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TU/e

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ASSESSMENT POLICY INDUSTRIAL DESIGN

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1 INTRODUCTION

Assuring an adequate level of education of our students and our graduates is of the utmost importance for our educational programs. Assessment policy is an important tool to realize this. This document presents the assessment policy of the Department of Industrial Design (ID).

This assessment policy is written in the context of an organization in transition. The department is officially in a reorganization, staff members are faced with an extensive workload and the department was faced with a severe financial loss. Also, there was an increase in student-staff ratio while there were still a number of unfulfilled vacancies. Next to that, the Major was redesigned and the Graduate School was introduced. This redesign was based on, among others, on advice of taskforces about quality assurance and assessments. Also working groups consisting of staff members were installed. (For a description of the new curricula and the underlying vision we refer to the paper study guide). The redesign of both the major and master had severe implications for the assessments as well. The curriculum consisting of individual learning paths and holistic assessments about the development of students during a semester was replaced with a system that better integrates with the Bachelor College and the Graduate School. The most important change is probably that all learning activities are assessed separately and that grades are provided for both electives and Final Bachelor and Master project. As goes with all educational changes, it takes time and asks for considerable effort of all actors involved to make it a success. Therefore, time is needed to develop and improve the assessment policy and practice at our department.

In compiling this document, several exploring conversations have been held with members and the chairs of both the Educational Committee (EC) and the Board of Examiners (BoE). Also, exploring conversations were held with the Director of Education (DoE). Next, a draft version of the assessment policy was provided to the Director of Education and in parallel to the EC, BoE and TU/e testing expert Ludo van Meeuwen (June 9th). This draft version was discussed during the EC meeting of June 16th. Individual members of the BoE provided comments in writing. Also, the testing expert provided comments in writing. All comments were processed in a final version that was discussed with the DoE on June 20th. Next, the assessment policy was provided for approval to the Departmental Board on June 27th. The board approved the document on June 27th.

We would like to thank the members of the Board of Examiners and the Educational Committee who provided us with valuable advice. Furthermore, we would like to say thank you to Ludo van Meeuwen the Tu/e testing expert. Last but not least we would like to thank The Eindhoven School of Education and its Director of Education, Ruurd Taconis who provided us the opportunity to build this policy document on the testing policy of the Eindhoven School of Education. In practice, this means that some parts literally have been taken and translated into English and other parts have been used as a source of inspiration to write our own policy.

Eindhoven, 2016, Migchiel van Diggelen and Miguel Bruns

2 BACKGROUND KNOWLEDGE FOR THE READER: TOWARDS AN ASSESSMENT POLICY

In this chapter the reader is provided with a background in what an assessment policy entails.

Starting from 2010 the Dutch government has undertaken measures to increase the importance of quality assurance of assessments. These measures are: (1) a more explicit, independent and proactive role for BoEs; (2) the possibility for university-wide accreditations; (3) higher minimum quality requirements for assessments (see: for quality standards). In this context, the compiling, implementation and monitoring of assessment policies, as a coherent quality assurance system, became more and more important.

According to the Dutch Inspection for Education, assessment policy can be defined as a coherent set of measures and facilities with the purpose to guarantee and improve the quality of the assessment practice. The plan-do-check-act cycle (PDCA) is a frequently used tool for assessment policies. Within our university the PDCA cycle is undertaken on several levels. Figure 1. Provides an overview of these PDCA cycles (Bax & van Berkel, 2006).

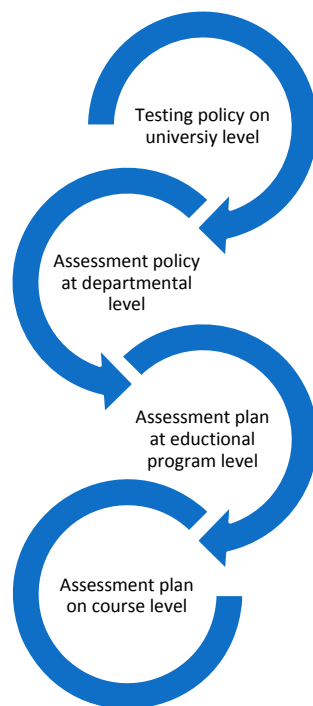


Figure 1. Overview of PDCA cycles for assessment policies

What should be described at what level? Documents addressing the assessment policy on a university level only target the main lines such as: assessments should be valid, reliable and transparent and provide a framework departmental assessment policies should adhere to. These

general guidelines need a translation to the specific context and nature of the discipline Industrial Design. In principle a departmental assessment policy should fit and be framed in the general policy of the university. To get an overview of the departmental testing policy framework we refer to Halsema and Swagten (2014).

For this departmental assessment policy document we combined the topics indicated in the institutional assessment framework (Halsema & Swagten, 2014) and the list provided by Martens and Moerkerke (2012):

- Educational vision and aligned vision on assessment
- How end-terms are operationalized in learning goals
- How the end-terms fit the Dublin-descriptor
- How the growth within a learning line is realized
- How an optimal balance between different methods of assessment is realized
- Requirements for teachers to assess
- How the minimum quality of assessments is realized and guaranteed

As already described, the assessment policy follow a plan-do-check-act cycle. A common procedure is visualized in Figure 2.

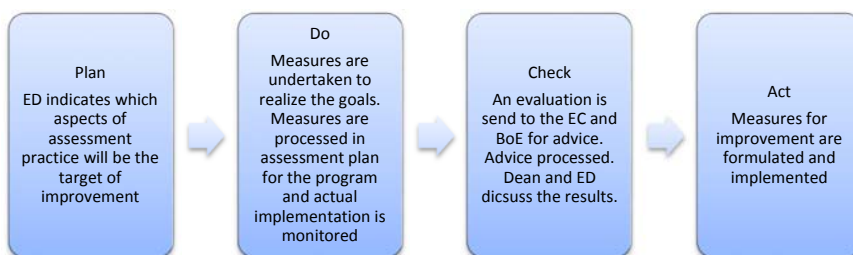


Figure 2. Plan-do-check-act cycle

This particular PDCA cycle can be performed each year.

3 VISION ON EDUCATION OF INDUSTRIAL DESIGN

3.1 VISION ON ASSESSMENT

The mission of Industrial Design is “to create intelligent systems, products, and related services in a societal context”. In line with this vision, the Educational programs of Industrial Design aim at educating industrial designers capable of designing, creating, valorizing and researching interactive systems, products and related services in a societal context. To achieve this mission a competence-centered and self-directed learning program is offered. The mission and vision on the education of the department have many consequences for the design of its curriculum, its assessment procedures and maintaining and improving its quality. In this Chapter we describe our vision on assessment and how we define quality. In later chapters it will be addressed how we guarantee this vision on assessment in practice.

The educational ideas underlying the assessment of Industrial Design reflect what Birenbaum (1996) has called an assessment culture. In line with the ideas of Birenbaum, our assessment procedure can be characterized (and therefore opposed to a classical view on testing) by six important elements. First, there is a strong emphasis on integrating learning and assessment. Second, the student is considered to be an active participant who shares responsibility for learning, practices self-assessment, reflects and collaborates with others. Third, multiple instruments are included in the assessment. Fourth, assessment is considered to be authentic and it is strived for contextualized learning; use of skills in context. Fifth, higher order skills are to be assessed which also include metacognitive, social and affective learning outcomes. Finally learning goals, instruction and assessment need to align (Gibbs, 1999).

3.1.1 QUALITY OF ASSESSMENT

In Chapter 2 we already described different levels in assessment policies. One of these levels was the program level. The idea of the concept ‘assessment program’ is that assessments within a program need to be more than an arbitrary selection of assessments composed by responsible teachers of a course (Van der Vleuten et al., 2012). An assessment program is a deliberately chosen set of assessments that fit the goals, content, structure and set-up of a program. Elements of an assessment program and courses in general should be complementary to each other in covering end-terms of a program. Obviously, an assessment program should match the curriculum. Using the concept of assessment program assures that a curriculum, courses and their corresponding assessments need to be viewed as a whole and that all assessments of courses need to be deliberately chosen and judged against the bigger picture. Another important notion underlying the concept of the assessment program is that a method-mix is needed for assessments to realize an assessment program that covers all the end-terms and different learning goals (Attitude, Skills and Knowledge). A curriculum should have a logical progression of courses and projects and all separate activities should contribute the students’ development. Using the lens of assessment programs is supportive in choosing adequate assessment methods for different moments in the curriculum. Next, it provides the opportunity to direct learning through assessment by using different functions of assessment (formative and summative). Formative assessment aims to enhance learning and

summative assessment is aimed at making decisions about pass/fail. In the complete assessment program decisions should be made concerning the formative and summative nature.

As already stated, the quality of an assessment program is more than the quality of individual assessments. In the TU/e exam framework (Halsema & Swagten, 2014) it is explicated that tests need to be valid, reliable and transparent. In textbox 1 we provide the definitions of these concepts as introduced for the TU/e in the exam framework (Halsema & Swagten, 2014, p. 9).

- Transparent: before the exam, it is made clear to students how they are being tested, and on what subject matter.
- Valid: the exam covers the learning objectives. Content (consistent with the learning objectives), level (the degree of difficulty) and a good representation of the subject matter are key aspects of validity.
- Reliable: the exam makes a meaningful distinction between the students who easily meet the learning objectives, and those who do not. The quality of the exam plays a role here (individual ability, minimal chance of guessing the right answers, lack of ambiguity), as do the circumstances in which the exam is held (standardization and objectivity) and the method used for assessing the results (objective, not random, accurate)

Textbox 1. Quality criteria for assessment (Tu/e exam framework)

For the assessment program of Industrial Design we use a more elaborate quality framework (Baartman, Kloppenburg, & Prins, 2013, p. 59 – translated into English). This framework is provided in textbox 2. We will use elements of this framework to reflect on the assessment practice within our department (Chapter 8).

Validity	Operationalization The assessment program is adequately and sufficiently deduced from the end-terms. The end-terms are processed in more specific learning outcomes per course and in assessment criteria or correction models.
	Representation The content of the assessment program reflects the content of the educational end-terms and aspects of it. The relevant goals are sufficiently covered.
	Complexity The assessment program is of an adequate level, fitting the stage of the program and grows in complexity.
	Form The combination of assessment forms in the entire program fits the content to be assessed.
Reliability	Reproducibility If possible the content and conditions for assessment are determined (criteria, correction models and weighting) and differences between assessors are minimized. Rater Bias minimized?

	<p>Triangulation</p> <p>The assessment program provides sufficient information to produce a reliable verdict. Decisions are not based on the subjective verdict of one assessor or on the judgment on one single location. Information is triangulated across situations.</p>
Function	<p>Selection</p> <p>Based on an assessment program, better and weaker students can be distinguished. This selection should occur in the earlier stages of the program to facilitate students to change their studies.</p>
	<p>Learning effect</p> <p>The assessment program has a desirable effect on students learning processes. The different assessment methods stimulate the intended learning processes and provide rich feedback</p>
	<p>Education effect</p> <p>The assessment program provides rich information about the coherent program enabling teachers and students to evaluate and improve their program.</p>
Condition	<p>Transparency</p> <p>Students are provided with sufficiently clear information about the methods, criteria, norms and outcomes of the assessment so they know what is expected of them.</p>
	<p>Competent in assessing</p> <p>The assessors possess sufficient domain related knowledge and skills, how is assessed and providing feedback.</p>
	<p>Organization</p> <p>The assessment program is organized efficient and effective. Assessors have sufficient time to prepare a reliable verdict.</p>

Textbox 2. Quality criteria for CAP (Baartman, Kloppenburg & Prins, 2015)

3.1.2 TRENDS IN ASSESSMENT

Within Educational Programs technology is becoming more and more important. At the university level the use of digital assessment is considered a relevant trend. Our department already has a tradition of using digital tools for assessment. Students create showcases (websites) for their assessments but also a digital portfolio system is used. Using digital tools might support the assessment process, to improve the process of giving and receiving feedback/formative assessment and can be helpful for quality assurance purposes. Feedback.camp, for example is a tool that offers

mentoring functionalities, options for providing targeted feedback and rubrics to be used for both formative and summative purposes (Funk & Diggelen, 2014; Diggelen & Funk, 2015) . With the introduction of the new Learning Management System and a new administrative system in the near future, new opportunities will rise for improving the assessment system.

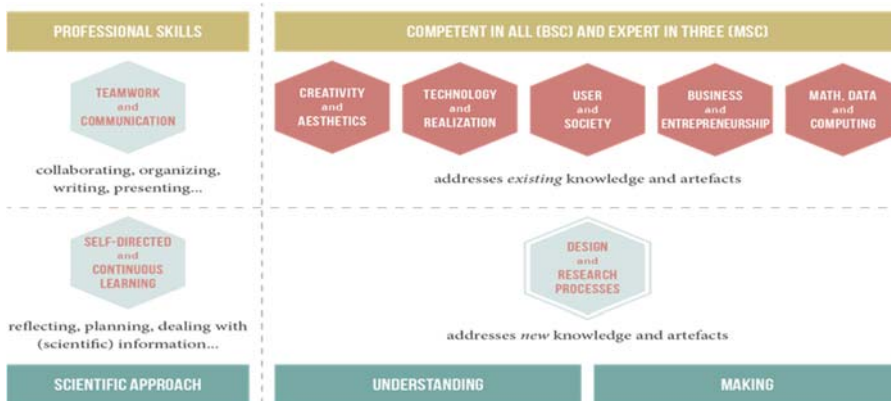
4 WHAT IS ASSESSED? END-TERMS, ACQA, 3TU/E, EXPERTISE AREAS AND COMPETENCIES

4.1 ACQA - ACADEMIC COMPETENCIES AND QUALITY ASSURANCE

The educational programs of Industrial Design adhere to the Dublin descriptors. To assure this, the 3TU IDE have composed a domain-specific reference document for the academic industrial Design Engineering programs, have outlined a shared profile for IDE graduate students and have explicated domains of knowledge and skills to be addressed in the IDE curricula (for a complete description, see Appendix 1). These documents build on the ACQA model (Meijers, Overveldt, & Perrenet, 2005). ACQA means Academic Competences and Quality Assurance and is developed at the TU/e. ACQA aims to explicate and clarify the academic character of educational programs and to make it possible to evaluate its quality. ACQA contains a set of competencies, learning goals and criteria for academic bachelor and master programs. The competencies are officially recognized by the KNAU as a valid operationalization of the Dublin Descriptors within the context of engineering education. As Meijers, et al. (2005) state: the ACQA framework needs to be contextualized to the context, content and goals of specific programs.

4.1.1 ID COMPETENCE FRAMEWORK

To improve the integration of the ID bachelor and Master program with the rest of the TU/e it was decided to integrate the ACQA model per September 1st, 2015 (Meijers, et al., 2005) in the competence framework of ID. Visual 1 provides an overview of this Competence Framework.



Visual 1. Competence Framework ID

4.1.2 DIFFERENCES BETWEEN A BACHELOR'S AND A MASTER'S GRADUATE

In Meijers et al. (2005), the differences between Bachelor's and Master Students' in terms of academic competencies have been described. The differences are outlined in table 1 below.

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/competencies 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)

Table 1. overview of end-terms Bachelor and Master graduates.

4.1.3 TRANSLATING ENDTERMS TO LEARNING GOALS

The end-terms for the domains-specific competencies within the expertise areas creativity and aesthetics, technology and realization, user and society, business and entrepreneurship, and math, data and computing are achieved within the different courses. Design and research processes are addressed in various courses but above all in the projects. Furthermore, different projects have a different emphasis with respect to the expertise areas. The end-terms with respect to professional skills and integration of expertise areas are achieved within the projects, internships and teacher coaching. The academic year 2015-2016 was used to create a framework with rubrics with defined end-terms for both the expertise areas and the professional skills. In the final Chapter we will reflect on this issue and formulate points for improvement.

4.1.4 SUMMARY

In this Chapter we described end-terms for both the major of ID and the master fitting the Dutch quality indicators and the international requirements as operationalized in the Berlin descriptors. These end-terms are translated into learning lines and learning goals for parts of the curriculum and into a framework with rubrics for both projects and electives. These rubrics can be used to explicate learning goals and to further improve the quality of assessments. In the Chapter with a reflection on the current assessment practice we will shortly reflect on this issue.

5 ASSESSMENT AND QUALITY ASSURANCE

Students of the Major and the Master of Industrial Design, potentially encounter the following types of assessment: 1. course assessments (electives); 2. Competence-assessments (project-related) and 3. Assessments of other activities (internships, exchange and external minor). For a description of these different types of assessment we refer to the digital study guide. The quality of all types of assessments needs to be assured. In this chapter different aspects of different topics related to quality assurance are described.

5.1 ROLES IN THE ASSESSMENTS

Different roles are involved in the different assessments within ID. To perform such a role and to be involved in the actual assessments, the DoE needs to send a written request to the BoE underscoring why someone needs to become an examiner. Based on the examiners profile (Appendix 1) the BoE then judges whether someone is allowed to assess. The complete procedure for appointing examiners is outlined in Appendix 2. To be complete, the following roles are involved in some kind of assessment:

Project coach

The project coach is an examiner who leads a project; the project coach has regular meetings with the student(s) throughout the semester. The project coach has expertise in “Design and Research Processes”, in “Professional Skills” and in one or more expertise areas.

Independent examiner

The independent examiner has expertise in “Design and Research Processes”, in “Professional Skills” as well as one or more expertise areas. To assess the integration of different areas of expertise, the independent examiner should be knowledgeable about the project topic, but should have expertise

in an area different from the project coach. For the FMP, the independent examiner should have expertise in at least one area in which the student wishes to achieve expertise

Teacher coach

The teacher coach is an examiner who monitors the development of the student throughout the Bachelor Program. The teacher-coach has expertise in “Design and Research Processes”, in “Professional Skills” and in one or more expertise areas.

Mentor

The mentor is an examiner who monitors the development of the student throughout the Master Program; the mentor has regular meetings with the student throughout his or her FMP. The mentor has expertise in “Design and Research Processes”, in “Professional Skills” and in one or more expertise areas. Quality assurance before, during and after assessments

Starting point for assuring the quality of assessment is a system of continuous monitoring and improvement. ID quality assurance is performed on different levels. Firstly, within the organization and at the level of the staff member (teacher, examiner and peer) it is mainly about assessment and checking whether the frameworks and quality criteria as outlined in this document have been implemented properly by teachers. Quality assurance before the educational activities are performed takes place via yearly discussions of overviews of learning activities in the EER in the EC and the BoE. Both the EC and the BoE advise on the educational programs, the electives and the instruction and assessment methods. After the learning activities take place, the BoE has insight in the assessment methods that are used and potential complaints about assessment that address the alignment between learning goals, instruction and assessment. Externally, the DoE collaborates with the other Industrial Design programs of Delft/Twente for benchmarking purposes and collegial consultation.

With respect to the level of the examiners it can be stated, that examiners are expected to realize a fit between assessment forms and learning goals. This can be realized by choosing adequate and valid assessment methods.

Professional Learning of teachers

An important tool to realize an acceptable level of assessment is to assure that our examiners have sufficient knowledge and skills for assessments. To do so, our department stimulates staff members to get their BKO certificate. Currently, about 40% of the staff members have finished their BKO. The BKO policy is executed conform the institutional policy. In addition to the BKO we organize meetings to inform staff members about new topics. Furthermore, each semester assessor trainings are organized for examiners to practice with forms and discuss student work. These meetings are used to build a shared understanding of criteria and standards and to calibrate judgements and expectations. If needed, the departmental testing expert organizes meetings and teacher support is available from DPO Teach.

Guidelines and procedures

To further enhance the quality of assessments guidelines are formulated for composing, implementing and assessing student work and analyzing assessment outcomes. Also, guidelines are formulated for administrative procedures and archiving student and exam work. These guidelines are

provided in the examination regulations of the BoE and the BoE checks the execution of the guidelines by means of random sampling. We highlight a few guidelines:

- An assessment plan is in place for courses and projects, and the plan has been published and /or verbally communicated to students within two weeks after the start of the course/project;
- An assessment plan explicates expected deliverables and criteria and standards which should be aligned with the goals of the course/project;
- Multiple lecturers are involved in the construction of criteria and standards and methods for assessment/or the criteria and standards and methods for assessment are discussed with the responsible of the expertise area;
- Goals of the course/project are used as a starting point to develop the assessments;
- Teachers are able to indicate how the goals, content and assessment methods (including criteria and standards) relate;
- Tests/course assessments/project assessments are checked, before they are administered, by reviewers in terms of validity, reliability and transparency;
- Tests/course assessments are graded according to a procedure in which differences between assessors are kept to a minimum and for project assessments verdicts are provided using procedures that minimize the differences between assessors to acceptable levels;
- Assessors adhere strictly to the criteria and standards;
- On the basis of the initial experiences with the criteria and standard, the criteria and standards have been or should be amended;
- A second examiner/content expert was present during a final oral test or oral course assessment.
- Examiners of courses, CA, Bachelor's final projects and Final Master projects check student work for plagiarism with plagiarism-detection software;

Transparency

For each learning activity it is explicated what is assessed and how is assessed. In other words, criteria and standards and methods for assessment need to be explicated and to be communicated to students (e.g. via OASE, OWIS, verbally and/or via 'een studiewijzer'). The information should be available when students would like to inform themselves about which learning activity to enroll for. Using assessment plans on a course level constitutes to the quality of assessments by increasing transparency. Asking these descriptions before the start of a course asks from teachers to act and consider issues related to course design before the start of a course and provides the BoE with a means to control the quality of the assessments. The BoE checks this regularly by means of random sampling. Also, questionnaire evaluations focus on the issues of transparency and provide a means to check whether the information is known to students and provided in time. Per course and per project it is also asked to indicate to what expertise area the particular learning activity contributes and how. Furthermore, clear assessment procedures should be used that are known and understood by students.

Evaluations

Through the use of different questionnaires the quality of our assessment procedure and course assessments is monitored. The results from questionnaires for courses, projects, the curriculum and the National Student Inquiry to evaluate how satisfied students are with the assessments (transparency, adequacy of assessment methods, criteria and standards etc.). The Board of Examiners is informed about this and takes action when necessary. This regular form of evaluation

shall be supplemented by further investigation based on random samples and possibly in response to other information (e.g. specific complaints). In case of complaints there is always an investigation into the specific case, based on all the evidence available and taking into account the perspectives of all actors involved. If necessary, the Board of Examiners will request the DoE to take appropriate action. Furthermore, once per three years a proof accreditation is held. To prepare this accreditation a digital self-assessment tool is used that measures the quality indicators of Baartman, et al. (2014) as described in Chapter 2.

5.1.1 SUMMARY

Table 2 provides an overview of instruments that are used to judge the quality of assessment methods, before and after the actual assessment is performed.

Instrument	Whom	Policy of ID
Before		
Quality of teachers as examiners Teachers have a qualification in terms of a BKO or are prepared to attain this qualification. Being competent in assessment is part of this qualification. The BoE approves the examiner list. The examiners need to fit the profile with knowledge, skills and expertise defined for Competence Assessment.	Teacher BoE	Professional development policy for teachers
Toetsmatrijs/rubric In these methods, topics for assessment are indicated and what the standards are for assessment and how the judgment will be transformed in a grade.	Teacher	With the start of the new program, more and more teachers use rubrics for their course assessment. Creating rubrics is also part of the BKO trajectory.
Peer-support In compiling assessments teachers both the responsible teacher and involved teachers are involved in making the course assessments (methods and criteria and standards). If agreements are made at the 4TU level these should be maintained.	Peer BoE	Advised: peer-review for each course. Obligatory for 2017-2018. BoE monitors. If agreements are made on the 3TU level, these should be maintained.
After		
Check on validity, reliability and transparency. Based on an analysis of the results. Teachers can ask support from the educational expert.	Teacher or quality officer (also assessment-expert)	Bi-annual for all elements
Re-assessment of outcomes, preferably by teachers from other departments from other University with a specific focus on the quality of 'exams'.	Peer	Once per three years in the context of a 'proof-visitation'.
Self-assessment using the KIT	Teachers/quality officer or other delegates asked by the BoE	Once per three years in the context of a proof-visitation

Table 2. Overview of tools used for quality assurance of assessments

6 RESPONSIBILITIES BOE, TEACHERS AND EXAMINERS

For each learning activity, the responsible lecturer/examiners are the main responsible for the quality of assessment within the framework of our EER, assessment policy and examination regulations. The development and implementation of the assessment policy are the responsibility of the DoE. Writing the examination regulations and checking whether the assessments and graduations are performed according to the examination regulations is the responsibility of the BoE. The BoE is an independent committee. The main task pertaining to the assessment quality is assurance of the quality system and acting pro-active in the fore-mentioned tasks. The pro-active role is visible in (amongst others):

Regular meetings, at least twice a year, between the chair of BoE and the Dean of ID;

Regular meetings, at least once a year, between the chair of the BoE of the IDE-partners;

Regular meetings, at least twice a year, between the DoE, chair of the BoE and the chair of the EC;

Directing and monitoring the assessment process within ID.

The BoE is committed by law to examine the outcomes of assessments. Different indicators can be used for this purpose. Investigations into the quality can be focused on pass rates, course evaluations, collection complaints, installing workgroups of teachers etc. A more detailed description of the tasks and role of the BoE can be found in the examination regulation.

As already described, the BoE approves the list with examiners provided by the DoE. As a guiding principle for compiling the list with examiners it is strived for appointing teachers as an examiner for a course/project they are involved in. The examiners assess whether a student has passed or failed a learning activity. The evidence for pass/failure is provided on behalf of the BoE.

The BoE needs to be aware of the content of both the Major and Master, of rules and regulations (WHW, EER and examination regulations) and needs to be approachable for all relevant stakeholders (e.g. DoE, EC and students). In principle, members of the BoE are members of the different research groups within ID. In this way the BoE represents the department and its multidisciplinary nature well.

The composition of the Board of Examiners is such that the required independence and expertise are guaranteed. Each committee shall have, in any case:

- A chair (and member), preferably a professor
- A deputy chair (and member)
- Two additional members

- An external member, who is not an employee of the same department and does not have teaching duties in the degree program(s) for which the Board of Examiners is responsible (to be prolonged for a maximum of two terms).

ID has a profile for the chair of the BoE, the secretary, members and the advisors. These profiles can be found in the document 'handreiking examencommissies' (De Brouwer et al., 2013). The chair of the BoE participates in university-wide meetings: the Advice Committee Bachelor Programs (AEB) and the InterVision group BoE's. If necessary the BoE can be advised by study-advisors, DoE and test experts. To enhance the knowledge and skills, members and advisors of the BoE are allowed to participate in courses offered by DPO-Teach. The BoE reports on her activities in a year report. This report also includes a reflection. This year report is discussed with the DoE and the Dean.

Now we have outlined the main responsibilities of the BoE, teachers and examiners a detailed description of all the roles, duties, responsibilities and powers in relation to everything regarding testing and assessing is provided (this description is taken from appendix 3 of the TU/e exam framework of Halsema and Swagten (2014).

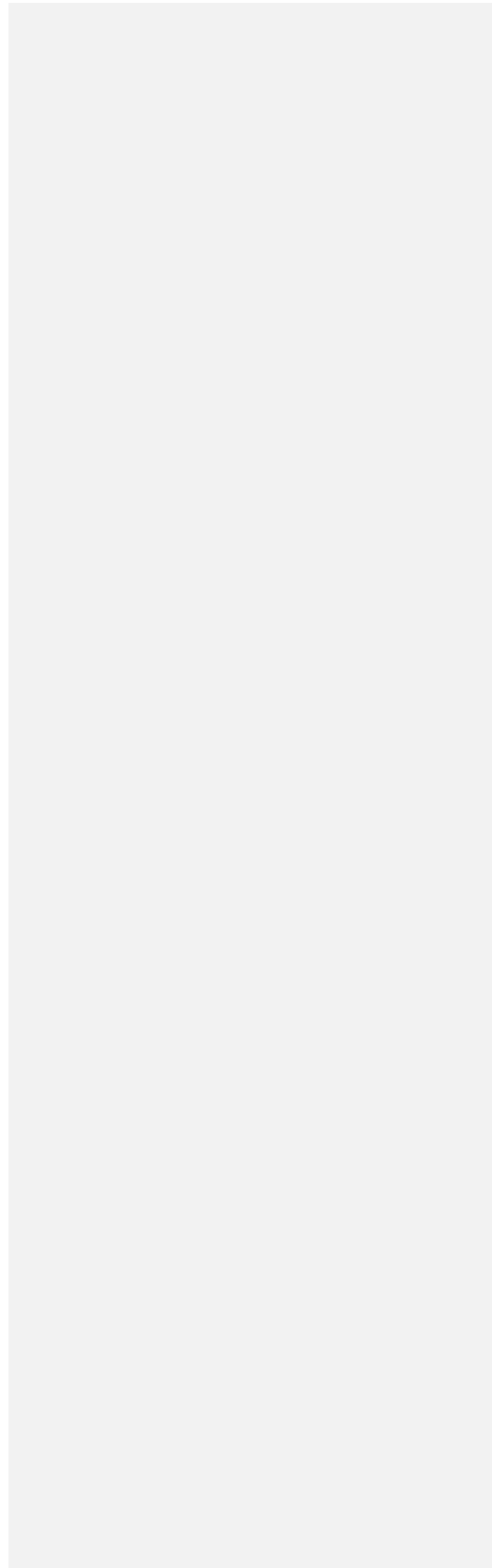
Exam policy responsibilities			
Preconditions	Parties responsible	Harmonization/relationship with	Requirements
Composition of and appointments to BoE	Dean ¹	DoE+ BoE	WHW, Section 7.12, 7.12a and 7.12b, and Departmental Regulations model, Article 2.10B and 2.11B
Appointment of examiners	BoE	DoE+ Dean	WHW, Section 7.12c paragraph 1
BoE annual report	BoE	DoE+ Dean	WHW, Section 7.12b paragraph 5, and Departmental Regulations model, Article 2.13B
Program and Examination Regulations program	Executive Board + Dean of BC	DoE+ Dean + Program Committee	WHW, Section 7.13 and Section 7.14
University-wide exam policy	Executive Board + Dean of BC	DoE+ Dean + AEB + ACB	TU/e exam policy framework
Program exam policy	DoE	BoE + Program Committee + Dean	TU/e exam policy framework
Examination regulations (assessment guidelines)	BoE	DoE+ Program Committee + Dean	availability of Program and Examination Regulations +

¹ The word dean refers to the dean of the department. The word dean of BC refers to the dean of the Bachelor College

			WHW, Section 7.12b paragraph 1b
Quality of examiners	Dean	BoE + DoE+ Dean	TU/e exam policy framework
Safeguarding the quality of testing	BoE	DoE+ Program Committee + Dean	Examination Regulations (WHW, Article 7.12b)
Teaching and examination process	Parties responsible	Harmonization/relationship with	Requirements
Program descriptors	DoE	BoE + Program Committee + Dean	Dublin descriptors or ACQA (legal) Accreditation (WHW, Section 5a.8, 5a.10a, 5a.13f and 5a.13g) WHW, Section 7.13 paragraph 2c Program and Examination Regulations
Program exam plan (learning trajectories/learning objectives based on descriptors)	DoE	BoE + Program Committee + Dean	TU/e exam policy framework
Learning objectives for each course	DoE	Examiners + BoE + Program Committee + Dean	
Making sample exams available	Examiner	Co-examiners + BoE	
Exam matrix/criteria and standards/exam schedule	Examiner	Co-examiners + BoE	Exam policy and program exam plan
Exam + exam quality	Examiner	Co-examiners + BoE	Examination regulations, at least: - Transparent - Valid - Reliable
Assessment procedures and model (depends on project)	Examiner and DoE	Co-examiners + BoE	
Determining the pass mark	Examiner	Co-examiners + BoE	Program and Examination Regulations, and Examination

			Regulations, at least: - Make clear in advance how pass mark is determined; - Opportunities for modifications later are clear; - How to deal with borderline cases.
Assessment	Examiner	Co-examiners + BoE	Examination regulations
Exam analysis and evaluation	Examiner	Co-examiners + BoE	
Organization of testing	Parties responsible	Harmonization/relationship with	Requirements
Registering for scheduled exams	Student	STU + Department + Dean	Program and Examination Regulations
Holding an exam	Student	STU + Department + Dean	Program and Examination Regulations
Scheduling of exams	DoE	BoE + Department	Examination regulations
Fraud and complaints	Parties responsible	Harmonization/relationship with	Requirements
Fraud and detection of plagiarism	Examiner	BoE	Program and Examination Regulations and/or Examination regulations and TU/e fraud policy
Dealing with cases of fraud	BoE	Examiner	WHW, Section 7.12b paragraph 2, procedure for cases of fraud that affect more than one department
Dealing with complaints in relation to exams	BoE	Examiner and/or Examinations Appeals Board	WHW, Section 7.12b paragraph 3 and 4 Program and Examination Regulations
Exemptions and degree certificates	Parties responsible	Harmonization/relationship with	Requirements
Exemptions	BoE	STU + Department	WHW, Section 7.12b paragraph 1d
Degree certificate	BoE	STU + Department	WHW, Section 7.11
Module certificate	BoE	STU + Department	WHW ...

Table 3. Exam policy responsibilities 1



7 ADDITIONAL QUALITY ISSUES

7.1 FRAUD AND ANTI-PLAGIARISM POLICY

Recently, the TU/e Education Fraud Policy (Van Meeuwen et al., 2014) was written. This policy is grounded in the TU/e Code of Scientific Conduct. In this policy, plagiarism is a specific type of fraud. The fraud policy was divided into four elements, namely 1. Informing about fraud, 2. Preventing fraud, 3. Detecting fraud and 4. Figure 3, taken from the Education Fraud Policy describes measures that will be undertaken to prevent students from committing fraud.

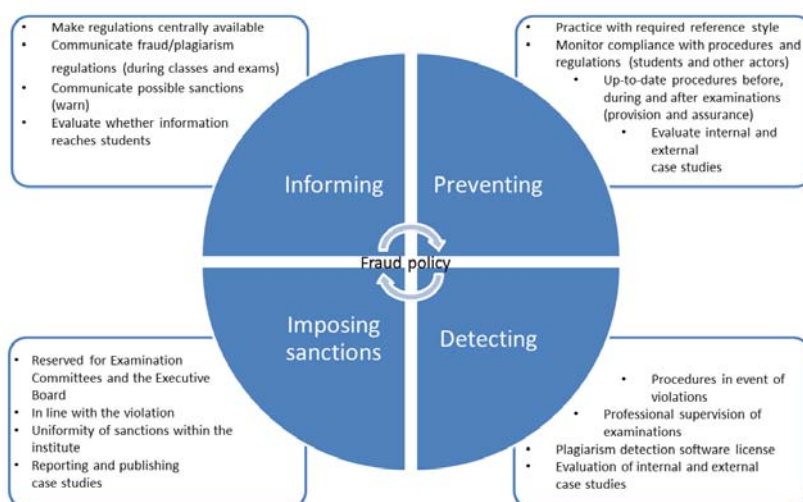


Figure 3 Overview of the TU/e Fraud Policy consisting of four elements (L.W. van Meeuwen, 2014) based on Rienties & Arts (cf. 2004).

Rules and regulations regarding fraud are formulated in the examination regulations. Dealing with the issue of fraud is a shared responsibility of both the BoE and the DoE. The topic of fraud is discussed on a yearly base when the examination regulations need to be comprised. In writing the document, the BoE and DoE discuss whether the fraud policy needs to be adjusted.

7.2 ASSURING THE END-LEVEL OF STUDENTS

The law of Higher Education (WHW) contains prescriptions for arranging curricula. According to the Inspectorate of Education there are several important pillars for assuring proper end-levels²:

The Education and examination regulations

² Inspectie van het onderwijs (2011), Alternatieve afstudeertrajecten en de bewaking van het eindniveau in het hoger onderwijs. Utrecht.

The board of examiners

Examiners

The level of graduates is expressed in their Final Bachelor and Final Master projects and their showcases (that are part of the final project assessments. To assure the quality of these final projects the following instruments are used:

- A digital study guide and website providing information about the goals, content and assessments within the curriculum and pertaining to separate learning activities and providing important rules and regulations;
- Assessment of Final Bachelor and Master projects are undertaken using clear procedures, methods and criteria and standards and are performed by examiners approved by the BoE;
- Course/project descriptions contain information about the goals, content and assessment (methods, procedure, criteria and standards) of the course/project;
- Final Bachelor projects and Final Master Projects are included in the curriculum evaluations. These evaluations provide students with the opportunity to provide feedback;
- The BoE and 3Tu/E platform are consulted in creating criteria and standards.
- The deliverables of (final) projects are stored in the digital portfolio system, ID compass.

7.3 OTHER ISSUES

There are several other issues related to assessment policy that needs to be discussed. Firstly, how to deal with individual versus group work. In principle, the policy is that students should be assessed individually and based on a visible individual contribution unless it is explicitly stated that it is a group project with collaboration as an explicit learning goal. If this is the case, this should be clearly addressed in the course descriptions. On a curriculum level, there should be a clear division in individual learning and group work. The individual component is mainly covered by assessing professional skills in both the Final Bachelor and Final Master Project. The Final Bachelor and Final Master projects conclude with an examination moment. At an examination moment not only the development within a project is assessed, also the overall development as a designer as well as the professional identity and vision are assessed. Due to the multi-disciplinary nature of the field of Industrial Design, the requirements with respect to professional skills are a much stronger part of the curriculum (approximately 30 ECTS for the Bachelor, 50% of each project + course "Professional Identity and Vision"). These are assessed as part of a portfolio (showcase) that students deliver for their examination. This showcase also shows the coherence of their program and contribution/connection of activities to their professional identity and vision. This showcase may also address relevant extra-curricular activities (e.g. exhibits, publications or design prizes) as they contribute to their professional development as a designer. Consequently, the students' development is assessed as part of professional skills which are an integral part of the project. As stated by the BC, if students fail their professional skills they fail the whole related learning activity. Including a showcase in an elective does not render it the value that it has for a professional designer. Secondly, whereas the field of Industrial Design is a specific discipline it integrates and builds on various disciplines. This multi-disciplinary nature is reflected in the competence framework and the goals for courses and projects. The assessments should also deal with this multi-disciplinarity. In the assessments of ID examiners work in duos. These duos are composed in such a

way that people with different expertise assess together.

8 REFLECTION

In this Chapter we shortly reflect on the current assessment practice using elements of the Framework of Baartman et al. (2014) described in the Chapter 2 about the vision on assessment.

Validity

With the development of a new curriculum the learning goals were redefined for both individual learning activities and the projects, and alignment needs to be created between these learning activities. For several reasons this appears to be complicated. Firstly, the department has a large tradition with 'individual learning paths and an ipsative model' for assessment. Furthermore, Industrial Design is interdisciplinary by nature and engaged staff members have firm and diverging beliefs about what should be the goals of projects and the curriculum. Furthermore, there is an expressed need to have open projects. The fore-mentioned factors assure that creating an adequate assessment program with adequate learning goals that logically progress and corresponding criteria and standards that are considered as adequate, takes time, costs effort and requires intensive discussion of all stakeholders.

The academic year 2015-2016 has been used to create and pilot with rubrics for the end levels, for the examination moments and to create rubrics for the expertise areas. It has been decided to use fixed rubrics for the examination moments, to indicate fixed topics for the other projects and to provide squad leaders the freedom to formulate their own rubrics for the other projects. The results of the assessments of semester 2 need to be thoroughly evaluated. Based on this evaluation, decisions should be made about how to proceed with the rubrics and how the actual assessment procedure for projects should look like. On a course level, teachers need to be provided with the time to develop a second iteration of their courses and the DoE together with his team will work towards alignment between learning goals, content and assessment on a curriculum level.

Consistency

The accreditation committee (2014) advised to increase the consistency in the feedback and assessments. The taskforces about quality assurance and assessments advised to solve this issue by creating rubrics. The past academic year has been used to create rubrics. This appears to be a challenge. In particular in the context of introducing the new programs. Whereas the rubrics will need further iterations to increase usability, the first steps have been made (see text about rubrics headed under validity). The gains of these efforts will likely become visible in the next academic year when rubrics will be introduced before the start of the academic year and all courses can develop rubrics framed in meta-rubrics for expertise areas.

Transparency

Evaluation results indicate that the transparency of the assessments can be increased. As mentioned in the introduction, changing and designing education takes time. Teachers need time for a change. This means that in the first year not all assessment methods and criteria and standards (projects and courses) were ready and available from the start of the activities. In the academic year 2016-2017 this will be the case. This will facilitate a proper communication and information provision about the assessment methods and criteria and standards. The transparency will likely increase. However, the transparency issues surrounding the assessments also reflect a deeper communication and information problem of the department. These issues are taken very seriously. There has been an

investigation into the communication problems and the departmental board has been advised about how to approach these issues. Currently, there is capacity available to continue this project.

9 PLAN FOR IMPROVEMENT

The next academic year the assessment practice of ID will be improved in several ways.

The first objective is to improve the information and communication concerning the assessments on a curriculum level. This will be done by undertaking the following measures for improvement:

- Make a guide for both teachers and students that clearly describes what is expected of teachers and examiners and that communicates rules and also indicates which documents contain which information and can be found where. To be implemented in September 2016
- Reorganize support for both students and teachers by organizing a first line of contact (BC and MA coordinator and educational office) for practicalities and a second line of contact (assessment expert) in case of specific assessment related concerns.
- Redesign the website
- Improve the offer of information via the studeerwijzer

In this process, a communication expert is involved.

Parallel to improving the information and communication aspects of assessments a more fundamental discussion will take place between the Dean, DoE, curriculum committee and BoE and educational expert to systematically map how the different components of the competence framework are assessed. Currently, meta-rubrics are defined explicating for each expertise area, professional skill, for professional identity and vision what is expected at the examination moments. These meta-rubrics will be provided to the curriculum committee for advice. Also, the BoE will be provided the opportunity to advice on these meta-rubrics. These meta-rubrics should be approved and implemented in September 2016. The meta-rubrics will provide responsible teachers of electives and examiners of competence assessment with the means to explicate goals for their learning activities and formulate corresponding criteria and standards. Next to these meta-rubrics the consistency of the whole needs to be discussed and further improved. In this respect, the BoE puts three specific issues on the agenda. First, which assessment components can/will be combined (e.g., see the discussion about separate or combined assessment of a final project and the portfolio or showcase). Second, do we reach a desired balance between individual and group assessment (e.g., if the contribution of group assessment is considered to be too high, do we need to consider remedies, such as peer assessment of individual contributions to the group). Third, what are the (preferably objective) boundary conditions for the overall quality assessment that leads to the approval of a diploma. Currently, a position paper (Appendix 4) is written about the assessments of the Final Bachelor and Final Master project by the Directors of Education and the Dean. This position paper is provided to the curriculum committee and the BoE for advice. The outcomes should be implemented per September 2016.

Finally, further discussion is needed between all actors involved (e.g. BoE, DoE, Dean, EC, Curriculum Committee) to clearly establish agreement on the tasks, roles and responsibilities of all actors involved in implementing, monitoring and guaranteeing (the quality) of assessments. In this respect, table 3 on p. 19-21 will be used as a starting point. This discussion should be finished before the start of semester 2 of the academic year 2016-2017.

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Appendix 1. Domain-specific reference document for the academic industrial design engineering programs

The three Schools of Industrial Design Engineering in the Netherlands (i.e., delft, ehv) have laid down a description of the profile and labor market positions of IDE Graduates, some specific features of the IDE curricula and the distinction between the Bachelors and the Master's level.

The Schools have defined the common elements for the purposes of quality assurance at a 3TU/e level. The description of the profile and the competencies makes no distinction between Bachelors and the Master's: the knowledge and skills themselves do not differ, but the level (i.e. width and depth of this knowledge and skills) does. The schools used a number of sources to develop the common elements and profiles:

The terms of reference of the last visiting committee (IDE program Delft, VSNY-report from May 2002)

- The descriptions of the profile and objectives of the three IDE programs
- Criteria for Academic Bachelor's and Master's Curricula (Joint publication by the three Technical Universities, Meijers, e.al. TU/e, 2005)
- Dublin Descriptors (NVAO protocol)
- International Benchmark in Industrial Design Engineering (TU Delft, December, 2005)

PROFILE OF THE IDE GRADUATES

The industry has a proven need for academically trained industrial designers who can integrate knowledge from different fields of technology with human factors, who can see signals from the market and can generate creative ideas with new solutions.

A Bachelor of Science/Master of Science in Industrial Design can operate in the field of Industrial Design as an interdisciplinary designer. The graduate is able to recognize 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: systems, products and related services.

In the process of developing systems, products and related services, the ID graduate:

- Is able to analyze market demands and user needs along with technological and social opportunities;
- Is able to generate a (personal) vision of the design problem;
- Is able to generate and select ideas and design concepts;
- Is able to transfer existing knowledge to new problems and to implement new knowledge;
- Can materialize a concept to the stage of a working model;
- Is able to take into account the marketing and the product life cycle.

The graduate is an academically educated designer. He or she is able to use scientific methods and techniques in the development of products and in conducting research. He or she is able to contribute to research projects and to the development of new knowledge. He or she has knowledge and skills in relevant disciplines and sciences and is able to use these in reasoning and methodological reflection during/on the process of development.

The graduate is talented, self-steering, responsible, creative, is able to build on his or her own knowledge and skills, is able to develop his or her own signature, is able to deal with limited certainties, can communicate, can document, visualize and present his design, can structure his projects, can function both individually as well in a multidisciplinary team and in an international and intercultural context.

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

DOMAINS OF KNOWLEDGE AND SKILLS IN THE IDE CURRICULUM

On the basis of the profile³, seven areas of competence can be identified for university graduates in the ID program. Graduates should be competent with regard to all seven points:

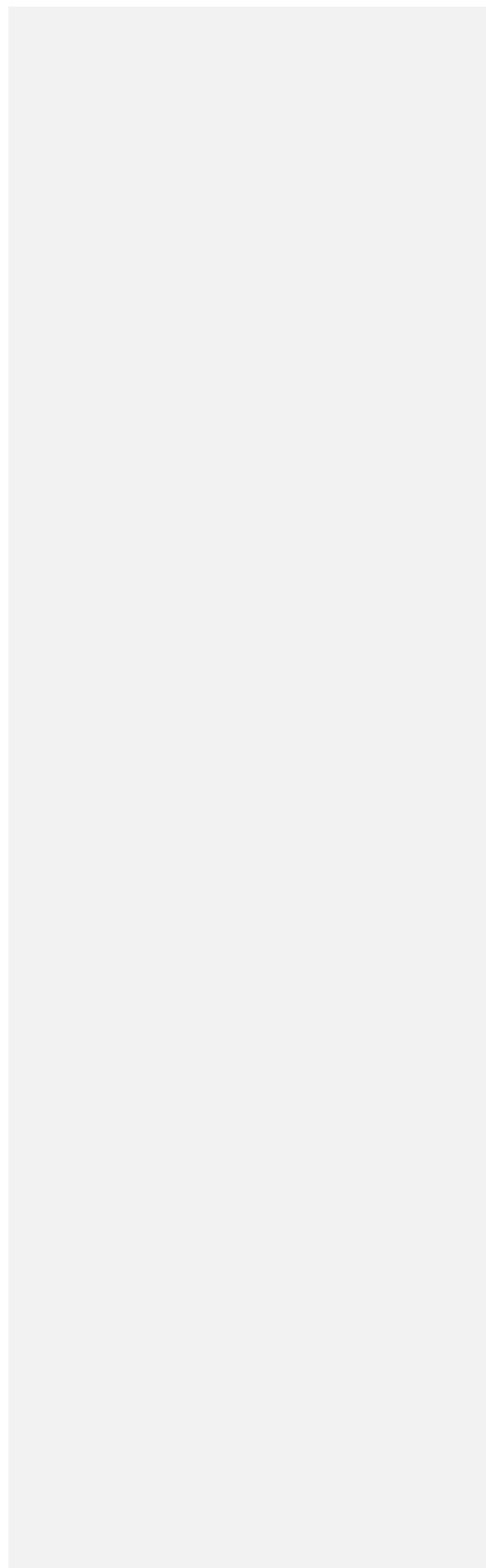
1. Is competent in designing; An IDE graduate can realize new or modified systems, products or related services, with the aim of creating value in accordance with predefined needs and requirements.
2. Is competent in the IDE -relevant disciplines, Creativity and Aesthetics, Technology and Realization, User and Society, Business and Entrepreneurship, and Math, Data and Computing; An ID graduate is familiar with existing knowledge and has the competence to increase and develop this through study.
3. Is competent in research; An 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.
4. Has a scientific approach; An IDE graduate has a systematic approach characterized 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.
5. Has basic intellectual skills; An IDE graduate is competent in reasoning, reflecting and forming a judgment. These competencies are learned or refined within the context of a discipline, and then become generically applicable.
6. Is competent in co-operating and communicating; An 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 and non-colleagues. He is also able to participate in a scientific or public debate.
7. Takes account of the temporal, social and personal context; Science and technology are not isolated, and always have a temporal, social and personal context. Beliefs and methods have their

³ Based on the reports: - marktonderzoek naar de behoefte aan Industrieel Ontwerpers, Kompaene, Bluemink Innobatin, Management en Daams Ergonomie, September 2000.

Industrieel Ontwerpen aan de Technische Universiteit Eindhoven: Een globale marktverkenning, BOM Syntens, 2000.

De staat van de onderwijsdag, Onderwijsverslag 2004/2005, Inspectie van het Onderwijs, April 2006.

origins; decisions have social consequences in time. An IDE graduate is aware of this, and has the competence to integrate these insights into his scientific work.



Appendix 2. TU/e EXAMINERS PROFILE FOR COMPETENCE CENTERED LEARNING

Legal framework

Article 7.12c of the Dutch Higher Education and Scientific Research Act (*Wet op het Hoger onderwijs en Wetenschappelijk onderzoek, WHW*) reads as follows:

1. The BoE shall appoint examiners who are responsible for organizing examinations^{4,5} and determining the results.
2. The examiners shall provide the BoE with information upon request.

Definition of examiner in competence-centered learning at TU/e

An examiner in competence-centered learning is an official who is responsible for an individual course⁶ and/or who is involved in competence assessment⁷. Examiners are appointed by the BoE for assessing students on specific courses and/or overall competence development, and for determining the outcomes of such assessments.

Knowledge, skills and personal qualities

The examiner has/has knowledge of:

- an academic level of working and thinking;
- competencies in relevant professional field(s);
- the course he/she teaches, supervises and/or assesses, as well as of appropriate teaching, coaching and feedback methods;
- the educational vision, level and overall content of the program;
- the role of his/her course within the curriculum and the contribution of the course to the objectives of the program;
- the role of competence assessment within the program;
- appropriate assessment methods (to be specified in the Examination Regulations by the BoE);
- the OER, the Examination Regulations and the (departmental) assessment policy, particularly with respect to any implications based on these documents that are relevant for him/her.

The examiner can:

- supervise students in connection with traineeships, subject and process of their projects and theses and assess their performance, if requested;
- assess whether or not a student's developed competency (in terms of attitude, skill and knowledge) is sufficient for a specific course and/or contributes significantly to his/her overall competence development;

⁴ An examination is defined as any investigation approved by the BoE into the attitude, skill and knowledge (ASK) developed by a student as part of a course or within the program.

⁵ If a course that is part of the curriculum is organized by another department or university, the quality of the education provided is approved in advance, and the examiners appointed by the organizing department or university for assessing the selected study components are also recognized by the BoE.

⁶ A course is defined as any coherent set of curricular learning activities that is part of the competency-centered Bachelor or Master degree programs, and that is concluded with an examination as defined above.

⁷ A competence assessment is defined as an investigation (as referred to in Article 7.10, paragraph 1 of the Act) into the student's academic and professional development, including an evaluation of the outcomes of that investigation. This assessment integrates feedback information from individual course activities, and provides the student with feedback to support further competence development. In the case of Industrial Design this competence assessment evaluates the student's overall competence in relation to design, his/her vision on design, and his/her identity and growth as a designer during the semester or year as a whole.

- perform competence assessments;
- plan, prepare and organize oral and written examinations (or other forms of assessment, when relevant);
- assess student performance through examinations (or other appropriate assessment tools);
- optimize the assessment situation, so that the student can perform optimally;
- trace (or supervise the tracing of) academic fraud and/or plagiarism;
- justify the assessment outcome and report this verbally and in writing to involved parties (e.g. provide feedback to assessed students, input for competence assessment, and information about the course examination to commissioning or accreditation bodies);
- communicate in the official language of the program in a correct manner, verbally and in writing;
- advise the BoE, e.g., in case of requests and appeals;
- work together in a collegial manner with all involved persons while performing his/her duties as an examiner;
- adjusts his/her activities based on self-reflection, feedback, criticism or changes in the educational vision.

Appendix 3. A Procedure for the appointment of examiners

- The BoE maintains a list of the examiners appointed by it for each course component.
- When this procedure enters into force, all employees who are then authorized to organize examinations shall be appointed as examiners for the course components taught by them and their names shall be added to this list of examiners.
- The BoE must determine whether or not an employee meets the profile of an examiner. Arguments used to motivate this can be: holding a BKO certificate, (see 'TUE_Regulation_BKO_2011') and having demonstrated sufficient experience with the educational program (for a more detailed specification see: Examination Regulations).
- If, in the opinion of the BoE, an employee no longer meets the profile of an examiner, it may deprive this employee of his/her authority to organize examinations and no longer appoint him/her as an examiner.

Appendix 4. Draft Policy paper FBP and FMP

In order to pass the exam for Bachelor of Science in Industrial Design or Master of Science in Industrial Design students will have to comply with the following examination requirements:

- They should have completed a set of courses (mandatory courses and electives) that meets, both in quantity as well as in profile, the requirements on courses set by the department.
- For a Bachelors student this means a set of courses has been completed that adequately and proportionally covers all expertise areas defined by the department
- For a Masters students specialization in expertise areas of choice is appreciated but courses in all expertise areas such as defined by the department should have been completed at least at Bachelors level
- Next to this students should have completed their Final Bachelor Exam (Bachelors students) or Final Masters Exam (Masters students)
 - Both exams consist of the following elements
 - A (completed) FBP/FMP project including a demonstrator
 - A corresponding report
 - A corresponding presentation (including Q&A session with the examiners)
 - An adequate portfolio representing the profile and professional vision and identity of the student
 - All elements are separately judged and graded and are combined into one single, final, grade that does not need to be the numerical average of these four elements. Failing one of the aspects cannot be compensated by a higher grade in one of the other aspects; all aspects have to have a sufficient (pass) grade. In case of failing one of the above criteria the following rules will apply
 - In case of a failing report, presentation, demonstrator or a portfolio failing on presentation a student can do a retake within three week where the missing aspect(s) will be judged separately.
 - In case of a failed project or a portfolio failing on content the student has failed the exam and will have to retake the entire exam in a subsequent semester

Based upon the above it is of imminent importance that coaches/mentors explicitly coach student throughout the entire Bachelors/Masters program on

- The development of a well-balanced set of courses adequately covering all expertise areas such as required by the department
- The development of an adequate portfolio towards the standards required for a Bachelors or Masters degree in Industrial Design at Eindhoven University of Technology