

STUDY GUIDE INDUSTRIAL DESIGN

Academic year 2014 - 2015





COLOPHON

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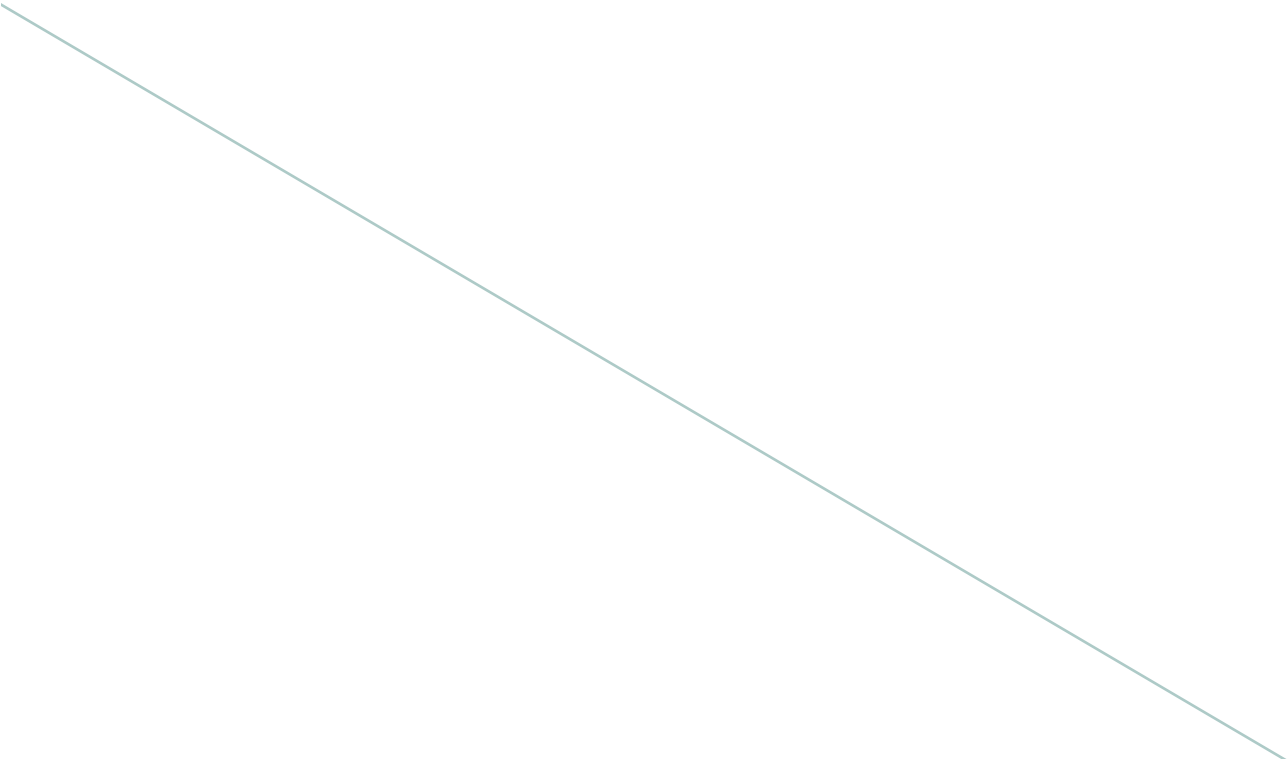
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PROLOGUE

The Department of Industrial Design at the Eindhoven University of Technology enters its fourteenth year of educating students to become industrial designers of intelligent systems, products and related services in a societal context. This study guide summarizes the main aspects of the Bachelor and Master Program in Industrial Design. The content of this education guide is largely based on the guides written by Prof. dr. ir. Hummels and Dr. Vinke (2009).

Given the many changes that both programs have undergone in the past years, we recommend you to review the current guide as it elucidates the core of the educational program for 2014-2015. In particular we highlight the updated descriptions of the competencies, the implications of the Bachelor College, the changes in the Master program, the stages of development, the assessment procedure and the educational roles.

We would like to express our gratitude to the people that contributed to this guide as well as to the digital study guide. Their contributions and critical readings are crucial for successful implementation of our educational program. We hope that this guide supports in increasing the quality of our educational programs.

I wish you all an inspiring and creative year.

On behalf of the Educational Board and Educational Affairs,

Dr. ir. Miguel Bruns

Director of Education of the Bachelor Program of Industrial Design

Deputy Director of the Master Program of Industrial Design



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FOUNDATION OF ID IN A NUTSHELL

The educational program of Industrial Design at the TU/e (ID) is unique and distinguishes itself by its focus on intelligent systems, products and related services in a societal context and by its approach, namely self-directed and competency-centered learning. In order to strengthen this foundation, we stimulate identity building, expertise building and community building, which refer to both the individual level (student and staff) and the department level (we as Industrial Design).

Eindhoven University of Technology (TU/e) profiles itself as a research-driven and design-oriented university of technology of international standing. Its focus is coherent education, research and knowledge valorization in the field of engineering science & technology (Mission of the TU/e according to the TU/e Institutional plan 2013-2016). In 2000, TU/e started the department of Industrial Design, a rapidly growing department with nearly 700 students, both Bachelor and Master, and almost 100 staff members involved in education. The educational program distinguishes itself by its self-directed and competency-centered learning approach and focus, which is reflected in the mission statement for our education at ID.

“To stimulate students to get the maximum out of their talents while developing towards designers of intelligent systems, products, and related services in a societal context.”

1.1 INTELLIGENT SYSTEMS, PRODUCTS AND RELATED SERVICES IN A SOCIETAL CONTEXT

Based on discussions with industry, the department decided to concentrate on the design of intelligent systems, products and related services, which addresses aspects such as adaptive behavior, context-awareness and highly dynamic interaction. Within the ID Major and the Master Program the focus is on interactive products with an awareness of intelligent systems. The discipline of ID is based on three paradigms: arts and crafts, engineering and social science. Therefore, you learn to integrate various approaches in the design process such as aesthetics, human, socio-cultural, interaction, technological and business process aspects.

Part of a system

As products become more and more intelligent and are accepted as part of a system where people interact with people, people interact with products and even products start interacting with each other, the social context is also becoming increasingly important. Generating innovative concepts and original ideas is emphasized in the program. More specifically, we want our graduates to be people who are able to transform our world, preferably in beautiful ways, and create opportunities instead of solving problems. Because technology is so rapidly and innovatively created by the technology providers of the world, it is potentially capable of transforming our world, but not in ways that we (can) know of beforehand. So instead of educating students to analyze the needs of users in existing product ecologies we aim towards a more radical goal: we want to educate students who are able to apply these new technologies in ways that are new and daring, driven by a design vision of how our world could be, and validated by solid user research (Hummels and Frens, 2008).

1.2 SELF-DIRECTED AND COMPETENCY-CENTERED LEARNING

Taking into account recent developments in both the professional and educational field, the ID learning programs are based on an educational model in which self-directed and continuous learning and competency development are pivotal. We give you, our 'junior employee' as we call our students, a professional role to create solutions within a professional setting. Competency-centered learning gives equal weight to knowledge, skills and attitudes, and stimulates you to learn by doing. Within our department, a competency is defined as "an individual's ability to select, acquire, and use knowledge, skills, and attitudes that are required for effective behavior in a specific professional, social, or learning context".

***Holistic
view***

Therefore, the programs offer a holistic view of design, in which you integrate eleven competencies towards the overall competency of designing. The nature of design beautifully intertwines the different types of knowledge with different human skills, in this case cognitive, emotional, perceptual-motor and social. It is about learning and performing through practical application, while simultaneously acquiring theoretical skills.

For example, design uses formal scientific notations (based on mathematics) as well as knowledge that is harder to formalize (e.g. aesthetics and creativity). Moreover, knowledge can be obtained through the analytical skills of the designer (e.g. analyzing user behavior), as well as through the synthetic skills of the designer (e.g. building physical models).

In addition to skills and knowledge, competency development focuses on the designer's attitude, such as taking responsibility and professionalism as well as being curious and empathic. Competency-centered learning is a highly person- and context-dependent process. A different context asks for different competencies and different students will prefer different competencies and develop them differently. Therefore, you take responsibility for and create your own program. You plan and direct your own learning by compiling a Personal Development Plan (PDP). In your PDP you describe your learning goals and intended competency development. Furthermore, you indicate which learning activities (e.g. projects and assignments or modules) best match your learning goals and required competency development of that semester. All this, of course, within the structure and content the department provides and with the help of senior employees (staff) who serve as coach and expert. Moreover, you work on projects with different (real) clients and experts, which tunes your competency development.

Because competency-centered learning is a holistic approach, the assessment focuses on the overall growth as a designer including identity building. You go through different stages during your Major and Master: awareness (you understand and can identify all eleven competencies, you have experience with most of them and you know how to continue developing them) and depth (you are able to integrate the eleven competencies in the design process and have developed attitudes, skills and knowledge inside the competencies). After the Bachelor program, you can develop a specific expertise within the field of Industrial Design (you have a clear profile in your competency development and you have in-depth attitudes, skills and knowledge of the field of design in relation to your competency profile; as a result, the integration of your strongest competencies is driven by a unique and personal

vision on designing), or even become visionary (you have achieved the stage of expertise -previous stage- and moreover you define your own field in design).

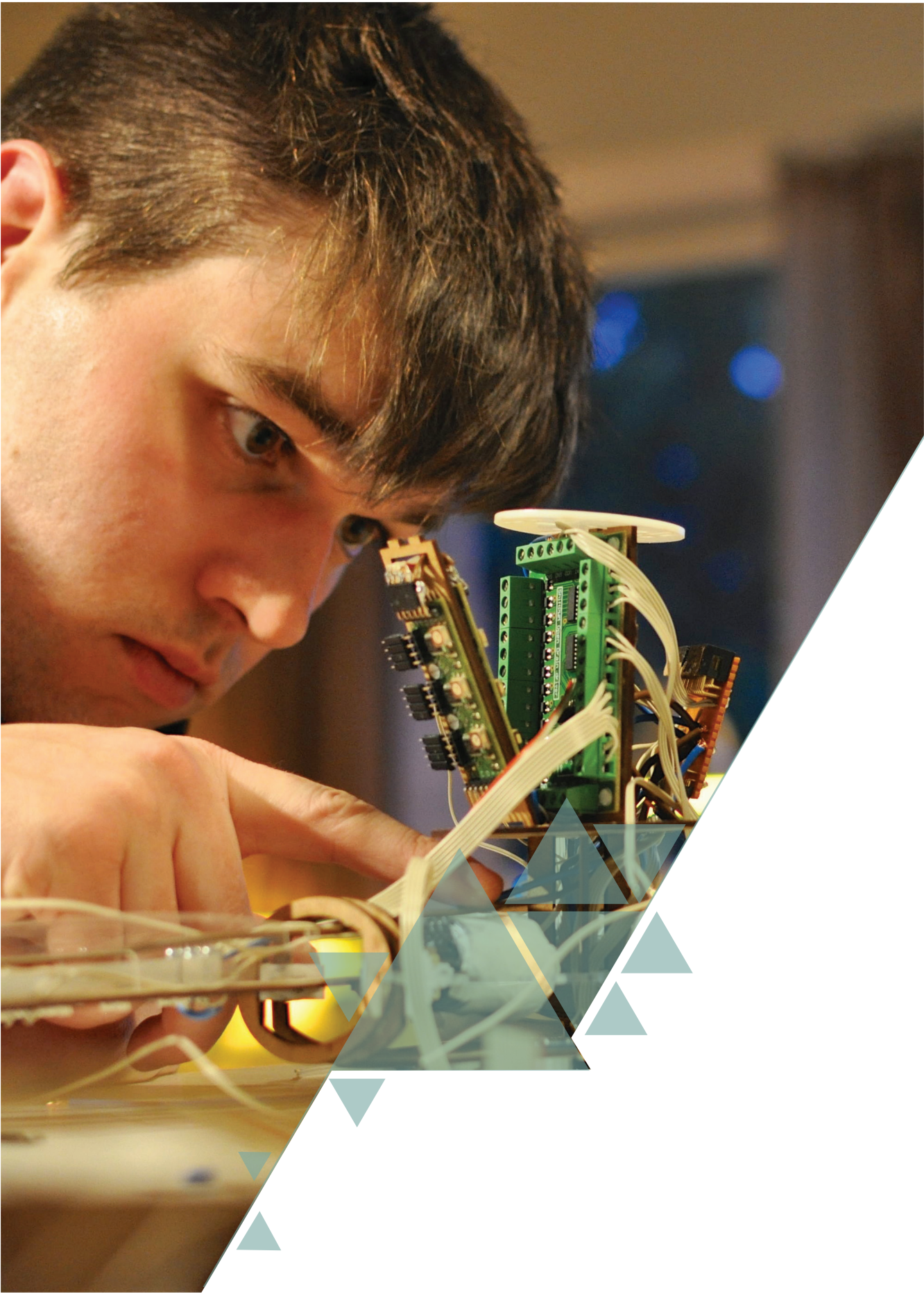
Reflection on and in action (Schön, 1983) as well as reflection for action are important mechanisms to stimulate and direct this growth. During the semester, the coach, assignor, lecturer and expert provide feedback on your achievement in the different learning activities, which you use to reflect on your competency development. It is your responsibility to find learning activities that will lead to your envisioned development. At the end of the semester, you create/update your showcase that elucidates the development as a designer over the past semester, fitted in with the history as a designer up to that point and the envisioned development in the future. You carefully select deliverables from learning activities to create the showcase and underpin it with evidence and feedback from coaches, assignors, lecturers and experts. This interactive showcase is assessed at the end of each semester and therefore forms an integral element of the learning process of the individual student. All these processes together are fundamental for self-directed learning.

1.3 IDENTITY, EXPERTISE AND COMMUNITY BUILDING

Focus on growth of designer

Our focus on intelligent systems and the use of self-directed and competency-centered learning has resulted in three main pillars of the department: identity building, expertise building and community building. This process of building refers to an individual level (student and staff) as well as to the department level (we as Industrial Design). Identity building is tightly connected to our approach of competency-centered learning. We focus on the growth as a designer and very importantly the development of identity as a designer. Expertise building is needed in order to be able to design the complexity of intelligent systems, products and related services in a societal context. We need to build our individual expertise as well as the expertise of the entire department to go beyond interactive products and move towards really intelligent systems. Finally, and maybe most importantly, people are the most important asset of our department. Together, so both junior and senior employees, we are Industrial Design. We have a beautiful and extensive body of attitudes, skills and knowledge, and highly motivated and passionate people. By working together, sharing our expertise and becoming an even stronger community, we can reach our mission statement.







EDUCATIONAL APPROACH

Present-day society asks for self-directed and life-long learning. Therefore, our ID curriculum is called a competency-centered and self-directed and continuous learning program, an educational model in which learning and working come together. We have designed a variety of learning activities with an emphasis on experiential learning and self-reflection, while taking into account differences between individual students. The ID Competency Framework shows the eleven specific competencies that are involved during designing as well as the integration, the overall competency of designing.

Knowledge age

Society in the 21st century is characterized by rapid changes in various domains, e.g. political, economical, social, aesthetical and ethical. At the same time science and technology are developing at a very high pace, which turns this era into a 'knowledge age'. The amount of knowledge is increasing very fast and is expected to go on growing at an even higher pace. Together with the advances in information and communication technology, this increases the volume of easily accessible information beyond imagination. Functioning effectively in this society requires the ability to creatively and flexibly deal with large amounts of constantly evolving information and the ability to learn continuously. Life-long learning, in turn, requires the ability to direct and regulate your learning. The notion of self-directed or self-regulated learning refers to the degree that students are behaviorally, cognitively, meta-cognitively and motivationally active in monitoring, directing and regulating their learning and development.

These societal changes are reflected in the professional working place. They also denote the challenge that higher education faces in having to prepare students to become professional experts in this new working place. They need to become experts who create, apply and

disseminate knowledge and continuously construct and reconstruct their expertise in a process of life-long learning. They also need to become experts who are required to work in teams, to cooperate with experts in various fields, and to participate in complex networks of information, resources and instruction. Meeting the goals of education requires a high consistency between instruction, learning and assessment. Since the goals of education in the knowledge era have changed, a new perspective for this consistency is needed. This new perspective has emerged in the constructivist paradigm, the umbrella for learning perspectives that focus on mind-world relations. Common to these perspectives is the key notion of activity: the understanding that learning (which includes knowledge) is an active construction of meaning by the learner. They need to become experts who create, apply and disseminate knowledge and continuously construct and reconstruct their expertise in a process of life-long learning.

2.1 COMPETENCIES

The learning programs of Industrial Design at the TU/e are competency-centered, an educational model in which learning and working come together. This competency-centered educational model is grounded in the constructivist perspective on learning. The notion of competency is defined as “an individual’s ability to acquire, select and use the knowledge, skills and attitude that are required for effective behavior in a specific professional, social or learning context”. From this definition the role of knowledge acquisition appears: acquiring knowledge is no longer an end but a means to develop a particular competency needed to perform a specific task or role.

The conceptual learning model (see figure 1) clarifies the definition of a competency and its relationship with knowledge. Each rung of the ladder is considered to affect the rungs above and below. The explanation of the terms used is taken from Voorhees (2001) and shows that competencies are developed in a specific context and that the assessment of competency development is performance-based.

- ▶ Traits and characteristics are the foundation for learning, the innate make-up of individuals on which further experiences can be built.
- ▶ Differences in traits and characteristics help explain why people pursue different learning experiences and acquire different levels and kinds of knowledge and skills.

- ▶ Knowledge, skills and attitude are developed through learning experiences, broadly defined to include study, work, participation in community affairs, etc.
 - ▶ Competencies are the result of integrative learning experiences in which knowledge, skills and attitude interact to form bundles that have currency in relation to the task for which they are assembled.
 - ▶ Demonstrations (demos) are the result of applying competencies. It is at this level that performance can be assessed.
- The competency definition also shows that competencies are developed in a specific context and that the assessment of competency development is performance-based.

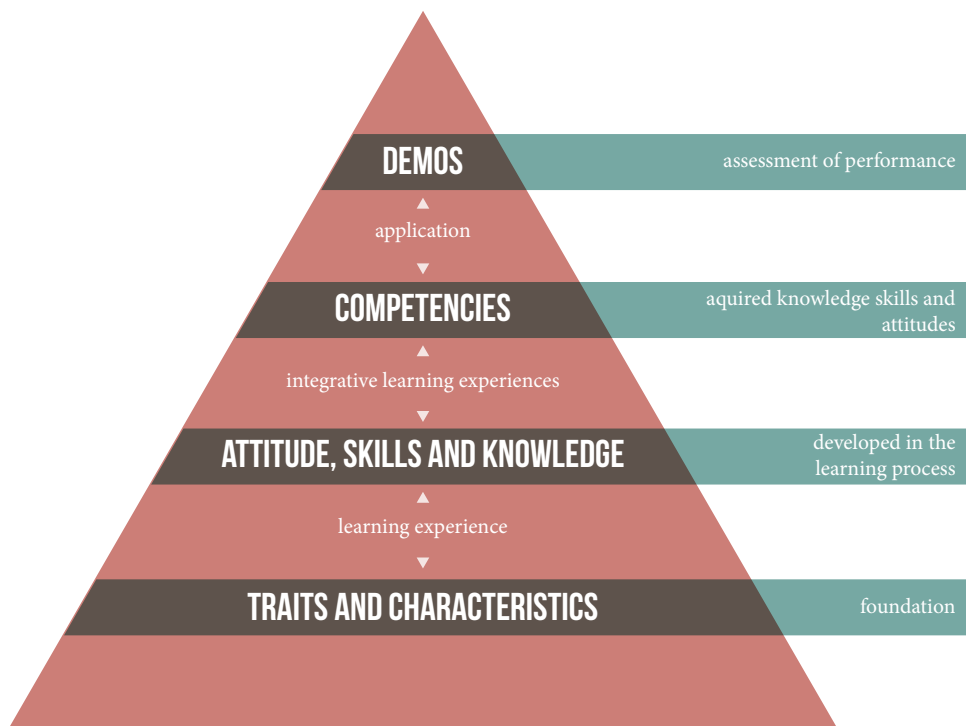


Figure 1. Conceptual learning model adapted from Voorhees (2001)

2.2 A SELF-DIRECTED AND COMPETENCY-CENTERED EDUCATIONAL MODEL

The very notion of competency marks the shift in educational goals, which go beyond teaching specific knowledge. The goal of a competency-centered curriculum such as Industrial Design is to facilitate and promote student learning. This is accomplished by creating an environment in which students are engaged in authentic learning activities and roles. Authentic in this context means derived from or similar to tasks and roles in the professional practice of designing. Performing these tasks and roles is not an end in itself.

How and why

It is intended to generate a meaningful learning experience: learning to determine what to perform, how to achieve this performance and why to achieve this. The 'how' refers to competencies to be developed and the 'why' to the ultimate goals of all the generated learning experiences: integration into the overall competency of designing, growth as a designer, identity building and life-long learning.

2.3 IMPLICATIONS OF A COMPETENCY-CENTERED APPROACH

AUTHENTIC CONTEXT

Within our competency-centered learning approach we have designed a variety of learning activities, each with their own purpose. Some of these activities have an authentic context to reflect professional practice, which includes experiencing and performing different tasks and roles, having real clients for projects, and being coached by professional design practitioners.

CONTEXT-SPECIFIC

Competencies are developed in a specific context. The task or role at hand determines which competencies you can or need to develop. This determines the knowledge, skills and attitude you acquire. It implies that your attitudes, skills, and knowledge acquisition is exemplary. You acquire particular attitudes, skills, and knowledge required in a specific context, which demonstrates your potential to acquire knowledge and skills rather than your ability to acquire a particular body of knowledge (exhaustive acquisition).

TAKING INTO ACCOUNT DIFFERENCES BETWEEN INDIVIDUAL STUDENTS

Students have different ways of learning and different needs for developing competencies. This implies that we do not have one fixed program for all students (supply-oriented). Instead, you are responsible for determining what to learn and which learning activities suit best (demand-oriented), of course taking into account the departments' view of designing, the ten ID competencies plus the competency self-directed and continuous learning. We also address the different learning needs of every individual because we aim at educating unique opportunity creators.

STUDENTS NEED TO TAKE RESPONSIBILITY

To a much larger extent than in a more traditional program, you need to take responsibility for your own learning. This applies to directing and managing your learning process, determining what kind of designer you want to become, choosing and planning suitable curricular learning activities, proving that you have achieved an adequate competency development and setting the scene for your assessment.

SELF-REFLECTION AS A CRUCIAL ABILITY

Given the large responsibility students need to take for their own learning and given the nature of the design process, you need to be able to reflect in action, on action (looking back) and for action (linking current achievements to future development and activities) (Schön, 1983). Reflection is a necessary tool for self-directed learning as well as for becoming a reflective practitioner in designing.

CHANGING ROLES FOR STAFF MEMBERS

The primary role for staff members moves away from teaching 'content' to facilitating, supporting, challenging and promoting student learning. This also applies to assessments (see chapter 9).

HOLISTIC APPROACH FOR ASSESSMENT

The ID learning programs focus on your competency development, development of your identity and vision and the development of your overall competence of designing and it allows for individual differences. Developing a set of competencies is essentially a cyclical process, which requires a more holistic way of assessment and an instrument that reflects the cyclical and individual nature of student growth. A portfolio has the potential to meet these

demands because it is authentic, comprises a variety of sources, is built over a longer period of time and allows for individual profiles. The showcase you build for your assessment is part of this portfolio.

EXPERIENTIAL LEARNING

You develop your competencies by doing authentic tasks and by reflecting on the meaning of these learning experiences for your overall development and growth. This means that you acquire experiential (tacit) knowledge next to theoretical knowledge. From an educational point of view, this process is captured adequately by Kolb's experiential learning theory, which describes learning as a four-stage cycle. Contrary to the more traditional approach in which students start this cycle with knowledge acquisition, at ID you can start anywhere in the cycle as long as you go through the whole cycle. From a designing point of view, students' experiential learning to design is captured in Schön's concept of the reflective practitioner (Kolb, 1984; Schön, 1983).







COMPETENCY FRAMEWORK

At our department we do not only teach you how to deliver excellent intelligent systems, products and related services; we also teach you about processes: the process of accomplishing the excellent design, and the process of becoming an excellent designer. The Overall Competence of Designing (OCD) is an individuals' ability to select, use and acquire the knowledge, skills and attitudes that are required for a designer to act adequately in the context of a design task. The design task can be a project, assignment, module, internship activity or any professional design task outside the Industrial Design program.

3.1 OVERALL COMPETENCE OF DESIGNING

The overall competence of designing is shaped by the integration of three core components. First, your vision on designing and on how you want to transform society through your designs. Secondly, it integrates your development of the different competencies, as well as your insight in your competency development. We regard design as a process of taking decisions based on too little information and see two drives for information gathering: directing the design decisions through the designer's vision, and exploring and validating design decisions in a real life context with users. Moreover, these drives are incorporated within two strategies that generate information, namely making and thinking. Finally, we observe the OCD from the quality of your overall design and deliverables. This includes the extent to which your deliverables show your own 'signature'.

VISION ON DESIGNING

As mentioned above, the OCD is shaped by the student's vision on designing. A vision is a coherent set of ideas and beliefs about the future of society and/or the future role of

academic designers (who can also be researchers) in society. A good vision is based on what drives you and what your needs are and therefore is personal. A vision serves to direct your development and influences your actions and decision-making as a (future) designer. That is why a vision needs to have a clear focus. A good vision though, is personal and is connected to your identity.

IDENTITY

The identity encompasses 'I' statements about who you are as a designer and as a person - the latter as far as relevant to your OCD. It is deduced from reflections on your personality traits, your personal history what drives you and what inspires you, your interests and beliefs. Also, the identity is deduced from the role you typically take in a design process, your strengths and weaknesses as a designer: your OCD. Your identity is constantly developing. To help you self-direct this development, you need to reflect on your desired identity. The desired identity describes who you want to be as a designer and as a person – again as far as relevant to your OCD. It is constructed by placing your current identity in the context of your vision on the future role of the designer. Thus, the identity is built on your past experiences, expresses how you view yourself right now and states who you want to become.

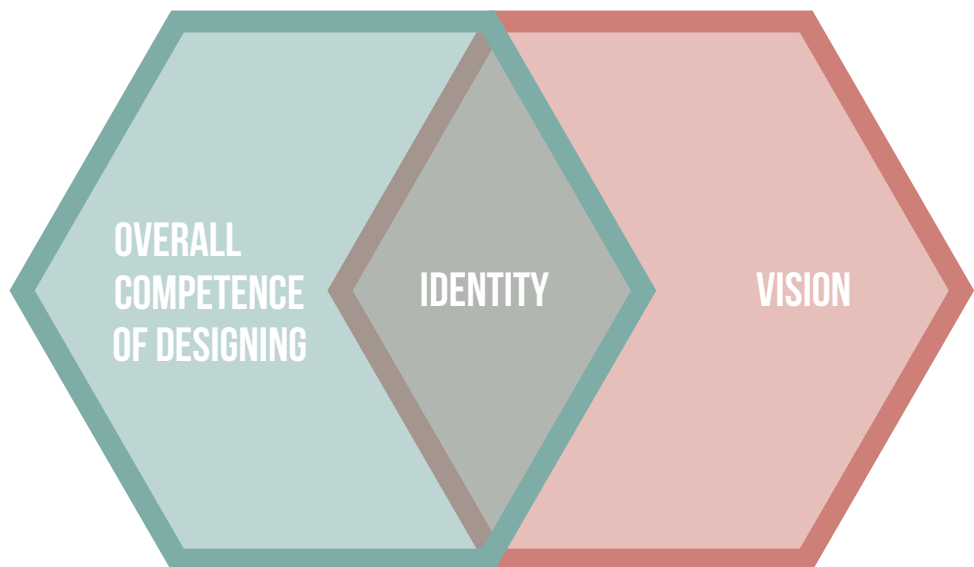


Figure 2. The overall competence of designing in relation to the vision and identity

3.2 COMPETENCY STRUCTURE

In addition to the vision on designing, the OCD is shaped by the integration of the student's development of the different competencies. In the academic year 2013-2014 a new structure for the competencies has been implemented (see figure 3). The competency framework consists of the basic competency of self-directed learning (SDCL), the fundamental competency of our educational model. SDCL is emphasized in all our educational activities and is explicitly addressed by the students through competencies goal specification in the Personal Development Plan (PDP) and reflections in the Showcase. This basic competency enables our students for life-long learning and is one of our unique selling points. Besides SDCL we use seven domain-specific core competencies, which provide the profile for the development of an industrial designer of intelligent systems, products and related services in a societal context and three meta-competencies, which are relevant for the academic and professional competency development of all our students over all semesters. The eleven competencies will be described below.

3.3 SELF-DIRECTED AND CONTINUOUS LEARNING

*Courage to
look closely*

As stated in previous chapters, the rapid changes in society ask for openness and the willingness and ability of continuous learning. To become a self-directed learner you should get an understanding of what learning is as an activity, discover what your preferred learning style and learning strategy is, learn how to play with various styles and strategies, and develop the skills you need to design your own learning process. This understanding should be grounded in theoretical as well as experiential knowledge. In a competency-centered program such as ID you need to direct and manage your own competency development, learning process and learning activities: what do you want or need to learn, and what does it take to achieve it? This requires the ability to orientate yourself on what there is to learn, to set your own learning goals, to choose suitable learning activities (and sometimes create your own), to plan, execute and monitor these activities, to analyze your learning outcomes in terms of competency development and to evaluate if you have achieved the goals you set. In the end you should also be able to self-assess your competency development and growth as a designer. It may be needless to say but the self-management aspect of this competency only works if you take full responsibility for your own learning process.

Learning - and designing - is a process of trial and error. From making mistakes, in

BASIC COMPETENCY

Self-directed and Continuous Learning (SDCL)

CORE COMPETENCIES

1. Ideas and Concepts (IC)
2. Integrating Technology (IT)
3. User Focus and Perspective (UFP)
4. Socio-cultural Awareness (SCA)
5. Designing Business Processes (DBP)
6. Form and Senses (FS)
7. Descriptive and Mathematical Modeling (DMM)

META-COMPETENCIES

8. Design and Research Processes (DRP)
9. Teamwork (T)
10. Communication (C)

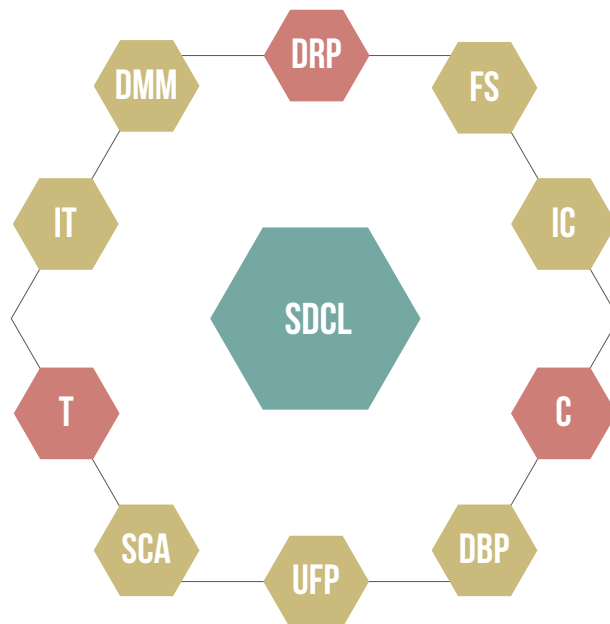


Figure 3. Competency structure

particular, you can learn about yourself and about designing. But this takes the courage and the ability to look more closely at yourself, your learning process and learning outcomes. What attitude, skills and knowledge have you actually acquired? What went well in the process? What went wrong? Why did it go wrong? Are you satisfied with the results? Are experts satisfied with your results? Why not? What do the results say about your identity building as a designer? What would you do differently next time? The ability to observe and reflect on your own learning, on the design process, on your identity, vision and on your overall development as a designer is essential to develop yourself professionally as well as personally. The ability to communicate all this will enable others to give you feedback, which will enable you to enhance your learning experience.

Finally, self-directed and continuous learning is a competency that enables the development of the other competencies. At the same time your experiences with the other competencies provide you with specific instances of self-directed learning and as such with input for self-reflection. In this respect the development of the other competencies and self-directed learning are processes that will reinforce one another.

3.4 CORE COMPETENCIES

IDEAS AND CONCEPTS

The design competency Ideas and Concepts is centered on the generation, selection and refinement of design ideas into well-developed concepts. This makes that the competency is often not limited to a single stage in a design process; It is a competency that is relevant both in early explorations - generating ideas for inspiration purposes, having a focus on divergent association - as well as in stages of refinement (generating sub-ideas, deepening existing ideas, elaborating on overall conceptual decisions) where the focus typically lies on convergent action. The competency is characterized by combining both rational and intuitive action.

*Inquisitive,
imaginative
and critical*

The competency Ideas and Concepts asks for an inquisitive, imaginative and critical attitude. Designers need to be inquisitive as the act of designing is a constant process of dealing with a lack of information; this calls for an attitude of 'wanting to know more'. In order to transform our society designers need to be able to imagine potential futures. Imagination is a vital quality in order to break free from the world as we know it, towards the world as

we would like it to be. For assessing your ideas and for making balanced decisions, a critical attitude is essential. Imagining new worlds is not the only quality of designers: the true trick is to make them reality. A critical attitude means that you should approach a design challenge by questioning what is there, taking into account your own, first-person point-of-view, as well as those of others.

Creativity techniques

In order to generate, select and refine ideas and concepts it is useful to be up to date with creativity techniques, as well as different approaches to make selections. There are various repositories of techniques available, for example books about creativity techniques such as brainstorming, brain writing, tinkering and many, many more. Also, there is quite a selection of books describing design processes of notable companies (e.g. IDEO). In this competency though, we feel knowledge cannot be separated from skill, as much of the competency floats on association and imagination. You should familiarize yourself with available resources, including those necessary to position your ideas and being able to make balanced decisions. This means that you should become familiar with the professional tradition that you are in, as well as restrictions (and opportunities) that external stakeholders place on the solution domain.

Skill in the context of this competency boils down to being able to create momentum in explorative ideation phases (which is difficult in itself, and even more so when collaborating with others), as well as being able to generate criteria or guidelines for idea selection. You should practice both, as knowing the skills and tools is different than applying them.

INTEGRATING TECHNOLOGY

Being competent in integrating technology means being able to explore, visualize, create and demonstrate innovative concepts and experiences using technology, as well as analyzing the technical and economic feasibility of complex designs in which technology is integrated. Moreover, you need to understand scientific writings and be able to communicate with engineers and researchers of another discipline.

Intelligent systems

Designing interactive and intelligent systems, and building prototypes requires training in choosing sensors and actuators, object-oriented design, algorithms, circuits and mechanisms, and integrating them in the overall competence of designing. Next to synthesizing and concretizing, developing your analytical and abstraction skills to determine the technical and economic feasibility of a design can be done through informed judgments through

calculations, and appropriate mathematical tools, as well as acquiring sufficient knowledge that enables you to read further and go into depth on technological, design-related issues.

Designers typically work in multi-disciplinary teams. This, and the fact that intelligent systems can overstretch at some point the skills and knowledge of Industrial Design students, requires you to understand scientific writings and be able to communicate with engineers and researchers of another discipline. Thus understanding electrical engineering, computer science and mechanical engineering as disciplines and being able to cooperate with these engineers, which may require reading specifications and datasheets, documenting hardware and software, and finally awareness of data science and artificial intelligence.

USER FOCUS AND PERSPECTIVE

As designing is bringing about societal change, it directly affects people's everyday life and work. Therefore, people are main stakeholders in the design process. User Focus and Perspective is about acknowledging the consequences of this insight, by empathizing with people and involving them throughout the design process. User Focus and Perspective is about realizing that 'user' is just one role of people, which is fully integrated in their everyday sense-making efforts. It is an attitude more than a set of skills or a collection of insights. Becoming competent in User Focus and Perspective means acquiring this attitude and the associated skills and knowledge for implementing this attitude in the design process.

Empathy with the people

The attitude is about creating empathy with the people who will be affected by the design process and its outcomes. It presupposes sensitivity towards and respect for people and their interests, the willingness to understand people in their everyday context, to take their perspective and to create value for people, an openness and curiosity towards people and a readiness to learn from people. Also, it involves the disposition to act ethically and in a morally responsible way towards users both in the process and with respect to the outcome of the design process.

Implementing this attitude in the first place means applying a set of skills for getting information about and from people and involving them in the design process, allowing them to contribute to the design process and establishing a dialogue to discuss proposals. The skills concern knowledge of which methods are available for involving people in different stages of the design process and skills in applying those methods, including methods for getting them talk, observing them in action and having them contribute by making artifacts.

They also include skills for analyzing quantitative and qualitative data, such as interview and interaction recordings. Finally, you will need to acquire skills in applying different perspectives in the design process. You can take a third person perspective, observing users and acquiring information about them. You can take a second person perspective, and involve users in the design process through participatory design techniques. Or you can take a first person perspective, empathizing with users. A skilled designer is able to switch between different perspectives.

A third element of being competent in User Focus and Perspective is the knowledge about methods for involving people in the design process, and the knowledge of psychological and social theory. Methodological skills cannot exist without knowledge of what different approaches and methods exist, what their goals are and how they apply to the different stages of the design process. This includes insight into the different purposes of user research (e.g., exploration, validation). The psychological and social theory can be related to three aspects of the relation between the user and his or her environment: the interaction itself, the resulting user experience and the context in which the interaction takes place. At the level of interaction, there are theories about perceptual and cognitive aspects of the interaction with technological artifacts; at the level of the resulting user experience there are theories about the emotional and motivational processes; at the level of the context, there are theories about how people behave as social beings and are affected by their social context.

Not only with respect to methods, but certainly with respect to psychological and social theory, it is impossible to have exhaustive knowledge. Being competent involves basic awareness in (some of) these areas, but first and foremost the interest and willingness to acquire this knowledge when relevant in the design process and the capability to do so in an academically sound way.

SOCIO-CULTURAL AWARENESS

This competency contributes to educate unique opportunity creators for societal transformation through intelligent systems, products and related services. This educational objective puts an emphasis on societal embedding and cultural impact of design. Industrial Design is inevitably part of the larger human society and culture. Global society develops at a breath taking pace. Mega trends like ageing, globalization, new technology and issues like scarcity of resources, political power, economic and demographic development, play an important role in what the world will be like in the future, and therefore inevitably influence each undertaking in higher education.

Therefore competency development implies the development of attitudes, knowledge and related skills that integrates the awareness of different societies and cultures. In order to create culturally appropriate systems, products and related services, you need to understand how persons' mind sets are based on their values, beliefs, behavior and ontological assumptions, and how to put these into design practice. Being inevitably part of society, ethical and philosophical questions become important for taking responsibility for society and the notion of 'good' design. In order to be able to transform society and create future, you need a clear understanding of the past, including design history, and taking a normative position into the future.

***Social,
political and
cultural
implications***

To develop Socio-cultural Awareness, you should have openness to other mind-sets and cultures; sensibility for social, political and cultural implications of design. You should be sensitive to cultural differences and self-awareness of your own cultural background and have the willingness to take a normative position based on own vision. Furthermore, one should have awareness towards the impact of technology and design on society at large.

With respect to skills, one should have the ability to position design in a larger historical societal and cultural context and to identify and shape societal and cultural trends. As a designer you need to be able to initiate and catalyze a societal discussion through design for debate and to analyze, understand and communicate the social and cultural implications of design. Also, you should be able to articulate, organize, synthesize and communicate socio-cultural issues in compelling design briefs.

Finally, a designer should have knowledge of historical social and cultural impact of design and technology as well as of utopian, dystopian and topian future scenarios of society. Knowledge of the history, norms, values and beliefs of different cultures and of culture, organizations, and cross-cultural communication will contribute to the development of this competency.

DESIGNING BUSINESS PROCESSES

The path from a good idea to a meaningful product-service system that contributes to a business performance product is by no means trivial. Industrial designers will need to be able to design new value propositions for business, together with the appropriate underlying business case. In addition, they will be able to validate these designs, by arguing for the plausibility of the business case, and by testing their designs in a real-life societal context.

This requires a combination of knowledge, skills and attitude on the business/societal context of designing meaningful systems.

The competency Designing Business Processes relies on a well-established knowledge base, both in industrial design, industrial engineering, and management. It is based on concepts such as the creation of value propositions and business cases, economic models of manufacturing, sales, service, use and re-use, and on the creation of sustainable business networks. Since business processes often operate in an (inter)national context, students should be familiar with basic business principles concerning, among others, entrepreneurship, intellectual property rights, and business ethics. The level of knowledge should be such that students in the Bachelor phase are able to define a simple single chain business case, while in the Master phase, students are able to design a multi-party business model. Both should be able to understand and validate their business model in context.

Value propositions

It is expected that designers are able to create and analyze business plans for different types of value propositions in different contexts. They should be able to create business models using commonly used tools such as IDEF0. Surveys and field tests, for example in the context of Experiential Design Landscapes, serve as an important means to validate a designer's claim for his/her design as well as for the corresponding business case.

As a designer you should integrate the business context of your design as a fundamental part of your design process. You should develop a critical attitude towards the industrial and economic aspects of (your own and other) designs. In addition, you should have an open attitude towards creating meaningful designs for business. You should thus welcome insights and initiatives towards enhancing the value of your design work, as provided by business experts, or during tests with real people in real-life product-service systems.

FORM AND SENSES

Meaning is created in interaction, in a continuous and recursive loop between sensing and acting. The competency Form and Senses is all about how vision, hearing, touch, taste and smell affect our reactions to objects, spaces and the physical world we inhabit. Thereby, aesthetic and form (visual) are to be extended to other modalities, and to the inter-modality. As a designer, you may specialize in one modality; gain a deep set of knowledge and skills focusing on one of the senses (e.g. focusing on sound design). However, you should be able to reflect on the sensitivity gained in one sense to realize the need for such sensitivity

in other modalities, and consequently in multimodality. Therefore, the designer should also create a vocabulary to communicate this sensitivity. Moreover, specific knowledge is recognized as necessary to focus on one sense using e.g. psychophysical approaches (e.g. psychoacoustics for sound design), and you should also be knowledgeable and should reflect on more holistic and ecological approaches (e.g. as offered by Gibson, 1986), taking all the senses as well as the body (position in space and behavior) into account.

Meaning is also constituted by what we do or can do. It is about our behavior, our actions and action possibilities, and consequently also about our skills. Therefore, you should trust and pay attention to your senses, and you should keep on exploring with a proactive curiosity, through physical explorations that invite touching and exploration. This requires learning to see (i.e. to feel) differently, to focus on details. This can be achieved by iterations on and reflection upon details explored during these iterations. This leads to comprehending subtleties, intimacy and richness in the making, in the designing, and in the experiencing. For that, designers make use of physical materiality next to interactive materiality, going through a process from first explorations up to manufacturing.

Craftsmanship

Craftsmanship is therefore an approach, which satisfies the competency of Form and Senses. You learn skills and attitude, in addition to knowledge, and grows through the practice of them. You open up the abstract through the sensorial, connects the intuitive to the analytical, and making to thinking. Craftsmanship is gained through time (i.e. through endless practice) and through iterative and reflective explorations.

DESCRIPTIVE AND MATHEMATICAL MODELING

Designers have to deal with complex, messy realities. Modeling is one of the approaches used by the academic designer to get a grip on such complexity. The type of modeling varies throughout the design process. In an early stage, the focus is on analysis and finding focus. Later on, modeling techniques are used in structuring possible solutions, to explore proposed solutions through simulations, and finally to validate solutions through statistical analysis. The competency Descriptive and Mathematical Modeling relies on an extensive and well-established base of shared knowledge and understanding in mathematics and engineering, the basics of which are offered as part of the Bachelor college, specifically within the basic courses Calculus and Introduction to Modeling.

The attitude that is encouraged within Descriptive and Mathematical Modeling is that models are a way to identify and communicate important aspects of a designed product or service that are very difficult (or even impossible) to convey otherwise. This may for instance be due to the fact that a description in natural language is not accurate enough, and that more formal terminology, diagrams, etc. are needed to arrive at a unique specification. It may also be because key information cannot be easily expressed in natural language, such as when such information arises through accumulation and interpretation of observations across individuals (such as in statistics) or across time or space (such as when identifying emerging patterns), and hence relies on procedures that cannot be executed by humans.

***Measurable
variables***

A key concept within Descriptive and Mathematical Modeling (this is formally termed construct validity) is the existence of well-defined and measurable variables that serve as input into a model and that are transformed in a well-defined way by the model to produce relevant output variables. Descriptive (black-box) models concentrate mostly on the specification of the input and output variables themselves that are defined throughout a system, while mathematical (glass-box) modeling is usually required for a more in-depth discussion of the transformations that take place on such variables. The ability to identify relevant variables is a key requirement in any design situation, while a more in-depth (mathematical) understanding is likely to be required especially in cases where off-the-shelf solutions are insufficient, and models need to be specifically created or substantially adjusted. As a general rule, a model is considered interesting (useful, worth the effort, etc.) when it is sufficiently concrete and specific to be actionable, i.e., if it allows to identify and specify follow-up actions, either by the designer him/herself, through the involvement of domain experts, or for a development team that might want to expand on a proposed concept or prototype.

The skills that are required within Descriptive and Mathematical Modeling are tightly related to the kind of design outcomes (especially prototypes and system specifications) that need to be produced, which means that a significant overlap with skills as defined within the competency Integrating Technology can be expected. Descriptive and Mathematical Modeling tools include Mathematica, MatLab, Visio, UML Modeling, SolidWorks, etc. However, not all such tools may be equally appropriate for designers. Shneiderman (2007) and Resnick et al. (2005) have for instance identified more explicitly key requirements for creativity support tools. When proposing such tools we should not only consider if they offer the required core functionality (in a way that matches the a priori knowledge of designers),

but also if they provide sufficient feedback for an appropriate meta-understanding, on aspects such as whether or not the model itself is adequate, sufficiently simple (Ockham's Razor) and precise, as well as if the provided model outcomes are reliable and accurate enough to satisfy the requirements of the application. Aspects such as how comfortable designers are with their constructed models and how successful they are in communicating them are just as important as their ability to create the models in the first place. These aspects also determine to a large extent the level of understanding (the knowledge) that designers need to develop on how exactly detailed modeling operations are performed.

3.5 META COMPETENCIES

DESIGN AND RESEARCH PROCESSES

The competency Design and Research Processes is about using, grasping, adapting and inventing design and research processes based on the demands of the task at hand. An Industrial Designer should be able to run the design and design research processes efficiently and effectively, to reflect on and grasp different kinds and ways of designing and design research, be able to choose and adapt an appropriate design or design research strategy for their challenges, and be able to invent new ways of designing and researching (all with a strong emphasis on the focus of his department). The Bachelor student will focus on developing the skill of using a variety of methods, whereas the Master student focuses more on understanding, selecting, contextualizing, adapting and inventing new methods.

Knowledge builder

A successful design is highly dependent on a thorough research process as a 'knowledge builder' and 'information gatherer' about the subject domain. Next to being able to do research that will directly feed into your design, you should also be able to perform design research and research through design in order to generate knowledge for the design and research community. Specific research and design processes are planned and organized according to the nature of the design subject and context; these can be quite different and need to be considered carefully according to the required project deliverables. All in all, you need to understand what kind of activity designing is, how it relates to doing research, how it differs from other human activities, and which abilities you should develop to become a designer or a designer-researcher. Moreover, given the focus of our department, you should be able to find a good balance between subjectivity and objectivity, implicit and explicit knowledge, making and thinking, intuition and reason, and using ones senses and the mind.

TEAMWORK

Design projects by nature involve many different stakeholders and experts, where designers can play a leading role in the assimilation and integration of many different parts of the project. The focus on intelligent systems, which might become very complex, urges designers to cooperate with other experts. Inevitably, this requires special skills and experiences to work in multidisciplinary teams, which are often internationally based. Teamwork is about the ability and desire to work cooperatively and collaboratively with others to achieve collective goals. Working and learning in a group with a shared goal requires openness to experiences, valuing teamwork, creating mutual trust and a team-orientation instead of an orientation on oneself.

Multi-disciplinary team

When working in a multidisciplinary team it is important to learn to deal with group-dynamics, to accept and provide feedback in a constructive and considerate way and to share and encourage others to do the same. Teamwork requires that you learn to support and motivate the group members to perform at its best. If necessary, conflicts must be recognized and dealt with adequately. On the one hand this requires being able to put forward reciprocal expectations and clearly define roles and responsibilities. On the other hand, this requires conflict resolution strategies too. It is a matter of learning to cooperate as professionals and to build professional relationships. As part of this professional cooperation, you must learn to work effectively with different personalities and professionals with different working styles across a variety of situations.

Teamwork emphasizes interpersonal and communicative knowledge and skills. You should be able to communicate in a shared language or at least understanding the language of the team members. Furthermore, you should know what roles you can take in a team and which one fits you best. In the end, it is about understanding the differences between people, how to work together towards a positive goal and most of all, teamwork is about good communication and project management.

COMMUNICATION

Different media

Communication has many faces, settings and goals. The ability to communicate is an important concept for industrial designers. You need to learn to communicate design problems, design processes, design concepts and the role of the industrial designer through different media and in different situations. Designers have to communicate in exhibitions, in oral presentations and in digital or printed visual and written materials. Important skills are the ability to sketch and to write reports (Bachelor) or scientific papers (Master). Someone who can effectively communicate thoughts, ideas, and feelings is better equipped for a successful future as an industrial designer. How you communicate depends on the situation and the goal. For example, convincing clients and selling a product requires a different style than solving a conflict with a colleague. Effective communication is much more than being able to talk; it is also the ability to listen and understand others, to 'read' and interpret body language and to know the best ways to get our points across and dealing adequately with the context-specific nature of communication.





BACHELOR PROGRAM

As of the academic year 2012-2013 the TU/e has implemented the Bachelor College (BC), which replaces the existing Bachelor programs of all faculties. Through the BC the TU/e aims at attracting a wider range of students to their engineering programs. The BC allows for both depth and breadth in development by offering increased freedom of choice and more embedding in a societal context. Students of the BC can create their own study program that fits their interests and ambitions. The Bachelor program consists of three years of study and includes a Propaedeutic and a Bachelor examination.

4.1 MAJOR

The Major comprises the most important part of the Bachelor. The Major is the discipline you are educated for and forms the foundation of your education. The Major of Industrial Design is one of the twelve Majors the TU/e offers. The Major is mostly composed of the projects, in which you learn to integrate the competencies, developed throughout basic courses, electives and assignments. The ID major has very specific components to satisfy the above fundamentals of BC.

4.2 GOALS OF THE BACHELOR PROGRAM

The Bachelor program of ID comprises five blocks along with their respective credits (60 or 30 ECTS) and curricular learning activities. Within these blocks the students follow different curricular learning activities: (1) projects; (2) basic courses; (3) electives; (4) assignments; (5) USE learning line; and (6) external learning activities.

The goal of the Bachelor Program is to support you in becoming self-directed and continuous learning industrial designers of intelligent systems, products and related services in a societal context. To accomplish this, we have described goals for each year in our program. Broadly speaking, the goals of the different years are comprised by the different levels of growth (see chapter 7 for more information). One of the goals of the first year of the Bachelor Program is to determine whether you are a potential Industrial Designer of intelligent systems, products and related services. You need to show sufficient responsibility to be a self-directed learner and show sufficient awareness of how to continue developing all competencies. To get to know our educational model you will get an introduction to self-directed and competency-centered learning (DG000) in quartile one. After the first year you must have developed the level of awareness regarding your overall competence of designing. At this level you understand and are able to identify all eleven competencies, you have experience with most of them and know how to continue developing them. One of the goals of the second year is for students to develop a vision on design and society. You will start to develop depth in particular competencies and need to have a clear idea of the direction you want to take as a designer. The goal of the third year is to educate you to a level that you can integrate the eleven competencies in the design process and have developed attitudes, skills and knowledge inside the competencies.

4.3 PROJECTS

Projects are the backbone of the ID curriculum. Within the projects you integrate and develop your competencies in an authentic context, often including a real client related to one of the themes. Projects are performed individually or within a team, with an increase of the individual performance and a decrease of the team performance as you progress through the Bachelor program (see Figure 4). A typical Bachelor project takes up 50% of dedicated time per semester. The final Bachelor project (FBP) is an individual project.

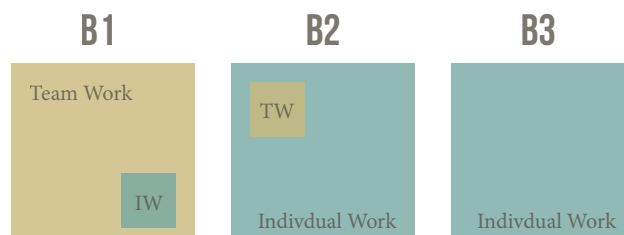


Figure 4. Indication of relation between teamwork and individual work in the years of the Bachelor program

In group projects in the Bachelor program, students discover their own and each other's capabilities. They learn about design and research processes and how to manage multi-tasking and to deal with time-management. Furthermore, you learn to work with clients and stakeholders, and how to involve external parties to participate in your projects. Projects offer you a ground to explore your interests, and to develop your vision and approach. Academic staff members or freelance designers are coaching you in the projects. Students can choose from a varied offer of projects by the themes, which will be described below.

4.4 BASIC COURSES

*Eindhoven
Engineer*

All Bachelor students have to complete six basic courses. These basic courses provide the foundation for the 'Eindhoven Engineer', and will develop your transversal knowledge. This is the knowledge you will need to follow electives and coherent elective packages in a degree program outside the ID Major. As an Industrial Design student you will follow basic courses in Mathematics, Applied Natural Sciences, Modeling, USE (User, Society and Enterprise), Design and Professional Skills. The basic courses are offered from quartile 1-4 in the first year and in quartile 1 of the second year. Table 1 describes which competency is addressed per basic course (check the centrally TU/e website for more details).

Table 1. Overview of competencies addressed in the Basic Courses

Basic Course	Competency
Calculus	Descriptive and Mathematical Modeling
Applied Physics	Integrating Technology
Modeling	Descriptive and Mathematical Modeling
USE Basis	Socio-cultural Awareness
Design	Design and Research Processes
Professional Skills	Self-directed and Continuous Learning
	Teamwork
	Communication

4.5 ELECTIVES

Next to the Major you have the opportunity to choose electives. Each department of the TU/e offers electives. You can choose electives from all departments. Choosing electives will assist you in broadening and deepening your competency development. Some electives are offered as a coherent learning line of two or three electives such as the USE learning lines described below.

4.6 ASSIGNMENTS

In addition to the electives, which are accessible to all students of the TU/e, ID offers assignments. Assignments are individual intensive training courses that focus on development of competencies in a specific learning setting. Assignments take one day a week during seven consecutive weeks. You work on deliverables and competency development, on which you get individual feedback from the assignor. You are supposed to choose assignments that best match your learning goals and aimed competency development of semester you are in. An assignment focuses mostly on one or two competencies. As each student follows a personal learning path, assignment groups are usually composed of students from various phases of the program.

4.7 USE

Next to the basic courses, you have to select at least one USE learning line in your second and/or third year. USE stands for User, Society and Enterprise perspective. USE learning lines show that technology will always be used in a larger context. Engineers develop technology for users, to solve societal problems and to create economical possibilities. In each USE learning line there is one main subject. This subject makes the interaction between technology and the surrounding environment clearly visible and focuses on one or more USE perspectives. The USE learning lines are offered from the second year of the Bachelor's program.

Table 2. Overview of competencies addressed in the USE learning lines

USE learning line	Competency
Customer Centricity and the Design of Winning Products	Designing Business Processes
Decisions under Risk and Uncertainty	User Focus and Perspective
Design for a Sustainable Future	Socio-cultural Awareness
Human in Technology	User Focus and Perspective
Patents, Design Rights, and Standards	Designing Business Processes
Quality of Life	Socio-cultural Awareness
Robots Everywhere	Socio-cultural Awareness
Secret Life of Light	User Focus and Perspective
Technology Entrepreneurship	Designing Business Processes
The Future of Mobility	Socio-cultural Awareness

Check the central TU/e website for details.

4.8 EXTERNAL LEARNING ACTIVITIES

Block B31 is aimed at confronting your vision in an external context. Therefore, you have to follow an external learning activity. The external learning activity supports you in matching your vision as a designer with reality. For example, if you intend to start a design consultancy or you wish to work for a company, you can decide to do an internship within such a company. On the other hand, if you aspire to an academic career, you can do an internship within a research group. When you consider doing a master at a foreign university, you can decide to do an exchange. Also you can broaden your knowledge and skills in a specific field or explore other Dutch programs by conducting TU/e electives; or a free minor at another university.

INTERNSHIP

One of the external learning activities is the internship. An internship is possible in a company in the Netherlands if the general aims of internship are met. This is also applicable for an internship at a company abroad. If you want to do a research internship within the department of ID, you can contact the capacity group or theme in which you want to participate.

EXCHANGE

A second external learning activity is an exchange. You can do either an exchange or a project within a research group at a university abroad. In case of an exchange, you participate in the curriculum of the host university. You can do an exchange at a university if we have a bilateral agreement with that university. When there is an exchange agreement, you do not need to pay any tuition fees at the partner university. For more information on partner universities, you need to contact the exchange coordinator of Educational Affairs. It is also possible to do a project within a research group at a university abroad. Usually a project within a research group is initiated through contacts of individual coaches with partner universities.

ELECTIVES

The third possible external learning activity is comprised by TU/e elective courses. If you would like to participate in elective courses that are offered at our university, you can compose a package yourself. Of course you need to see whether the courses fit your development but you also need to make sure that you can set up a feasible planning of these courses, e.g. ensure that they do not overlap with other courses you still need to finalize. You do not need to ask approval for your package if the general aims of the Bachelor College are met.

FREE MINOR

A final external learning activity can be a minor at another university. It is important to discuss your plans with your coach, and if needed, also with your study advisor. Again, you should use the results from the different courses as evidence in your showcase.

4.9 CONSIDERATIONS FOR CHOOSING

When considering Electives, Coherent Elective Packages and USE learning lines you need to take two aspects into account. First, consider which courses contribute best to the achievement of your vision on design and society. Secondly, consider which courses contribute best to achieve the level of depth on all competencies and the ability to integrate them in a design process, on which you will be assessed at the end of B32. The courses that are most relevant to ID students indicate which competencies are addressed. You are allowed to choose a maximum of 45 ECTS on courses offered by other departments than ID. However, if you choose more than 15 ECTS outside of ID you have to arrange a meeting with the study advisor. In this meeting you will discuss whether your intended development is sufficiently balanced to graduate from ID in time. If serious doubts emerge during this meeting you will need to submit a formal request to conduct the electives outside of ID to the Board of Examiners.





MASTER PROGRAM

The goal of the Master Program is to support you in becoming expert within a specific field related to the design of intelligent systems, products and related services in a societal context. The first year focuses on developing an insight into the academic field of Industrial Design and on defining the field in which you want to achieve expertise. The second year aims for students to develop themselves in such a way that you have a clear profile in your competency development and you have in-depth attitudes, skills and knowledge of the field of design in relation to their competency profile; as a result, the integration of their strongest competencies is driven by a unique and personal vision on designing.

5.1 PROJECTS

In the Master program, all projects are individual. At the weekly project coach meetings you receive feedback on your design, design process and project management skills. Coaches help you to understand your improvement over time and their strengths and weaknesses.

Expertise profile

In the first year of the Master program you have to carry out a research project and a design project. The research project is connected to ongoing research in the department (see description of the research groups chapter 10), and is therefore linked to senior academic staff or PhD students. The ambition of this project is that students learn about different research methodologies and approaches in design research, and that they apply the ones that best match their interests. During the second semester, you conduct a design project in which you can elaborate on your design research or start to develop an expertise profile. In the first quartile of the second year, you have to write a proposal for your final Master project

(FMP). You can choose to do a project within a theme, connected to a research group or for a company. While writing a proposal you need to have discussions with potential clients, who can offer you the societal context for your project. After its approval you continue with the project, taking up two semesters. With the exception of the FMP, students select a project from the offer of each theme. Staff informs students about their projects and tries to convince interested students during the biannual project market.

5.2 MODULES

A module is an individual intensive training that focuses on development of competencies in a specific learning setting, which takes one, two or four full-time weeks. Modules generally focus on one competency, but also enable the integration of other competencies. You can choose modules in accordance with your competency development goals. Modules contribute to the development of advanced academic skills, and are often closely related to ongoing research. In some cases modules offer opportunities to work with industrial partners.

5.3 FOREIGN EXPERIENCE MASTER STUDENTS

In the Master you can also spend a semester or part of a semester abroad at a company or at a university. In most cases this exchange or internship is related to a specific project. For example, you can do a research project (M1.1 at a partner institute with which a larger research project is conducted, or you can approach a foreign client for your FMP and spend part of your time with the client abroad.







GENERAL LEARNING ACTIVITIES

As described above, the Major and Master program consist of different curricular learning activities. These curricular learning activities are activities with an emphasis on experiential learning and self-reflection while taking into account differences between individual students. In addition to the curricular learning activities, which are pre-programmed by the department there are various learning activities that students can undertake on their personal account. Students can use these additional learning activities, which are described below, as evidence for their competency development. Overall, learning activities are not a target but a gate that opens up the attitudes, skills and knowledge needed by students in order to develop their competencies. Learning activities are not an end but a means; therefore they are not assessed separately.

6.1 AUTONOMOUS LEARNING ACTIVITIES

**RDSL
weeks**

In our department you can do autonomous learning activities during Reflective Self-Directed Learning (RSDL) Weeks. During these weeks you have the opportunity and challenge to break away from prescribed processes by the department and define your own activities that serve personal development goals. But first and most of all: it gives you the opportunity to sit down and spend some extra time to reflect. Throughout the year, five weeks are reserved for autonomous learning activities, two halfway the first semester, one before the start of the second semester, and two halfway the second semester. Each student is encouraged to define his or her own autonomous learning-activities. You can team up with other students to define a joint activity or you may choose to participate in an activity another student has set up. You have to develop a plan for what to do during these weeks in consultation with

your coach. The first RSDL week starts with the Dutch Design Week (DDW) in Eindhoven, which all students are encouraged to visit. Furthermore, you can participate in activities that the study association Industrial Design Lucid organizes such as the study trip to the Salone in Milan. In addition to these design-related activities, you can use the RSDL weeks to catch up on the development of missing competencies, or you can do new projects with which you can bring into practice what you have already learned, such as participating in design competitions. We expect an active involvement, and a deliberate choice of activities that can demonstrably lead to growth along the competencies and you should account convincingly for the allocated time. To facilitate cooperation, you can use www.IDshare.nl, which is a way of sharing activities so you can simply organize an activity with other ID students. Or you can look for activities you can participate in. The coach is the final responsible person to judge whether an RSDL proposal fulfills its educational purpose.

6.2 WORKSHOPS AND STU COURSES

Workshops are relatively short learning activities. Their size varies from a few hours to a full day. Workshops provide you with an introduction to various topics, for example information brokering, design processes, reflection, group dynamics, creating a showcase, mathematical modeling, electronics or a theme-related topic. These introductions are meant to initiate and support your competency development within the projects. Workshops can also provide you with specific expertise, either linked to a particular competency or to a Theme. In addition to the workshops offered by ID Education, Lucid and students, you can join a variety of courses from the Education and Student Service Center (STU). These courses support you in improving your study skills, making the right study choice, communicating in intercultural settings, and developing your social and communicative skills. Furthermore, STU offers different language courses. When your level of English is insufficient we recommend you to participate in an English course.

6.3 LECTURES BY SENIOR PROFESSIONALS

Throughout the year we organize several lectures organized by senior design professionals. They will be announced by posters and in the newsletter. We highly encourage you to visit these lectures as they offer you a clear perspective on what the profession of industrial design entails.







DEVELOPMENT

Competency-centered learning is a cyclical, highly individual and context-dependent process. This requires a holistic approach to designing a curriculum and corresponding assessment. The goal of our curriculum is to facilitate and promote your development of the overall competence of designing and your growth as a designer. It is your responsibility to determine what kind of designer you want to become, what competency development this requires and what learning activities you need to perform to achieve this goal (self-directed learning). Important mechanisms to facilitate, enhance and direct this growth are feedback, reflection, a holistic approach to assessment, and learning activities that generate competency development. The role and nature of learning activities have been explained in the previous chapters. Although the learning activities vary significantly in terms of focus and programming, the Major and Master are equally structured in terms of setting goals, selecting learning activities, receiving feedback, and reflecting on learning. In this chapter we discuss the program overview and the underlying processes that and procedures.

7.1 PROGRAM OVERVIEW

1. At the start of each semester, you have to lay down your envisioned growth as a designer in a Personal Development Plan (PDP). By making a PDP you can determine per type of learning activity the ones that provide the best opportunity to develop your competencies and overall competence of designing.
2. Consequently, you can select curricular learning activities taking into account the composition of the block you are going to do. During these activities you receive feedback on your process and outcomes, which you store in a digital portfolio (IDcompass). In addition you reflect on the quality of your deliverables, your competency development,

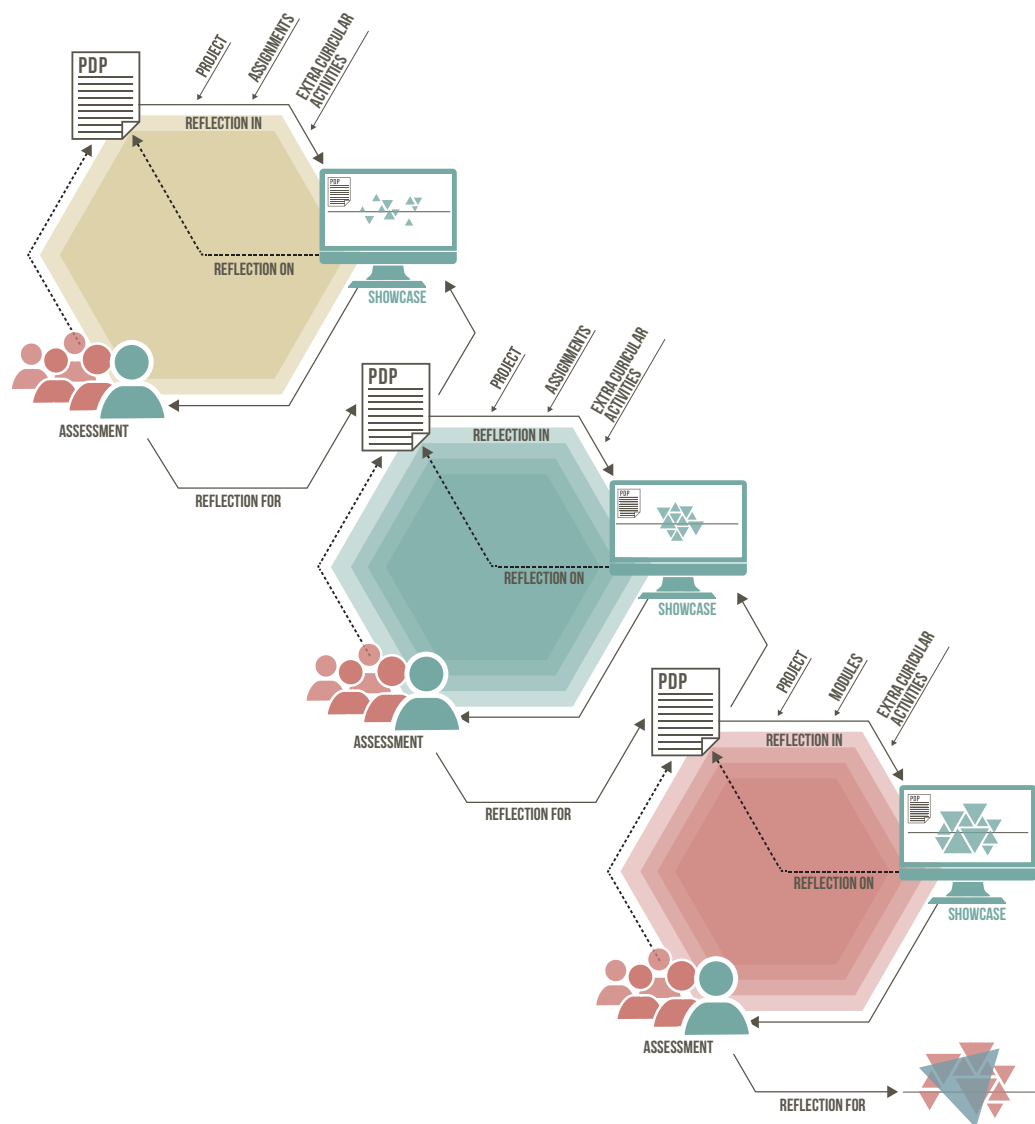


Figure 5. Schematic overview of the Bachelor and Master Program

design process and learning process and attitude across the various learning activities you have done in a semester.

3. At the end of the semester, you are assessed on the development of your overall competence of designing, vision on designing and growth as a designer. You have to prove or demonstrate what you have achieved in the semester as a whole. Your showcase is a crucial component of this end-of-term assessment. The showcase consists of reflections on learning supported by (visual) evidence obtained from learning activities.
4. The assessment is a formal decision but also a starting point for your development and growth in the next semester.

7.2 PERSONAL DEVELOPMENT PLAN

At the start of the semester you write a Personal Development Plan (PDP). The PDP is a relevant tool to support your development. It is a written document for planning and directing your competency development on a continuous base by formulating goals based on your reflection on learning experiences. Formulating goals provides your learning with a direction and makes it possible to evaluate and monitor your progress. In general, goals need to be meaningful and relevant for your competency development. Also, goals need to be formulated as concrete as possible. A tool to formulate goals effectively is to formulate them SMART. A goal is SMART if it's Specific, Measurable, Apparent, Realistic and Time-related.

Long-term, mid-term, short-term development

Developing and shaping your vision is the pivotal action for your PDP. It becomes your point of reference and may give you a specific focus when you are performing learning activities during the semester. The PDP is also your point of reference for monitoring your progress, evaluating the accomplishment of your goals, and for creating and updating your showcase. The idea is that you use the PDP as a tool to direct your long-term (vision on designing, what kind of designer you want to become), mid-term (what competency development you want to achieve per semester) and short-term development (what you want to learn in an assignment or project).

Based on the long-term and mid-term goals in your PDP you select various learning activities and make concrete what you want to achieve in the particular learning activity. Therefore, you have to write/adjust your PDP at the start of each semester, but also halfway

the semester and towards the end of the semester. It is important to discuss the content of your PDP with your coach and that you take into account the feedback you receive from assessors, experts, assignors and lecturers. Writing and using your PDP involves various activities. Also, it is the assessor's point of reference when he or she assesses your overall development and growth as a designer. Therefore, you need to include it in your showcase. At the end of the semester you review all deliverables, feedbacks and reflections to determine how these have contributed to your overall development and growth as a designer. This results into the update/creation of your showcase. It is this showcase, which is assessed. This assessment gives you feedback on the developmental stage at which you are, how this fits in your long-time ambitions and if you are ready for promotion to the next block. Then this process starts all over again in the consequent semester.

7.3 DELIVERABLES

An important constituent element of the overall competence of designing is the quality of your overall design or the whole of your deliverables, including the extent to which your deliverables show your own 'signature'. Throughout the different learning activities and design processes you produce various deliverables such as prototypes, the outcomes of a user study, a project report, a poster, a presentation, a file for a patent, or a conference or journal paper. Deliverables represent your strength in specific activities (e.g. making) and indicate the importance of the variety of competencies for designing intelligent systems, products and services in a societal context. It is highly recommended to keep track of (intermediate) deliverables for example by making photos and videos. Ensure that your photos and videos are of such quality that they can be used in reports and presentations.

7.4 FEEDBACK

In the course of a curricular learning activity the staff member concerned gives frequent verbal feedback, in a dialogue and in discussions with the students. This verbal feedback is intended to make explicit what you have achieved so far (feedback on action/on learning). Moreover, it helps you to relate your learning process and deliverables to your vision, your identity, your competency development, to understand the competencies, and to explore

how your competency development achieved across various learning activities can enhance one another. Verbal feedback is highly effective, as the feedback giver can check whether the feedback has 'landed' and the student can ask for clarification. Discussions support your understanding of, amongst others, the competencies and enhance their critical thinking. Furthermore, feedback supports in accomplishing high quality deliverables and to achieve the goals you set for particular competencies.

Feedback is also meant for action/for learning: how you can take the next step or achieve a higher level. It is this meaningful link between feedback and feed forward in particular that facilitates and enhances your learning, deliverables, competency development and design process. After you have presented or handed in your deliverables, and these have been discussed between staff member and students, the staff member gives final written feedback on the quality of your deliverables, related competency development, and design process. This final written feedback is input for your reflection on your learning outcomes and competency development achieved in the learning activity. It also serves as input for the assessor. It is your responsibility to collect feedback by assignors, lecturers and experts if you want to claim growth in some competencies after a learning activity. Sometimes this has already been taken care of by TU/e and ID rules, such as for assignment feedback and coach feedback. But for other activities such as extra-curricular or autonomous learning activities and for specialisms within the project it is your personal responsibility to get feedback from qualified experts.

Your coach gives you verbal feedback during the project and written feedback at the end of the project. The focus of the written feedback is on the basic competency and meta-competencies, more particular on your learning and overall competency development. In some cases a coach will also give feedback in competencies within which he or she is an expert. Assignors and lecturers provide you with feedback after assignments, modules and courses on specific competency development, as addressed within that learning activity. Also, you can collect feedback for your development when consulting experts. It is your responsibility to collect this feedback, we therefore recommend you to take good notes of the feedback you receive from the different parties. Because you need the feedback for your reflection on the learning activity concerned as well as for adjusting your competency development goals for other/new learning activities in the same semester, you need to contact assignor, coach or lecturer if you do not receive it in time. You use this feedback

*Frame and
reframe your
learning
experiences*

when you reflect on the quality of your deliverables, your design process and your competency development achieved (reflection on action) and how this relates to your future development and activities (reflection for action).

REFLECTION

Reflection is an important mechanism to learn from experiences and to stimulate and direct your growth. It is a necessary tool for self-directed learning as well as for becoming a reflective practitioner in designing. Reflection has been defined as a “mental process that occurs before, during and after situations with the purpose of developing greater understanding of yourself and the situation so that future encounters with the situation are informed by previous encounters” (Sandars, 2009, p. 685). Through reflection you frame and reframe your learning experiences. Generally, three types of reflection are distinguished: reflection-before-action, reflection-in-action and reflection-after-action (Schön, 1983; Zimmerman, 2002). Reflection-before-action focuses at planning and orienting on learning or performing. This type of reflection occurs when you draft your PDP in which you describe what you want to learn and how. Reflection-in-action occurs when you pause to analyze an (learning) event as it is occurring and make judgments about how to proceed. For example, you need to take a step back from the deliverables you have produced to see how they relate to each other. Reflection-after-action (also called reflection-on-action) occurs when you analyze an event after it has occurred to reevaluate their interpretation of the event and their actions. Reflection-after-action occurs when you write a reflective report; write down your experiences in a log or when you discuss your competency development with your coach. Reflection-after-action involves an evaluation of performance and decisions on how to handle similar situations in the future.

It is important for you to structure your reflections. Numerous models can be found that provide structure to the thought processes (e.g. the ALACT model by Korthagen and the learning cycle by Kolb). Systematic and structured reflection is important in promoting sound professional behavior and stimulating competency development (Korthagen, Kessels, Koster, Lagerwerf and Wubbels, 2001, p. 47). It is the ability to continue to develop professionally on the basis of self-directed learning. However, using these models in a fixed way can lead to instrumental and superficial learning. Therefore, it is important to realize that reflection is an iterative process consisting of different mental activities that do not occur in a fixed order.

*Describing,
analyzing,
evaluating,
planning and
formulating*

Broadly speaking the following mental activities are important: Describing, analyzing, evaluating, planning and formulating intentions for learning. All models on reflection describe a structured reflective process, but do not tell much about the content of reflection: where do you or should you reflect upon? When reflecting on learning experiences it is important to frame and reframe these experiences in terms of development of the basic competencies, meta-competencies, the overall competence of designing, your vision and your identity and to formulate intentions for learning. Reflections serve to learn from experiences and to direct and plan your future learning.

7.5 SHOWCASE

*Communicates
your
development
as a designer*

In the course of a semester, you essentially go through iterative learning loops at two levels: a loop of competency development in each learning activity you do, and a loop of growth as a designer over the semester as a whole. For each learning activity you store the deliverables in the digital portfolio (IDcompass), together with the written feedback and your own reflections. In these reflections you look back on what you have achieved (reflection on action) and how this will direct and shape your future development (reflection for action).

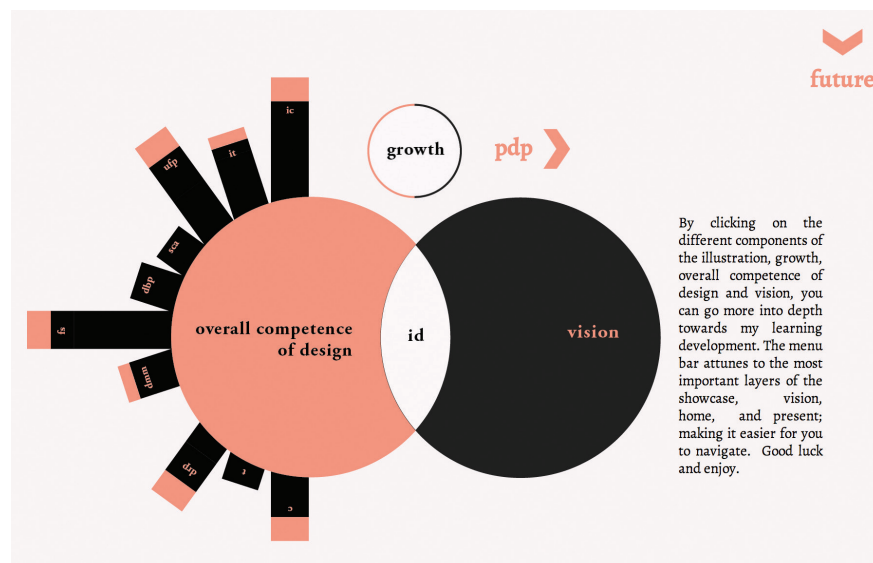


Figure 6. Screen capture from the showcase of Attalan Mailvaganam depicting his overall competency development in relation to his overall competence of designing

Deliverables, feedbacks and reflections are evidence for your showcase. In the year planning time is dedicated for these reflective processes: the RSDL weeks halfway through, and at the end of the semester.

You are encouraged to update your showcase continuously during the semester, and to ask feedback on it. At the end of the semester you publish your showcase for assessment. This showcase is visual and interactive. You review all deliverables, feedbacks and reflections to determine how these have contributed to your overall development and growth as a designer. In order to create/update your showcase you carefully select deliverables and enrich them with reflections on your development as a designer. You underpin your overall development with links to evidence from your learning activities. The frame for this development is on the one hand the four-stage model for your growth as a designer, and on the other hand your own long-term goals for your individual growth as a designer. The showcase communicates your development as a designer and the development of the overall competence of designing over the semester, fitted in with your history as a designer up to that point (previous showcase(s)) and the view of the designer you want to become (long-term goals). The past is transformed, the present becomes the past, and the future becomes the present.

7.6 ASSESSMENT

The scope of an assessment is your identity, vision, development of the overall competence of designing and growth as a designer, as communicated through your showcase portfolio, and underpinned with evidence: of the quality of their deliverables, and of their development of the competencies. The formal function of an assessment is to take a decision on your progress in the program and to assign credits or not. In our case this is determined by the developmental stage you have achieved, related to the block you have been doing: awareness, depth, expertise or visionary. The formal decision we take is 'promotion to the next block or not'.

Feedback moment

An assessment essentially is a feedback moment, used to give you insight in your stage of development and your growth. From this feedback it becomes clear how you should develop further, and if you have developed enough to enter the next block of the curriculum. The assessment provides you with an evaluation of your overall development as a designer over the past semester, fitted in with the history as a designer up to that point and the envisioned

development in the future. This may be a confirmation, modification or rejection of what you communicate through and conclude in your showcase. In this respect the assessment is also feedback on your ability to self-assess. Last but not least assessment feedback fulfills a feed forward function: it helps you fine-tune or adjust your long-term goals for your growth as a designer and set competency development goals for the next semester.

During the assessment the student interacts with an assessor or assessment panel. For B1, B2 and B31 assessments, only one assessor is involved, for B32 and further always a panel is involved consisting of an independent assessor and the student's coach. Assessors are assigned to you prior to the Demo Days in which you demonstrate your project deliverables and other materials that have contributed to your competency development. After the Demo Days you build your showcase, which needs to be ready in the first assessment week. Specific deadlines for this are included in the Bachelor and Master year planning.

ASSESSMENT PROCEDURE

Assessors assess the students that have been assigned to him or her in the second assessment week. The formal and more detailed assessment procedure, including the various verdicts and how to decide on a particular verdict, is included in the 'Examination Requirements 2013-2014', to be found on our intranet. In brief, the assessment is a five-step process:

1. The first step in the assessment process is the Demo Day. During the Demo Day students exhibit their prototypes and pitch their project. If considered necessary, students can bring other physical evidence to demonstrate their competency development. At the Demo Day the assessor should inform the student about points that require further attention in the showcase.
2. As a second step in the assessment process the assessor goes through the student's showcase with the focus on the student's development of the overall competence of designing and the student's growth as a designer. The central question is whether the student has achieved (or, in case of excellence, has gone beyond) the expected developmental stage of growth as a designer (as defined below). The student's development of the competencies and the quality of his or her deliverables are input for this, which has already been established in the context of the learning activities the student performed. In the showcase the student should include links to evidence for this, so the assessor can easily get an overview. The assessor writes down his evaluation of the student's development, tentative verdict and justification, and questions or topics he wants to address in the meeting with the student.

3. The third step in the assessment process is a meeting between assessor and student. This meeting gives the assessor the opportunity to either get clarification of or discuss particular aspects or parts of the showcase in more detail. This way the assessor can fine-tune his or her evaluation of the student's development and growth, and check the tentative verdict. For the student this meeting is an opportunity to demonstrate his overall development and growth in a different way (verbally as opposed to the visual/written communication in the showcase).
4. The fourth and last step is the assessor meeting, in which various assessors from one block are present including the students' coaches. An assessor who is well acquainted with the EER, e.g. a member of the Board of Examiners or a Director of Education, chairs each assessor meeting. A secretary, usually a member of Educational Affairs, supports the chair by taking notes of the discussion. The assessor meeting starts with the assessors proposing their tentative verdicts. Consequently, starting with the clear cases, each assessor needs to give the ground(s) on which they have arrived at these verdicts. They have to describe the student's vision, identity, overall competence of designing and growth. The chair can request specific information regarding the student, if the grounds are insufficient. Other assessors and coaches are to engage in the discussion and share their view on the student or the assessment. During this discussion different students or assessments can be compared. Having discussed each verdict, they also discuss, if applicable, whether and why students qualify for 'excellence'. This again allows for comparing different cases. The above-described discussion may result in modification of some of the verdicts, as the final verdict for the students should be achieved by consensus. Therefore, the chair of the meeting always checks the final verdicts and requests all members to confirm the verdicts.
5. After the assessor meeting each assessor finalizes his or her assessment forms in IDCompass.

ADDITIONAL PROCEDURES FOR B32 THROUGH M22

The procedure for B32 through M22 is slightly different than the procedure described above. In B32 students are assessed by an assessment panel, which is composed of the assessor and the student's coach.

- ▶ Both coach and assessor have to visit to the Demo Day, although this can be done individually.
- ▶ During the assessment meeting both assessor and coach have to be present.

ADDITIONAL PROCEDURES FOR B32

- ▶ Prior to the assessment the panel has already gone through the student's final project report and showcase. This allows for in-depth and more detailed questions on the student's project as well as showcase. As part of this meeting the panel gives the student their assessment feedback and decision on the verdict.
- ▶ The student is assessed on the development over all Bachelor years. Although the FBP does play a prominent role in this, the assessment must focus on the overall development achieved in the Bachelor program.
- ▶ The graduation ceremony is scheduled twice a year. Bachelor students receive their diploma from their coach, together with a brief personal speech.

ADDITIONAL PROCEDURES FOR M22

- ▶ Generally, the assessment panel for M22 is the same as for M21.
- ▶ Prior to the assessment both assessors have already gone through the student's final project report and showcase. This allows for in-depth and more detailed questions on the student's project as well as showcase. As part of this meeting the panel gives the student their assessment feedback and decision on the verdict.
- ▶ The student is assessed on the development over all Master years. Although the FMP does play a prominent role in this, the assessment must focus on the overall development achieved in the Master Program.
- ▶ The graduation ceremony is scheduled twice a year. Master students receive their diploma from their coach, together with a brief personal speech.

7.7 STAGES OF GROWTH AS A DESIGNER

Students perform learning activities that yield particular deliverables. In order to achieve these deliverables they need to develop particular competencies. These deliverables and related competency development contribute to the development of students' overall competency of designing, and to their growth as a designer. This overall development requires thorough understanding and integration of the eleven competencies. For students' overall development we distinguish four developmental stages: Awareness, Depth, Expertise, and Visionary.

*Awareness
with respect
to interactive
systems*

AWARENESS

In the first year as a Bachelor student you have performed DG000, two projects, four basic courses and a number of electives. You have received your first feedbacks, and have written your first reflections on your learning experiences within the different learning activities, deliverables and competency development achieved. You have built a draft showcase and a showcase, in which you reflect on your identity, vision, your self-directed learning, overall competence of designing, and on your on design process(es) and growth as a designer. At the end of the first year you have gained experience with most of the eleven competencies, demonstrate awareness of what all eleven competencies entail as related to your own work, what your own overall competence of designing is, what your own growth as a designer is, how your competency development contributes to the overall development, and what a design process may constitute. You have built awareness with respect to interactive systems and know how to continue developing the competencies.

*Formulating
a clear vision*

DEPTH

Depth is the expected stage for Bachelor graduates. You have the second and third year to achieve this. Knowledge, skill and attitude building, including experiential knowledge as well as theoretical knowledge, characterize the stage of depth. You are able to demonstrate depth in particular competencies and in your skills as a designer: sensing/perceiving/doing and analyzing/abstracting, next to emotional and social skills. Depth also shows your ability to integrate, and your professional attitude and responsibility as a designer. In your reflections you connect competencies to one another and establish connections between competencies, the overall competence of designing and overall growth. You have gained experience with the five activities within the 'reflective transformative design process', and with jumping from one activity to another while reflecting on the previous one. You demonstrate understanding of this design process as a whole. You have built an awareness of intelligent systems and demonstrate depth in interactive systems. Your showcase communicates (the beginning of) a clear identity developing over time. You are capable of formulating a clear vision on a project, and relating it to your general vision.

*Academic
level of
designing*

EXPERTISE

Expertise is the expected stage for Master graduates. When you have achieved this stage, your vision and identity have started to merge more prominently and are inextricably intertwined in all activities. You demonstrate expertise building in the overall competence of designing, in your growth as a designer and in particular competencies while you show depth in

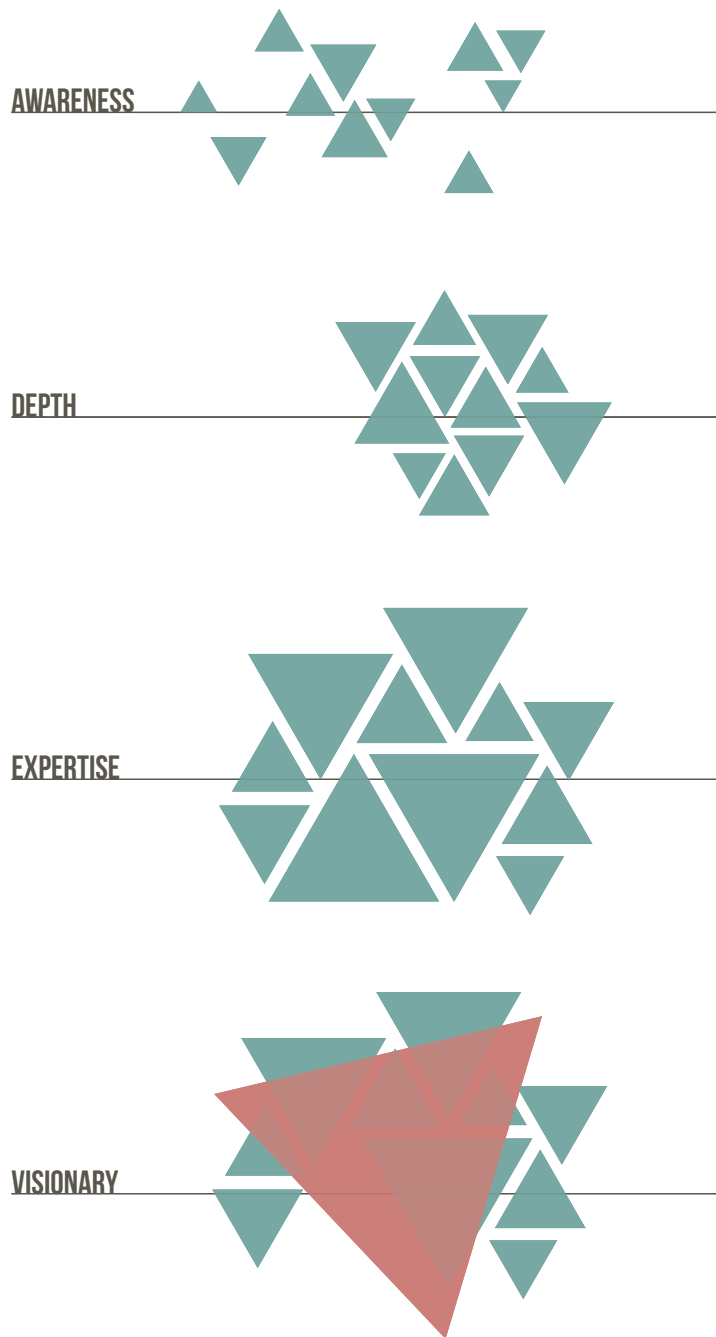


Figure 7. Stages of growth as a designer

others. As a consequence, you are not expected to reach expertise in all competencies, but to develop a clear expertise profile, driven by a unique and personal vision on designing. Expertise in the particular competencies of this profile is demonstrated in the quality of your deliverables and in your ability to discuss and communicate your expertise to others. This expertise is also demonstrated in your integration of interactive and intelligent systems into your design. Expertise in the overall competence of designing is reflected in your ability to integrate various approaches in your design process (arts and crafts, engineering and social science). It also shows in your ability to comfortably jump back and forth between the five activities within the 'reflective transformative design process', reflecting on the steps they take and trusting your senses. You demonstrate an academic level of designing.

VISIONARY

Visionary expertise

Visionary is the stage that excellent Master graduates may have started to develop. For many graduates this is the stage they will work on and arrive at after their graduation. Dorst (2004) defines this stage as follows: "The world discloser or 'visionary' consciously strives to extend the domain in which he/she works. The visionary develops new ways on how things could be, defines the issues, opens new worlds and creates new domains. To do this a visionary operates more on the margins of a domain, paying attention to other domains as well, and to anomalies and marginal practices that hold promises for a new vision of the domain." In the Bachelor as well as the Master a strong emphasis is put on envisioning for societal transformation and you are stimulated to develop your own vision on society. When a designer has reached the stage of visionary, all his or her designs breathe this overall vision, which has become the salient aspect of his or her identity. Other experts in and outside the field of industrial design have to recognize their visionary expertise.



MARJOLEIN KORS

ING RITUALS

van een ontwerp dat het rouwen doet aan een ouder. Het stimuleert de vader en moeder bewust veranderingen, die het gevolg zijn van de rouw, onder ogen te zien. De nog te ontwikkelen juiste context en methode om de rouw te combineren met de relatie met het overleden kind en een hoeveelheid kleine persoonlijke fiches. Hiermee kan het proces van rouwen en ervaringen leggen, en de rouw kan worden bepaald. Het is de bedoeling om de rouw te bespreken, waarna het kind alle mogelijkheden heeft om de rouw te bepalen. Het is de bedoeling om de rouw te bespreken, waarna het kind alle mogelijkheden heeft om de rouw te bepalen. Het is de bedoeling om de rouw te bespreken, waarna het kind alle mogelijkheden heeft om de rouw te bepalen.

ment of child's mourning
stimulates the remaining
trials, and redefine changes
in context and protocol, in
a number of small plastic
phase the child can indicate
their level of importance.
The child has the freedom
to its own liking. It is the
just the meaning, after which
the child's bedroom.
of the overview and notifies
light is turned on, the image
on the child's bedroom ceiling.

BAOBAB MEMENTO


"Ten Third Culture Kid (TCK) is iemand die leeft groter dan zijn land. Hij is de belangrijkste jaren van ontwikkeling buiten de cultuur van zijn ouders heeft doorgebracht. De TCK ontwikkelt relaties met meerdere culturen, hoewel hij er niet volledig deel van uitmaakt. Hoewel de TCK, zal het gevoel van verbondenheid vooral opgeld doen bij anderen met een soortgelijke achtergrond."

De Baubab Memento is een sieradure Kid. Twee algemene uitdagingen van de TCK zijn verbonden met het? De andere uitdaging betreft hoeft wanneer hij een land v... manente karakter van de v... David C. Pollock ligt een... lje objecten' als onder... herdenkingsmiddelen die o... staten zich te herinneren.

ment is ontwikkeld binnen de culturele context van de familie. De Culture Kid (TK) is een programma dat de eerste vijf levensjaren van een kind als een ontwikkelingsjaar beschouwt. Het helpt ouders om de beste relaties te bouwen met hun kind in deze periode. Alhoewel elke familie anders is, kan de TK de levenservaring van ouders helpen om te delen met anderen van dezelfde achtergrond.

David C. Van Reken, Ruth E. Goss, and
 Jobab Memento is a jeweled
 Kid. Two common challenges
 es related to identity: which
 red grief that they may feel
 loss and permanence





COMMUNICATION AND INFORMATION

Given the fact that we have only employees, junior and senior, we encourage everyone to support the PR and communication internally and externally. That is why all spaces and all Themes have zones to present ideas and findings, with a strong emphasis on demonstrating and experiencing through prototypes. During the semester we organize Demo Days, symposia and workshops to disseminate ideas and expertise and enhance the community.

8.1 WEBSITE AND NEWSLETTER

ID Education aims to inform the students adequately about important information concerning the Major and Master program by means of the bi-weekly newsletter, digital study guide and the paper study guide. The bi-weekly newsletter consists of important information and highlights information published in the digital study guide. Examples of topics addressed in the newsletter are: calls for information session/events on a specific subject, deadlines to be attended, and information about procedures of all relevant educational activities. Every other Tuesday by the end of the day, the Newsletter will be sent by email. Since the Newsletter is a real time webpage, the information can be viewed at any moment. In the digital study guide in-depth information concerning curriculum, regulations, planning, facilities and administration can be found. The head of Educational Office (Lenny Apon) carries responsibility for the internal communication. Since everybody contributes to ID Education, you can suggest information to be placed on the newsletter through your theme champ.

Contact Newsletter: secretariat.education@tue.nl
Digital Study guide: id.education@tue.nl

8.2 EER

Since the Act on Higher Education and Scientific Research (WHW) has been implemented in 1993 we are obliged to determine and write down the main features of our educational programs and examinations. Currently, there are three EER's for our educational programs:

- ▶ Education and Examination Regulations for the Industrial Design Bachelor's Degree Program 2014-2015 - Phasing Out;
- ▶ Education and Examination Regulations for self-directed and Competency-Centered Learning 2014-2015 - for the new bachelor's degree program;
- ▶ Education and Examination Regulations for the Industrial Design Master's Degree Program 2014-2015.

In these EERs you can find rules regarding admission to the degree programs and information about the structure of the programs. Also, rules pertaining to enrollment, completion and withdrawal of curricular learning activities and rules for assessment and examinations are described.

8.3 ARP

The Board of Examiners guards the quality of our assessments and examinations (see Chapter 9 for more information). To support this process, the Assessment, Rules and Procedures (ARP) have been written which are updated every year. As of the academic year 2014-2015 the TU/e has centralized the process in the Examination Regulations (ER). A separate ER has been written for competency-centered programs. In this document, the working method and task of the Board of Examiners of competency-centered programs is outlined. Furthermore, rules and regulations pertaining to assessment and examinations are described.

8.4 QUALITY ASSURANCE

The goal of our quality assurance system is to monitor and guard the quality of our educational programs. Through the use of questionnaires we evaluate our assignments and modules and with the semester evaluation questionnaire we monitor the quality of coaching and assessment. The evaluation results of these learning activities are provided to the responsible educational staff and they are invited to reflect on it. On a more general level, management summaries are made for the overall evaluation results of assignments and modules. These summaries are provided to the Educational Committee, are discussed with the Directors of Education and are used in bi-yearly appointments with the Dean of the Bachelor College (BC).

In these meetings with the Dean of the BC we also discuss results from the National Student Inquiry (NSE) and 'aansluitenquêtes'. The NSE is a large scale national inquiry in which all students in Higher Education are invited to express their opinion about all aspects of their study. This inquiry is used for benchmarking our Educational Programs with other programs from the TU/e. The 'aansluitenquêtes' are inquiries used by the BC to map student satisfaction pertaining to guidance, information and communication. Next to the questionnaires described, we also make use of qualitative data-analysis methods. We study, for example, the quality of written feedback provided by the educational staff, we explore how students compile their PDP's and showcases and we study the quality of reflections. Results of these inquiries are used to inform policy-making.





ORGANIZATION

Our department is a network organization with a lot of responsibility for employees. Instead of a hierarchy with rules and control, the network organization is based on flexible self-managing teams that share knowledge and expertise and collectively come to decisions within the overall framework of the department. This organization aims at supporting self-directed and life-long learning, stimulates creativity and innovation, and fits perfectly with competency-centered learning and taking responsibility for one's own (individual and departmental) development. Within this network organization, employees can have different roles within education simultaneously, for example being a coach, assignor/lecturer, assessor, coordinator, theme champ, member of a committee and expert. The organogram presented below provides an overview of actors (roles, functions and committees) involved in our educational program. After the organogram is presented a selection of actors is described.

9.1 EDUCATIONAL ROLES

A constructivist perspective on learning has various implications for the roles of student and 'teacher'. Staff roles at ID vary and include coach, expert, assignor, module lecturer, assessor and client (see Figure 8). For each role the central question is: what do students want or need to achieve, what is required for this and how can I support and enhance their process and results, given my specific staff role and professional expertise? The different educational roles of our educational staff perform will be shortly described.

COACH

Support in competency development

Coaches play a crucial part in supporting and challenging students' competency development, growth, vision and identity as a designer. The scope and focus of the coaching role may vary. The coach is responsible for coaching the individual student on his or her competency development. For this purpose the competency coach has regular meetings

with the student (on average every other week). In these meetings students discuss their competency development plan and/or learning goals (PDP), their progress within their learning activities, the relations between work results and competency development, how this relates to their overall development, how this relates to their vision and identity and how to build their showcase around this. It is an important task of the coach to support the students in writing reflections and compiling their showcase. The coach mainly addresses the basic competency SDCL and the meta-competencies DRP, T and C. Thereby, they also focus on how the student(s) go through their design process in their project. In B1 and B2, the coach is also responsible for coaching the project team, which is usually done on a weekly basis. In these meetings the design process, the project deliverables, and - if applicable - the team processes are addressed. The coach normally brings in a client, either from inside ID or from outside via the professional network.

To support competency development in the core competencies, students need to request feedback from experts (who in some cases can also be their coaches) in assignments, modules, workshops or expert meetings. Competency meetings are mostly individual (between coach and student) but may also be in small groups (between coach and team, or several students). The coach gives students feedback from a holistic, self-directed and competency development point of view. Coaching students who do an external learning activity (block B3.1) is similar, with one essential difference, as these students are not at the department but at another university, department or a company. For their external learning activity students also have a coach at the university or company concerned, the organization coach. The TU/e coach should try to meet or discuss the progress of the student at least once with the organization coach. In particular to clarify expectations, as organization coaches tend to focus on results, while students will be assessed on their competency development. Therefore, the coach should provide sufficient guidance to the students in achieving their competency development goals.

ASSIGNOR AND LECTURER

*Facilitate,
support and
enhance student
learning*

Assignors and lecturers support and enhance students' acquisition of specific knowledge and skills, framed within a particular competency as a whole. Within this context assignors and lecturers perform the role of expert. Assignors and lecturers facilitate, support and enhance student learning in the context of specific learning activities such as assignments, electives and modules. An assignor or lecturer provides one or more assignments, electives

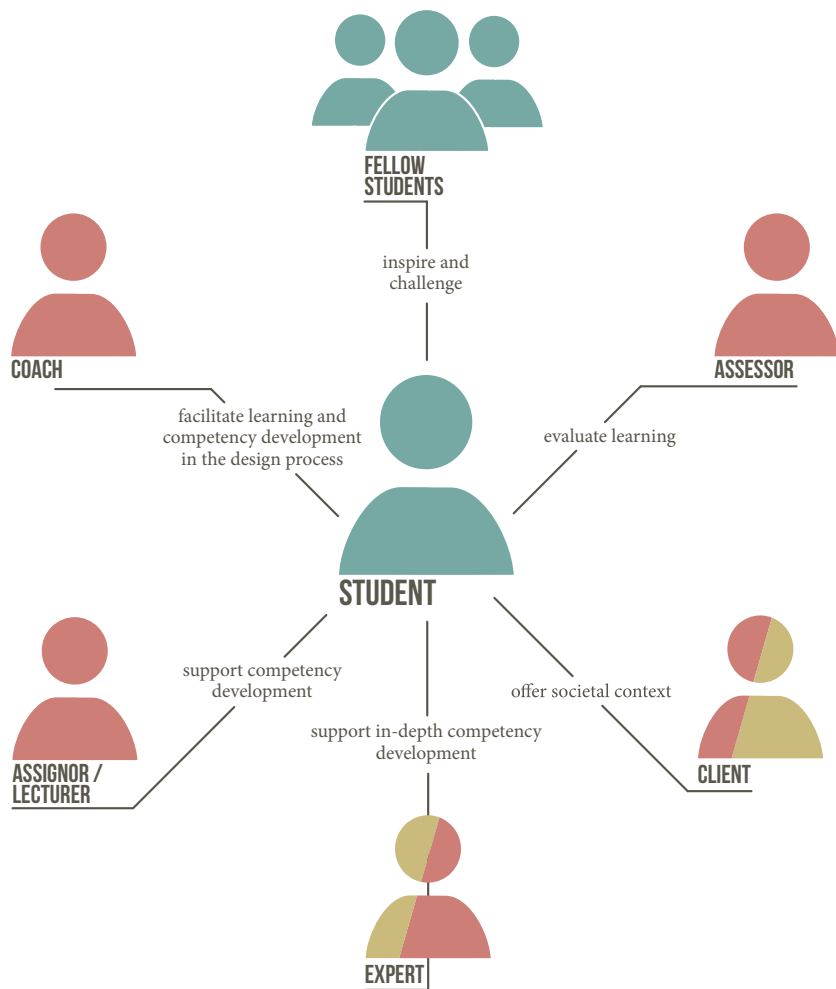


Figure 8. Overview of roles of staff and their relations towards the student

or modules in his or her field of expertise. These learning activities mostly address one or two particular competencies. They support students in achieving awareness or depth (assignments and electives), or expertise (modules). They also provide students with pointers on how to transfer a particular approach or view to projects or other learning activities, so students can build up awareness, depth or expertise in various contexts. At the scheduled meeting with students they discuss 'content' (specific knowledge and skills), relate this to the competencies as a whole, and give students feedback on their progress and achievement within the assignment, elective or module. Assignors and lecturers provide students with feedback on the quality of their deliverables and related competency development from an expert point of view. Assignors and lecturers stem either from ID's research groups, from other departments at the TU/e, or from the professional field. Sometimes we invite internationally renowned academics to present a module.

ASSESSOR

Holistic feedback on the student's overall development

The role of assessor focuses on evaluating the developmental stage a student has achieved at a particular moment (levels of growth), framed by the student's identity and vision as a designer (development up to that point) and the student's ambitions (long-term-goals for growth as a designer). So this evaluation is not absolute but relative. From the Demo Day, showcase and meeting with the student, the assessor examines the student's development of the overall competence of designing, growth as a designer based on the PDP, identity and vision. An assessor also checks whether the student has a balanced development over the competencies (Bachelor) or whether a specific area of expertise is emerging (Master). Furthermore, they conduct a meta-review on the quality of the deliverables and check whether a preliminary PDP for the consequent semester is in line with the expected development. The assessor determines what a student has achieved (assessment of learning) and relates this to the next developmental stage (assessment for learning). The assessor takes a formal decision on the student's progress in the program (promotion to next block or not) and gives feedback on the student's overall development from a holistic point of view.

EXPERT

Contact on own initiative

The role of expert is comparable to the role of assignor or lecturer. An essential difference is that experts do not have their 'own' learning activities in the program. Instead, students have to contact experts on their own initiative if they need consultancy from them, mostly in the context of the project they are doing. Students should only contact an expert after

thorough preparation so they can get the most out of their meeting with the expert and do not claim time for vague questions or for information they can easily retrieve themselves. It is important for students to discuss consulting experts with their coach prior to the actual consultation. From the second year onward students should really involve experts in their projects to achieve depth or expertise in particular competencies and in their deliverables. Students can request experts to provide expert feedback on the competencies for which they are addressed, an overview of expertise can be found in appendix 1.

CLIENT

Provide feedback on the quality of deliverable

The client has an important role as he enables students to gain experience and apply what they have learned in a societal setting. The role of client can be taken by someone from outside university (e.g. companies in the design industry, non-governmental organizations, etc.) or from inside the university (scientific staff from ID). The client represents the problem owner and provides the student or student team with further information on the problem, question, or business opportunity. In addition, the client provides the student or student team with feedback on the proposed solution (which can be a product, but also a service or proposal) and feedback on professional skills (e.g. doing negotiations, making agreements, attending meetings and being representative). Each project should have a client, which can either be an external party or a researcher or research group. Students can request clients to provide feedback on the quality of their project and deliverables. In the Master, and more specifically in Block M11, which is a research semester, the coach can also play the role of client. Students work under the guidance of a scientific staff member or PhD student, and do a project within their area of research. Often, this project is directly related to an ongoing research project or at least contributes to extend the field of interest.

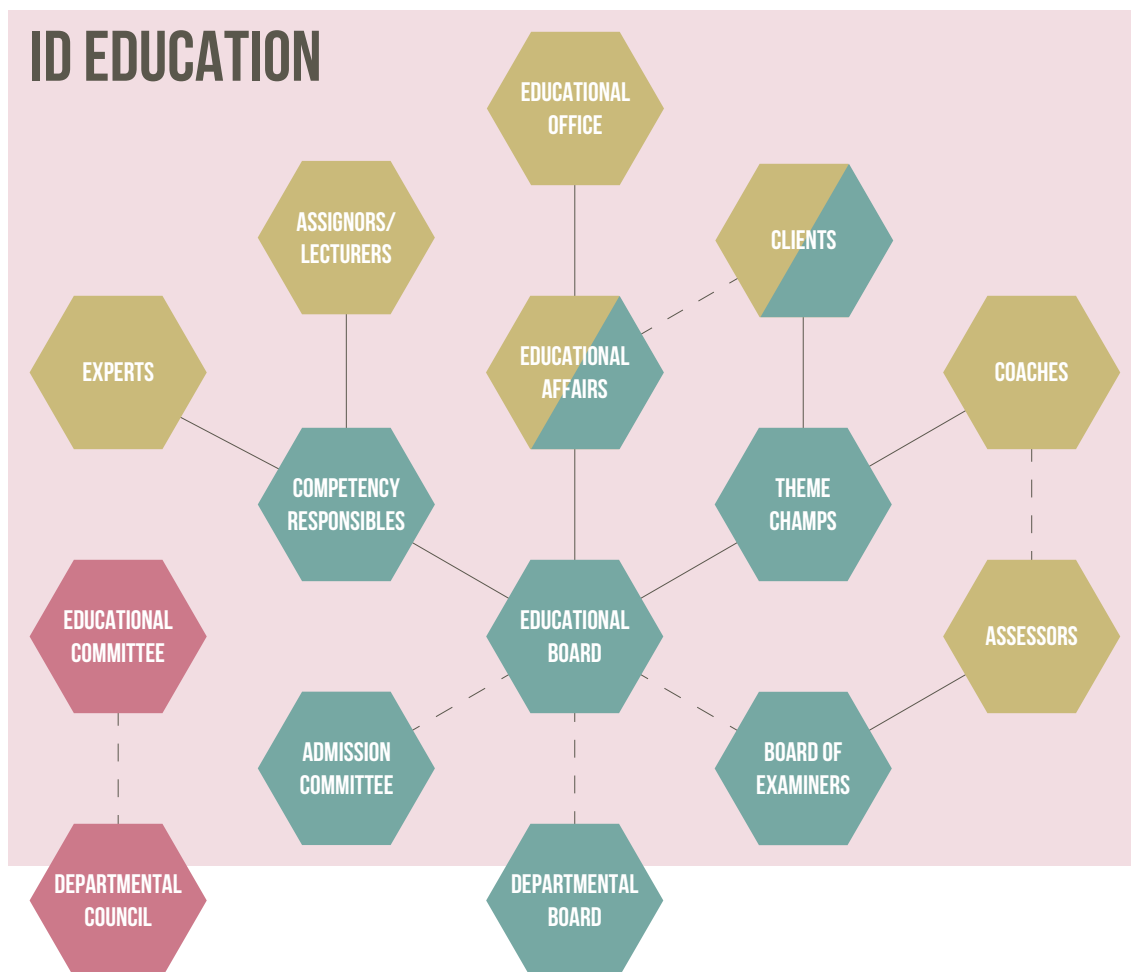


Figure 9. Overview of the organization of ID Education

9.2 EDUCATIONAL BODIES

COMPETENCY RESPONSIBLES

Full professors, with extensive expertise within a competency, are responsible for the core-competencies and the meta-competency Design and Research Processes. They keep track of the development of the competency within the context of Industrial Design, and ensure that learning activities and materials are up to date. Since a competency is broader than only the professors' chair, various experts support them in this process, for example by offering assignments and modules. The Directors of Education are responsible for the curricular learning activities related to the basic competency Self-directed and Continuous Learning and the meta-competencies Teamwork and Communication.

Competency responsibles

Ideas and Concepts - Prof. dr. Ron Wakkary
Integrating Technology - Prof. dr. ir. Loe Feijs
User Focus and Perspective - Prof. dr. ir. Berry Eggen
Socio-cultural Awareness - Prof. dr. Matthias Rauterberg
Designing Business Processes - Prof. dr. Lin Lin Chen
Form and Senses - Prof. dr. ir. Caroline Hummels
Descriptive and Mathematical Modeling - Prof. dr. ir. Jean Bernard Martens
Design and Research Processes - Prof. dr. Panos Markopoulos

THEME CHAMPS

A theme champ is the catalyst of the theme. The champ motivates and stimulates coaches and the team, makes connections to possible experts and clients (tries to arrange contracts) and stimulates the communication of the theme externally, although all other theme members will also perform these activities. The champ actively explores possibilities for connections to or new theme related modules and assignments. The champ develops the vision of the theme together with the theme coaches, and stimulates the team to develop the theme further. The theme champ is an expert in the area of the theme. The role of theme champ is a temporary one, which lasts between one and three years.

Theme champs

Light.time.space.move - Dr. ir. Harm van Essen
Next Nature - Ir. Menno Stoffelsen
Out of Control - Dr. Mathias Funk
Playful Interactions - Dr. ir. Tilde Bekker
Smart Health - Ir. Peter Peters
Wearable Senses - Marina Toeters MA

EDUCATIONAL OFFICE

The Educational Office (EO) is responsible for registration, project- and assessment planning. Furthermore, students can address the educational office for statements, diplomas as well as IDcompass and OASE issues. The secretariat of committees as well as scheduling and planning of assignments, workshops and modules falls under the tasks of the EO. For questions or requests relating to the above-mentioned topics you can send an email to the office. If you have problems with IDcompass or OASE you should drop by and bring your laptop.

Team

Ms Lenny Apon
Ms Sonja Joosten
Ms Rachel van de Pol
Ms Marjolein Ruijs
Ms Marjoleine Wouters

Contact id.education@tue.nl

Location HG 2.88

Opening hours Monday, Tuesday and Thursday from 10h00 to 11h00 and 13h00 to 15h00
Wednesday and Friday from 10h00 to 11h00

EDUCATIONAL AFFAIRS

The activities of Educational Affairs (EA) are directed towards the support, development and organization of the educational processes within the department. At EA, the internships and exchange programs are coordinated. Also, our communication employees are part of the EA team. The communication officers are responsible for all internal and external communication, including the website and the Public Relations (amongst others). At EA you can also find the study advisors. The study advisor provides support to students. Students can consult the study advisor for all kind of issues that affect their study progress, academic achievement or study planning. These issues may be related to personal circumstances (e.g. dyslexia, RSI, home situation), study choice, motivation or complaints. Students are also advised to consult the study advisor if they want to modify the composition of a block or if they want to submit an appeal against the assessment verdict from or treatment by the assessor. Requests for a modified block and appeals need to be submitted to our Board of Examiners.

Team Ms Annemarie van Malsen (secretariat)
Drs. Henri in 't Groen (internship and first year coordinator)
Drs. Yolanda Hübner (coordinator exchange and international students)
Drs. Pleunie van Daesdonk, Dr. Gielis van der Heijden and Drs. Yolanda Hübner (study advisors)
Ms Jeanette Schoumacher and Ms Lieke Thijssen (communication)
Educational Development and Quality Assurance - Dr. Migchiël van Diggelen

Contact Secretariat - secretariaat.education@tue.nl
Internship coordinator - industrialdesign@tue.nl
Coordinator exchange/international - idinteroffice@tue.nl
Study advisor - idstudyadvisorbachelor@tue.nl; idstudyadvisormaster@tue.nl
Communication - communication.id@tue.nl

Location HG 2.74

EDUCATIONAL COMMITTEE

The Educational Committee (EC) acts as an independent committee to give advice on all matters of the ID educational system. The quality of education is their main concern. The EC approves the program and gives advice on all key aspects of the education at ID. The EC gives advice when asked, and gives advice when not asked but when the EC feels that an advice is needed. The quality of the education originates from the smooth operation of our rich constructive learning environment including the competencies, the themes, the coaching, the feedback system and the assessment system. The EC meets every two weeks and represents the students (one for each year) and educational staff (one for each research group). Furthermore, the commissioner of education of the Lucid board is a permanent advisor of the EC.

Staff members	Prof. dr. ir. Loe Feijs (chair)
	Dr. ir. Harm van Essen
	Dr. ir. Joep Frens
	Ir. Peter Peters
	Ms Sonja Joosten (official secretary)
Contact	s.m.h.j.joosten@tue.nl

BOARD OF EXAMINERS

The task of the Board of Examiners (BoE) is to assure that the quality level of the examinations at our department is maintained. Also, the BoE needs to take decisions in handling daily matters regarding special circumstances or requests. It grants dispensations and permissions; grants or rejects appeals against assessment outcomes; decides on applicability of free Minors, and deals with miscellaneous student requests. It also handles fraud cases, and decides whether to grant cum laude, etc. Furthermore, it approves the ARP and it decides on education and examination authorities of all staff members.

Members	Prof. dr. ir. Jean Bernard Martens (chair)
	Dr. ir. Pierre Lévy
	Dr. Mathias Funk
	Dr. ir. Mark de Graaf
	Dr. Migchiel van Diggelen (advisor)
	Drs. Pleunie van Daesdonk (advisor)
	Dr. Gielis van der Heijden (advisor)
	Drs. Yolanda Hübner (advisor)
	Ms Sonja Joosten (official secretary)

Contact	idboe@tue.nl
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DEPARTMENTAL ADMISSION BOARD

The Departmental Admission Board (Dutch: FTC) takes decisions about the admission of students to the Master program. This concerns students from the Netherlands or abroad who have a Bachelor diploma from a university Bachelor program other than those listed in the “doorstroommatrix” (listing Bachelor programs giving unconditional admission) or students from within the Netherlands who have a degree at HBO level (professional school). The board meets once a month to discuss applications and comes to a decision about direct admission, admission to the pre-master or decline. In addition, the results for people who were admitted and enrolled in the program are monitored on a regular basis.

Members Dr. Jacques Terken (chair)
 Dr. ir. Frank Delbressine
 Dr. Lu Yuan
 Dr. ir. Stephan Wensveen
 Ms Sonja Joosten (official secretary)
 Drs. Pleunie van Daesdonk (advisor)

Contact id.ftc@tue.nl or 040-247 8337

DEPARTMENTAL COUNCIL

The Department Council is an elected, consultative group composed of five students and five staff members of this department. This council is required by law to approve major organizational and educational changes proposed by the Department Board and Director of Education. In comparison with the Educational Committee there is a stronger focus on organizational changes. Under normal circumstances the council meets twice a month, once to discuss ongoing matters and once with the Department Board and invited guests. During these meetings important matters in relation to the department are discussed and if necessary approved upon by the council. All members of the council are elected in annual elections in which all Industrial Design students and staff are allowed to vote and council members thereby represent the interests of the students and staff in this department by deciding on matters on their behalf. The council also advises the University Council on university-wide matters that affect this department.

Staff	Dr. ir. Bart Hengeveld (chair)
members	Dr. ir. Saskia Bakker
	Dr. Migchiël van Diggelen
	Drs. Mia Jelsma
	Dr. Erik van der Spek

Student	Doenja Oogjes
members	Jim Stolk
	Daan Weijers
	Pepijn Verburg (secretary)
	David Verweij

STUDY ASSOCIATION LUCID

Lucid is the study association for students of ID. They are a growing and active community and organize various educational activities such as excursions, workshops, lectures and study trips abroad as well as social activities for students and employees. Through these activities they try to form a bridge between students and companies or organizations. Furthermore, they run a bookstore selling a variety of books recommended by the teaching staff or that Lucid members find inspiring for the students' competency development. As representatives of the students, they are actively involved in collaboration and discussions with the Director of Education. Lucid is represented in both the Department Council and the Educational Committee through a member of the board.

Contact lucid@tue.nl
Location HG 2.96

EDUCATION AND STUDENT SERVICE CENTER

The central Education and Student Service Centre (STU) also provides student support: training activities on study skills, consultation with psychologist, or testing/advice if a student doubts about his study choice (is ID the right place for me). Students can go to STU directly; in other cases the study advisor or coach can refer students to STU.

Contact stu@tue.nl
Location MetaForum (MF 1.214)

9.3 THEMES

Themes are an important integrating mechanism within our Department. Themes are used to enhance internal and external links, and to stimulate integration and community building. Themes link the expertise, motivation, identity and passion of students and coaches. Themes emphasize competency-centered learning for students as well as staff, especially identity building and expertise building, and address the need for self-directed and continuous learning, which will differ for all individuals. Themes aim at strengthening the link between research and education, the different paradigms, the four capacity groups, Bachelor and Master, including between the different years, as well as the link between the department and university, industry and commerce. Themes create links between projects and other learning activities such as assignments and modules. They develop over time including the development of theme-exceeding platforms, knowledge valorization, visibility and communication, and have a strong connection to the department's labs.

As an Industrial Design student you have your own (project) workspace in your theme. We expect you to keep your space as clean as to be visited by external guests at all time. The aim is to work towards an atmosphere comparable to that of a design studio. Such a space supports creativity and work, whilst at the same time representing the values and qualities of the institution. We expect you to be a junior employee and be present at the department as in a regular work relationship. We would like you to use your work space as a creative space in which a design process takes place, in which the steps of your process are present as sketches, models, photographs, etc. The theme (champ) will inform you of where you can sit.

LIGHT.TIME.SPACE.MOVE

Creating experiences

The light.time.space.move (LTSM) theme holistically considers interactive systems and installations aimed at adding value and creating experiences for users. Designs are developed through an understanding of context, social opportunities, empathy, and human needs. Our projects recognize the opportunities of light, space, human body, and dynamics. That is why we bear our proud name light.time.space.move.

We approach this challenge from various angles. For example projects start off by investigating the opportunities of modern connected lighting systems and interaction

possibilities of both indoor and in public spaces. Other projects aim for an engaging experience with interactive lighting installations, for example by investigating the qualities of light or the expressive capabilities of the human body. We also start projects from societal challenges and a thorough understanding of the context and routines in which these are relevant, such as education and everyday remembering, but also in service design.

Our process is highly explorative and physical: moving, creating, making, testing, and iterating to gradually find subtle solutions with the largest effect. Our team of coaches represents a wide variety of knowledge and skills that regularly organize workshops and sessions, which support competency development. The space integrates workplaces of students with workplaces of fulltime ID research staff. This is a unique, inspiring, and fruitful working environment. The theme hosts a state-of-the-art infrastructure. Lighting equipment is a basic necessity for our theme: we have a considerable supply of lighting and control equipment for theme projects, accessible for staff and students. Demo and development spaces are available.

Team Jacob Alkema, Jorge Alves Lino, Jan-Derk Bakker, Saskia Bakker, Roos van Berkel, Cindy van den Bremen, Kirsten van Dam, Harm van Essen (theme champ), Rombout Frieling, Har Hollands, Jean-Bernard Martens, Karin Niemantsverdriet, Elke den Ouden, Frans Parthesius, Jan Rouvroye, Ewelina Schraven, Marion Tränkle, Liesbeth van de Water (theme support) and Rob Zimmermann.

Location Yellow

NEXT NATURE

Wild and unpredictable

The essence of the Next Nature (NN) Lab vision is the notion that people, with their culture and technology cause the rising of a next nature, which can be kindly disposed to us, but also be wild and unpredictable - as ever. The extent with which new technologies are intervening in the constructive, material, aesthetic and social practice of everyday life can hardly be underestimated. Today design starts at the level of bits, atoms, neurons and genes. We seem to be living in a time in which the 'made' and the 'born' are fusing. Virtual realities, nano- and biotechnology are increasingly influencing our aesthetics and providing new construction kits for our reality.

Information and communication design enable highly complex connections and giving rise to virtual social systems. Products of culture, which we used to be in control of, tend to

outgrow us and become autonomous. Therefore, all projects that are being developed in Next Nature Lab address these issues actively, supported by a broad theoretical framework. Next Nature Lab aims to rewire research design of today and tomorrow and embraces complexity as the ultimate way to perceive biosphere and technosphere as one and the same.

Team Emilia Barakova, Susana Cámara Leret, Merel Daniel (theme support) Berry Eggen, Arne Hendriks, Ward van der Houwen, Koert van Mensvoort, Menno Stoffelsen (theme champ), Jacques Terken, Mike Thompson and Ronald van Tienhoven.

Location Purple

OUT OF CONTROL

Physical and digital worlds

Out of Control (OoC) is firstly about systems design in a world that is no longer in control, and actually never has been. Out of Control is secondly about dealing with a complex boundary between physical and digital worlds in bottom-up and self-organizing ways. How to design for dynamically changing environments and contexts? How to deal with changing requirements, tastes and trends when essentially everybody is connected and markets are supercharged with demands? Out of Control is finally also about designing for challenges that arise in the new public domain, both urban and eco, both crafty and post-digital. These challenges are inherently complex and ask for a more dynamic approach with strong elements of empowering citizens and inspiring bottom-up action.

Out of Control is a place where you can design with realistic constraints of system behavior and for real-life situations and settings. We will show you! We are really excited about Systems Design, join us to do it for real: we will provide technology, experts, cross-coaching, and lots of fun.

Team Ad van Berlo, Sander Bogers, Izabella Bolož, Aarnout Brombacher, Sjors Eerens, Joep Frens, Mathias Funk (theme champ), Bart Hengeveld, Jun Hu, Job Huberts (theme support), Caroline Hummels, Johanna Kint, Maurits de Koning, Carl Megens, Sander Mulder, Matthias Rauterberg, Max Sakovich (theme support), Jeroen Thoolen and Vera Winthagen.

Location Green

PLAYFUL INTERACTIONS

Joyful path

All people are playful. We doodle during a boring meeting, fiddle with a pen or a loose price of thread, and when we can make a little game out of a boring task it becomes a fun task. The godfather of all thinking about how humans are playful beings is Johan Huizinga in his world-famous book *Homo Ludens*. Play is about human behavior including properties such as fun, being voluntary, a sense of escape and freedom and not necessarily having purpose.

Designing for playfulness also puts a focus on having a joyful path in reaching a goal, and not only on reaching a goal. Maybe the path is as important as the outcome. Projects combine a hands-on user centered design approach with theory-based design research to explore design solutions. Relevant theories include play, child development, persuasion and theories about emergent behavior. In a special track we also offer the opportunity to work on high fidelity concept development.

Student projects in the Playful Interactions (PI) theme are well connected to research projects conducted at the department. Focus areas within the theme are open-ended play. How can we design for play without designing the play activity itself? In open-ended play, we want to facilitate the users to define and keep transforming their play activities. This can be games with goals and rules, but also free play. Furthermore, we address playful and persuasive design. How can games and game principles be used to entice people to have a playful approach to an activity and then be transformed through the playful process (possibly a game)? How can we tap in to intrinsic motivation of people through playful persuasion? And finally, projects relate to design for playful expression in contexts such as theatre, music and pretend play.

Team Pelin Atasoy, Ellis Barthelomeus, Tilde Bekker (theme champ), Iris Douma, Rhys Duindam, Guido van Gageldonk, Fiona van de Geijn (theme support), Mark de Graaf, Martijn Kors, Bert Lonsain, Hans Leeuw, Sander Lucas, Pepijn Rijnbout, Ben Schouten, Erik van der Spek, Rob Tieben, Frans Taminiau, Linda de Valk, Xinwei Wang, Lu Yuan and Flip Ziedses Des Plantes.

Location Orange

SMART HEALTH

Medical needs The theme Smart Health (SH) focuses on creating innovative designs to enable people with medical needs to achieve better recovery results, to help medical staff to achieve better training, and to empower people, resulting in better and more comfortable care. In collaboration with professional partners in the fields of health care such as Máxima Medisch Centrum, Philips research, Catherina Ziekenhuis, Adelante Zorggroep, Kempenhaeghe, researchers and stakeholders, the students perform projects where quality of life and the user is one of the essential factors driving the design process and resulting designs. In any SH project a focus is advised on a limited set of competencies and although some projects are better suited for certain competency development than others, in any project all competencies can be developed. Projects are defined over a wide range of subjects, but always related to health issues and smart ways to improve becoming or staying healthy.

Team Wei Chen, Frank Delbressine, Loe Feijs, Chris Heger, Jan Roelof Kortstra, Panos Markopoulos, Sidarto Bambang Oetomo, Loes Peters (theme support), Peter Peters (theme champ) and Jeroen Vinken.

Location Purple

WEARABLE SENSES

Body as central position Within Wearable Senses (WS) we combine research and education in interactive products, systems and related services for societal transformation and wellbeing that are worn on or near the body. The person and the body have a central position in each project, from which we tend towards topics such as measuring bodily parameters, behavior change, craftsmanship, lifestyle, intimate interaction, smart textiles and a valuable integration in the life of the person. We want to create a community where practitioners from research, education and industry help and challenge each other on a continuous basis. Where students can profit of a vibrating and inspiring platform for their work. Therefore, we advocate a hands-on explorative and multidisciplinary approach, which is supported by the availability of materials and machines in our Texlab and strong network of partners in research, education and industry.

Team Rene Ahn, Liesbeth den Besten, Martijn ten Bhömer, Miguel Bruns, Pauline van Dongen, Laura Duncker (theme support), Xiaojuan Feng, Brandon Yeup Hur, Kritsi Kuusk, Matthijs Kwak, Pierre Levy, Marina Toeters (theme champ), Oscar Tomico, Maarten Versteeg, Simone de Waart, Stephan Wensveen and Ralph Zoontjes.

Location Blue

9.4 RESEARCH GROUPS

The department consists of four capacity groups, which are responsible for the research within the department. Senior staff within the groups (assistant professors, associate professors and full professors) dedicates approximately half of their time to education. The research focus of the four groups and their full professors are described below.

BUSINESS PROCESS DESIGN

The Business Process Design (BPD) group investigates designing and analyzing business processes for the design of intelligent systems, products and related services. In this context intelligent systems are defined as systems that consist of a set of products and/or services that have the ability to adapt their behavior based on the situation, context of use and users' needs. In particular the group focuses on those systems that are of benefit to individuals, societies and different cultures worldwide, as well as on the underlying problems and opportunities.

Prof. dr. Lin Lin Chen, Design and Realization of Intelligent Systems

Prof. dr. ir. Aarnout Brombacher, Design Theory and Process Design

Prof. dr. ir. Kees Dorst, Design Skills for Interaction

Prof. Ad van Berlo, Entrepreneurial Design of Intelligent Systems

DESIGNED INTELLIGENCE

The Designed Intelligence (DI) group aims at designing the quality inside(-out) of intelligent systems, platforms and tools. It focuses on adaptive systems, autonomous systems and aware environments. In addition to the curricular learning activities, the DI group offers the students infrastructure and support in both dedicated educational facilities, such as e-atelier, and research laboratories, such as the Cultural Computing Lab, the Robotics Lab and the Simulation Lab.

Prof. dr. Matthias Rauterberg, Human Communication Technology

Prof. dr. ir. Loe Feijs, Industrial Design of Embedded Systems

Prof. dr. Sidarto Bambang Oetomo, Pediatric Applications of Ambient Intelligence

DESIGNING QUALITY IN INTERACTION

The Designing Quality in Interaction (DQI) group focuses on how to design for highly interactive intelligent systems. DQI is shifting its research and teaching context from Human Product Interaction, which mainly focuses on opening up the functionality of products, towards a broader approach aimed at enhancing interpersonal and societal values, including those in the personal, aesthetic and socio-cultural domains, through the application of highly interactive intelligent systems.

Prof. dr. ir. Caroline Hummels, Design Theory for Intelligent Systems

Prof. dr. Ron Wakkary, Design for Everyday Life

Prof. dr. Patrizia Marti, Culture based Design

USER-CENTERED ENGINEERING

The User-centered Engineering (UCE) group investigates how to design, develop and evaluate innovative applications and concomitant interaction solutions in the area of Human-System Interaction. The research is focused on understanding the human aspects of the interaction of people with intelligent systems. The group's primary objective is to create added value for the end users of intelligent systems by designing systems that match people's needs, abilities and desires.

Prof. dr. ir. Berry Eggen, User Centered Engineering

Prof. dr. Panos Markopoulos, Design of Awareness Systems and Ambient Experience

Prof. dr. ir. Jean Bernard Martens, Visual Interaction

Prof. dr. Ben Schouten, Design of Intelligent Systems of Playful Interactions





CODE OF CONDUCT

The department aims to create an educational environment in which students have their own space to work and learn. In our vision we perceive and approach our students as junior employees because we want to make our learning environment as authentic as possible. Therefore we have a working environment in which you have a variety of rights, but also obligations. In this Code of Conduct we try to explain this idea to enhance creativity, inspiration needs to be shared. An inspiring atmosphere is neither a big mess nor empty, stiff or strictly organized. It is dynamic, flexible and provides a lot of freedom. This freedom comes with certain responsibilities.

10.1 SPACES

Students, researchers and clients each have their own needs and desires for the spaces that they work in. This means that the spaces provide areas suitable for working on projects, giving presentations, inviting clients, and a quiet and concentrated workspace for both staff and students. The aim is to work towards an atmosphere comparable to that of a design studio. Such a space supports creativity and work, whilst at the same time representing the values and qualities of the institution. The atmosphere can be described as creative, supportive for information exchange and mutually inspirational. It should be representative for outsiders and work representing ongoing projects should be visible in an aesthetically pleasing value. In addition to common professional behavior such as keeping appointments, being on time, treating one another with respect asks for a responsible approach towards the working area to reach these goals.

RULES

- ▶ You have a workspace for a semester. When you take up this space at the beginning of the semester, you want it to be tidy. It is your responsibility to leave your space tidy at the end of the semester, so others receive a tidy space as well.
- ▶ In case of incidental use of a workspace, such as during the assignment days, you have to leave the area in orderly fashion.
- ▶ Be thoughtful about the sound level you produce. Always take other members of the space into account and do not unnecessarily disturb others.
- ▶ Respect the provided spaces and furniture, do not break, paint, scratch or disassemble what is not your property.
- ▶ It is not allowed to move furniture, especially between spaces, without permission of the responsible persons.
- ▶ The use of electrical equipment such as water boilers, toast-irons and coffee machine is not allowed in the spaces.
- ▶ A work environment is neither a canteen nor a kitchen. Lunch is not to be taken from the canteen to the spaces. The IDcafé has been created to meet this need.

TIDY AND CLEAN DESK POLICY

At Industrial Design we have a 'tidy desk policy' for all students. Because we are all employees and ID needs to be a professional working space, we need a tidy desk policy for all spaces. We ask you, as junior employees of our department, to take responsibility in making your space representable. We would like you to use your workspace as a creative space in which a design process takes place, where the steps of your process are present including sketches, models, photographs, etc. In case spaces, such as labs, are used more flexibly, a clean desk policy is required. Users of such spaces are expected to tidy up all their belongings after they have finished working at a workspace.

We have clustered the storage space, which you can use to store your belongings, materials, models, etc. If you experience any problems e.g. with respect to storing your belongings or layout of furniture, please contact the service desk. Besides this tidy desk policy, we expect all students to use their workspace as an employee, and not as an additional space of the students' home. External people or clients often come in, so the environment we work in should communicate a professional working atmosphere



Rob van Kasteren

Expertise
Shape and Geometry
Design and Material Production (knitting)
Social Cultural Awareness

Keywords
Interdisciplinary Collaboration
Knowledge transfer education
Changing behavior
building and making

Goals
Approach more people
Share education more widely
Share resources locally
High end prototype

Weaknesses
Business plan
Working too much (not sleeping, drinking and
smoking)



Arlene Peltierman

Expertise
Knitting
Textile design
Pattern making
Digital fabrication

Keywords
Collaboration
Interdisciplinary
Knowledge transfer education
Building and making

Goals
Approach more people
Share education more widely
Share resources locally
High end prototype

Weaknesses
Business plan
Working too much (not sleeping, drinking and
smoking)



Leonie Tenthof van Noorden

Expertise
Math and Geometry
Form and Form
Texturing and Construction
Descriptive and Mathematical Modeling

Keywords
Pattern
Materials
Experimenting
Exploring

Goals
Academic foundation of the project
Export generation designing
Working architecture and fashion
3 pieces of clothing according to method

Weaknesses
Work export specifically
Export in different media
Learn enough in 1 day, still need during
Working too intensely

IDCAFÉ

This is an area to have your lunch together, have a chat and share a laugh. It is the only area within the ID department where you are allowed to take your lunch. IDcafé is created and sustained by our community, which means that everybody using the space should also partake in keeping it a pleasant area. When you leave the café, put your tray, plate and cutlery in the designated spaces and use the red bins for trash. It is not allowed to move these bins!

COOPERATION

As a junior employee you sometimes have to fulfill different tasks that are indirectly linked to your learning activities. You can think of cleaning, but also making an exhibition, making posters or bundling information for your Theme. We strive for a situation like a design studio in which you, as a designer, are involved in these activities as well. This way you learn from these activities too. We try to have everybody involved in equal amounts. Therefore, coordinators of the different Spaces may ask support for specific activities that you will do during that semester within that Space. All students will have to pitch in; so be quick so you still can make your own choice in what you will do!

10.2 PROFESSIONAL CONDUCT

WORKING FULL-TIME

For students we have created professional workspaces, geared to doing a variety of activities. We would like students to fully benefit from these facilities, which implies being at the department for all work-related activities. Being here full-time gives students the opportunity to share experiences and knowledge with other employees, which enables expertise and community building at the individual and departmental level. Working full-time means making 40 hours a week, eight hours per day on average (and of course more hours when either the task or your own development requires this).

Most educational activities are planned between 8h45 to 17h30. However, the TU/e knows the system of flexible start and ending when it comes to working hours. We expect that everybody is present for 8 hours per day, and starts no later than 10h and ends not earlier than 16h00. Given these flexible working hours it is essential that you let your colleagues know when you will be in and when you will leave or if you have work-related obligations outside the department (e.g. visiting a lecture, lab or client).

ILLNESS OR ABSENCE

If you become ill or cannot be present for another reason, you should notify all persons with whom you collaborate, so fellow students, coach, assignor, lecturer or expert. It is crucial that you do so in time. After you have recovered you get in touch with these persons so you can make arrangements to get back on track as soon as possible. Your colleagues, both senior and junior, will help you with this. If your illness or absence takes more than a few days, it is likely to affect your academic progress and possibly cause a study delay. In this case you should contact your coach and study advisor right away. If you are sick during a Bachelor College exam or course, you should address in the way subscribed on the TU/e centrally website. In this case also inform your study advisor immediately.

TIME IS PRECIOUS

Being a professional means that you do not waste your own and somebody else's time. Try being productive in the time that you are here and stick to deadlines. If you have an appointment with either fellow students or senior employees, prepare well for the meeting. Determine in advance what you want to get out of this meeting, in what way you would like to make use of the other employee's expertise, and what this requires in terms of preparation (retrieving information, phrasing specific questions, etc.). If somehow you are prevented from attending a scheduled meeting or being in time for that meeting, you contact everyone involved, in time.

10.3 SAFETY RULES

- ▶ Always ensure personal safety as well as safety of others
- ▶ If you have not worked with tools before request an instruction
- ▶ It is not allowed to bring and use personal electric tools to the department
- ▶ Use protection if needed (goggles, earplugs, gloves, mask etc.)
- ▶ It is not allowed to develop prototypes involving Voltages higher than 35V
- ▶ If the prototype is used in evaluations involving animals or persons it should be battery-powered unless approved by a senior expert from the department
- ▶ If you witness an unsafe situation inform the service desk
- ▶ In case of doubt it is mandatory to ask support from senior experts from the department and comply with their decision

Contact g.j.a.v.d.boomen@tue.nl, j.l.rouvroye@tue.nl

10.4 SCIENTIFIC INTEGRITY

Everyone involved in education and research at TU/e bears personal responsibility for observing and maintaining scientific integrity (<https://www.tue.nl/en/research/scientific-integrity>). At TU/e we require strict compliance with the overall principles of professional scientific conduct in all cases. The Netherlands Code of Conduct for Scientific Practice (VSNU 2004, updated in 2012) provides details of these principles. TU/e endorses these principles, which apply as guidelines for the university (see article 1.7 WHW Higher Education and Scientific Research Act). One of the ways to verify scientific integrity is the right to complain in cases of (suspected) infringements. The Executive Board has defined the complaints procedure scientific integrity TU/e for the practical handling of this right to complain.

10.5 FRAUD, PLAGIARISM, REFERENCING AND CITING

Fraud comprises in any case any intentional action by a student, or failure to act by a student, which makes it partially or completely impossible for the assessor to determine the individual student's development of the overall competence of designing and vision on designing. Fraud with respect to a curricular learning activity or assessment includes: Submitting work under one's own name that has been done by others or copied from others wholly or partially: this includes copying word-for-word or paraphrasing the work of others without indicating that the words or underlying ideas belong to someone else (plagiarism); actively (assisting in) offering or assisting in offering one's own work to others, who might then submit it as their own work; improper cooperation, that is two or more students jointly doing (part of) a curricular learning activity of which it is known in advance that individual work is required.

If an assessor, assignor, lecturer or coach should discover or suspect fraud in relation to an assessment or a curricular learning activity, either before, during or immediately after the assessment or curricular learning activity, the assessor, assignor lecturer or coach, respectively, will record this in writing as soon as possible and submit this to the Board of Examiners. If requested, the student in question should present any evidence required. Refusal to do so will be mentioned in the report.

The student in question will be given the opportunity to add written comments to the report written by the assessor, assignor, lecturer or coach, respectively. The report will be sent to the Board of Examiners as soon as possible, if applicable, together with the student's written comments. It is then up to the Board of Examiners to take any measures it considers appropriate in the case in question, which in the most extreme case could lead to a proposal by the Executive Board to terminate the student's enrolment in the program indefinitely.

REFERENCING AND CITING

To prevent fraud and plagiarism, you need to use proper referencing and citing of the sources of information you use in any academic writing or report. You should cite the source in your text whenever you quote, paraphrase, summarize, or copy someone else's ideas as part of your work, and by including the reference in the list of references or bibliography at the end of your assignment. Citing and referencing is not just done to avoid plagiarism. When you cite sources, you demonstrate that you have consulted appropriate information sources and that you are familiar with the existing knowledge and ideas. Citing is pointing to evidence, authority, or proof. In addition, you enable the readers of your work to consult the sources you used and to verify your data. We recommend using Version 6 of the American Psychological Association (APA) style. However, other styles such as the Association for Computing Machinery (ACM) style are also accepted as long as they are used consistently.





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APPENDIX 1

EXPERTISE

Capacity Group	Name	IC	IT	UFP	SCA	DBP	FS	DMM	DRP
BPD	A.A.J. van Berlo	+				+			
BPD	A.C. Brombacher		+		+	+		+	
BPD	L. Chen	+		+		+			
BPD	C.H. Dorst					+			+
BPD	Y. Lu			+	+	+		+	+
BPD	C.J.P.G. Megens	+	+		+	+	+		+
DI	E. Barakova		+					+	
DI	W. Chen		+	+					+
DI	FL.M. Delbressine		+					+	+
DI	L.M.G. Feijs		+				+	+	
DI	M. Funk	+	+					+	
DI	J. Hu		+	+				+	+
DI	S. Bambang Oetomo	+		+			+		
DI	P.J.F. Peters		+					+	+
DI	G.W.M. Rauterberg			+	+			+	+
DI	E.D. van der Spek	+		+		+	+		+
DQI	M. Bruns	+			+		+		+
DQI	J.W. Frens	+	+				+		+
DQI	B.J. Hengeveld	+			+		+		+
DQI	E.B. van der Houwen	+	+				+		+
DQI	J.M.L. Kint				+		+		+
DQI	C.C.M. Hummels	+		+	+		+		+
DQI	P.D. Lévy	+		+	+		+		+
DQI	P. Marti	+		+	+		+		+
DQI	O. Tomico	+		+					+
DQI	S.A.G. Wensveen	+		+			+		+
UCE	P. Atasoy			+			+		+
UCE	S. Bakker			+			+		+
UCE	M.M. Bekker	+		+					+
UCE	J.H. Eggen			+			+		+
UCE	H.A. van Essen	+	+	+					+
UCE	M.J. de Graaf			+				+	+
UCE	P. Markopoulos		+	+					+
UCE	J.B.O.S. Martens	+	+	+				+	+
UCE	K.M. van Mensvoort	+	+		+		+		
UCE	B.A.M. Schouten	+		+	+		+		+
UCE	J.M.B. Terken	+		+					+
UCE	R. Tieben		+	+					+

	Name	IC	IT	UFP	SCA	DBP	FS	DMM	DRP
EDU	R.M.C. Ahn		+					+	
EDU	S.I. Lucas	+		+			+		+
EDU	J.L. Rouvroye		+					+	
EDU	S.G. de Waart	+			+		+		+
Freelancer	J.C. Alkema	+	+				+		
Freelancer	J.A. Alves Lino	+			+		+		
Freelancer	J.D. Bakker	+	+	+					+
Freelancer	E.J.C. Bartholomeus			+			+		
Freelancer	R.E.A. van Berkel	+					+		+
Freelancer	I.J. Boloz	+			+		+		+
Freelancer	S. Camara Leret	+		+	+		+		+
Freelancer	K.C.E. van Dam	+		+		+	+		+
Freelancer	I.D. Douma	+	+	+	+	+	+		+
Freelancer	G. van Gageldonk	+	+			+			
Freelancer	C.J.J. Heger	+		+	+	+	+		+
Freelancer	M.S.A. de Koning	+	+				+		+
Freelancer	J.R.A. Kortstra	+		+			+		+
Freelancer	H.J. Leeuw	+	+		+		+		
Freelancer	J.A.H. Lonsain	+	+	+	+	+	+		+
Freelancer	S.S. Mulder	+			+	+			+
Freelancer	E.J. Parthesius	+	+	+	+		+		+
Freelancer	F. Taminiau	+		+		+	+		+
Freelancer	M.A.H. Stoffelsen	+			+	+	+		+
Freelancer	M.J. Toeters	+	+				+		+
Freelancer	M.J. Thompson	+			+		+		+
Freelancer	R. Van Tienhoven	+	+		+		+		+
Freelancer	J.P.H. Thoolen					+			+
Freelancer	M.F. Versteeg	+			+				
Freelancer	J.A.J.M. Vinken	+		+			+		+
Freelancer	F. Ziedses Des Plantes	+					+		+
Freelancer	R. Zimmermann		+		+		+		



APPENDIX 2

IMPORTANT DEADLINES

Important Dates 2014 - 2015

SEMESTER 1

Date	Event	Who
18 - 22 Aug 2014	Intro program	All new students
25 - 28 Aug 2014	Re-assessment	Re-assessors
27 - 29 Aug 2014	Introduction program ID new students	All new students
28 Aug 2014	Plenary Re-assessment Meeting	Re-assessors
29 Aug 2014	Kick off semester meeting	All students / coaches
1 Sep - 16 Oct 2014	Introduction to competence centered learning (DG000)	B1-BC
12 Sep 2014	Module feedback day	Lecturers / students
12 Sep 2014	Information session assessment / coaching	All coaches
19 Sep 2014	Module feedback day	Lecturers / students
23 Sep 2014	Approval FMP brief	M22 retry only
13 -16 Oct 2014	Assignment feedback day	Assignors / students
15+16 Oct 2014	Approval FMP brief	M21 coach / student
17 Oct 2014	Mid-term Demo Day	All students / coaches
20 - 24 Oct 2014	Dutch Design Week / ID'14	
27 - 31 Oct 2014	Reflection and Self-directed Learning	All students
27 Oct - 8 Nov 2014**)	Bachelor College exams Q1	BC students
31 Oct 2014	Master information session	B32
14 Nov 2014	Module feedback day	Lecturers / students
21 Nov 2014	Module feedback day	Lecturers / students
5 Dec 2014	Update approval FMP brief	M21 coach / student
12 Dec 2014	Information session assessment for students	All students
16+19 Dec 2014	Final Demo Day	All students / coaches
5-8 Jan 2015	Assignment feedback day	Assignors / students
8 Jan 2015	Information session assessment	(assistant) chairs
9 Jan 2015 (AM)	Project feedback day BC	BC coaches / students
9 Jan 2015 (PM)	Project market start registration projects / themes	All students /coaches
16 Jan 2015	Project feedback day	B2-B3, M1-M22 coaches / students
12 - 16 Jan 2015	Reflection and preparation assessment	BC students
19 - 23 Jan 2015	Reflection and preparation assessment	B2, B3, M1-M22
19 - 31 Jan 2015**)	Bachelor College exams Q2	BC students
20 - 22 Jan 2015	Assessor meets student	BC assessors / students
23 Jan 2015	Plenary assessor meeting BC	BC assessors
26 - 28 Jan 2015	Assessor meets student	B2-M21 assessors / students
27 - 28 Jan 2015	M22 assessment presentation	M22 assessors / students
28 Jan 2015	Clean up day theme space	All students / coaches
29 Jan 2015	Plenary assessor meeting	B2, B3, M1-M22 assessors

Important Deadlines 2014 - 2015

SEMESTER 1

Date	Event	Who
24 Aug 2014*)	Deadline registration Bachelor College courses Q1 12PM	BC students
16 Sep 2014	Deadline FMP brief 5PM	M22 retry only
19 Sep 2014	Deadline deliverables modules 5PM	M1, M21
26 Sep 2014	Deadline personal development plan (PDP) including study contract 5PM	All students
26 Sep 2014	Deadline modules feedback 5PM	Lecturers
9 Oct 2014	Deadline deliverables assignments 5PM	All bachelor students except B1-BC
9 Oct 2014	Deadline FMP brief 5PM	M21
16 Oct 2014	Deadline assignments feedback 5PM	Assignors
19 Oct 2014*)	Deadline registration Bachelor College courses Q2 12PM	BC students
19 Oct 2014	Deadline registration assignments Q2 12PM	B1-BC
7 Nov 2014	Deadline structure & reflections showcase 5PM	B2-BC, B3-BC, B2 - M2
7 Nov 2014	Deadline structure & reflections showcase / DG000 deliverables 5PM	B1-BC
13 Nov 2014	Deadline assignment feedback DG000 5PM	B1 coaches
21 Nov 2014	Deadline deliverables modules 5PM	M1, M21
28 Nov 2014	Deadline modules feedback 5PM	Lecturers
12 Dec 2014	Deadline draft report 5PM	M22 students
18 Dec 2014	Deadline deliverables assignments 5PM	All bachelor students
8 Jan 2015	Deadline assignments feedback 5PM	Assignors
8 Jan 2015	Deadline report 5PM	BC students
11 Jan 2015*)	Deadline registration Bachelor College courses Q3 12PM	BC students
12 Jan 2015	Deadline feedback project + competency coaching 5PM	BC coaches
15 Jan 2015	Deadline showcase (including PDP) 5PM	BC students
15 Jan 2015	Deadline report 5PM	B2, B3, M1-M22
19 Jan 2015	Deadline feedback project + competency coaching 5PM	B2, B3, M1-M22 coaches
22 Jan 2015	Deadline showcase (including PDP) 5PM	B2, B3, M1-M22
26 Jan 2015	Deadline registration projects/themes 11AM	All students
27 Jan 2015	Deadline assessment feedback 5PM	BC assessors
3 Feb 2015	Deadline assessment feedback 5PM	B3, M1-M2 assessors

Important Dates 2014 - 2015

SEMESTER 2

Date	Event	Who
3 Feb 2015	Introduction program ID new students	New students M1
3 Feb 2015	Registration assignments	B3 students
4 Feb 2015	Registration assignments	B2 students
5 Feb 2015	Registration assignments	B1 students
5 Feb 2015	Registration modules	M1-M21
6 Feb 2015	Kick off semester meeting	All students / coaches
13-18 Feb 2015	Re-assessment	Re-assessors
19 Feb 2015	Plenary Re-assessment Meeting	Re-assessors
27 Feb 2015	Module feedback day	Lecturers / students
6 Mar 2015	Module feedback day	Lecturers / students
6 Mar 2015	Information session assessment / coaching	Coaches
10 Mar 2015	Approval FMP brief	M22 retry only
30 Mar - 2 Apr 2015	Assignment feedback day	Assignors / students
30 Mar + 1 Apr 2015	Approval FMP brief	M21 coach / student
31 Mar 2015	Mid-term Demo Day	All students / coaches
7 - 18 Apr 2015 **)	Bachelor College exams Q3	BC students
7 - 17 Apr 2015	Reflection and Self-directed Learning	All students
10 Apr 2015	Master information session	B32
1 May 2015	Module feedback day	Lecturers / students
13 May 2015	Update approval FMP brief	M21 coach / student
22 May 2015	Module feedback day	Lecturers / students
29 May 2015	Information session assessment	All students
3 + 5 Jun 2015	Final Demo Day	All students / coaches
10+11 Jun 2015	Assignment feedback day	Assignors / students
11 Jun 2015	Information session assessment	All (assistant) chairs
12 Jun 2015 (AM)	Project feedback day BC	BC coaches / students
12 Jun 2015 (PM)	Project market start registration projects / themes	All students / coaches
19 Jun 2015	Project feedback day	B32, M1-M22 coaches / students
15 - 19 Jun 2015	Reflection and preparation assessment	BC students
22 - 26 Jun 2015	Reflection and preparation assessment	B3, M1-M22
22 Jun - 4 Jul 2015 **)	Bachelor College exams Q4	BC students
23 - 25 Jun 2015	Assessor meets student	BC students / assessors
26 Jun 2015	Plenary assessor meeting BC	BC assessors
29 Jun - 1 Jul 2015	Assessor meets student	B32, M1-M21 students / assessors
30 Jun - 1 Jul 2015	M22 assessment presentation	M22 assessors / students
1 Jul 2015	Clean up day theme space	All students / coaches
2 Jul 2015	Plenary assessor meeting	B3, M1-M22 assessors
7 Jul 2015	Registration assignments	B3 students
8 Jul 2015	Registration assignments	B2 students

Important Deadlines 2014 - 2015

SEMESTER 2

Date	Event	Who
3 Mar 2015	Deadline FMP brief 5PM	M22 retry only
6 Mar 2015	Deadline deliverables modules 5PM	M1-M21 students
13 Mar 2015	Deadline personal development plan (PDP) including study contract 5PM	All students
13 Mar 2015	Deadline modules feedback	Lecturers
26 Mar 2015	Deadline deliverables assignments	All bachelor students
26 Mar 2015	Deadline FMP brief 5PM	M21
29 Mar 2015*)	Deadline registration Bachelor College courses Q4 12PM	BC students
2 Apr 2015	Deadline assignment feedback 5PM	Assignors
17 Apr 2015	Deadline structure & reflections showcase 5PM	All students
22 May 2015	Deadline deliverables modules 5PM	M1-M21
27 May or 4 June 2015	Deadline deliverables assignments 5PM	All bachelor students
29 May 2015	Deadline draft report 5PM	M22 students
1 Jun 2015	Deadline modules feedback 5PM	Lecturers
11 Jun 2015	Deadline assignment feedback 5PM	Assignors
11 Jun 2015	Deadline report 5PM	BC students
15 Jun 2015	Deadline feedback project + competency coaching 5PM	BC coaches
18 Jun 2015	Deadline report 5PM	B3, M1-M22
18 Jun 2015	Deadline showcase (including PDP) 5PM	BC students
22 Jun 2015	Deadline feedback project + competency coaching 5PM	B3, M1-M22 coaches
25 Jun 2015	Deadline showcase (including PDP) 5PM	B3, M1-M22
30 Jun 2015	Deadline assessment feedback	BC assessors
3 Jul 2015	Deadline registration project/theme 11AM	All students
7 Jul 2015	Deadline assessment feedback	B3, M1-M22 assessors

Important Dates and Deadlines**2015-2016**

Date	Event	Who
17 - 21 Aug 2015	Intro program	All new students
24 - 27 Aug 2015	Re-assessment	Re-assessors
26 - 28 Aug 2015	Introduction program ID new students	All new students
27 Aug 2015	Plenary Re-assessment Meeting	Re-assessors
28 Aug 2015	Kick off semester meeting	All students / coaches
28 Aug 2015	Registration modules/themes	M1-M21

Holiday & TU/e closed**2014-2015**

Date	Event	Who
22 Dec 2014 - 2 Jan 2015	Christmas holiday 25 Dec 2014 - 1 Jan 2015	Holiday TU/e closed
16 - 20 Feb 2015	Carnival	Holiday
3 April	Good Friday	Holiday (TU/e closed)
6 April	Easter Monday	Holiday (TU/e closed)
27 April	Kings day	Holiday (TU/e closed)
4 May		TU/e closed
5 May	Liberation day	Holiday (TU/e closed)
14 + 15 May	Ascension day	Holiday (TU/e closed)
25 May	Whit Monday	Holiday (TU/e closed)

Events**2014-2015**

Date	Event	Who
1 Sept 2014	Opening Academic Year	
26 Sep 2014	Bachelor graduation ceremony	Graduates Bachelor
2 Oct 2014	Master graduation ceremony	Graduates Master
14 Oct 2014	Propaedeutic graduation ceremony	Graduates Propaedeutic
17 + 18 Oct 2014	Orientation days	
5 Dec 2014	Education Day	All coaches
12 + 13 Dec 2014	Orientation days	
26 Feb 2015	Master graduation ceremony	Graduates Master
27 Feb 2015	Bachelor graduation ceremony	Graduates Bachelor
20 + 21 Mar 2015	Orientation days	
23 Apr 2015	Dies Natalis	All staff + students
24 Apr 2015	Matching day	Coaches / upcoming students
8 May 2015	Education Day	All coaches
29 May 2015	Matching day	Coaches / upcoming students



APPENDIX 3 ROOMS, LABS AND FACILITIES

COLLOQUIUM ROOMS

As a student you can reserve colloquium rooms one week before the date preferred if available. Each room has different facilities like a beamer, white board. If there is no equipment, you can contact the ID service desk for hiring. Reservations can be made by email or at the secretary desk by clearly indicating your name, date, time and type of event.

Contact secretariat.education@tue.nl
 servicedesk.id@tue.nl

LABS

/D.SEARCH LAB

The /d.search lab is dedicated to the realization of high-quality prototypes for Master Students and researchers of the department ID. The lab facilities are also used for the support of innovative projects within education that deserve extra attention to come to a higher level to attract industry and inform and inspire research. Dedicated multi-disciplinary support staff takes care of the proper operation of the equipment and the maintenance and extension of the facilities and related support.

The main facilities of the Prototyping Lab include:

- ▶ High-end CAD workstations (SolidWorks, Adobe)
- ▶ High-end electronic workplaces
- ▶ A dedicated SMD (Surface-Mounted Device) work station and an SMD oven
- ▶ General workplaces for e.g. cardboard modeling
- ▶ Laser cutter Trotec Speedy 300™
- ▶ Small 3D printers (Second generation Cube®)
- ▶ State-of-the-art professional 3D printer (Objet Connex 350)
- ▶ 3D milling machine for plastics and wood.

Contact j.l.rouvroye@tue.nl
Location HG 2.63 (enter through HG2.57)

BIOFEEDBACK LAB

The Biofeedback Lab allows gaining awareness of the physiological functions in the human body using sensors that provide information on the activity of these functions. The goal is ultimately to manipulate these functions at will to improve health, well-being and performance. The infrastructure of the lab provides the equipment to perform a wide variety of different measurements on the human body.

Contact g.j.a.v.d.boomen@tue.nl
Location HG 3.46

CAR SIMULATOR

The Car Simulator, also called Drive Master Driving Simulator, provides a mobile Virtual Reality environment for creating a virtual driving experience. It consists of a driving simulator and a control station and is equipped with eye tracking sensors and force feedback steering wheel. Scenarios can be created meeting specific experimental requirements, and different kinds of data can be logged and extracted in real time.

Contact j.m.b.terken@tue.nl
Location HG 2.29

CONCEPT LAB

The Concept Lab is created with the intention of giving interaction designers access to new and emerging technologies that are potentially useful during the conceptual and early prototyping stages of the design process.

Contact j.b.o.s.martens@tue.nl
Location HG 3.51

GAME LAB

The Game|LAB is a laboratory for testing of state-of-the-art gaming systems, testing and evaluating games and game controllers designed in the department and observing and analyzing gamer behavior and experience. The main activities are related to research projects and education activities including student projects and assignments, in which the lab is used for testing, evaluation and analysis.

Contact m.j.d.graaf@tue.nl
Location HG 2.17

LIGHT BOX

LTSM has specific equipment available for use with lighting installations (DMX-controlled lights and related equipment). The theme has two test rooms with (remote) controlled lighting that can be used for experiments. Next to that we have a black box space that blocks all external light in order to experiment with (effects of) light.

Contact h.a.v.essen@tue.nl
Location Yellow space

MEDICAL SIMULATION LAB

The Medical Simulation Lab provides space to develop equipment (simulators) that can aid in the training process of medical professionals.

Contact g.j.a.v.d.boomen@tue.nl
Location HG 3.46

NEONATAL LAB

The Neonatal Lab provides space to develop and test designs to be used in a neonatal care environment. The space provides a context (medical equipment, incubator) that can otherwise only be found in a hospital.

Contact f.l.m.delbressine@tue.nl
Location HG 5.40

SOUND STUDIO

The Sound Studio is equipped for sound design and offers a wide range of possibilities for high-quality audio recording, generating, editing and listening.

Contact servicedesk.id@tue.nl
Location HG 3.94

TEXLAB

Theme Wearable senses has equipment in their space specific for their application area among which several general purpose and one industry standard sewing machines, an overlock machine, a computer controlled embroidery machine, a heat press, a weaving machine and a few knitting machines. These machines are usable by students that have attended an introductory instruction.

Contact m.j.toeters@tue.nl
Location HG 0.40

VISION STUDIO

The Vision Studio allows research into human movement and interaction with large displays, for instance for larger visualization and signification experiments. The studio has the dimensions of a large classroom and has completely darkened windows. The room is equipped with two cameras, an HD video camera and a professional Firewire camera, as well as an HD projector for realizing a video processing chain operating at 1920 x 1080 pixels resolution. Furthermore, the studio has a projection screen of 592 cm x 222 cm on one side, and a mobile white screen of comparable size is available that can be used to bring the developments of the Vision Studio to external venues like conferences and exhibitions. For mixed media development, a 7.1 surround sound system is provided and each of the eight audio channels can be controlled separately through the computer, allowing for, e.g., sonification of users' movements. Finally, the studio is equipped with a Mackie mixing console, and different smaller electronic instruments.

Contact m.funk@tue.nl
Location HG 5.95

FACILITIES

E-ATELIER

The electronics atelier (e-atelier) is meant for education; it facilitates students who want to build electronic circuits. The electronics atelier provides the first level of electronics support for bachelor students. The e-atelier is also used for some assignments and workshops on electronics.

The e-atelier has 12 working places, which can be used by ID students without prior reservation. Each working place is equipped with measuring equipment like an oscilloscope, function generator, power supplies, and a soldering iron. Student assistants from the department of Electrical Engineering assist ID students, working under the supervision of a senior staff member. The e-atelier also has a website with electronics information (www.eatelier.nl). In September 2013 student association Lucid started selling electronics components to students from within the electronics atelier, under the name of E-lucid. E-Lucid is supported by the ID department by means of providing budget for student assistants and is sponsored by component distributor RS-Components (www.lucid.cc/index.php/e-lucid).

Contact g.j.a.v.d.boomen@tue.nl, e@lucid.cc
Location HG 4.40

IDCAFÉ

IDcafé be can used for formal and informal meetings and/or meeting point. For presentation, a reservation is required.

Contact secretariat.education@tue.nl
Location Purple

MATRIX

In the Matrix building ID has a small workshop featuring a number of woodworking tools and a 3D milling machine. It also includes a small area for resin and silicone casting and a rig for tufting carpets.

Contact c.bangaru@tue.nl, j.sterk@tue.nl
Location Matrix 0.20a - 0.20c

PHOTO STUDIO

The photo studio is equipped for high-quality photography of realized models, products prototypes and products. The photo studio has lamps, product tables, tripods and a variety of backgrounds.

Contact servicedesk.id@tue.nl
Location HG 4.35

PRINTING SHOP

A well-equipped printing shop is located in the MetaForum to finish your papers and reports for publication.

Contact reproshop@tue.nl
Location MetaForum (MF 1.597)
Opening hours Monday to Friday from 08h00 to 23h00
Saturday and Sunday from 10h00 to 22h00

VERTIGO

The Vertigo building has a well-equipped workshop, which has been adapted to the requirements and wishes of ID in the field of mechanical processes. In Vertigo a specialized team assists students in building prototypes and models in general. The most frequently used equipment supports woodworking and foam modeling, laser cutting. To some extent staff members can support metal machining and welding. The workshop has a sales desk where students can buy common prototyping materials.

Contact studenten.werkplaats@bwk.tue.nl
Location Vertigo building 0.05
Opening hours Monday to Friday from 08h00 to 16h30



