments and individual assignments. In coaching the aim is to support students to become self-reliant. In the current curriculum, there are several assignments per block and there is the final graduation project which takes two and a half months.

The new curriculum is different: the individual Client Project starts early in the programme, just after completing the Boot Camp. The panel expects the students to be less knowledgeable and experienced when they start the client project as a student in residence. Therefore, the panel advises communicating clearly upfront, especially to the clients, what can be expected in order to make the project worthwhile for both student and client.

Internationalisation and Teaching language

The panel supports the offering of this study programme in the English language. On average half of the students is coming from abroad. Data-driven design is considered to be an international-oriented professional domain. Therefore, the aim to create an international classroom is valid. The panel concludes, based on the programme documentation and the conversations held, that the staff is more than sufficiently proficient in the English language. This is also the case for the students. Potential international students are required to demonstrate English proficiency at IELTS 6.0 or at TOEFL level 80 for writing and level 20 for verbal skills.

Research

The panel advises to be more concrete and explicit about what constitutes acceptable research paradigms of the teacher learning environment. The panel notes from the graduation projects examined that there is room for improvement in reporting on the (design-)research approach. The panel advises to give more guidance on research reporting and advises integrating research and design better with each other. At the moment it seems that there is the design process on one hand and the research approach on the other, combining them would be beneficial. Topics to address in more detail include: How are research methods applied to inform design, and explaining what the contribution of the work is, e.g., a design (or artefact), empirical knowledge or something else (see ¹ Wobbrock and Kientz, 2016). In the panel's opinion it would be appropriate to specify to what extent several theoretical aspects are looked into and taken into consideration. The design of the new curriculum offers good opportunities for this, because of the five learning tracks and the team learning activities.

Tutoring

The panel notes that the student coaching process works quite well. The lecturers monitor the student progress very well. In the current curriculum the study career coach meets weekly with students. The panel is enthusiastic about the coaching of the learning process and about the flexibility that is offered to explore. According to the panel it is important to regularly check the

¹ Jacob O. Wobbrock and Julie A. Kientz. 2016. *Research contributions in human-computer interaction. Interactions* 23, 3 (May + June 2016), 38–44. <https://doi.org/10.1145/2907069>

student's progress on the competence development. This is considered also to be a suitable element of the learning team activities in the new curriculum. Also, it is important to give some guidance about to what extent coding is required as a component of the design solution that is being developed. The flexibility offered to make individual development possible is recognised and appreciated by the panel, but more explicit indication and verification on the actual use of data in designing is advised in order for a balanced development in data-driven design.

Staff

The panel commends the staff for its commitment and enthusiasm. The overview of lecturers involved in MDDD demonstrates that the lecturers are knowledgeable and well-educated. They have at least a master's degree in relevant study fields such as Media & Communications, Data Science, Graphic Design, Artificial Intelligence, User experience research, Gamification and project/agile management. Furthermore, four out of fourteen lecturers have a PhD and two are pursuing a PhD. This leads to a diverse staff team that is well connected with the professional field and is working together with several research groups of Hogeschool Utrecht, such as Digital Ethics, HEMD and Co-Design. Concerning the educational qualifications: all staff members have a basic qualification in examination (BKE). Recently appointed lecturers are in the process of retrieving this qualification. Since the curriculum is offered in the English language; all lecturers demonstrate that they are proficient in English. For further educational professionalisation the team is supported by the Teaching & Learning Network (TLN) offered by Hogeschool Utrecht.

Facilities

The facilities offered are supportive to the study programme. The programme uses the digital learning environment Canvas and other online tools like Microsoft teams and OnStage. All relevant documents are accessible online. For educational activities there are various facilities available, both for lectures and project work. Worth mentioning is the Maker space. This is a workshop that is valuable for the graduation project: students can work on tangible prototypes like prototypes related to the internet of things. There is expertise and all kinds of materials are available to design various kinds of tangible prototypes.

Standard 3 Student Assessment

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

Conclusion

The study programme **meets** the generic quality requirements for this standard. According to the panel the assessment system is well organised, and the assessments are valid. The assessment programme consists of formative and summative assessments. The group assignments during the courses are assessed formatively in order to support the learning process. At the end of the courses, students are always individually summatively assessed. The panel notes that many of these assessments are based on written materials and advises to balance this more with other ways of assessing, such as oral forms.

The assessment quality is adequately ensured. Course coordinators are trained in assessing and examining. The examination board adequately supervises the assessment quality. The panel notes that there is a useful dialogue on assessment quality between the examination board and study programme. Regular calibration sessions are organised to evaluate assessing and grading procedures. Especially for the Graduation Assignment a strict calibration procedure is applied consisting of two calibration sessions per year to ensure the assessment quality.

Substantiation

Assessment policy

The panel agrees with the assessment policy of the programme. In the assessment programme document is explained that the aim is to interconnect the different summative tests per course in order to form a holistic assessment programme on programme level. This means that the technology, design and research should be integrally assessed in relation to each other. It is agreed that all summative assessments are individual assessments. Students exercise in group work, which is formatively assessed. The assessment programme ensures that the competencies are tested in various summative assessments throughout the programme. Table 1 gives an overview of these summative assessments.

Block	Course	Summative Assignments
A	Philosophy of a Digital Society	Oral exam (debate)
A	Fundamentals of Data Science	Dashboard and extended abstract
A	New Media Psychology	Academic Essays
B	User Experience Ecosystem	Research Report
B	Fundamentals of Machine Learning	Poster presentation and project
B	Smart Interfaces	Portfolio and oral assessment
C	Digital Transformation and Scalability	Whitepaper
C	State of the Art Technology	Prototype and reflection
C	Creative Research	Research proposal
D	Graduation Assignment	Academic Paper and Prototype

Table 1; Courses and summative Assignments (Self-evaluation Report MDDD, March 2023)

Execution of assessment policy

The panel notes with satisfaction that the assessing is aligned to the content of the courses. The assessment format, however, is mainly written. The panel advises to balance this more with other forms, like the verbal assessments in order to offer equal opportunities to all students. The panel examined several assessments, such as assessment of the course Fundamentals of Machine Learning. In this course students work on an assignment in which they explore data and gauge a fit model. Subsequently they explore machine learning methods. For the assessment, students write a report. They are assessed on their skills in data cleaning and exploring. They are also assessed on being able to design a fit data model and to comment about it. Another assessment examined, concerns the course Smart Interfaces from the Human track. In this course students acquire knowledge and insights on user experience and interaction design. This is then applied in a group assignment in which students design a data-driven application. This application is presented in a promotion video and each student hands in a personal project diary. Based on the presented application and the personal diary, each student is individually interviewed and assessed.

Graduation Assessment

The graduation assessment is well executed, and the grading is valid. For this assessment students hand in a working prototype with the technical documentation and an academic paper. In addition, they present the prototype at a graduation exposition. Two examiners, of which one has at least a PhD and the other an MA/MSc assess the final work. They are present at the graduation exposition and subsequently grade the documents handed in. Finally, the examiners discuss their findings in an individual feedback session with the student in order to come to a final conclusion of the graduation assessment.

Quality assurance

Course coordinators are responsible for the quality of the assessments. Transparency on assessing is ensured through information provided via Canvas about the assessments with the corresponding assessment forms or rubrics. The course coordinators see to it that the four-eyes principle is implemented in the grading process, and they regularly coordinate calibration sessions for examiners who have to be qualified in assessing (BKE). The grading procedure is supported by assessment forms or by rubrics and transparent criteria. The relation between assessment criteria and competencies with learning objectives is specified. This makes the grading procedure transparent and valid.

The examination board is positioned well to ensure the assessment quality. The board consists of six members representing the two bachelor programmes and this master programme offered by the Institute for Media. The board functions as a partner of the programme. Random samples are taken by the board to ensure the quality of the assessments. A KIT Plus Assurance Instrument is used to support the monitoring of the assessment quality. The monitoring concerns the aspects validity, reliability, functionality and conditions. The panel finds it positive that findings of the examination board are at least once a year reported to the Student Programme Committee. Finally, the panel notes that the examination board is well involved in the redesign of the curriculum. This dialogue concerns, amongst other things, how to implement programmatic assessment in line with the aim of the holistic approach. This demonstrates the involvement of the examination board as a partner to also ensure the assessment quality in the new redesigned curriculum, which is under development.

Standard 4 Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

Conclusion

The study programme **meets** the generic quality requirements for this standard. The panel concludes that the documentation examined is at master level. The graduation projects result into a variety of final solutions and concepts that reflect the degrees of freedom offered by the study programme. In some cases, the design process could have been better substantiated. However, the prototypes examined are of a good quality. Giving the nature of the problems researched, an ethical (and if relevant medical) approval procedure is strongly advised. The programme prepares students well for the work field. Alumni successfully enter the professional work field as designers with data engineering skills. In this role they operate as an intermediate who is able to bring the data-driven perspective in design. This role is valued and appreciated by the rapidly developing domain of data-driven design.

Substantiation

Graduation process

In the fourth block of the programme (Figure 2, block D) students complete the Graduation Assignment. This assignment is a project in which the three tracks Concept, Human and Technology, come together. Through an individual project, students create a data-driven solution to a real-world problem and demonstrate that they have mastered all the competencies of the programme. Students can choose their own project or decide to work on one of the client projects offered by the programme. The prototypes are to be presented at an exposition for MDDD students, staff and alumni. After this exposition students hand in an Academic Paper in which they describe the design and research process. Next to the paper they hand in the prototype accompanied with the technical documentation, in which the design process is outlined.

Level of intended learning outcomes in graduation products

The panel examined the technical documentation of fifteen prototypes with the corresponding academic papers. According to the panel, the documentation examined is up to the master standard and the designed prototypes are original, interesting and of a diverse nature. The panel notes that in some cases the design and research process deviate from the original research question. In other cases, the development decisions made in the process of designing a prototype could be better substantiated. Students report on this in various manners and supervisors also seem to have a different view on how to deal with and report the design and research process in a coherent manner. This is a point of attention related to the earlier made comments on the vision on research. The panel advises the programme to clarify what is required to substantiate design decisions made, to what extent it is allowed to deviate from the initial research question and report, and how changes in research question should be reported on this deviation.

The prototypes developed demonstrate that students are able to design solutions that are user-centred and data-driven. Some examples of prototypes examined are:

- Stimulating healthy food choices by using data,
- A system using data obtained from computer vision technology to support shopping consumers in finding cosmetic products that have not been tested on animals,
- Machine learning to help activists increase their chances of success,
- A social matching system to help migrant students shape social connections and reduce social (linguistic) isolation,
- The design of a chatbot to be used to detect and prevent suicide.

Considering the nature of these solutions, the panel would expect that proposals for research and ideas for prototypes are to be submitted for review and approval by a (medical, when related to medical topics) – ethics committee or medical – ethics committee, depending on the subject of graduation project. This finding is in line with the previously made recommendation for the Teaching-learning environment.

Functioning of alumni in the work field

After completing the programme, alumni find employment in creative industries, in the fields of information technology, research and management consulting. In general, they work in positions as designers with data engineering skills. According to work field representatives, alumni are able to combine data engineering with user experience design. Since the domain of data-driven technology is rapidly changing, work field representatives value that alumni are able to deal with these rapid changes. Their role is seen as a designer being able to identify what is needed in order to develop new concepts and tools. Critical thinking is of importance in fulfilling this role. If there is a suggestion to be made by the work field for further improvement, then it would be paying more attention to and teaching critical thinking skills.

Alumni experience an easy and smooth transition to the work field. They feel confident and well-prepared to contribute, not only because of the knowledge and skills they learned but because they are able to contribute the design processes well. They experience that they can contribute as an intermediate between design and data science. They bring the data-driven perspective to design. Moreover, they experience to be able to work in an interdisciplinary manner and to learn from others in order to continuously contribute to data-driven design in the rapidly developing domain of media, design and information technology.

Final Conclusion

Assessments of the Standards

The audit team comes to the following judgements regarding the standards:

	M Data-driven Design
<i>Standard 1 Intended Learning Outcomes</i>	Meets the generic quality requirements.
<i>Standard 2 Teaching-Learning Environment</i>	Meets the generic quality requirements.
<i>Standard 3 Student Assessment</i>	Meets the generic quality requirements.
<i>Standard 4 Achieved Learning Outcomes</i>	Meets the generic quality requirements.

The judgements have been weighed in accordance with the NVAO assessment rules. Based on this, the audit panel assesses the quality of the existing Master study programme Data-driven Design of Hogeschool Utrecht, University of Applied Sciences, as **positive**.

Recommendations

The audit panel has the following recommendations for the study programme:

Standard 1

- Make the ethical considerations of data-driven explicit in the different competencies and the learning outcomes. Ethics is not only relevant in the competence Strategic Communication, but a crucial and core element in the complete design process.

Standard 2

- See to it that projects and proposals are subject to review and approval by an (medical) ethics committee.

Appendices

Appendix 1: Programme for the Site Visit

Time	Theme	Participants
9.45 - 10.15	Arrival	NQA panel
10.15–10.30	Welcome	Programme manager MDDD, Director Institute for Media.
10.30 - 11.15	Intended learning outcomes, future perspective and ambitions	Director Institute for Media, Programme manager MDDD, Programme coordinator and lecturer, Lecturer and graduation coordinator,
11.15 - 11.30	Break	
11.30 - 12.15	Student perspective	Student class D01 (2x), International student class D01, SPC member, Student class D02, vice chair SPC.
12.15 - 13.15	Lunch Break	
13.15 - 14.00	Teaching-learning environment and student counselling	Lecturer and chairmen SPC, Lecturer and SPC-member, Lecturer and senior-researcher Human Experience & Media Design, Alumni, lecturer, student counsellor, PhD candidate and SPC-member, Lecturer and PhD candidate.
14.00 - 14.15	Lectorate Co-Design	Programme coordinator and lecturer, Professor Research Group Co-Design.
14.15 - 14.25	Break	
14.25 - 15.00	Student assessment, quality assurance and achieved learning outcomes	Chairman Examination Board, lecturer BA CMD, Member Examination Board, lecturer MDDD and BA CMD, Member Assessment Committee, lecturer BA CMD, Lecturer and chairmen SPC, Lecturer and graduation coordinator.
15.00 - 15.15	Break	
15.15 - 16.00	The MDDD professional	Alumni: (2x) Professional field: Manager Human Data Interaction, Bright Cape, Head innovation NPO.
16.00 - 16.15	Break	
16.15 - 17.30	Assessment meeting	NQA panel
17.30 - 17.45	Feedback panel	All participants

Appendix 2: Documents Examined

The initial TNO report 2018,
Adviesrapport MDDD; the next step process 2021,
Onderwijsvisie Instituut voor Media 2020 – 2026,
Framework IvM international orientation 2021 – 2026,
TNO – NVAO application file initial accreditation 2017,
MDDD Competence and learning outcomes 2019 – 2022,
Lecturer overview, March 2023,
MDDD Vision on Education,
Brochure flex study,
MDDD examples of flex routes,
Evalytics MDDD09-2020 to 02-2023,
Overview members PFC,
MDDD Assessment programme 2020-2021,
Course manual; smart interfaces,
Course manual; Fundamentals of Machine Learning,
Course manual; Graduation,
Calibration Report 2021-2022,
KIT Plus Quality Assurance Framework,
MDDD Assessment programme 2022- 2023,
Graduates overview 2020-2021-2022,
Studiegids MDDD,
Education and Examination Regulations 2021-2022.