Industrial Design

Faculty of Engineering Technology
University of Twente

Quality Assurance Netherlands Universities (QANU)
Catharijnesingel 56
PO Box 8035
3503 RA Utrecht
The Netherlands

Phone: +31 (0) 30 230 3100
Telefax: +31 (0) 30 230 3129
E-mail: info@qanu.nl
Internet: www.qanu.nl

Project number: Q0441

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This report was finalised on 24 February 2014

Report on the bachelor's programme Industrieel ontwerpen and the master's programme Industrial Design Engineering of University of Twente

This report takes the NVAO's Assessment framework for limited programme assessments as a starting point.

Administrative data regarding the programmes

Bachelor's programme Industrieel ontwerpen

Name of the programme:	Industrieel ontwerpen
CROHO number:	56955
Level of the programme:	bachelor's
Orientation of the programme:	academic
Number of credits:	180 EC
Specialisations or tracks:	
Location(s):	Enschede
Mode(s) of study:	full time
Expiration of accreditation:	31-12-2014

Master's programme Industrial Design Engineering

Name of the programme:	Industrial Design Engineering
CROHO number:	66955
Level of the programme:	master's
Orientation of the programme:	academic
Number of credits:	120 EC
Specialisations or tracks:	Design and Styling; Emerging Technology Design; Management of Product Development; Architectural Building Components Design Engineering; Cradle to Cradle
Location(s):	Enschede
Mode(s) of study:	full time
Expiration of accreditation:	31-12-2014

The visit of the assessment committee Industrial Design to the Faculty of Engineering Technology of University of Twente took place on 13 and 14 November 2013.

Administrative data regarding the institution

Name of the institution:	University of Twente
Status of the institution:	publicly funded institution
Result institutional quality assurance assessment:	applied (pending)

Quantitative data regarding the programmes

The required quantitative data regarding the programmes are included in Appendix 5.

Composition of the assessment committee

The committee that assessed the bachelor's programme Industrieel ontwerpen and the master's programme Industrial Design Engineering at the University of Twente consisted of:

- Prof. dr. L.T.M. (Luciënne) Blessing (chair), Professor of Engineering Design and Methodology, Université du Luxembourg;
- Prof. dr. P.J. (John) Clarkson, FREng, Professor of Engineering Design, Director of Cambridge Engineering Design Centre, Cambridge University, UK;
- Prof. dr. I. (Ilpo) Koskinen, Professor of Industrial Design, Aalto University School of Art and Design, Helsinki, Finland;
- Prof. dr. A. (Albert) Pilot, Emeritus Professor of Curriculum development en Professor of Chemistry education, Utrecht University;
- Prof. (emeritus) dr. M. (Markku) Salimäki, Director (emer.) of International Design Business Management, Aalto University School of Business, Helsinki, Finland;
- M. (Manon) Kühne BSc (student member), Master's student Integrated Product Design, Delft University of Technology.

The committee was supported by mw. dr. J. (Jetje) de Groof, who acted as secretary.

The board of the University of Twente and the Accreditation Organisation of the Netherlands and Flanders (NVAO) agreed to the composition of the assessment committee. Appendix 1 contains the curricula vitae of the members of the committee. All members of the committee and the secretary signed a declaration of independence as required by the NVAO protocol to ensure that they assess without bias, professional preference or personal interest, and that the assessment is made without undue influence from the institute, the programme or other stakeholders (see Appendix 8).

Working method of the assessment committee

The assessment of the Industrial design programmes at the University of Twente was part of a cluster assessment. The committee assessed eight programmes at three universities: the University of Twente, Eindhoven University of Technology, Delft University of Technology.

- Prof. dr. L.T.M. (Luciënne) Blessing (chair), Professor of Engineering Design and Methodology, vice-president for research, Université du Luxembourg;
- Prof. dr. P.J. (John) Clarkson, FREng, Professor of Engineering Design, Director of Cambridge Engineering Design Centre, Cambridge University, UK;
- Prof. dr. I. (Ilpo) Koskinen, Professor of Industrial Design, Aalto University School of Art and Design, Helsinki, Finland;
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- Prof. (emeritus) dr. M. (Markku) Salimäki, Director (emer.) of International Design Business Management, Aalto University School of Business, Helsinki, Finland;

- M. (Manon) Kühne BSc (student member), Master's student Integrated Product Design, Delft University of Technology (assessment University of Twente);
- P.G. (Philémonne) Jaasma BSc (student member), Master's student Industrial Design, Technical University Eindhoven (assessment Delft University of Technology);
- R. (Ruben) van den Hout BSc (student member), Master's student Industrial Design, University of Twente (assessment Eindhoven University of Technology);.

Preparation
After receiving the critical reflection, the project manager checked the quality and completeness of the information provided. After approval, the critical reflection was forwarded to the committee, in both printed form and digitally. In addition, the committee members selected and read a number of theses for each programme that was assessed (see appendix 7).

Before the site visit the project manager created a draft programme for the interviews (see appendix 6). The draft programme was discussed with the chair of the committee and the coordinator of the educational institute. As requested by QANU, the coordinators of the programmes carefully composed a select and representative panel for all interviews.

Site visit
During the initial meeting at the start of each site visit, the committee members discussed among themselves their findings regarding the critical reflection and the theses. They also discussed their task and working methods and the proposed domain-specific requirements (see appendix 2).

During the site visit, interviews were held with representatives of the programme, students, alumni, staff members, the Education Committee, the Examination Board and a student adviser. A consultation hour was scheduled to give students and staff of the programmes the opportunity to talk to the committee. One lecturer of the programme made use of this opportunity at University of Twente.

The committee used part of the final day of the site visit to discuss the assessment of the programmes and to prepare a preliminary presentation of the findings. The site visit concluded with an oral presentation by the chair on the preliminary findings of the committee.

Report
After the site visit the project manager wrote a draft report based on the committee's findings. The draft was first commented upon by the committee members and then sent to the faculty to check for factual irregularities. All comments made by the faculty were discussed with the chair of the committee and, if necessary, with the other committee members. After revision, the report became official.

Decision rules
In accordance with the NVAO's Assessment framework for limited programme assessments (as of 22 November 2011), the committee used the following definitions for the assessment of both the standards and the programme as a whole.

Generic quality
The quality that can reasonably be expected in an international perspective from a higher education bachelor's or master's programme.

Unsatisfactory
The programme does not meet the current generic quality standards and shows serious shortcomings in several areas.

Satisfactory
The programme meets the current generic quality standards and shows an acceptable level across its entire spectrum.

Good
The programme systematically surpasses the current generic quality standards across its entire spectrum.

Excellent
The programme systematically well surpasses the current generic quality standards across its entire spectrum and is regarded as an (inter)national example.

Summary judgement

This report provides the findings and considerations of the Industrial Design committee on the bachelor's and master's programmes in Industrial Design Engineering (IDE) at the University of Twente (UT). The committee assessment is based on information in the critical reflection, interviews during the site visit and a selection of theses.

Bachelor's programme Industrial Design Engineering

The programme aims to educate T-shaped academic professionals capable of addressing multidisciplinary design challenges and tasks. Seven domains have been identified that are relevant for the intended learning outcomes of IDE-graduates: designing; IDE-relevant disciplines; research; scientific approach; intellectual skills; co-operating and communicating; addressing temporal, social and personal contexts.

The committee appreciates the focus on T-shaped academic professionals, with a broad orientation offered at the bachelor's level, and subsequent specialisation in the master's programme. It fits the objectives set in the DSR. However, the committee also concludes that the intended profile of the bachelor's programme needs further elaboration against the background of an increasing number of students doing a master's programme elsewhere or getting into professional practice after the bachelor's phase. This also includes providing further clarification of the status of the 'humanities and business'-component in the bachelor's profile and the terminology used for this component.

The committee finds that the intended learning outcomes are adequately described in terms of level and orientation. They are in line with the DSR and are a suitable translation of the intended profiles. Still, the committee thinks the intended learning outcomes require further elaboration so that they are more suited as a tool that gives direction to the development of the teaching learning environment and the assessment system.

The committee values that the programme has many informal means to ensure that the profile and intended learning outcomes of the programmes are kept up to date with emerging issues in society. Still, it is advised to go about this in a more structured, proactive way, also involving alumni.

The committee concludes that IDE creates a coherent teaching-learning environment. The committee has established that the curriculum is well structured and coherent. It is an adequate translation of the intended learning outcomes of the programme. The committee thinks project-led education is especially well suited for design education, and appreciates the way in which it is implemented. The committee was highly impressed with the quality of the teaching staff, their open-door policy, and commitment to the teaching concept. The committee appreciated the extensive course materials, which contribute to the establishment of a learning environment of high quality.

Still, there is room for improvement. The committee finds that the 'humanities and business'-pillar needs strengthening in the sense that topics like pricing, service concepts and entrepreneurship, which students encounter primarily in the projects, should also be dealt with through more formal training. The same holds true for the development of interdisciplinary and scientific problem-solving skills.

The committee is of the opinion that clarification is needed on what notion of design research is applied in the programme. It values the setup of the bachelor's thesis, but urges the programme management to consider measures to ensure that the scientific approach is more structurally embedded in the bachelor's theses.

There is room for improvement with regard to the proportion of staff with a PhD. The committee appreciates that the programme is currently taking several steps to improve this, and that priority is given to the specialisations where this need is most urgent. Also, the student-staff ratio is high, which is why the committee asks to closely monitor the sustainability of the current teaching-learning environment. The committee values that new staff has been attracted to provide more substance to the 'humanities and business'-pillar in education and research.

The study progress and study load of bachelor students should be closely followed, but the committee trusts that the recent initiatives taken by the programme, combined with the open atmosphere of the IDE-community, will improve study progress.

The committee found clear evidence that the IDE-programmes at the UT are oriented towards constant improvement. Many of the remarks made by the committee have already been discussed within the programme and these discussions have in some cases led to concrete initiatives.

The committee has established that the IDE-programme has an adequate assessment system. There is an appropriate variety of assessment methods. The committee concludes that the quality control mechanisms that are in place are adequate and ensure that the assessment is transparent, reliable and valid. The committee greatly appreciates that evaluations and assessments in the IDE-programmes are done by more than one assessor as much as possible. Still, the committee thinks that the moderation process has to be made more explicit and robust to ensure consistency in assessment throughout the programme.

The transparency of the feedback process for the bachelor projects has improved recently. The committee sees it as an important step that process aspects are now also taken into account, as this makes the application of what has been learnt in the programme more visible. This was not always evident in the bachelor theses the committee consulted.

The committee has found that the achieved learning outcomes at the bachelor level are adequate. According to the committee, the final projects overall meet the requirements with regard to level and orientation. The committee suggests that continuous effort is made to ensure that the scientific approach is more structurally embedded in the theses in future.

Master's programme Industrial Design Engineering

The programme aims to educate T-shaped academic professionals capable of addressing multidisciplinary design challenges and tasks. Seven domains have been identified that are relevant for the intended learning outcomes of IDE-graduates: designing; IDE-relevant disciplines; research; scientific approach; intellectual skills; co-operating and communicating; addressing temporal, social and personal contexts.

The committee appreciates that the IDE-programmes at the UT focus on delivering T-shaped academic professionals, with a broad orientation offered at the bachelor's level, and subsequent specialisation in the master's programme. It fits the objectives set in the DSR. The committee values the clear focus of the master's programme and appreciates the decision of the programme to cut down the amount of master tracks that are offered.

The committee finds that the intended learning outcomes are adequately described in terms of level and orientation. They are in line with the DSR and are a suitable translation of the intended profiles. Still, the committee thinks the intended learning outcomes require further elaboration so that they are more suited as a tool that gives direction to the development of the teaching learning environment and the assessment system.

The committee values that the programme has many informal means to ensure that the profile and intended learning outcomes of the programmes are kept up to date with emerging issues in society. Still, it is advised to go about this in a more structured, proactive way, also involving alumni.

The committee concludes that IDE creates a coherent teaching-learning environment. The committee is of the opinion that the master curriculum is an adequate translation of the intended learning outcomes of the programme. The master tracks are well composed and the students' flexibility in composing their programme allows for a very good outcome. The committee values the way in which students are allowed to work increasingly autonomously and has ascertained they receive the necessary support for this. The committee was highly impressed with the quality of the teaching staff, their open-door policy, and commitment to the teaching concept. The committee appreciated the extensive course materials, which contribute to the establishment of a learning environment of high quality.

The committee values the concept of the master's project. The scientific orientation is evident throughout the master's programme, but further clarification is needed on which notion of design research is applied. Also, more explicit training on the scientific approach is required.

There is room for some improvement with regard to the proportion of staff with a PhD. The committee appreciates that the programme is currently taking several steps to improve this, and that priority is given to the specialisations where this need is most urgent. Also, the student-staff ratio is high, which is why the committee asks to closely monitor the sustainability of the current environment.

Although the committee took note of the fact that recent initiatives better prepare master students for their future career, the committee thinks that the master's programme could be more proactive in this regard.

The committee found clear evidence that the IDE-programmes at the UT are oriented towards constant improvement. Many of the remarks made by the committee have already been discussed within the programme and have in some cases led to concrete initiatives.

The committee has established that the IDE-programme has an adequate assessment system. There is an appropriate variety of assessment methods. The committee concludes that the quality control mechanisms that are in place are adequate and ensure that the assessment is transparent, reliable and valid. The committee greatly appreciates that evaluations and assessments in the IDE-programmes are done by more than one assessor as much as possible. Still, the committee thinks that the moderation process has to be made more explicit and robust to ensure consistency in assessment throughout the programme.

The committee is very enthusiastic about the achieved learning outcomes at the master level. It was impressed with the motivated alumni and with the level of the master theses.

The committee assesses the standards from the Assessment framework for limited programme assessments in the following way:

Bachelor's programme Industrieel ontwerpen:

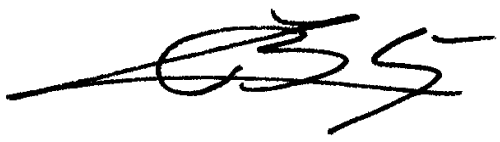
Standard 1: Intended learning outcomes	satisfactory
Standard 2: Teaching-learning environment	satisfactory
Standard 3: Assessment and achieved learning outcomes	satisfactory
General conclusion	satisfactory

Master's programme Industrial Design Engineering:

Standard 1: Intended learning outcomes	satisfactory
Standard 2: Teaching-learning environment	satisfactory
Standard 3: Assessment and achieved learning outcomes	good
General conclusion	satisfactory

The chair and the secretary of the committee hereby declare that all members of the committee have studied this report and that they agree with the judgements laid down in the report. They confirm that the assessment has been conducted in accordance with the demands relating to independence.

Date: 24 February 2014



Prof. L. Blessing

dr. J. de Groof

Description of the standards from the Assessment framework for limited programme assessments

Standard 1: Intended learning outcomes

The intended learning outcomes of the programme have been concretised with regard to content, level and orientation; they meet international requirements.

Explanation:
As for level and orientation (bachelor's or master's; professional or academic), the intended learning outcomes fit into the Dutch qualifications framework. In addition, they tie in with the international perspective of the requirements currently set by the professional field and the discipline with regard to the contents of the programme.

Findings

The committee evaluated the intended learning outcomes of the Industrial Design Engineering (IDE) programmes of the University of Twente (UT) with regard to content, level and orientation. It studied the domain-specific framework of reference (DSR) (1.1.), the profile and orientation of the programmes (1.2.) and the objectives and intended learning outcomes (1.3.).

1.1. Domain-specific framework of reference

The DSR reflects the common understanding of the quintessence of IDE and has been drawn up conjointly by the three academic educational programmes of IDE in the Netherlands. In the DSR, the profile of the Industrial Design Engineer is described as an academically educated product designer who can integrate knowledge from different fields of technology with human factors, can see signals from the market and can generate creative ideas with new solutions. Seven domains have been identified that are relevant for academic IDE-graduates:

- designing;
- IDE-relevant disciplines;
- research;
- scientific approach;
- intellectual skills;
- co-operating and communicating;
- addressing temporal, social and personal contexts.

The description of the domains is phrased in terms of competence descriptors, i.e. as a combination of knowledge, skills and attitudes, and a distinction is made between the bachelor's and the master's level. The domain-specific framework of reference for the IDE-programmes in the Netherlands can be consulted in appendix 2.

The committee is of the opinion that all the relevant building blocks for IDE-programmes are present in the DSR. The committee finds the DSR to be aligned with relevant IDE-programmes worldwide.

1.2. Profile and orientation of the programmes

During the site visit, the committee learned that the IDE-programmes aim to educate T-shaped academic professionals capable of addressing multidisciplinary design challenges and tasks. The bachelor's programme qualifies graduates for independent professional practice in

the field of IDE, as well as enrolment in master's level programmes in IDE. The master's programme qualifies its graduates to enter independent professional practice at the master level, to do research in the field, to enrol in PhD programmes, or in post-master's design programmes.

Educating T-shaped professionals implies offering depth in a certain discipline whilst also gaining insight in the broader context. The committee gathered that the bachelor's programme is broad and aims at an integration of the components design, engineering, research and 'humanities and business'. Specialisation is subsequently offered at the master's level, where extending and reinforcing the understanding of design principles, theoretical concepts, and the relation between products and product development processes is a deliberate goal. Master students can choose between five tracks:

- Design and Styling (DS);
- Emerging Technology Design (ETD);
- Management of Product Development (MPD);
- Architectural Building Component Design Engineering (ABCDE);
- Cradle to Cradle (CTC).

As explained during the site visit, the latter two tracks will be discontinued due to the limited student influx. No new tracks are planned, as the programme finds the coverage provided by the current three tracks adequate.

The committee finds the focus on the T-shaped profile particularly appropriate for an IDE-programme whose graduates will act as independent designers and members or leaders of interdisciplinary product development teams. It fits the objectives set in the DSR. The committee values the clear focus of the master's programme and appreciates the decision of the programme leaders to reduce the number of master's tracks that are offered, without losing the important Cradle to Cradle aspects of the fifth master. This provides clarity for the students, staff and potential employers; delivering the knowledge, skills and competencies required to practice in three areas which reflect both traditional and emerging markets for design. It is the opinion of the committee that on the one hand, the three tracks cover the intended learning outcomes and the market needs well; on the other hand the flexibility of the curriculum (see 2.1.) gives further options for specialisation according to students' interests. The committee however asks the programme management to reconsider the name used for the DS-track as its content is clearly more design-oriented and the term 'styling' may give the wrong impression of the track's otherwise well thought through content (see also 2.1.).

Concerning the bachelor's programme, the committee finds that the profile needs further clarification regarding a few elements. A first issue is that, currently, students need the broadness of the bachelor's programme as well as the specialisation of the master's programme in order to attain the desired T-shaped profile. This raised the question to the committee what kind of profile the programme aspires at the bachelor's level against the background of an increasing number of students doing a master's elsewhere or getting into professional practice after the bachelor's phase. The committee was pleased to learn from the programme management team that discussions on this topic are ongoing, but that it is already certain that more emphasis and importance will be put on the bachelor's thesis in order to encourage and allow students to go into more depth with their final project at the bachelor's level.

Secondly, the committee talked at length about the status of the 'humanities and business'-component in the bachelor's profile. The committee gathered that it is the aim to further give the 'humanities and business'-pillar substance in the future, thus aligning increasingly with the 'High Tech Human Touch' profile of the UT. The committee values this ambition. However, it struck the committee that in the actual content of the programme (see 2.2.), business-related topics do not receive a lot of attention and 'business' is primarily address marketing. Against this background, the committee asks the programme management to think about the position and perspective of 'business' in the intended profile and learning outcomes. The emphasis on the entrepreneurial aspects in the profile is ever more important against the background of the possibility of bachelor students not continuing with a master's programme.

Moreover, the committee suggests to adapt the title of the 'humanities and business'-orientation to its content and feels the terms 'human interaction' on the one hand and 'entrepreneurship' or 'product strategy' on the other hand better describe these aspects of the programme. The committee is moreover not convinced that 'human interaction' and 'entrepreneurship' should be conceived of as one bulk category, as both its constituents are different. If preference is given to one single category, the term 'user orientation' or 'customer orientation' may be an option. During the discussions, the committee heard that the IDE-programme also considers a change of terminology an option.

1.3. Objectives and intended learning outcomes

The intended learning outcomes of the IDE-programme can be consulted in appendix 3. The committee noted that the competence descriptors of the seven relevant IDE-domains mentioned in the DSR (see 1.1.) have been taken as the starting point for the formulation of the intended learning outcomes. A distinction has been made between the intended learning outcomes at the bachelor's level and at the master's level. As the intended learning outcomes of the bachelor's and master's programmes of the University of Twente coincide to a great extent with the competence descriptors of the seven relevant IDE-domains in the DSR, the committee found them to be formulated at a rather general level. The committee would have liked to see a meso-level between the high-level description of the competence descriptors from the DSR and the very elaborate and detailed objectives of individual courses. It recommends that the IDE-programme clearly defines its own interpretation of the DSR to ensure it can be operationalised.

The committee read in the critical reflection that the intended learning outcomes for IDE-programmes mentioned in the DSR are based on the Academic Competences and Quality Assurance (ACQA), which have an academic orientation and are based on the Dublin descriptors. The committee observed that all Dublin descriptors are reflected in the intended learning outcomes of the IDE-programme of the University of Twente.

The committee also conferred about how the bachelor's and master's programmes accommodate new, emerging issues, like e.g. sustainability and ageing. It was explained to the committee that the staff's relation with industry partners ensures that there is a link with the outside world. Views of academics nationally and internationally are received through membership of international (academic) societies. The committee learnt from the alumni that they are currently not involved in this process. The staff pointed out that several alumni are involved in teaching activities and projects, but agreed that additional and more institutionalised alumni involvement could provide a valuable contribution to the programmes and the educational strategy. The committee was pleased to hear that discussions as to the role of the alumni have already started.

The committee learnt from the students that the vision for the programmes as well as the intended learning outcomes, are clear to them, although they also mentioned that the career perspective or career preparation is not always clear.

Considerations
The committee is of the opinion that all the relevant building blocks for IDE-programmes are present in the DSR. The committee appreciates that the IDE-programmes at the UT focus on delivering T-shaped academic professionals at the end of the master's programme, with a broad orientation offered at the bachelor's level, and subsequent specialisation in the master's programme. It fits the objectives set in the DSR.

The committee appreciates that the IDE-programmes are constantly improving their profile. However, the committee also concludes that the intended profile of bachelor's programme needs further elaboration against the background of an increasing number of students doing a master's programme elsewhere or getting into professional practice after the bachelor's phase. This also includes providing further clarification of the status of the 'humanities and business'-component in the bachelor's profile and the terminology used for this component. The committee asks that ongoing discussions on these matters are brought to a conclusion.

The committee appreciates the clear focus of the master's programme and the decision of the programme to cut down the amount of master tracks that are offered as this will increase the programme's visibility.

The committee finds that the intended learning outcomes of the bachelor's and master's programmes are adequately described in terms of level and orientation. They are in line with the DSR and are a suitable translation of the intended profiles. Still, the committee thinks the intended learning outcomes require further elaboration so that they are more suited as a tool that gives direction to the development of the teaching learning environment and the assessment system.

The committee values that the programme has many informal means to ensure that the profile and intended learning outcomes of the programmes are kept up to date with emerging issues in society. Still, it is advised to go about this in a more structured, proactive way, also involving alumni.

Conclusion
Bachelor's programme Industrieel ontwerpen: the committee assesses Standard 1 as 'satisfactory'.
Master's programme Industrial Design Engineering: the committee assesses Standard 1 as 'satisfactory'.

Standard 2: Teaching-learning environment

The curriculum, staff and programme-specific services and facilities enable the incoming students to achieve the intended learning outcomes.

Explanation:
The contents and structure of the curriculum enable the students admitted to achieve the intended learning outcomes. The quality of the staff and of the programme-specific services and facilities is essential to that end. Curriculum, staff, services and facilities constitute a coherent teaching-learning environment for the students.

Findings

In this standard, the findings of the committee regarding the extent to which the curricula enable students to achieve the intended learning outcomes are described. The findings are directed to the curriculum (2.1), didactic concept (2.2), feasibility (2.3) staff (2.4), and facilities (2.5).

2.1. Curriculum

Bachelor's programme
The bachelor's programme consists of three years of 60 EC (180 EC for the total programme). An academic year is divided in four quarters of ten weeks each. The final semester of the programme is split into a block of 10 EC (third quarter) and a block of 20 EC (fourth quarter) to enable an adequate execution of the bachelor's thesis project.

The aim of the first year is to offer students both orientation and selection. The second year provides a broadening and contextualisation of the content, whereas the third year combines deepening of understanding and insight in the core disciplines as well as a widening in addition to these disciplines (the 'minor' part of the programme, 20 EC). The bachelor's programme is concluded with an individual bachelor's thesis project of 20 EC. The university also offers two additional honours programmes (30 EC). The complete structure of the bachelor's programme can be consulted in appendix 4.

The setup of the bachelor's programme, so the committee read in the preparatory documents, reflects the multidisciplinarity of the IDE-domain. Four disciplines structure the bachelor's programme and constitute the learning themes that are visible throughout the bachelor curriculum:

- Styling (among other things sketching and designing);
- Engineering (among other things manufacturing and material sciences);
- Humanities and business (among other things ergonomics, human factors and marketing);
- Basics (among other things mathematics, mechanics and electronics).

A fifth – implicit and non-disciplinary – theme aims at integrating the disciplinary themes by means of project work and assignments.

The committee read in the preparatory documents that the IDE-programme takes several initiatives aimed at ensuring the coherence of the programme. The themes of the projects are chosen in such a way that a balance between design and engineering is achieved. Almost all staff members act as lecturers of courses as well as tutors of projects. Also, the weekly meetings with the teaching staff enable quick feedback and identification of potential imbalances, risks and disturbances in the execution of the educational programme. The students affirmed during the site visit to be generally very happy with the composition and coherence of the programme.

The committee finds the curriculum well-structured and coherent. The multidisciplinary intended learning outcomes of the programme, so the committee ascertained, have been translated into detailed individual objectives per course. The committee saw in the course descriptions and materials that the complexity of courses increases throughout the bachelor's programme. The learning themes are used as means to ensure cohesion between the courses in the sense that courses are attributed to one or more of the learning themes. However, the committee learnt from the students that although staff makes clear for every course what is expected, the overall structure of the programme, including the learning themes, are less clear-cut for them. The committee therefore thinks that more effort can be put into making the programme structure understandable to students.

The committee raised with the programme management the issue that of the learning theme 'business and humanities', the business aspects are less visible in the bachelor curriculum than other themes (see also 1.2.). Specific topics like pricing, service concepts and entrepreneurship do receive attention in the projects, but it is the opinion of the committee that they also need to be addressed through more formal training and should be more visible in the objectives of individual courses. The committee learnt that there are historical reasons for the lack of embeddedness of this pillar and values that new staff has been attracted to provide more substance in education as well as research. During the site visit, the committee heard that this will reflect well upon the bachelor's as well as the master's programme.

The committee also learnt that the training in interdisciplinarity and scientific problem-solving skills essentially happens in the projects. It is the opinion of the committee that these topics should also be addressed through more formal training in individual courses. Offering more explicit training on the topics mentioned above is, according to the committee, necessary as it is not so clear how projects are selected, structured and managed to ensure these topics are addressed.

The committee was impressed with the quality of the teaching and learning material. It saw some excellent examples of self-developed exercises and material. The course material on systems engineering was particularly impressive; a topic that is notoriously difficult to teach.

During the site visit, the committee learnt that the strategy of the programme is to create possibilities for students to spend time abroad, without obliging them to do so. Students confirmed that there are ample opportunities and support for students wanting to study or to do their bachelor's or master's thesis assignment abroad. The committee also learnt that the extension of the minor to 30 EC (one semester) in the Twente Education Model (TEM, see 2.2) will facilitate spending a complete semester abroad. Although the committee finds the current offer and strategy adequate, it welcomes this new, more explicit offer.

The language of the bachelor's programme is Dutch, although materials used are often in English. As the bachelor's programme progresses, students have some courses and (parts of) assignments in English and receive feedback on their English skills. This prepares them for the master's programme and an optional period abroad.

The committee discussed at length the scientific orientation and the notion of design research in the programme. It was mentioned by the lecturers that throughout their study, students are encouraged to develop a critical attitude towards theories, methods, and tools they are confronted with. In the second bachelor year, students are taught different ways of conducting research by means of a project where students have to look at a design problem

from scientific literature point of view. In addition, already at the bachelor's level, current research of the teaching staff surfaces in lectures, projects and tutoring. Before starting the bachelor's final assignment, students carry out (desk) research on the state of the art and new developments in the field that is the topic of their projects.

The committee took note of the fact that in the programme the notion of 'design research' is used to indicate 'design oriented research', which is geared primarily towards gathering information about the design problem, i.e. the application of systematic problem solving to challenges of increasing complexity rather than scientific 'research on the design process'. In literature, both notions of design research – research in design and research on design – are used and are valid in their own right, but they can cause confusion if not clearly distinguished. During their visit, the committee saw that different groups of interviewees had different opinions on this matter, a fact that was reflected in the bachelor's theses the committee consulted (see 3.2.). It is the opinion of the committee that further clarification is needed concerning which notion of design research is applied in which context and programme component.

The committee read that the concept of the final bachelor project is that the assignment is carried out externally, at a company or a public organisation within (or at times outside) the Netherlands. The committee values that this setup enables students to come into contact with industry. Students are coached by (selected) staff members of the external organisation. University staff members act as supervisors, and coach the students as well. During the site visit, the committee gathered more information on the supervision process. The committee learnt that there is a kick-off meeting, during which the assignment is thoroughly communicated in the presence of all parties. Before the start of the actual project, students write a project plan, which is to be approved by the appointed university staff member. The committee finds the approach with an early milestone effective in ensuring an appropriate scope for the project. Still, the committee also read in the preparatory documents that some external advisors would like more contact with the internal supervisors, after the initial kick-off meeting of the project. At the end of the project, students submit a final report that is assessed by the supervisor of the external organisation and the supervisor from the university. The latter decides whether the project's execution is of sufficient quality to be assessed by an assignment committee.

With regard to the bachelor's thesis, the committee heard from lecturers and students that every bachelor assignment must include a literature study in order for the student to become acquainted with the problem, and that including a design rationale is a requirement. Despite this assurance, the literature study was absent from a number of the bachelor's theses reviewed by the committee (see also 3.2.). The committee urges the programme management to ensure that all bachelor theses contain a literature study, regardless of what notion of design research is applied, and regardless of the context (academic or non-academic) the bachelor project is carried out in. Training, explicit guidelines on the process and on the content of the thesis, as well as continued contacts between academic and industrial supervisors are some of the means that could improve this.

The committee applauds that the programme finds a strong relationship with the professional field important. Next to the setup of the bachelor's thesis, this link is established by different means. A number of staff members involved with teaching duties have ties with related industries or have an industrial background. In some of the courses of the programme, guest lecturers from industry are invited. Field trips are mandatory in some courses.

Master's programme
The total study load for the two-year master's programme is 120 EC. The first five quarters of the master's programme consist of courses (75 EC); the final three quarters (45 EC) are spent on the master's project (thesis). The master's programme is in English.

The master's programme is more academically focused than the bachelor's programme. The emphasis is on design methodologies and problem-solving strategies underpinned by a solid theoretical foundation. The master's programme focuses on the field of IDE from five different perspectives. Each perspective is translated in a track:

- Design and Styling (DS), in which students are trained to address product and services development with accents on the historical context of products, consumer concerns and emotional benefits;
- Emerging Technology Design (ETD), which focuses on the introduction of new technologies onto the consumer market. Graduates of this track are able to modify consumer products by using new technologies. As technologies can differ considerably, various (individual) programmes;
- Management of Product Development (MPD), in which students aspire to manage the product creation process effectively and efficiently, while communicating with a variety of stakeholders (ranging from target groups and clients to suppliers, agencies and experts), both internally and externally;
- Architectural Building Component Design Engineering (ABCDE), which wants to train students for the new building practices society needs, i.e. (flexible) buildings that can be transformed for different purposes and of which the systems and components can be reconfigured and reused (this master track will no longer be continued);
- Cradle to Cradle (CTC), in which students are educated in the principles of re-usability and cutting-edge approaches that maximise the industrial ability to turn used materials into new products, in order to apply these in industrial environments (this master track will no longer be continued).

Each track contains a number of characteristic and core courses and a master's project in line with the track's specialisation. Furthermore, a student can participate in a selection of IDE-courses and some optional courses. In this way, students can personalise their programmes. During the site visit, the committee learnt that the students value this aspect of the master's curriculum, allowing them to customise their trajectory in alignment with the kind of designer they aim to be. On being asked whether subjects are lacking from the curriculum, some students mentioned that the business related content can be improved upon.

During the site visit, the committee heard from the master students that at the start of the master's programme, they are required to fill in a list of their desired courses. The research chair of the topic most related to the track vouches for the quality and feasibility of individual student programmes by checking this list for all individual students. The Disciplinary Council is responsible for a balanced offer of master's courses, while it is the responsibility of the Examination Board that each individual master's programme draws from this offer in a balanced and deliberate manner. The committee saw that this procedure is also sufficiently clear to the students. During the site visit, the committee moreover learnt from the students that they are well informed at the end of the bachelor's programme on the master tracks so that making an informed choice is possible. Lecturers and track coordinators were confirmed to be available for information.

The committee is of the opinion that the master curriculum is an adequate translation of the intended learning outcomes of the programme. The committee is very pleased with the composition of the master tracks and thinks, together with the students, that the flexibility of the programme allows for a very good outcome, especially in combination with the availability of the staff.

The committee was impressed with the quality of the teaching and learning material. It saw some excellent examples of self-developed exercises and material.

The committee read that the scientific orientation is more pronounced in the master's programme than in the bachelor's programme. The content of the courses depends more strongly on the staff members' present research, enabling students to engage in contemporary and relevant research questions, make use of scientific publications in the materials and experience scientific practices like peer review. The committee heard from the students that they are required to read academic papers in various courses. In selected courses, students write a scientific essay/publication as the (final) assignment. Students explained during the site visit that this had helped them in developing their academic writing skills. They also mentioned that they are expected to be aware of research methods and to apply them in the courses. Like at the bachelor's level, the committee found that on the one hand further clarification is needed concerning which notion of design research is applied in which context and programme component (see above). On the other hand, there is room for more explicit training on the scientific approach.

The master's programme is concluded with an individual master's project. The master's thesis is a problem-oriented project in the form of an in-depth research or design project. Its main objective is to carry out an individual research or design project, independently, in one of the subfields of Industrial Design Engineering. Applying state-of-art scientific knowledge of the subfield is a requirement of the project. During the site visit, the committee heard that master's projects must have a design as well as a research focus, although the emphasis can be on one of both. The committee learnt that whereas the bachelor's thesis is more geared towards answering questions connected to a particular problem, in the master programme a particular problem is more used as a case study on how to solve a category of problems. In the master, the requirement with regard to research-based methods is more comprehensive.

In general, the assignment is carried out externally, at a company or a public organisation within the professional field. The final responsibility for the supervision lies with the chair of the graduation committee of the student, who is a professor at the Faculty of Engineering Technology. A scientific member of the chair of the graduation professor is appointed as a daily supervisor. The committee talked about the milestones that are foreseen in the master's project and heard that there is a formal review early on in the process, as the professor has to approve the assignment in order to prevent it from being too ambitious. The committee values the concept of the master's project, particularly the early quality check and the joint supervision. The committee moreover applauds that the master assignment is carried out externally.

The preparatory documents mention several initiatives at the master's level to prepare students for their further careers. Students are encouraged to explore the attractiveness of fields of expertise or industries in regular courses or in 'selected topics' courses. Thesis projects are carried out externally and the research of staff members usually involves external partners. Still, the committee also took note that student evaluations mention a lack in preparation for future career in exit interviews. This issue was discussed with students,

lecturers and management alike. It was mentioned that as lecturers have an open-door policy, students on the one hand often ask advice regarding this matter directly. Also, the issue is present implicitly throughout the bachelor's and master's programme as students are constantly challenged to reflect on the type of designer they aim to be. On the other hand, the IDE-programme management explained that this is an issue they indeed want to improve on, e.g. by involving the alumni.

2.2. Didactic concept

Bachelor's programme
The bachelor's programme at Twente aims to offer students a challenging variety of learning activities in order to create an active and high-effort learning environment. In the bachelor's programme, the didactic concept is that of project-led education. The project-led education, so it was explained during the site visit, is key in educating the T-shaped professionals the programme aims at. Each term, there is a concentration on a theme in order to ensure a learning approach directed towards a real understanding and the application and evolution of what was learned. Students start designing from the very first day they are in the programme. They then experience the need for knowledge and skills. To provide students with the underlying knowledge and practical and academic skills that allow them to execute projects at the adequate levels of abstraction, creativity and integration, projects usually link up with workshops, laboratory exercises, computer courses and dedicated lectures. These project-supporting courses are preferably offered 'just in time' (at the moment the students need the theoretical input). Theory and skills that are not directly applicable are organised in parallel to the project work. Moreover, students are challenged to acquire technical and practical skills in extracurricular activities. During the site visit, students mentioned this approach to be challenging at first, but to be beneficial for their evolution in the end.

About 30% of the curriculum is composed of projects, and half of them are individual (including the bachelor's project). Every year contains at least one group project and several individual projects. Group projects are executed by 4 to 16 students and are composed in such a way that success is only possible if all members contribute adequately. Team members have different tasks and responsibilities. In this way, students are exposed to multiple viewpoints, interests and stakes that play a role in projects and organisations.

The project groups are supported by a tutor, who is a member of staff. The main tasks of the tutor is to guide the students in finding, combining and applying knowledge. Tutors see their students on average every week. On being asked, students mentioned they are happy with the support offered in the projects. The committee learnt that whereas guidance in the first year is very structured, more is left to the student's own initiative as progress through the programme is made. It was learnt that it depends on the projects whether a milestone is foreseen in the project process.

The committee finds that the didactic concept provides a good balance between theory and practice, and individual and team work. The committee thinks project-led education is especially well suited for design education as it requires the use and integration of the variety of knowledge and skills taught in the curriculum. The committee moreover appreciates the way in which project-led education is implemented. The committee values that students learn to work in increasingly multidisciplinary teams through direct experience (see also next paragraph on the TEM-model). The support students receive for this is adequate, and the committee is pleased with the increasing autonomy and independence of students in the execution of their project work. Still, it is the opinion of the committee that the projects

should be supplemented by formal training in order to fully prepare students to work in multidisciplinary teams (see also 2.1.).

The committee saw that the concept of project-led education has been adapted for all bachelor's programmes at the University of Twente in the Twente Educational Model (TEM). At the core of this new model lies that students are trained in modules. It is believed that this will enhance the strength of the IDE-programme. It was explained to the committee that with the TEM-model, students from different disciplinary backgrounds are working together on some of the projects, which is seen as an added value. This means lecturers are also co-operating increasingly.

Master's programme
Courses at the master level make use of a variety of teaching methods, as is the case at the bachelor's level. At the master's level, the concept is geared towards an increased focus on autonomous study and the attitude this requires. The master's student has more freedom of choice in composing his/her programme, with a lower numbers of lectures, tutorials, etc. The ability to work project-based is assumed to be a capability of a master's student. Many courses include design assignments related to realistic and topical challenges. Depending on the specifics of a course, these assignments are executed individually or by groups.

During the site visit, the committee learnt from the master's students that they are happy with the didactic approach and the fact that there is a learning line from bachelor's to master's that gradually allows for more autonomous study and the development of an independent attitude.

The committee appreciated that at the master's level, there is more focus on well-defined topics, on training for practice and on developing independence through more demanding thesis work.

2.3. Feasibility

Bachelor's programme
Data on the number of contact hours provided in the bachelor's programme are available in appendix 5. The contact time for the three years has been derived from the total of lectures, tutorials, exercises, guidance of project groups and examinations. The emphasis shifts throughout the bachelor's programme from plenary contact hours to individual consulting hours, thus increasingly focusing on the student's ability to work autonomously.

The bachelor's programme requires a high study load, with 42 hours of study expected from the students. On the one hand, the experienced study load is evaluated regularly and no problems are reported. On the other hand, the success rate at the bachelor's level is below the performance indicator after four years set by the university (39% for the UT's bachelor's programmes). The committee learnt from the students during the site visit that the study load in the bachelor's programme is indeed very high. They also explained they find this a logic consequence of having chosen a design programme, as learning to design is very time-consuming.

Several measures have been taken to improve the success rates of students. Students are now only admitted to a project team if they have demonstrated adequate study progress. Moreover, students are not allowed to execute two project assignments at the same time. In addition, they are not accepted to start their bachelor thesis project before having passed their bachelor courses.

The newly implemented TEM-model is also expected to improve the success rate of students. It foresees blocks of 15 EC with one mark per block. Combining this fact with a BSA at 75% means students have to finish three out of four blocks if they want to be admitted to the second year. Also, the TEM-model spreads the workload more evenly over the modules. Members of the Examination Board mentioned to the committee that they experience the BSA as being effective, with 15% of first-year-students leaving university last year.

The programme has also revised the mentoring system in order to improve the support students receive. There now is a four-member study advisory team, headed by the study advisor. The study progress is monitored in detail in the first academic year; based on this, the student receives intermediate advice and members of the advisory team may approach individual students for consultation. During the rest of the study, a student bears the responsibility for approaching a member of the study advisory team if the need arises. Moreover, a student counselling service is available that can be consulted with regards to study delays choice of study, motivational problems, issues involving family matters or personal circumstances, etc.

Students and lecturers alike mentioned that due to the short lines of communication, staff members know all students and their results, enabling a prompt action if study progress is substandard.

Although the committee received no complaints regarding the feasibility of the programmes, the committee thinks the study progress and study load of bachelor students should be closely monitored. The committee however trusts that the recent initiatives, combined with the open atmosphere of the IDE-community, will improve study progress.

Master's programme
Data on the number of contact hours provided in the master's programme are available in appendix 5. Contact hours at the master's level strongly depend on the individual student's programme. Students have on average 12 contact hours per week when they are taking courses. During the preparation of the master's thesis, this number is lower. University staff members act as study leaders and coach the students, while allowing them to act relatively autonomously. Supporting the students in their work is done through face-to-face meetings, e-mail, video-conferencing, conversations over the phone and other means.

Master students made it clear to the committee that they know who to turn to if necessary. The primary contact person for master's students is the co-ordinator of the chosen track. Also, they can turn to the programme director or individual lecturers. The committee learnt that feasibility is an explicit point of evaluation when the track coordinator approves the individual students' bachelor programme.

The alumni mentioned during the site visit that the increased autonomy at the master's level is challenging, and that study load is high, but that they experienced it as a welcome transition. Moreover, they are supported in developing a plan of approach right from the beginning. They also explained that they had felt well prepared for the transition to the English master's programme. They described the master students as a very motivated group, welcoming the master's programme as a new challenge.

The committee received no complaints with regard to the feasibility of the master's programme. It is of the opinion that although the study load at the master's level is fine, and

the student group highly committed to the programme. The open-door policy moreover enables timely, individual, personal guidance.

2.4. Staff

The IDE-programmes are taught by scientific staff belonging to chairs throughout the Faculty of Engineering Technology and even outside of this faculty. This is due to the multidisciplinary nature of the IDE-programme. This makes calculating the student-staff ratio complex, which is why only an approximation is possible. For the master's programme, this situation is made even more difficult by the fact that students can to a great extent choose their own programme.

The student-staff ratio can be consulted in appendix 5. It was calculated by including only the manpower involved in the IDE-courses at bachelor's/master's level (professors, lecturers, information specialists and PhD-students involved) and adding the lab and workshop supervising, the tutoring and coaching of the thesis project. This number was divided by the number of registered bachelor/master student.

At the bachelor's level, the student-staff ratio is at 29.1. For the master's programme the ratio is 21. This points at a considerable workload for the staff, especially at the bachelor's level. The committee heard that the staff tries to handle the increased workload by improving its efficiency. It was mentioned that the close contact with students in the project-led education is rewarding and effective, but not efficient. Still, students do not complain and, so the committee could note, are even very enthusiastic about the availability of staff.

The committee learnt that there is a short feedback loop in the programme, with students heavily involved in committees and an open door policy that ensures that students can approach staff members for direct feedback. Students explicitly mentioned their appreciation of the open atmosphere and all told the committee they feel their remarks are being taken into account. The lecturers explained to the committee that the close connection between staff and students allows them to make a dedicated programme.

The committee was very impressed with the stimulating, open community. It lauds the open-door policy of the staff, its commitment to the teaching concept, and its role in giving guidance to the students throughout their education. It was clear to the committee that this kind of close-knit community leads to short feedback loops, and that problems are dealt with in a timely fashion. The heavy involvement of students in this process reinforces the committee's belief that the programme is improvement oriented.

The committee on the one hand saw that this already strong community has recently been strengthened by the adoption of project-led education and multidisciplinarity at the bachelor's level throughout the university (TEM). Nevertheless, the IDE-community is also vulnerable. Although no complaints were received on the availability of staff, the student-staff ratio is high, and the teaching-learning environment draws heavily on the already busy staff. Also, the committee thinks that the current environment works very well for the current scale of the programme. Against the background of increasing administrative load and rising student numbers, this teaching/learning environment may prove not to be sustainable. The committee asks to closely monitor this. The committee learnt from the programme management that they only want little growth and are looking into measures to ensure this. The committee supports this course of action.

Education is regarded to be an essential part of the staff's assignment. The teaching staff meets on a weekly basis to discuss educational topics. All staff members involved in teaching must obtain the University Teaching Qualification (UTQ). Of the teaching staff of the bachelor's programme, 63% currently hold the UTQ and 28% have started it. At the master level 60% currently hold the UTQ and 29% have started it.

Teaching, coaching and supervisory tasks in the master's programme are more often performed by full professors than in the bachelor's programme. The committee read that at the bachelor level 89% of staff hold an MSc, whilst 50% of staff involved at the bachelor's level has a PhD. At the master level, this is 94% and 69%. The committee learnt that individual staff members, especially at the master level, are supported to obtain a doctorate, an initiative that is applauded by the committee. Newly appointed staff is required to hold a doctorate. Since 2010, the university's policy is to attract scientific staff into tenure track positions.

An assessment of educational skills is always incorporated in the application procedure for new staff. Teaching tasks are explicitly included in the annual performance reviews. Also, for tenure trackers, educational objectives are included in the agreement on the objectives to be reached. Evaluations, also of courses, may give cause to initiatives toward improving teaching skills. Students found teachers to be knowledgeable on their subject, and very able to transfer this to the students.

During the site visit, it was explained that currently, the IDE-programmes are in the process of attracting new staff for the master's tracks on the 'emerging technology design' and 'design and styling'. This will further strengthen the three remaining tracks and add to their visibility and quality. .

With regard to the international benchmarking of the content of the courses, the committee was told that lecturers are part of international networks, through which they are inspired regarding the most recent trends. Also, they are connected to the state of the art through their research, which they constantly try to integrate. New and emerging topics can easily be integrated in the projects and will also find their way to the taught courses running alongside the projects.

The committee values that the educational part of the assignment of the staff is taken very seriously, as is evident from the high proportion of staff members with UTQ. Still, there is room for improvement with regard to the proportion of staff with a PhD. The committee appreciates that the programme is currently taking several steps to improve this, and that priority is given to the specialisations where this need is most urgent.

2.5. Facilities

Key to the educational concept of the programme is providing the students with a multifunctional learning and working environment that allows professional group work and is equipped with adequate ICT and meeting facilities. The environment must facilitate group work (in relative) isolation and lecturing for a larger group. This variety in facilities is made available to the students in the building that hosts the Faculty of Engineering Technology.

The cluster of IDE shares a number of facilities with the cluster of Mechanical Engineering such as the mechanical workshop, assembly workshop, modelling workshop, laser-cutting facilities, rapid prototyping facilities etc. Students have access to these facilities. Moreover, students gain additional insights on practical skills while working together with experts in the

workshops. In elaborating and assessing their designs, students also have access to the virtual reality laboratory of the faculty. On being asked, students said they found the facilities very good and appreciated the availability of experts for help.

Considerations

The committee concludes that IDE creates a coherent teaching-learning environment. The committee was highly impressed with the quality of the teaching staff, their open-door policy, and commitment to the teaching concept. The committee values the high proportion of staff with UTQ. Still, the student-staff ratio is high, which is why the committee asks to closely monitor the sustainability of the current environment. PhD-levels of staff can be improved upon, which is why the committee applauds that individual staff members, especially at the master level, are supported to obtain a doctorate, and that priority is given to the specialisations where this need is most urgent. The committee is impressed with the extensive course materials, which contribute to the establishment of a learning environment of high quality.

The committee found clear evidence that the IDE-programmes at the UT are oriented towards constant improvement. Many of the remarks made by the committee have already been discussed within the programme and have in some cases led to concrete initiatives.

Bachelor's programme
The committee finds, in general, the curriculum well-structured and coherent. It is an adequate translation of the intended learning outcomes of the programme. Still, it thinks that the 'humanities and business'-pillar, apart from redefinition and relabelling (see standard 1), needs strengthening in the sense that specific topics need to be addressed through more formal training, next to the projects. The same holds true for the development of interdisciplinarity and scientific problem-solving skills.

The committee is of the opinion that clarification is needed on what notion of design research is applied in the programme. The committee values the setup of the bachelor's thesis, with external partners involved and an early milestone ensuring that projects are adequately scoped. The committee however urges the programme to consider measures to improve the scientific approach in the bachelor theses, such as explicit training, guidelines on the process and on the content of the thesis, as well as continued contacts between academic and industrial supervisors during the bachelor's project.

The didactic concept offers a good balance between theory and practice, and individual and team work. The committee thinks project-led education is especially well suited for design education and appreciates the way in which project-led education is implemented.

The study progress and study load of bachelor students should be closely monitored, but the committee trusts that the recent initiatives taken by the programme, combined with the open atmosphere of the IDE-community, will improve study progress.

Master's programme
The committee is of the opinion that the master curriculum is an adequate translation of the intended learning outcomes of the programme. The master tracks are well-composed and the students' flexibility in composing their programme allows for a very good outcome. The committee values the way in which students are allowed to work increasingly autonomously and has ascertained they receive the necessary support for this.

The committee considers the decision to focus on three tracks an important move (see standard 1). Together with the planned increase in staff, this will strengthen the remaining three tracks and contribute to the profile of IDE at UT.

The committee values the concept of the master's project. Although the committee saw that the scientific orientation is evident throughout the master's programme, the committee found that on the one hand further clarification is needed concerning which notion of design research is applied (see bachelor's programme), and that on the other hand, there is room for more explicit training on the scientific approach.

Although the committee took note of the fact that recent initiatives better prepare master students for their future career, the committee thinks that the master's programme could be more proactive in this regard.

Conclusion
Bachelor's programme Industrieel ontwerpen: the committee assesses Standard 2 as 'satisfactory'.
Master's programme Industrial Design Engineering: the committee assesses Standard 2 as 'satisfactory'.

Standard 3: Assessment and achieved learning outcomes

The programme has an adequate assessment system in place and demonstrates that the intended learning outcomes are achieved.

Explanation:
The level achieved is demonstrated by interim and final tests, final projects and the performance of graduates in actual practice or in post-graduate programmes. The tests and assessments are valid, reliable and transparent to the students.

Findings

In this standard, the findings of the assessment system and methods used are described (3.1), followed by the performance of graduates (3.2).

The assessment committee has read the programme's education and (final) examinations regulations (OER), has spoken with the members of the Examination Board and has evaluated assignments as well as exams of the different years of the programme.

3.1. Assessment system and methods

The IDE-programmes use a mix of assessment methods, matching the different types of educational methods, and related to the different learning objectives: written examinations, oral examinations, project examinations, exercises and assignments. The final mark of an examination is based on one or a combination of these methods.

Quality assurance of assessment is the responsibility of the Examination Board, that meets every week. Lecturers and project co-ordinators make plans for the assessment of their courses and projects. Exams are crosschecked and verified by colleague lecturers. Both the lecturers and the students evaluate the quality of assessments on a regular basis. If a need for adjustment is signalled, this is presented before the Examination Board.

As the committee noted that an important part of the examinations is done through oral exams, it discussed with the Examination Board how the quality of this process is assured. It was explained that oral examination is an explicit topic in the UTQ. Also, as a rule of thumb, two staff members from different chairs are present at exams, including oral exams.

The committee talked at length about the assessment of the students' project work. It was noted that in project examinations, group work and integrative aspects are judged, as well as the individual accomplishments of each student in the project. Every project has a focal point, around which the evaluation revolves. The tutor of a project is one of the assessors. The project exam usually takes up half a day and includes a second examiner, who is not from the same chair. Students are interviewed in group as well as individually.

The committee applauds the explicit emphasis on assessment, and the constant effort to improve its quality. The committee has established that, in general, the programme has an adequate assessment system. The committee finds that there is an appropriate variety of assessment methods, the validity of which is structurally checked. Confirmation was also received that the assessment system is transparent. The committee was also impressed with the quality of the feedback it found in the consulted materials.

Specific assessment rules have been drawn up for the bachelor's and master's project. The committee learnt that the evaluation procedure for the bachelor's project has in recent years been adapted towards the standard used for the master's project. This has to be seen in the

light of the increasing importance of the bachelor thesis. Bachelor students, like master students, now receive written feedback to their work, justifying the marks given. In addition to the existing product evaluation, process evaluation is now part of the assessment of the bachelor's thesis. In this way, the programme aims to document the process underlying the product and give more visibility to the application of what students have learnt in the IDE-programme (see also 3.2.).

The aspects of assessment for both the bachelor and the master thesis are:

- Level of the contents of the work undertaken in the light of the aims of the bachelor's/master's programme;
- Demonstrated skills of an engineer in the Industrial Design Engineering field at bachelor's/master's level;
- Communication skills (report, presentation, communication with colleagues in the external organisation) at bachelor's/master's level;
- Ability to defend and discuss the obtained results and the design at bachelor's/master's level.

These elements are evaluated in the context of the report (thesis), the (formal) presentation in presence of the members of the bachelor's/master's assignment examination committee, oral cross-questioning, problem-solving approach (of the final project) and mastering of the theory behind the problem. Marks for each component are used to substantiate decisions and to give feedback. The marks are given in consultations between the markers. The final mark is not necessarily the average of the component marks. The Examination Board explained to the committee that they want examiners to motivate what aspect is most counted in the final mark, enabling for instance the possibility to take a more elevated difficulty of the subject into account. Dedicated forms are used for the bachelor's as well as the master's projects, containing the different aspects of assessments. Feedback, so the lecturers explained to the committee, is given to students with regard to these different elements, a fact that was confirmed in the theses the committee looked into.

The examination committee for the bachelor thesis consists of the internal supervisor, and a professor or senior staff member (UHD) who chairs the examination. The committee learnt that the examiner is from a different chair than the supervisor. The supervisor from the external organisation is invited to join the committee as an advisor.

The master's graduation committee consists of the chair of the committee, who is a professor at the Faculty of Engineering Technology, the daily supervisor of the master student, who is a scientific member of the chair of the graduation professor, and a scientific staff member from another specialisation area, and therefore from another chair of the faculty. The supervisor from the external organisation is invited to join the committee as an advisor.

The committee established that the quality of the evaluation process of the master theses was already and remains up to standard. The transparency and feedback process for the bachelor projects has improved recently. The committee sees it as an important step that process aspects are now also taken into account, as this makes the application of what has been learnt in the programme more visible. This was not always evident in the bachelor theses the committee consulted.

During the site visit, the committee talked at length about the moderation of grading in the projects. It was explained that within separate projects, the level and the grading are compared in meetings between the different tutors. Moreover, cross-fertilisation is accomplished as

tutors are in different groups for every new project. For the bachelor's and master's projects, the rule is that members of the assessment teams should come from different specialisations. The committee also learnt that before final project exams, all the tutors decide together on the top and bottom ranked projects.

The committee greatly appreciates that evaluations and assessments in the IDE-programmes are done jointly as much as possible, as this supports the reliability of the assessment system. However, the committee also thinks there is a need for more robust formal moderation. Currently, the system is based on a common practice, which at first sight seems to be working well. Still, the committee is of the opinion that this is a vulnerable method of working, especially if the IDE-community becomes larger. As a result the committee thinks this process needs to be made more explicit in order to ensure consistency across the board.

The students mentioned that although they agree that the assessment of the projects is notably difficult to structure, they did not get any unexpected results. Still, the committee also read that in the group projects, students sometimes complain about the effort of fellow-students. The committee read that this part of the total project assessment could be improved by a more precise description of the division of tasks of each student in the project team, or by peer-review among the students.

3.2. Performance of graduates

Bachelor's programme
The committee read that the vast majority of the external supervisors are very positive about the performance of the students and the results of the thesis projects. Master students and alumni confirmed they were well prepared for further study after the bachelor level, also with regard to the level of their English. Not enough bachelor students have left university for a career after obtaining the bachelor degree in order to draw conclusions on this aspect.

The committee read a selection of bachelor theses. According to the committee, the final projects overall meet the requirements with regard to level and orientation. The committee took note of the fact that the marks given show the usual degree of variance and were in accordance with the marks they would give. No more than 10% of the bachelor theses were seen as unsatisfactory by the committee.

Still, the committee found a few examples of bachelor projects that had gone not according to plan. Questions on the supervision of the project plan were subsequently asked. The programme management told the committee that students are asked to make a plan of approach before starting with their bachelor's or master's project, and that this plan has to be approved. In this way, it was hoped that the feasibility and relevance of the project could be assured.

Furthermore, the committee found that the application of learning was not always evident in some of the bachelor theses. The explanation of the context was sometimes missing. Also, the research component was not always adequately executed. The committee learnt that the IDE-programme now better controls the students that are allowed to start with their bachelor's project as only students having finished all bachelor's courses are allowed to start. This should improve the overall quality of the bachelor theses.

The committee suggests that more formalised efforts are made to identify projects that are heading for trouble and to support students to recover them. Also, the programme

management has to ensure that students doing their bachelor's project in a non-academic environment receive the necessary support to improve the academic orientation of the bachelor theses (see also 2.1.).

Master's programme
The target is that 15% or less of the students receive a mark of 6 or less for their master's thesis. Recent results indicate that the programme has moved beyond this goal with only 4% of the students having received a mark of 6.

The committee read a selection of master theses. The final projects meet the requirements with regard to level and orientation. The committee took note of the fact that the marks given show the usual degree of variance and that the marks given were in accordance with the marks they would give. No more than 10% of the bachelor theses were seen as unsatisfactory by the committee.

The committee was impressed with the level achieved in the master theses. Many of the theses reviewed showed work of the highest quality applied to interesting and challenging problems. Most of the theses the committee reviewed addressed design-related problems, i.e. applied research. The committee would welcome at least a small percentage of the projects to be more oriented towards theoretical research.

The positions held by master graduates show a large degree of variation, although most are within the broad range of Industrial Design Engineering. The alumni the committee spoke to were very pleased with the preparation they received from the programme. The PhD-student present also lauded that the programme had provided him the methodological, systematic problem solving approach necessary for his current job.

Considerations
The committee has established that the IDE-programme has an adequate assessment system at the bachelor's as well as the master's level. There is an appropriate variety of assessment methods. The committee concludes that the quality control mechanisms that are in place are adequate and ensure that the assessment is transparent, reliable and valid. The committee greatly appreciates that evaluations and assessments in the IDE-programmes are done jointly as much as possible. Still, the committee thinks that a more robust moderation process needs to be put in place to ensure consistency also in the future.

The committee has found that the achieved learning outcomes at the bachelor level are adequate. The committee suggests that the research component in the theses is more structurally embedded in future, and that extra effort is made to safeguard the scope of the bachelor projects. This will also involve ensuring that students doing their bachelor's project in a non-academic environment receive the necessary support, in order to improve the academic orientation of the bachelor theses (see also 2.1.).

The committee is very enthusiastic about the quality of the master theses and was impressed with the motivated alumni, who had easily found a job in the IDE-domain.

Conclusion
Bachelor's programme Industrieel ontwerpen: the committee assesses Standard 3 as 'satisfactory'.
Master's programme Industrial Design Engineering: the committee assesses Standard 3 as 'good'.

General conclusion

The ambition of the IDE-programmes of the UT to deliver T-shaped professionals fits the DSR. Whereas the focus at the master's level is clear, the bachelor's profile is in need of further elaboration and clarification. The intended learning outcomes for the bachelor's and master's programme should be further elaborated so that they can better serve as a tool for the development of the teaching learning environment and the assessment system.

According to the committee, the content of the curriculum and the available staff constitute a coherent, attractive teaching and learning environment for the students. This applies to the bachelor's as well as the master's programme.

The committee is satisfied with the assessment system. It has found that the achieved learning outcomes at the bachelor level are adequate and was enthusiastic about the achieved learning outcomes at the master's level. The assessment system and theses demonstrate that the intended learning outcomes are achieved at the bachelor's as well as the master's theses.

For all three standards, the committee has a formulated a few recommendations for further improvement.

Conclusion
The committee assesses the *bachelor's programme Industrieel ontwerpen* as 'satisfactory'.
The committee assesses the *master's programme Industrial Design Engineering* as 'satisfactory'.

Appendices

Appendix 1: Curricula vitae of the members of the assessment committee

Prof. dr. Lucienne Blessing (chair)
Luciënne Blessing obtained her MSc from the Technical University of Delft (Industrial Design Engineering) and her PhD from the University of Twente (UT) (1994). She worked 1984-1992 as lecturer at the UT (Mechanical Engineering), from 1992-2000 at the University of Cambridge (Engineering Design Centre) as senior research associate and Assistant Director. From 2000-2007 she held the Chair of Engineering Design and Methodology at the University of Technology Berlin. In 2007 she became Vice-president for Research at the University of Luxembourg (until April 2013) and Professor for Engineering Design and Methodology. Since 1999 she co-organises the International Summer School on Engineering Design Research for PhD candidates. She co-founded the Design Society (2000), was elected member of its Management Board until 2005, and of its Advisory Board since then. 22 PhD candidates successfully defended their PhD under her supervision and 5 under her co-supervision. Since 2011 she is a member of the steering committee of the EUA's Council of Doctoral Education.

Prof. dr. John Clarkson
John Clarkson obtained his B.A. in Engineering (Electrical Sciences) and his Ph.D. in Engineering (Electrical Machines) from University of Cambridge, 1988. He obtained a Doctor Honoris Causa (Engineering Design) from the K.U.Leuven in 2012.

John Clarkson returned to the department in 1995 following a seven-year spell with PA Consulting Group's Technology Division where he was Manager of the Advanced Process Group. He was appointed director of the Engineering Design Centre in 1997 and a University Professor in 2004. John is directly involved in the teaching of design at all levels of the undergraduate course.

At PA John gained wide experience of product development with a particular focus on the design of medical equipment and high-integrity systems, where clients required a risk-based systems approach to design to ensure timely delivery of safe systems.

His research interests are in the general area of engineering design, particularly the development of design methodologies to address specific design issues, for example, process management, change management, healthcare design and inclusive design. As well as publishing over 500 papers, he has written and edited a number of books on medical equipment design, inclusive design and process management.

Prof. dr. Ilpo Koskinen
Ilpo Koskinen was a sociologist, but has worked as a professor of industrial design since 1999. His main research interests have been in mobile multimedia, the relationship of design and cities, and methodology in design research. His most recent book is "Design through Research: From Lab, Field, Showroom," a book on constructive design research (Morgan Kaufmann, San Francisco, 2011). He has been professor in University of Art and Design (now Aalto), and held visiting positions in Denmark, Hong Kong and Australia.

Manon Kühne
After finishing pre-university education (natural sciences and technology with French and Drawing as electives) Manon Kühne started her Bachelors in Industrial Design Engineering at Delft University of Technology in 2008. In 2010-2011 she spent a semester abroad studying Innovating Usages and Product at Strate Collège, Sèvres (France). After obtaining her

bachelor's degree in July 2011 she postponed the start of her masters to represent students as the Commissioner of Education in the board of Study Association i.d from August 2011-August 2012. Meanwhile she took place in the Education Committee up until July 2013. In September 2012 she started her Master Integrated Product Design, meanwhile working as a student assistant at the quality assurance department of the faculty. After doing an internship at Fabrique Public Design in Delft (july 2013 – December 2013)she will start her graduation year in February 2014.

Prof. dr. Albert Pilot
Albert Pilot is Emeritus Professor of Curriculum Development at Utrecht University and Professor of Chemistry Education at that university. His research focuses on curriculum development, design of learning and instruction, talent development, honours programmes, professional development of teachers and context-based science education.

Prof. dr. Markku Salimäki
Markku Salimäki, Dr.Sc.(econ), M.Sc.(eng), has been the Director of the International Design Business Management (IDBM) Programme at the Aalto University, but retired in 2012. After graduation from Helsinki University of Technology (Industrial Management) in 1973 he worked in different managerial positions in the Finnish Ceramic and Glass Industry. Markku Salimäki left the industry in 1992 to start his doctoral studies at HSE and received his Licenciate Degree in 1996 on topic of "the Competive Strategy of the Finnish Design Companies". Markku Salimäki defended his doctoral thesis and received the degree of Doctor of Science in 2003 at Helsinki School of Economics. In 2007 Markku Salimäki was nominated as Visiting Professor at Kyoto Institute of Technology, Japan. In March 2011 Markku Salimäki was nominated as Professor-of-Practice at Aalto University's IDBM Program.

Markku Salimäki's research interests include managing international design business in general, competitive strategies of design intensive business, design's role as competitive factor, design intensive entrepreneurship and benefits of multidisciplinary teams. He has published in several scientific journals and management magazines and given key-note and conference speeches in different countries.

Appendix 2: Domain-specific framework of reference

Domain Specific Reference Framework
for the academic Industrial Design Engineering programmes

Introduction

The academic educational programmes of Industrial Design Engineering in The Netherlands conjointly specify the profile of IDE Graduates. In this document, the educational programmes in Delft, Eindhoven and Twente describe that profile, the labour market positions of IDE Graduates, a number of specific features of the IDE curricula and the distinction between the Bachelor's and the Master's level.

In the description of the profile and capabilities of the graduates, the knowledge and skills themselves are described independent of the distinction between the Bachelor's and Master's level. The difference between these levels is described in section 5, and addresses the width and depth of this knowledge and these skills.

The characterisations in this document reflect the common understanding between the three educational programmes as concerns the quintessence of IDE. In this, the document also elaborates on a number of underlying sources[1, 2, 3, 4].

Profile of the IDE graduates

The Industrial Design Engineer is an academically educated product[5] designer who can integrate knowledge from different fields of technology with human factors, can see signals from the market and can generate creative ideas with new solutions. In industry, the need for such versatile product designers is evident.

A Bachelor of Science/Master of Science in Industrial Design Engineering can operate in the field of Industrial Design as an interdisciplinary designer. The graduate is able to recognise the relevant disciplines and aspects, such as technology, manufacturing and logistics, market and user, business and marketing, aesthetics and functionality and is able to integrate these aspects into the development of solutions: products, systems and related services.

In the full development cycle of products, the IDE graduate:

- is able to analyse market demands and user needs along with technological and social opportunities;
- is able to generate a (personal) vision on the design problem;
- is able to generate and select ideas and design concepts;

1 Dublin Descriptors (NVAO protocol).
2 The terms of reference of the last visiting committee "Assessment of Degree Courses Industrial Design Engineering", by A.C. Rotte et al., QANU Utrecht, The Netherlands, December 2007.
3 The descriptions of the profile and objectives of the three IDE programmes.
4 Reports like: Criteria for Academic Bachelor's and Master's Curricula (Joint publication by the three Technical Universities) (Meijers, e.a. TU/e, 2005); International Benchmark in Industrial Design Engineering (TU Delft, December 2005).
5 In the context of the Industrial Design Engineering programmes, the notion 'product' is seen as any combination of physical product, system and (accompanying) services that together constitute a marketable entity.

- is able to transfer existing knowledge to new problems and to implement new knowledge;
- can materialise a concept to the stage of a working model;
- is able to take into account the marketing and the product life cycle.

Because the graduate is an academically educated designer, he has a thorough command of scientific methods and techniques related to the development of products as well as in conducting research. Based on having knowledge and skills in relevant disciplines and sciences, and being able to use these in reasoning and methodological reflection during/on the process of development, the graduate is able to contribute to research projects and to the development of new knowledge.

The graduate is a practiced engineer who proves himself by purposefully rendering added value for the organisation he works in. Moreover, he is self-steering, responsible, creative, is able to build on his own knowledge and skills, is able to develop his own signature and is able to deal with limited certainties. Moreover, he can communicate, can document, visualise and present his design, can structure and manage his projects, can function both individually as well in a multidisciplinary team. The context of his activities can be international and intercultural.

The basis for this IDE graduate profile is formed during the Bachelor's programme and the profile is further developed during the Master's programme.

Domains of knowledge and skills in the IDE curriculum

On the basis of the profile, seven dimensions are identified for academic graduates in the IDE programme. Graduates should have the ability to address all these dimensions:

- *Designing*; A University IDE graduate can realise new or modified artefacts, products or systems, with the aim of creating value in accordance with predefined needs and requirements.
- *IDE-relevant disciplines*; A University IDE graduate is familiar with contemporary knowledge and has the ability to increase and develop this through study.
- *Research*; A University IDE graduate is able to acquire new scientific knowledge through research. In this respect, research entails the development of new knowledge and insight according to purposeful and systematic methods.
- *Scientific approach*; A University IDE graduate has a systematic approach characterised by the development and use of theories, models and coherent interpretations, has a critical attitude and has insight into the nature of science and technology.
- *Intellectual skills*; A University IDE graduate is able to adequately reason, reflect and form a judgment. These abilities are acquired or refined within the context of a discipline, and then become generically applicable.
- *Co-operating and communicating*; A University IDE graduate is able to work with and for others. This not only requires adequate interaction and a sense of responsibility and leadership, but also the ability to communicate effectively with colleagues, clients, (end-) users, suppliers, experts and laymen. He is also able to participate in a scientific or public debate.
- *Addressing temporal*, social and personal contexts; Science and technology are not isolated, and always have temporal, social and personal contexts. Beliefs and methods have their origins; decisions have social consequences in time. A University IDE graduate is aware of this, and has the competence to integrate these insights into his scientific work.

The IDE curriculum includes the following aspects/building blocks:

- Design Projects;
- Design Methods and Techniques;
- Engineering;
- Management and Market Studies;
- Design;
- Human factors;
- Socio-cultural awareness;
- Research Practices.

Furthermore, the IDE curriculum is a programme that provides a balance between the formation, processing, application, integration and contemplation of theory and skills. The Design Projects are the core of the curricula. The other building blocks are taught and integrated in the Design Projects.

Labour market perspective

Traditionally, prospects for designers in the labour market have been closely linked to the overall economic situation. In times of a booming economy, jobs were offered to graduates even before they had completed the IDE-programme.

In a declining economy, it can take graduates one or two years to find a suitable job. However, the enormous potential of current new developments (such as smart products, smart environments and portable products) means that new industrial designers are likely to be in great demand. More and more, governments and industry are convinced that innovation and smart design are set to play a very important role in future society.

Also, the fact that the domain of Industrial Design is widening its scope (for example to services, product-service combinations, the design of environments, the management of product development, brand design), means that the domain could soon become less dependent on the state of the economic situation.

So in the long run, the influence of design in society will increase, as will the demand for highly educated professionals in this field.

IDE graduates are found in jobs such as industrial designer, product designer, product engineer, design engineer, design manager, product manager, interaction designer, researcher, usability consultant, design-centred researcher, strategic designer, brand manager, New Product Development project leader, innovation consultant, design-brand consultant. Up until now, a relatively low number of Bachelors' graduates has directly entered the labour market.

Differences between a Bachelor's and a Master's graduate

The Bachelor's and the Master's degree differ in terms of orientation and level.

A Bachelor's graduate	A Master's graduate
Can apply knowledge in various familiar situations	Can apply knowledge in new situations
Can work under supervision; average level of autonomy	Can work independently; high level of autonomy
Can approach/tackle and solve (relatively) basic (design) problems/questions	Can approach/tackle and solve (more) complex(design) problems
Can develop knowledge and skills/ competencies from related disciplines	Can develop knowledge and skills/ competencies from various disciplines
Can integrate and apply knowledge and skills/competencies in relatively basic (design) problems/questions	Can integrate and apply knowledge and skills/competences in more complex (design) problems
Can participate in the design and/or research process	Can adjust the design and/or research process to meet the demands of the task at hand
Has sufficient knowledge of the disciplines to judge the relevance of new developments, and can translate this to own domain	Has sufficient deep-seated knowledge of the disciplines to be able to form a (scientific) judgment, and can translate this to own domain
Can use scientific research findings in the design process and can perform a simple research project under supervision	Can plan and perform scientific research and can reflect on the phases of the research process
Can communicate opinions, ideas, information and results clearly	Can communicate conclusions, including the underlying knowledge, motives and deliberations, clearly, convincingly (and unambiguously)

Appendix 3: Intended learning outcomes

Intended learning outcomes of the IDE programmes (Standard 1)
The final qualifications of the Bachelor's and Master's programmes match the desired profiles of IDE graduates.

Objectives of the IDE programmes

In line with the mission of the Faculty of Engineering Technology, the IDE programmes[6] aim to educate academic professionals that are capable of addressing multi-disciplinary design challenges and tasks in the societal context, while continuously integrating acquired learning and know-how with unremitting attention for extending both the professional's practical experience and theoretical and methodological abilities.

Bachelor's programme
The Industrial Design Engineering ("Industrieel Ontwerpen", IO) programme aims to provide academic knowledge, understanding and skills in the domain of Industrial Design Engineering at a level that qualifies the graduate for:

- Independent professional practice at the Bachelor level in the field of Industrial Design Engineering;
- Enrolment in educational programmes at the Master level in the field of Industrial Design Engineering.

Master's programme
The IDE programme aims to provide academic knowledge, understanding and skills in the domain of Industrial Design Engineering at a level that qualifies the graduate for:

- Independent professional practice at the master level in the field of Industrial Design Engineering;
- Research in the field of Industrial Design Engineering;
- Enrolment in PhD programmes in the field of Industrial Design Engineering;
- Enrolment in post-Master's design programmes (PDEng programmes) in the field of Industrial Design Engineering.

Domain-specific reference framework

The goals of the programmes are too abstract to assess the knowledge, skills and attitudes that students must have acquired after completing the Bachelor's or Master's programme. Therefore, the goals are captured in the final qualifications, which are derived from the domain-specific reference framework. This framework has jointly been established by the three Dutch universities of technology, initially in 2006. In 2012, this domain-specific reference framework was reassessed; with some minor revisions, the three universities confirmed[7] its validity and applicability. One of the specific touchstones in evaluating the framework is the alignment with relevant Industrial Design Engineering programmes worldwide.[8]

6 Appendix K
7 Meeting at TU Eindhoven, December 6, 2012
8 'International Benchmark in IDE', S.R.C. Romph, TU Delft, part 1 2005 and part 2 2006

The domain-specific reference framework describes the profile of the IDE graduates, together with the domains of knowledge and skills that are relevant for the IDE curriculum. It also depicts the labour market perspective for IDE graduates. Moreover, it specifies the differences between a Bachelor's and a Master's graduate.

Final qualifications of the IDE programmes

The three Dutch universities of technology have developed criteria for Bachelor's and Master's programmes, the so called ACQA (Academic Competences and Quality Assurance)[9]. These criteria have an academic orientation and are based on the Dublin Descriptors[10].

The final qualifications of the IDE programmes, defined according to ACQA, are phrased in terms of competence descriptors, which are a combination of knowledge, skills and attitude. These final qualifications are formulated in the Student Charter[11], as follows:

- *Designing*
  A graduate can realise new or modified artefacts, products or systems, with the aim of creating value in accordance with predefined needs and requirements.
- *IDE-relevant disciplines*
  A graduate is familiar with contemporary knowledge and has the ability to increase and develop this through study.
- *Research*
  A graduate is able to acquire new scientific knowledge through research. In this respect, research entails the development of new knowledge and insight according to purposeful and systematic methods.
- *Scientific approach*
  A graduate has a systematic approach characterised by the development and use of theories, models and coherent interpretations, has a critical attitude and has insight into the nature of science and technology.
- *Intellectual skills*
  A graduate is able to adequately reason, reflect and form a judgment. These abilities are acquired or refined within the context of a discipline, and then become generically applicable.
- *Co-operating and communicating*
  A graduate is able to work with and for others. This not only requires adequate interaction and a sense of responsibility and leadership, but also the ability to communicate effectively with colleagues, clients, (end) users, suppliers, experts and laymen. All graduates are also able to participate in scientific or public debates.
- *Addressing temporal, social and personal contexts*
  Science and technology are not isolated, and always have temporal, social and personal contexts. Beliefs and methods have their origins; decisions have social consequences in time. A University IDE graduate is aware of this, and has the competence to integrate these insights into his or her scientific work.

9 Meijers, A.W.M., Overveld, C.W.A.M. van, and Perrenet, J.C.; '-Criteria for Academic Bachelor's and Master's Curricula, TU Eindhoven 2005 (http://alexandria.tue.nl/repository/books/570523E.pdf)

10 http://www.nvao.net/page/downloads/Dublin_Descriptoren.pdf

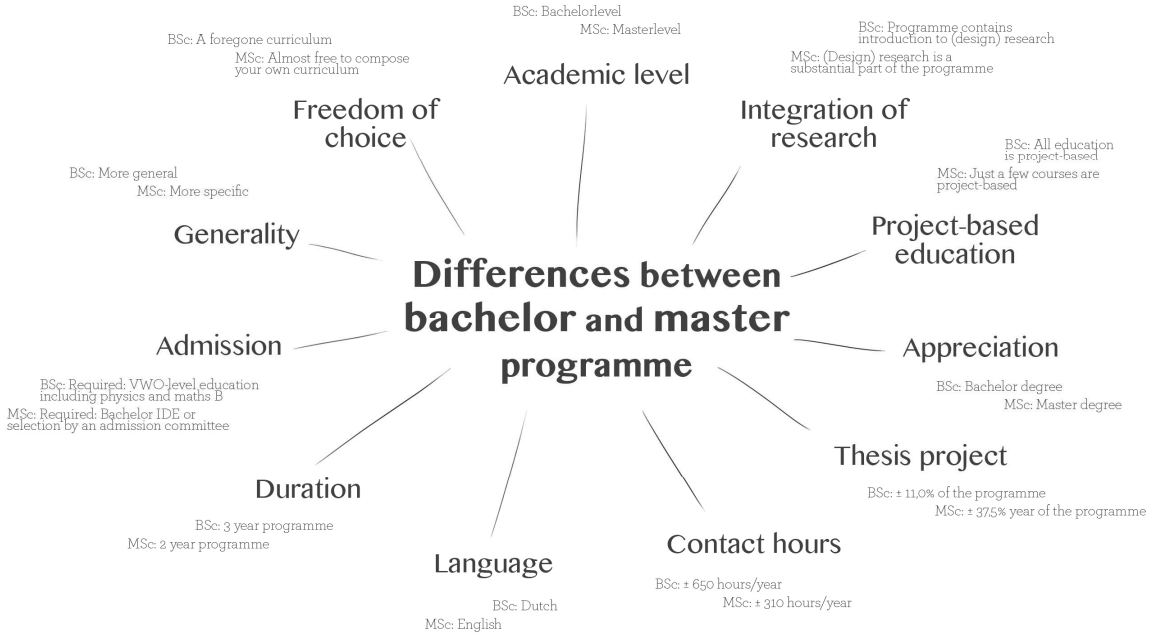
11 Appendix K

Differences between Bachelor's and Master's graduates
The difference between Bachelor's and Master's graduates can be defined in terms of orientation and level. The figures below and on the next page illustrate the differences between the final qualifications of Bachelor's and Master's graduates in relation to the final qualifications.

Evidence of the level of the final qualifications
To ensure that the final qualifications of the programmes are in line with the expectations and requirements of the professional field, the following actions have been taken:

- Review of academic results of the BSc and MSc graduates in technical and scientific journals[12];
- Survey of the external coaches of thesis projects[13;]
- Panel discussions with alumni[14] based on the outcomes of the WO – monitor 2011;
- Unremittingly observing and monitoring the industrial (and academic) networks that are accessible via the members of the discipline council and the associate and assistant professors.

Inspired by the expectations and requirements of the professional fields, the surveys and consultations aim to determine the achieved quality level of the graduates. Based on the various types of input, the expectation that the final qualifications of the BSc and MSc programme do indeed satisfy the desired profile of IDE graduates is justified.



12 Appendix Z
13 Appendix Q
14 Appendix P

Differences in Bachelor's and Master's programme outcomes

The IDE graduate ...	
is competent in designing	The bachelor graduate is able to apply knowledge in standard situations, to tackle complex problems; the master graduate is able to apply knowledge in new, non-standard situations, to tackle more complex and ill structured problems
is competent in the IDE-relevant disciplines	The bachelor graduate is recognised as a junior generalist; the master graduate is recognised as a specialist in one of the sub-disciplines of the domain
is competent in research	The research of a bachelor graduate is marked out within the problem context (leading to the demands or needs), while a master graduate is able to acquire new scientific knowledge and contribute to the body of knowledge of the discipline
has a scientific approach	The master graduate is mature in choosing and applying a scientific approach and to validate the method chosen
has basic intellectual skills	The IDE programmes emphasise the development of self-reflection as the prime competence for individual development and life-long learning; this process starts immediately after starting the bachelor programme, and never ends
is competent in co-operating and communicating	The difference between bachelor and master graduates relates to handling complexity of a situation; a master graduate can contribute more to, and is more confident in participating in a scientific debate
takes account of temporal, social and personal context	The bachelor graduate develops a general style; a master graduate develops his own style, in which contextual aspects are integrated in a consistent manner

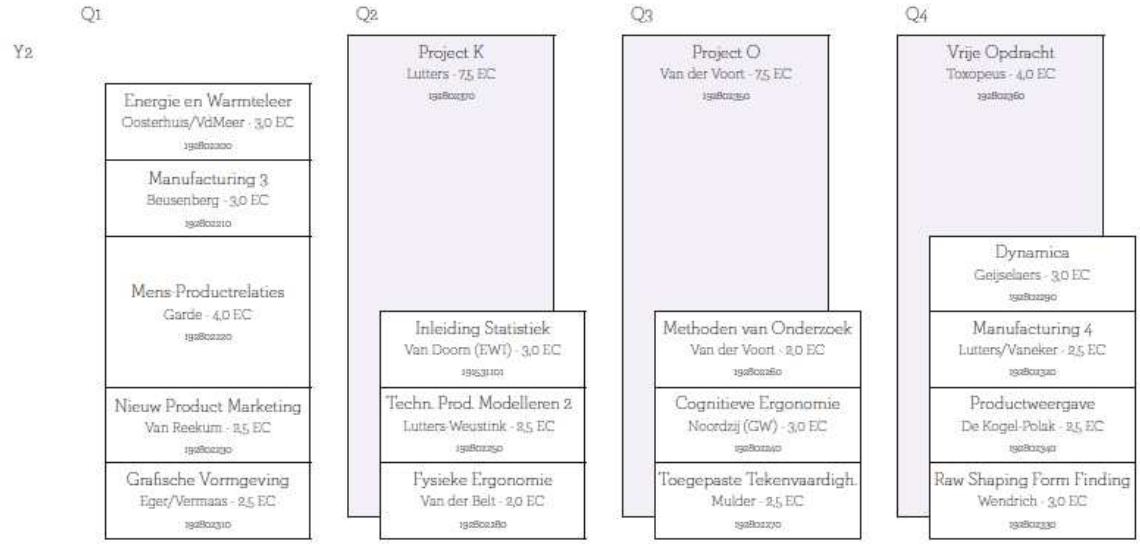
Appendix 4: Overview of the curricula

Bachelor's programme

Year 1

Q1	Q2	Q3	Q4
KOP Project Garde - 3,0 EC 192801231	Project IDEE Van der Bijl-Brouwer - 2,5 EC 192801210	Project Productrealisatie Vaneker - 5,0 EC 192801260	Project Smart Products Tragter - 5,0 EC 192801270
Inleiding Industr. Ontw. Bonnema/Eger – 2,0 EC 192801231	Wiskunde 2 Kern (EWI) – 2,5 EC 191528020		
Wiskunde 1 Still (EWI) - 2,5 EC 191528010	Stijfheid en Sterkte Geijselaers - 3,0 EC 191157052	Wiskunde 2 Still (EWI) - 2,5 EC 191528030	Elektronica voor IO Van der Zee (EWI) - 2,5 EC 191210381
Statica IO Loendersloot - 2,5 EC 191157202	Techn. Prod. Modelleren 1 Lutters-Weustink - 2,0 EC 192801240	Manufacturing 2 Schuurman - 2,5 EC 192801350	Applicatiebouw Van Slooten - 2,5 EC 192801310
Materiaal Schuurman - 2,5 EC 192801340	Manufacturing 1 Lutters - 2,5 EC 192801330	Constructietechniek Vaneker - 2,5 EC 192801250	Ergonomie Voort/Bijl/Beukel - 2,5 EC 192801290
Schetsen en Concepttekenen Van Passel - 2,5 EC 192801220	Vormologie Wendrich - 2,5 EC 192801320	Product Presentatietekenen Van Passel - 2,5 EC 192801280	Vormmethodiek Garde - 2,5 EC 192801300

Year 2



Year 3

Q1	**Q2**	**Q3**	**Q4**
Reflectie op Vrije Opdracht Toxopeus - 0,5 EC		Ontw. van Mechatronica en Systemen Bonnema/Lutters-Weustink - 5,0 EC 201000016	Bache loreindopdracht IO Van d en Beukel - 20,0 EC 201000017
Inl. Eindige Elementen Meth. Perdahcioglu - 2,5 EC 201000019	Productcomplexiteit Jauregui Becker – 2,5 EC 201000021		
Ontw. van Interactieve Prod. Van den Beukel – 2,5 EC 201000020	Website Design vSlooten/Vermaas - 2,0 EC 201000018		
Minor 1 5,0 EC	Minor 3 5,0 EC	Techniek-filosofie Verbeek (GW) 2,5 EC 201000023	
Minor 2 5,0 EC	Minor 4 5,0 EC	Vorm- en Betekenisgeving Van Rompay 2,5 EC 201000022	

Master's programme

For all five Master tracks, the overall structure is identical:

	Q1	Q2	Q3	Q4
Year 1	Obligatory courses, Recommended courses, Elective courses	Obligatory courses, Recommended courses, Elective courses	Obligatory courses, Recommended courses, Elective courses	Obligatory courses, Recommended courses, Elective courses
Year 2	Obligatory courses, Recommended courses, Elective courses		Thesis project	

On the following pages, the courses provided by the individual tracks are listed.

D&S

Q1/Q5	Q2	Q3	Q4
Design Management Ludden - 5,0 EC 192850700	Evolut. Prod. Dev. Research Eger - 5,0 EC 201100192	Evolut. Prod. Dev. Design Eger - 5,0 EC 201100194	Design Histories Eggink - 5,0 EC 201200137
Create the Future Eggink - 10,0 EC 192850830			Design & Emotion Van Rompay - 5,0 EC 192850790
			Graphic Language of Prod. Mulder - 5,0 EC 200900077

ETD

Q1/Q5	Q2	Q3	Q4
Source of Innovation Reinders - 5,0 EC 192850840	Biomechanics Koopman - 5,0 EC 191150390	Dur. of Consumer Prod. De Rooij - 5,0 EC 201000159	Surf. for Comf. and Touch Masen - 2,5 EC (of 5) 201000158
Technology Gate Keeping Beusenberg - 5,0 EC 201000164	Surf. Eng. for Look & Feel Masen - 5,0 EC 192850870	Surf. for Comf. and Touch Masen - 2,5 EC (of 5) 201000158	Smart Environm. Integr. Pjt Bonnema - 5,0 EC 201000212

MPD

Q1/Q5	Q2	Q3	Q4
Governing Prod. Developm. Lutters - 5,0 EC 192850730	Product Life Cycle Toxopeus - 5,0 EC 192850740	Product Life Cycle Manag. Dankers - 5,0 EC 192850750	Packaging Des. & Manag. 2 Ten Klooster - 5,0 EC 192851010
Packaging Des. & Manag. 1 Ten Klooster - 5,0 EC 192850910	Scenario Based Prod. Des. Van der Bijl - 5,0 EC 192850810	Intellect. Prop. in Prod. D. Damgrave - 5,0 EC 192850960	Virtual Reality Damgrave - 5,0 EC 201000201

ABCDE

Q1/Q5	Q2	Q3	Q4
Ind. Des. for Building: Intro Durmisevic - 5,0 EC 192855000		Build. Systems Design 1 Durmisevic - 5,0 EC 192855020	Building Systems Design 2 Durmisevic - 5,0 EC 192855030
Sust. Build. Manag. & Phys. Entrop - 5,0 EC 201100171		Des. of Load Bearing Str. Snellink - 5,0 EC 192855060	Industr. & Innov. Constr. Halman - 5,0 EC 201100173
		Indoor Climate Des. & Install Durmisevic -5,0 EC 201000021	

CTC

Q1/Q5	Q2	Q3	Q4
C. to C. Business Case Venlo Boomgaard - 15,0 EC 201200091	C. to C. Design Paradigm 1 Scheelhaase - 5,0 EC 201000079		C. to C. Design Paradigm 2 Scheelhaase - 5,0 EC 201000080

Appendix 5: Quantitative data regarding the programmes

Data on intake, transfers and graduates

Bachelor's programme

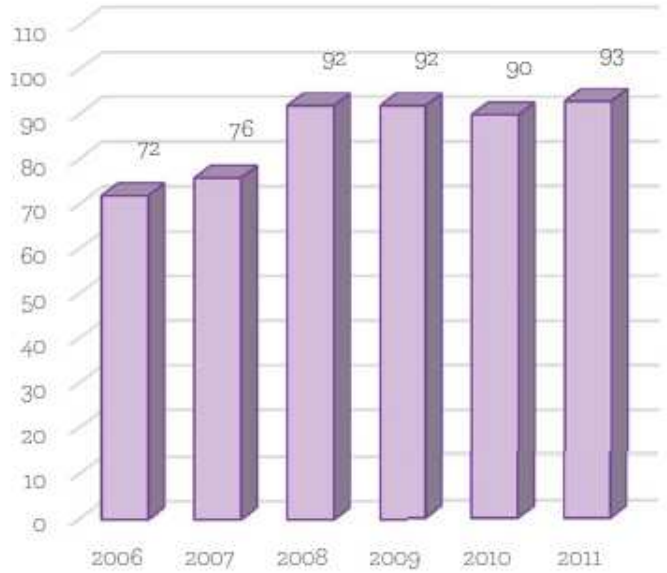


Figure 5.9 Bachelor intake 2006-2011 (VSNU data)

Bachelor intake (Management information system UT; (MISUT), VSNU data)

Cohort	2006	2007	2008	2009	2010	2011
Inflow VWO	72	76	92	92	90	93

Cumulative dropout rates 2006-2011 (VWO inflow, VSNU data)

Cohort	2006	2007	2008	2009	2010	2011
Inflow VWO	72	76	92	92	90	93
Dropout after 1 year	10%	13%	11%	18%	16%	11%*
Dropout after 2 years	13%	18%	18%	21%	17%*	
Dropout after 3 years	17%	21%	21%	27%*		

* preliminary data; October 2012

Bachelor's programme efficiency (VWO inflow re-enrolled)

Cohort	2006	2007	2008	2009	2010	2011
# after 1 year	65	66	82	77	76	
after 3 year (n)	0%	0%	2%	3%		
after 4 year (n+1)	26%	17%	39%			
after 5 year (n+2)	58%	56%				
after 6 year (n+3)	78%					

Completion rates of total inflow (cumulative in %) per cohort based on re-enrolment after the first year

Cohort	2006	2007	2008	2009	2010
Re-enrolment after 1 year	67	67	84	82	83
Completion after 3 years	0%	0%	1%	4%	
Completion after 4 years	27%	18%	34%		
Completion after 5 years	58%	57%			
Completion after 6 years	79%				

Master's programme

Master intake (Management information system UT; MISUT)

Cohort	2006	2007	2008	2009	2010	2011
Inflow	40	45	56	55	59	72

Master's programme efficiency

Cohort	2006	2007	2008	2009	2010	2011
Inflow	40	45	56	55	59	72
after 2 year (n)	23%	56%	41%	47%	39%	
after 3 year (n+1)	73%	84%	77%	87%		
after 4 year (n+2)	93%	89%	91%			
after 5 year (n+3)	95%	91%				

Teacher-student ratio achieved

Bachelor's programme

Teaching staff involved in the Bachelor's programme (1 March 2013)

Function	**#**	**fte**	**%**
Full professor	3	0.35	3.5%
Associate professor	8	1.50	14.8%
Assistant professor	21	4.40	43.5%
Lecturer	10	3.65	36.1%
Information specialist	1	0.03	0.3%
PhD. student	3	0.19	1.9%
Total	46	10.12	100%

Student-staff ratio of the Bachelor's programme (1 March 2013)

Student/staff	29.1

Master's programme

Function	#	fte	%
Full professor	9	0.70	18.0%
Associate professor	6	0.72	18.5%
Assistant professor	15	2.17	55.8%
Lecturer	4	0.25	6.4%
PhD student	1	0.05	1.3%
Total	35	3.89	100%

Figure 6.5 Teaching staff involved in the Master's programmes (1 March 2013)

Student/staff	21.0

Figure 6.6 Student-staff ratio of the Master's programme (1 March 2013)

Average amount of face-to-face instruction per stage of the study programme

Bachelor's programme

Contact hours in the Bachelor's programme

	B1		B2		B3	
	hrs.	**%**	**hrs.**	**%**	**hrs.**	**%**
Lectures	394	23.5%	394	23.5%	128	7.6%
Tutorials	40	2.4%	54	3.2%	38	2.3%
Practicals	352	21.0%	148	8.8%	32	1.9%
Group with guidance	70	4.2%	37	2.2%		
Examinations	70	4.2%	38	2.3%	24	1.4%
Subtotal contact time	926	55.1%	671	39.9%	222	13.2%
Group without guidance	210	12.5%	288	17.1%	52	3.1%
Individual study	544	32.4%	721	42.9%	286	17.0%
Final project					(560)	(33.3%)
Minor study					(560)	(33.3%)
Subtotal non-contact time	754	44.9%	1009	60.1%	1458	86.8%
% contact hours	(1680)	55.1%	(1680)	39.9%	(560)	39.6%

*in the B3, the hours for the minor and final project are not taken into account

Average number of contact hours per week in the Bachelor's programme

	B1	B2	B3
Contact hours per week	23 = 55.1%	17 = 39.9%	17 = 39.6%

*in the B3, the hours for the minor and final project are not taken into account

Master's programme

Contact hours in the Master's programme

	M1		M2 (quartile 5)		M2 (Thesis)	
	Hrs.	**%**	**Hrs.**	**%**	**Hrs.**	**%**
% contact hours	504	30.0%	126	30.0%	45	3.5%

Average number of contact hours per week in the Master's programme

	During courses first 5 quartiles in M1/M2	During thesis project 3 quartiles of M2
Contact hours per week	12 = 30%	1 = 3%

Contact hours during the thesis project are an estimate.There is an open-door policy to enable timely, individual, personal guidance.

Appendix 6: Programme of the site visit

Tuesday 12 November 2013

17.00-20.00	**Preparatory meeting and dinner (Committee in private)**

Wednesday 13 November 2013

08.30-11.30	**Startup, viewing documentation (Committee in private)**
11.30-12.15	**Preparation Committee Critical Reflection** Prof.dr. G.P.M.R. (Geert) Dewulf (Dean), Dr. ir. A (Thonie) van den Boomgaard, MBA (Director of Education), Ir. H.M. (Hiske) Schuurman-Hemmer, Dr.ir. D. (Eric) Eric Lutters
12.15-12.45	**Lunch (Committee in private)** + Possibility of private consultation committee (on invitation)
12.45-13.30	**Bachelor Students** N. B. (Niek) van den Hout (4th Study Year) M.A. (Marloes) Hengeveld (3rd Study Year) R.A.H. (Randy) Kommerkamp (3rd Study Year) S.A.W. (Simone) Hesseling (2nd Study Year) N.D. (Nathalie) Bekkering (2nd Study Year) M. (Mark) Swanenberg (1st Study Year) J.J.P. (Joren) Wolfert (1st Study Year)
13.30-14.15	**Teaching Staff Bachelor Programme** Ir. M. (Maaike) Mulder-Nijkamp, Ir. M.P.J. (Martijn) Zwart, Dr.ir. G.M. (Maarten) Bonnema, Ir. M.E. (Marten) Toxopeus, Dr.ir. T.H.J. (Tom) Vaneker, Ing. R.E. (Robert) Wendrich, Ir. W. (Winnie) Dankers, Dr.ir. C. (Cora) Salm
14.15-14.30	**Break**
14.30-15.15	**Master Students** R.L. (Rosanne) Andriessen BSc., L.A. (Liza) Boon BSc., R. (Ruben) Borgonjen BSc., R.M. (Ruud) Baaijens BSc., K.H. (Karlo) Finkers BSc., A. (Alexandra) van der Meer BSc., G.M.A. (Merijn) Sanders BSc., B. (Berte) van de Weerd BSc., R.C.B. (Roel) Driever, BSc.
15.15-16.00	**Teaching Staff Master Programme** Prof.dr.ir. A.O. (Arthur) Eger, Dr. T.J.L. (Thomas) van Rompay, Dr.ir. G.D.S. (Geke) Ludden, Dr.ir. M.C. (Mascha) van der Voort, Ir. J. (Jos) de Lange, Prof.dr.ir. A. (André) de Boer, Ir. E.E.G. (Edsko) Hekman, Dr.ir. D. (Eric) Lutters
16.00-16.30	**Educational Committee** Prof.dr.ir. F.J.A.M. (Fred) van Houten (Chair), C.H.C.L. (Cyriel) van Oorschot (Vice Chair), Dr.ir. W. (Wouter) Eggink, L. (Heleen) de Vos BSc, R.L. (Roy) Stroek BSc., F.F. (Frank) Brussel, Dr.ir. M.C. (Mascha) van der Voort, Dr.ir. R. (Richard) Loendersloot, J.E. (Jorien) Alers (Advisor to the committee)
16.30-16.45	**Break**
16.45-17.30	**Alumni** Ir. D. (Dennis) de Beurs (Owner De Beurs ICT) Ir. M.S. (Maarten) Essers (PhD student, UT) Ir. R.D. (Bob) Giesberts (MoveAid Foundation), Ir. L. (Lasse) Licht (Trimm), Ir. G.J.K. (Jeroen) Smit (Nedap), Ir. R.C. (Ryelle) de Wit (BAAT Medical Products), Ir.drs. R. (Renske) Landman (ErgoS)
18.30-21.00	**Dinner (Committee, in private)**

Thursday 14 November 2013

8.30-9.15	**Examination Board & Study Advisor** Prof.dr.ir. A.O (Arthur) Eger (Chair), Prof.dr.ir. H.J.F.M. (Bart) Koopman, Prof.dr.ir. F.J.A.M. (Fred) van Houten, Ir. A.P. (Arie Paul) van den Beukel, Ir. I.F. (Ilanit) Lutters-Weustink, Dr. J.L.M. (Jolanthe) Schretlen (Study Advisor)
9.15-10.15	**Drawing first conclusions (Committee in private)**
10.15-11.00	**Feed back Management IO/IDE** Prof.dr. G.P.M.R. (Geert) Dewulf, Prof.dr.ir. F.J.A.M. (Fred) van Houten, Dr.ir. A (Thonie) van den Boomgaard, MBA
11.00-12.45	**Preparation Preliminary Findings / Lunch (committee)**
12.45-13.00	**Short Presentation Preliminary Findings**

Appendix 7: Theses and documents studied by the committee

Prior to the site visit, the committee studied the theses of the students with the following student numbers:

Bachelor's programme

0096261	0186589	0117129
0140562	0139378	0208736
1009974	0122564	0209007
0091960	0077623	0172723
0201650	0170615	0150266

Master's programme

0070408	0185086	0112615
1014706	0050970	0159891
0066621	0120723	0090476
1022504	0039624	0131742
0174300	0069434	0112542

During the site visit, the committee studied, among other things, the following documents (partly as hard copies, partly via the institute's electronic learning environment):

- Minutes of staff meetings
- Minutes of the Educational Committee
- Examination Board
  - Rules and Regulations
  - Minutes
  - Assessment system
  - Year reports
- Quality instruments UT
- Test plans of IDE-courses
- WO-monitor
- Report of staff survey
- Portfolio website
- Course descriptions and materials through Blackboard
- Complete course materials and assessments of selected courses (6 bachelor's courses and 5 master's courses)

Appendix 8: Declarations of independence

nvao
nederlands - vlaamse accreditatieorganisatie

DECLARATION OF INDEPENDENCE AND CONFIDENTIALITY
TO BE SUBMITTED PRIOR TO THE ASSESSMENT OF THE PROGRAMME

THE UNDERSIGNED

NAME: Prof. Dr.-Ing. Lucienne Blessing

HOME ADDRESS:

26, Rue de Hassel

L-5899 Syren, Luxembourg

HAS BEEN ASKED TO ASSESS THE FOLLOWING PROGRAMME AS AN EXPERT / SECRETARY:

Industrial Design Engineering Education

APPLICATION SUBMITTED BY THE FOLLOWING INSTITUTION:

TU Delft, U Twente and TU Eindhoven

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nederlands - vlaamse accreditatieorganisatie

HEREBY CERTIFIES TO NOT MAINTAINING ANY (FAMILY) CONNECTIONS OR TIES OF A PERSONAL NATURE OR AS A RESEARCHER / TEACHER, PROFESSIONAL OR CONSULTANT WITH THE ABOVE INSTITUTION, WHICH COULD AFFECT A FULLY INDEPENDENT JUDGEMENT REGARDING THE QUALITY OF THE PROGRAMME IN EITHER A POSITIVE OR A NEGATIVE SENSE;

HEREBY CERTIFIES TO NOT HAVING MAINTAINED SUCH CONNECTIONS OR TIES WITH THE INSTITUTION DURING THE PAST FIVE YEARS;

CERTIFIES TO OBSERVING STRICT CONFIDENTIALITY WITH REGARD TO ALL THAT HAS COME AND WILL COME TO HIS/HER NOTICE IN CONNECTION WITH THE ASSESSMENT, INSOFAR AS SUCH CONFIDENTIALITY CAN REASONABLY BE CLAIMED BY THE PROGRAMME, THE INSTITUTION OR NVAO;

HEREBY CERTIFIES TO BEING ACQUAINTED WITH THE NVAO CODE OF CONDUCT.

PLACE: Luxembourg DATE: 30 September 2013

SIGNATURE:

DECLARATION OF INDEPENDENCE AND CONFIDENTIALITY
TO BE SUBMITTED PRIOR TO THE ASSESSMENT OF THE PROGRAMME

THE UNDERSIGNED

NAME: **Professor P John Clarkson**

HOME ADDRESS: **6 Clover Court**

Cambridge, CB1 9YN

United Kingdom

HAS BEEN ASKED TO ASSESS THE FOLLOWING PROGRAMME AS AN EXPERT:

Programmes in Industrial Design

APPLICATION SUBMITTED BY THE FOLLOWING INSTITUTION:

Delft University, Eindhoven University of Technology and the University of Twente

nvao
nederlands - vlaamse accreditatieorganisatie

HEREBY CERTIFIES TO NOT MAINTAINING ANY (FAMILY) CONNECTIONS OR TIES OF A PERSONAL NATURE OR AS A RESEARCHER / TEACHER, PROFESSIONAL OR CONSULTANT WITH THE ABOVE INSTITUTION, WHICH COULD AFFECT A FULLY INDEPENDENT JUDGEMENT REGARDING THE QUALITY OF THE PROGRAMME IN EITHER A POSITIVE OR A NEGATIVE SENSE;

HEREBY CERTIFIES TO NOT HAVING MAINTAINED SUCH CONNECTIONS OR TIES WITH THE INSTITUTION DURING THE PAST FIVE YEARS;

CERTIFIES TO OBSERVING STRICT CONFIDENTIALITY WITH REGARD TO ALL THAT HAS COME AND WILL COME TO HIS/HER NOTICE IN CONNECTION WITH THE ASSESSMENT, INSOFAR AS SUCH CONFIDENTIALITY CAN REASONABLY BE CLAIMED BY THE PROGRAMME, THE INSTITUTION OR NVAO;

HEREBY CERTIFIES TO BEING ACQUAINTED WITH THE NVAO CODE OF CONDUCT.

PLACE: **Cambridge, UK** DATE: **17 September 2013**

SIGNATURE: 

DECLARATION OF INDEPENDENCE AND CONFIDENTIALITY

TO BE SUBMITTED PRIOR TO THE ASSESSMENT OF THE PROGRAMME

THE UNDERSIGNED

NAME: Ilpo Koskinen

HOME ADDRESS: Tuluskuja 12 a 2, 01670 Vantaa, Finland

HAS BEEN ASKED TO ASSESS THE FOLLOWING PROGRAMME AS AN EXPERT / SECRETARY:

Industrial Design in TU/Eindhoven, TU?Delft, and Tu/Twente

APPLICATION SUBMITTED BY THE FOLLOWING INSTITUTION:

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nederlands - vlaamse accreditatieorganisatie

HEREBY CERTIFIES TO NOT MAINTAINING ANY (FAMILY) CONNECTIONS OR TIES OF A PERSONAL NATURE OR AS A RESEARCHER / TEACHER, PROFESSIONAL OR CONSULTANT WITH THE ABOVE INSTITUTION, WHICH COULD AFFECT A FULLY INDEPENDENT JUDGEMENT REGARDING THE QUALITY OF THE PROGRAMME IN EITHER A POSITIVE OR A NEGATIVE SENSE;

HEREBY CERTIFIES TO NOT HAVING MAINTAINED SUCH CONNECTIONS OR TIES WITH THE INSTITUTION DURING THE PAST FIVE YEARS;

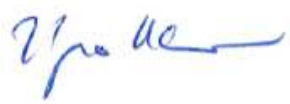
CERTIFIES TO OBSERVING STRICT CONFIDENTIALITY WITH REGARD TO ALL THAT HAS COME AND WILL COME TO HIS/HER NOTICE IN CONNECTION WITH THE ASSESSMENT, INSOFAR AS SUCH CONFIDENTIALITY CAN REASONABLY BE CLAIMED BY THE PROGRAMME, THE INSTITUTION OR NVAO;

HEREBY CERTIFIES TO BEING ACQUAINTED WITH THE NVAO CODE OF CONDUCT.

PLACE: Helsinki

DATE: 7 October, 2013

SIGNATURE:



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DECLARATION OF INDEPENDENCE AND CONFIDENTIALITY
TO BE SUBMITTED PRIOR TO THE ASSESSMENT OF THE PROGRAMME

THE UNDERSIGNED

NAME: A. Pilot

HOME ADDRESS:
Berkenlaan 13
3707 BA Zeist

HAS BEEN ASKED TO ASSESS THE FOLLOWING PROGRAMME AS AN EXPERT / SECRETARY:

Industrial Design B/M UT/TuD/TUe

APPLICATION SUBMITTED BY THE FOLLOWING INSTITUTION:

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nederlands - vlaamse accreditatieorganisatie

HEREBY CERTIFIES TO NOT MAINTAINING ANY (FAMILY) CONNECTIONS OR TIES OF A PERSONAL NATURE OR AS A RESEARCHER / TEACHER, PROFESSIONAL OR CONSULTANT WITH THE ABOVE INSTITUTION, WHICH COULD AFFECT A FULLY INDEPENDENT JUDGEMENT REGARDING THE QUALITY OF THE PROGRAMME IN EITHER A POSITIVE OR A NEGATIVE SENSE;

HEREBY CERTIFIES TO NOT HAVING MAINTAINED SUCH CONNECTIONS OR TIES WITH THE INSTITUTION DURING THE PAST FIVE YEARS;

CERTIFIES TO OBSERVING STRICT CONFIDENTIALITY WITH REGARD TO ALL THAT HAS COME AND WILL COME TO HIS/HER NOTICE IN CONNECTION WITH THE ASSESSMENT, INSOFAR AS SUCH CONFIDENTIALITY CAN REASONABLY BE CLAIMED BY THE PROGRAMME, THE INSTITUTION OR NVAO;

HEREBY CERTIFIES TO BEING ACQUAINTED WITH THE NVAO CODE OF CONDUCT.

PLACE: Zeist DATE: November 2, 2013

SIGNATURE:

nvao
nederlands - vlaamse accreditatieorganisatie

DECLARATION OF INDEPENDENCE AND CONFIDENTIALITY
TO BE SUBMITTED PRIOR TO THE ASSESSMENT OF THE PROGRAMME

THE UNDERSIGNED

NAME: Markku Salimäki

HOME ADDRESS: Pakilantie 84 I, 00660 Helsinki, Finland

HAS BEEN ASKED TO ASSESS THE FOLLOWING PROGRAMME AS AN EXPERT / SECRETARY:

Bachelor`s and Master's programmes in Industrial Design

APPLICATION SUBMITTED BY THE FOLLOWING INSTITUTION:

Delft University of Technology, Eindhoven University of Technology and the University of Twente

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nederlands - vlaamse accreditatieorganisatie

HEREBY CERTIFIES TO NOT MAINTAINING ANY (FAMILY) CONNECTIONS OR TIES OF A PERSONAL NATURE OR AS A RESEARCHER / TEACHER, PROFESSIONAL OR CONSULTANT WITH THE ABOVE INSTITUTION, WHICH COULD AFFECT A FULLY INDEPENDENT JUDGEMENT REGARDING THE QUALITY OF THE PROGRAMME IN EITHER A POSITIVE OR A NEGATIVE SENSE;

HEREBY CERTIFIES TO NOT HAVING MAINTAINED SUCH CONNECTIONS OR TIES WITH THE INSTITUTION DURING THE PAST FIVE YEARS;

CERTIFIES TO OBSERVING STRICT CONFIDENTIALITY WITH REGARD TO ALL THAT HAS COME AND WILL COME TO HIS/HER NOTICE IN CONNECTION WITH THE ASSESSMENT, INSOFAR AS SUCH CONFIDENTIALITY CAN REASONABLY BE CLAIMED BY THE PROGRAMME, THE INSTITUTION OR NVAO;

HEREBY CERTIFIES TO BEING ACQUAINTED WITH THE NVAO CODE OF CONDUCT.

PLACE: Helsinki Finland DATE: October 2nd, 2013

SIGNATURE:

Markku Salimäki

nvao
nederlands - vlaamse accreditatieorganisatie

DECLARATION OF INDEPENDENCE AND CONFIDENTIALITY

TO BE SUBMITTED PRIOR TO THE ASSESSMENT OF THE PROGRAMME

THE UNDERSIGNED

NAME: Manon Kühne

HOME ADDRESS: van Bleyswijckstraat 1, 2613 RP Delft, Nederland

HAS BEEN ASKED TO ASSESS THE FOLLOWING PROGRAMME AS AN EXPERT / SECRETARY:

Industrieel Ontwerpen/Industrial Design Engineering – Twente University

APPLICATION SUBMITTED BY THE FOLLOWING INSTITUTION:

Delft University of Technology

nvao
nederlands - vlaamse accreditatieorganisatie

HEREBY CERTIFIES TO NOT MAINTAINING ANY (FAMILY) CONNECTIONS OR TIES OF A PERSONAL NATURE OR AS A RESEARCHER / TEACHER, PROFESSIONAL OR CONSULTANT WITH THE ABOVE INSTITUTION, WHICH COULD AFFECT A FULLY INDEPENDENT JUDGEMENT REGARDING THE QUALITY OF THE PROGRAMME IN EITHER A POSITIVE OR A NEGATIVE SENSE;

HEREBY CERTIFIES TO NOT HAVING MAINTAINED SUCH CONNECTIONS OR TIES WITH THE INSTITUTION DURING THE PAST FIVE YEARS;

CERTIFIES TO OBSERVING STRICT CONFIDENTIALITY WITH REGARD TO ALL THAT HAS COME AND WILL COME TO HIS/HER NOTICE IN CONNECTION WITH THE ASSESSMENT, INSOFAR AS SUCH CONFIDENTIALITY CAN REASONABLY BE CLAIMED BY THE PROGRAMME, THE INSTITUTION OR NVAO;

HEREBY CERTIFIES TO BEING ACQUAINTED WITH THE NVAO CODE OF CONDUCT.

PLACE: Delft DATE: 22/09/2013

SIGNATURE:

nvao
nederlands - vlaamse accreditatieorganisatie

DECLARATION OF INDEPENDENCE AND CONFIDENTIALITY
TO BE SUBMITTED PRIOR TO THE ASSESSMENT OF THE PROGRAMME

THE UNDERSIGNED

NAME: Jetje De Groot

HOME ADDRESS:
Daensstr. 17, 2600 Berchem, Belgium

HAS BEEN ASKED TO ASSESS THE FOLLOWING PROGRAMME AS AN EXPERT / (SECRETARY)

Industrial Design Engineering

APPLICATION SUBMITTED BY THE FOLLOWING INSTITUTION:

Universiteit Twente

nvao
nederlands - vlaamse accreditatieorganisatie

HEREBY CERTIFIES TO NOT MAINTAINING ANY (FAMILY) CONNECTIONS OR TIES OF A PERSONAL NATURE OR AS A RESEARCHER / TEACHER, PROFESSIONAL OR CONSULTANT WITH THE ABOVE INSTITUTION, WHICH COULD AFFECT A FULLY INDEPENDENT JUDGEMENT REGARDING THE QUALITY OF THE PROGRAMME IN EITHER A POSITIVE OR A NEGATIVE SENSE;

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CERTIFIES TO OBSERVING STRICT CONFIDENTIALITY WITH REGARD TO ALL THAT HAS COME AND WILL COME TO HIS/HER NOTICE IN CONNECTION WITH THE ASSESSMENT, INSOFAR AS SUCH CONFIDENTIALITY CAN REASONABLY BE CLAIMED BY THE PROGRAMME, THE INSTITUTION OR NVAO;

HEREBY CERTIFIES TO BEING ACQUAINTED WITH THE NVAO CODE OF CONDUCT.

PLACE:

Antwerp

DATE:

11/11/2013

SIGNATURE: