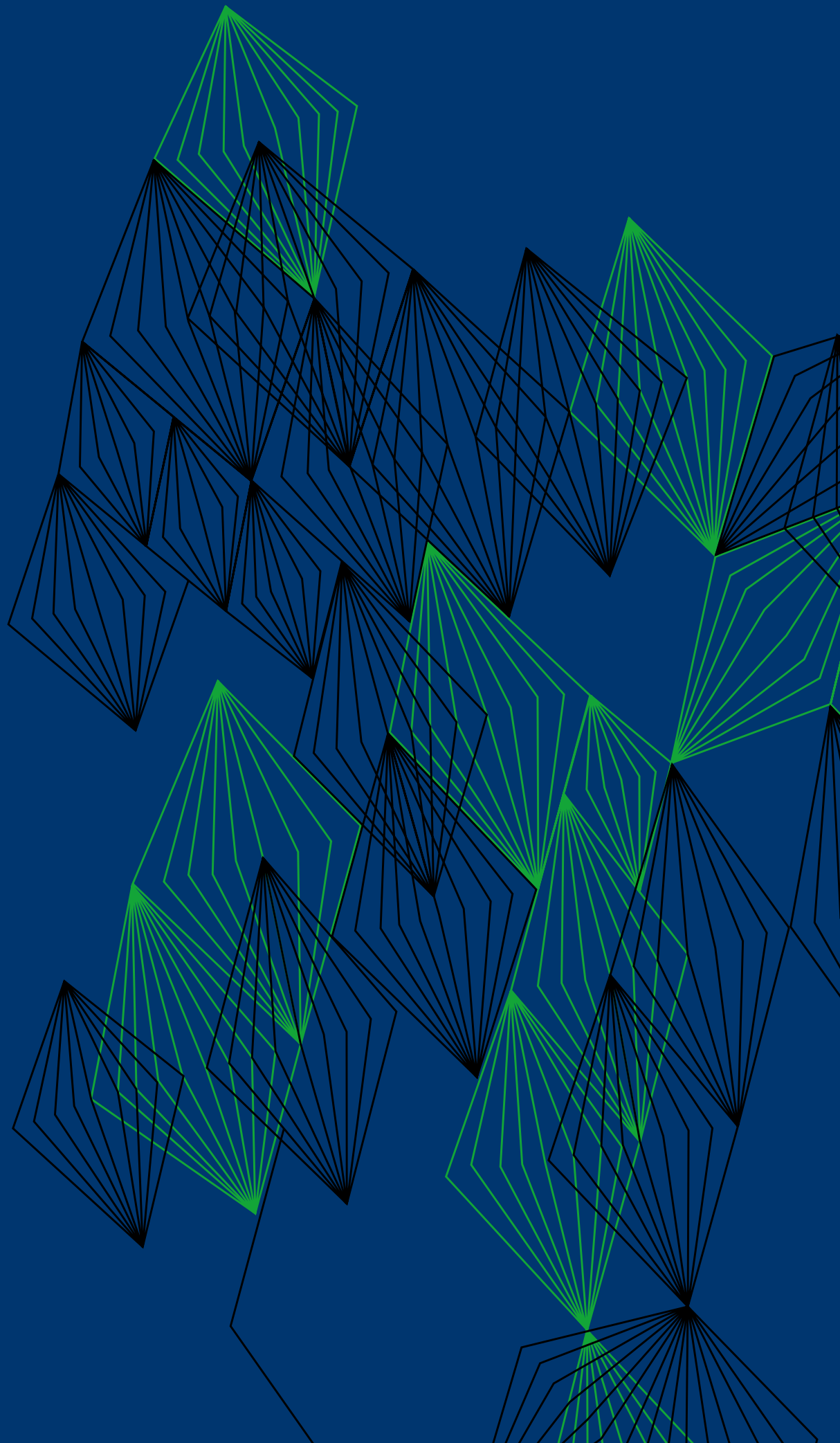
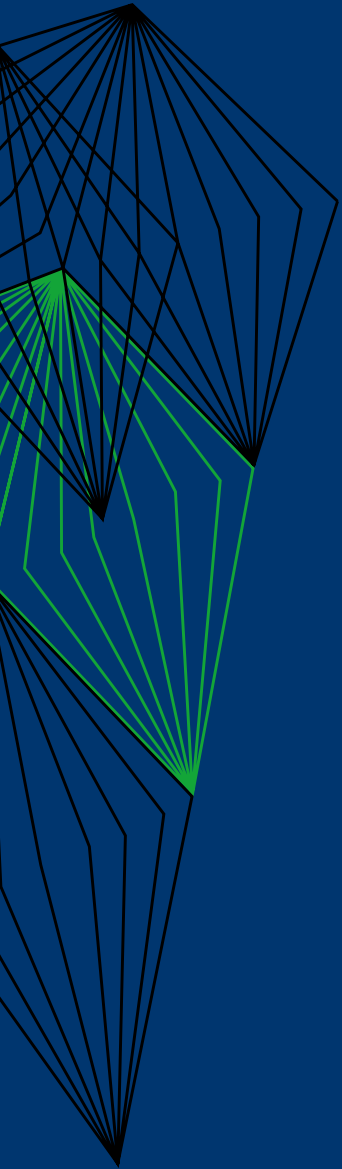


# QUALITY AGREEMENTS 2019 - 2024 PLAN OF UNIVERSITY OF TWENTE

UNIVERSITY OF TWENTE.







QUALITY  
AGREEMENTS  
2019 - 2024

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Quality Agreements 2019 - 2024

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## PREAMBLE EXECUTIVE BOARD

The establishment of the Quality Agreements 2019 – 2024 has been a phased and iterative process within the UT. We started almost immediately after it became known that ISO (interstedelijk studentenoverleg), LSVb (landelijke studentenvakbond), VH (Vereniging Hogescholen) and VSNU (Vereniging Samenwerkende Nederlandse Universiteiten) had formulated five core ambitions for educational quality in a joint higher education agenda.

These ambitions: small-scale education, student guidance, talent development, learning facilities and teacher professionalisation, reflect the current educational vision of and practice at the UT. We have, therefore, confidently initiated a bottom-up process that is suitable for the UT. The management of the faculty boards and programme directors have been asked to liaise with students of programme committees and study associations. This will identify their needs and wishes to improve the quality of the degree programmes and their learning environment at the UT.

The plan-making process was initially completed by the end of 2018, meeting the national deadline set by the ministry of Education, Culture and Science. This resulted in a Plan at UT level, approved by the University Council and Supervisory Board. This plan has been shared within the UT community.

After development of this plan, it became clear that the NVAO would perform the audit on the plans on quality agreements December 2019 and that we could take more time to further refine the plan and combine this audit with the institutional audit. This offered the opportunity for further adjustments and detailing, especially with regard to the financial and monitoring parts.

Nevertheless, the institution-wide plan of the December 2018 remains the policy framework for the quality agreements in the coming years. Accordingly, the current document starts with the plan from December 2018. We also chose to keep this plan recognisable to keep it transparent for the UT community. The plan from December 2018 is complemented by a actualised version focusing in more detail on monitoring and the investment budget at UT level.

A further explanation about the process and the structure of this overall plan can be found below. We look forward to the dialogue with the audit committee on December 18.

The Executive Board of the University of Twente:  
Victor van der Chijs  
Thom Palstra  
Mirjam Bult

### **Readers' Guide**

The realisation of this overall plan for the quality agreements took place in five steps.

1. At the beginning of 2018, ISO, LSVb, VH and VSNU formulated five core ambitions in a joint agenda for higher education, which led to six themes for educational quality laid down in the WO-2018 sector agreement. These themes were closely related to the educational vision and education policy of the UT. From this perspective, the faculty boards and programme management were asked to determine, in dialogue with students, which initiatives could give an extra impulse to the quality of education (bottom-up process).
2. Based on an inventory of these initiatives, five institution-wide programmes were defined in July 2018. These tied in with the educational vision of the UT and the six themes for education quality from the sector agreement that is mentioned above.
3. Each faculty subsequently drafted its quality agreements in September and October 2018, taking into account the needs and wishes of degree programmes, and structured them according to the five institution-wide programmes.
4. Next, the institution-wide plan of the University of Twente for quality agreements was formulated, which was approved by the University Council and the Supervisory Board in December 2018.
5. In June 2019, the University of Twente was advised by the NVAO to be as specific as possible regarding concrete measures and investments, at university level as well as at faculty level. As a result of this, the Executive Board asked to refine the UT plan as well as the faculty plans.
6. The updated UT plan and the plans of the faculties were established in September 2019 with the approval of the university council and the faculty council.

The overall plan therefore consists of three parts:

### **Part A:**

This part concerns the institution-wide plan of the UT for the quality agreements (December 2018), in which the following topics are described:

- The match of the quality agreements with the profile of the UT and the broader educational ambitions and how these ambitions contribute to the improvement of the quality of education.
- The way the UT defined five programmes to address the six themes for educational quality. The programmes will guide the development of education during the period of the quality agreements.
- The ambitions of the faculties and specific institution-wide initiatives.
- The governance on the quality agreements.
- The way that the University of Twente allocated the WSW budget to the faculties (December 2018) (Chapter 7).

### **Part B:**

The second part includes the 'Investment plan central budget from the student loan fund'. This plan is an addition and actualisation of the plan included in Part A. This investment plan was approved by the University Council in September 2019 and explains in detail how the central WSV-budget will be used within the UT. In this plan the investments, which are also described in Part A: Chapter 7, are updated and refined.

### **Part C:**

This final part comprises the separate plans on the quality agreements of the five faculties, which contain their ambitions, corresponding measures, phasing and the related budget built on their previous plans drawn up in 2018.

# 1. DEVELOPMENT PROCESS

A photograph of two young men in a laboratory setting. They are looking intently at a computer monitor. The man on the left is wearing a white and grey striped t-shirt, and the man on the right is wearing a grey hoodie over a blue and white striped shirt. In the foreground, there are large, out-of-focus blue and yellow pipes or structures, likely part of a chemical or biological experiment. The background shows a typical lab environment with wooden beams and equipment.



# 1. DEVELOPMENT PROCESS

In response to the request of the Ministry of Education, Culture and Science (OCW) the University of Twente (UT) developed agreements on the quality of education. These quality agreements will be effective for a period of 6 years, from 2019 until 2024. The extra income of the student loan system, or WSV-budget (Dutch abbreviation of Wet Studievoorschotmiddelen), is used to enforce the quality agreements, thereby giving an impulse to the quality of education.

The UT applied a bottom-up approach for the development of the quality agreements. To structure the development process of the quality agreements, the UT made two leading principles explicit right from the start:

- Quality of education is assured by means of the plan-do-check-act cycles that operate on course level, programme level, faculty level, and institutional level. These layered PDCA-cycles were utilized to develop the quality agreements.
- Students are partners in achieving high-quality education. Students were enabled and stimulated to contribute to formulating the quality agreements.

The University Council was involved in the decision to apply a bottom-up approach. The University Council advised positively on the project plan regarding the process of developing the quality agreements. The Supervisory Board was also involved in an early stage. The leading principles for the development process were discussed with the Commission Education of the Supervisory Board and the Supervisory board was kept informed during the process.

The Rector and the Chair of the University Council hosted a general meeting on quality agreements in April to inform the academic community about the broad context of quality agreements and the approach of the university to develop quality agreements. Furthermore, ideas were gathered about ways to involve students and teachers in improving the quality of education. Members of Programme Committees, Faculty Councils, Programme Directors, and Vice-Deans of Education were invited to this meeting.

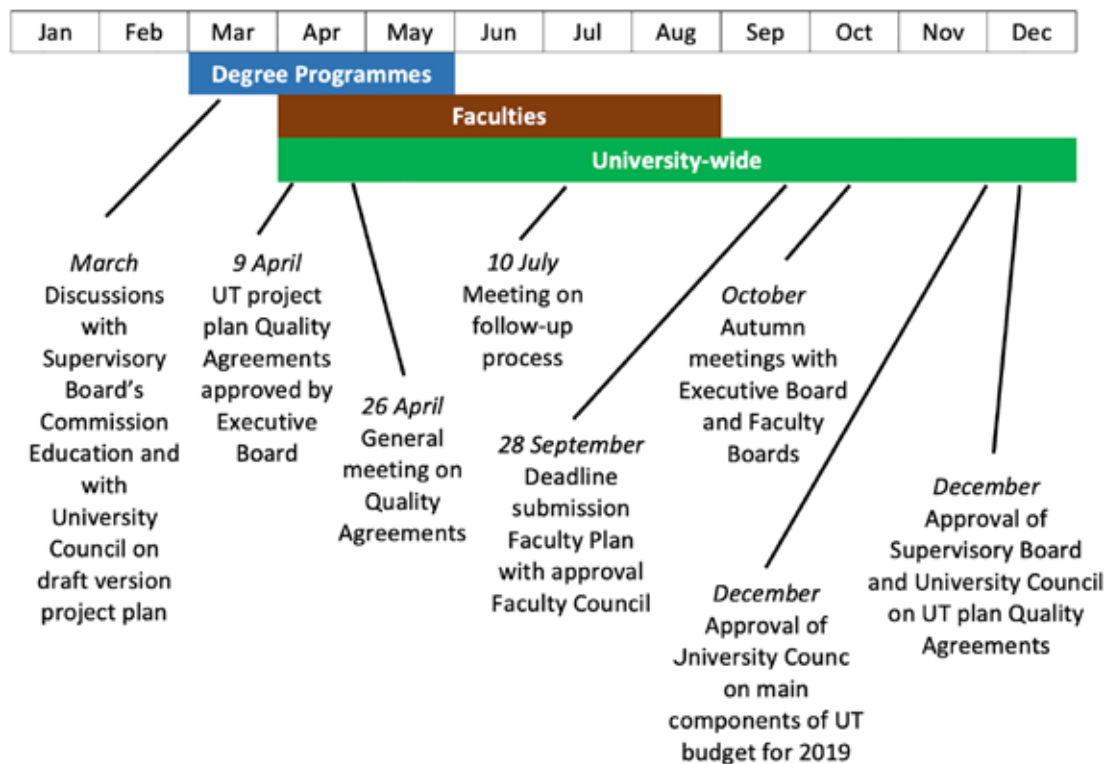


Figure 1: Timeline of development process UT plan on quality agreements 2018

The reason to start at programme level is that quality of education is primarily experienced within the context of a degree programme. The perspective of degree programmes, thereby, could be considered while developing quality agreements of faculties and the UT. Because Programme Committees represent the staff and students of degree programmes, they were invited to make a substantial contribution in developing quality agreements.

The Vice-Deans Education, as part of each Faculty Board were responsible for developing faculty-specific quality agreements. They took care that Programme Committees and Faculty Councils were involved in this process. Faculties involved degree programmes by asking to develop a long-term quality agenda. The plans of degree programmes to improve educational quality were input for the faculties to define quality agreements. As quality agreements were made at university level as well as at faculty level, these plans were translated into common ambitions that are relevant for each faculty as a whole. Some faculties organised a general meeting with representatives of Programme Committees, Study Associations, and the Faculty Council to get input for the faculty-specific quality agreements. Faculty-specific quality agreements and, related to this, the investment of faculty-specific WSV-budget were co-created with the Faculty Councils.

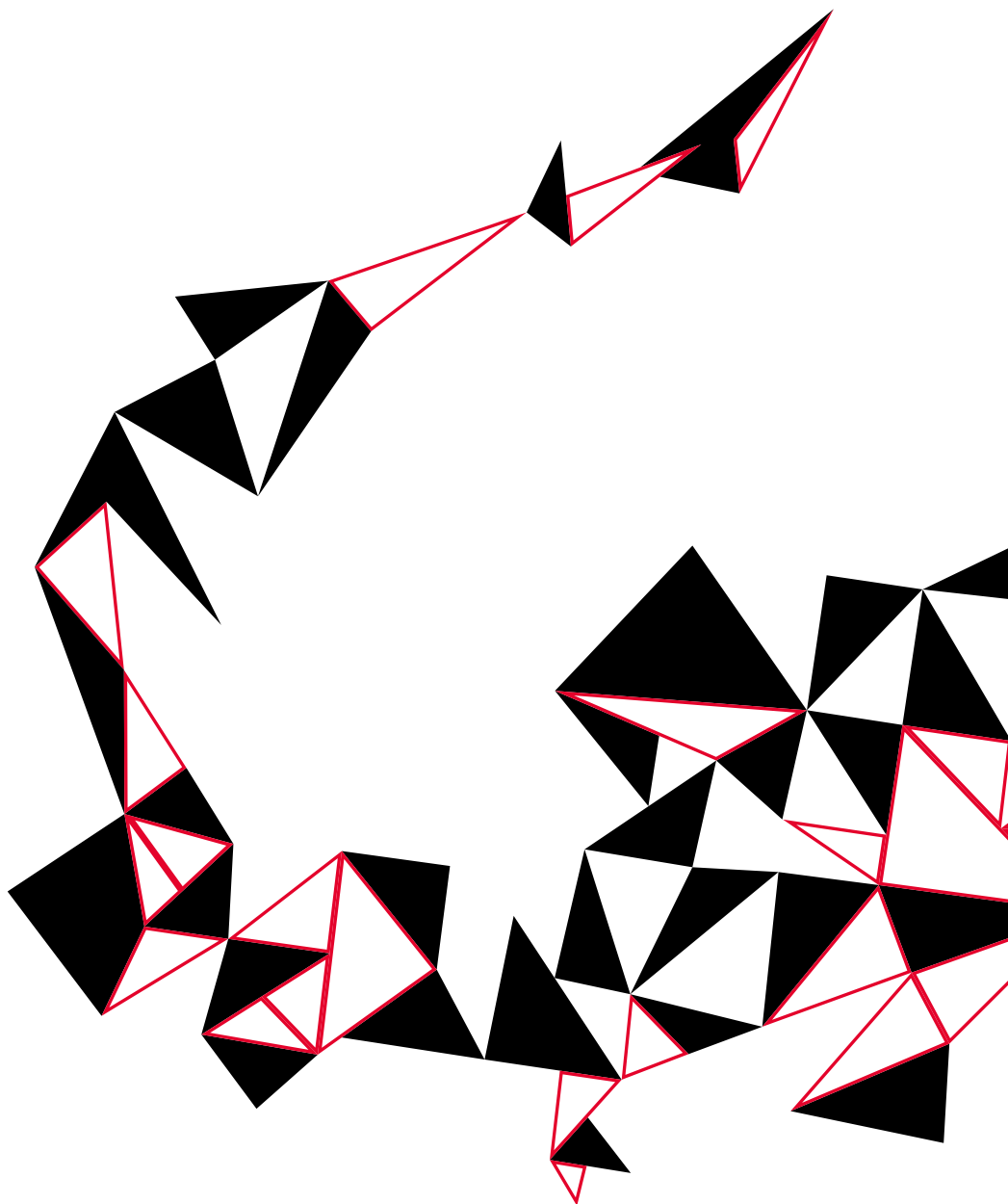
Draft versions of the faculty plans were provided to the Executive Board before the first of July. Based on this preliminary input, five university-wide programmes were defined by Vice-Deans Education, a Student-Assessor, Managing Directors of the faculties, the Rector, and the Vice President. The UT quality agreement programmes are:

1. Learning facilities
2. Community building
3. Teaching professionalisation
4. Talent development of students
5. Global citizens

As explained above these programmes encompass the ideas and suggestions from students and staff to improve quality of education. The faculties structured their plans according to the five quality agreement programmes. Faculties were able to motivate their choice to prioritize programmes, which could, for example, mean that a faculty decides to first invest in community building and teaching professionalisation and later invest in talent development of students.

The university-wide quality agreements are a sum of the faculty-specific quality agreements. Next to this, also elements are added that concern university-wide support or which are valuable for the university as a whole. The Vice-Deans of Education advised on the university-wide quality agreements. The UT plan for quality agreements was approved by the University Council and the Supervisory Board before the Executive Board submitted the plan to the Accreditation Organisation of the Netherlands and Flanders (Dutch acronym: NVAO).

The bottom-up development process of 2018, which operates according to the layered PDCA-cycles, will also be applied in the coming years to decide on follow-up actions (more information on governance of the quality agreements is provided in chapter 10). During the spring meetings between the Executive Board and the Faculty Boards, the specific goals of the faculties regarding the quality agreement programmes will be discussed. The outcomes of these meetings provide input for the spring memorandum (the multi-annual plan of the UT) and subsequently for the annual plans of the faculties for 2020 onwards. During the autumn meetings between the Executive Board and the Faculty Boards the specific plans for 2020 and corresponding WSV-budget will be discussed. The expert panel that carries out the institutional audit, will be informed about these developments.





## 2. UNIVERSITY'S PROFILE

## 2. UNIVERSITY'S PROFILE

**The UT is focused on societal impact, driven by synergy, and an entrepreneurial mindset. These values are part of the university's DNA and will remain undiminished and relevant during the period of the quality agreements. Here, it is concisely explained what the UT means with this and how this shapes the university's educational profile.**

### HIGH TECH - HUMAN TOUCH

The UT pioneered the concept of the entrepreneurial university, bringing together ten thousand students and three thousand employees, who share the drive to innovate, experiment, pioneer, test the limits and reach for the sky. The UT generates societal impact and contributes to solving the global grand challenges, by means of education, research, and commercial knowledge transfer. Continuous interaction with society is fundamental in order to respond adequately to the demands of the future. Because technology is needed to solve many challenges the society faces, the interplay between the two is an important topic in research and education at the UT. It is reflected in the university's profiling research themes: Engineering the digitalisation of society; Designing intelligent manufacturing systems; Improving healthcare by personalised technology; Increasing global resilience & sustainable development; and Engineering smart materials for society. To emphasise the university's approach to seek synergy between social and technological disciplines, the university's motto is: High Tech – Human Touch.

### CROSSING BORDERS

The UT aims to educate the global citizens of tomorrow. The field of operation becomes increasingly international. The UT's international network is expanding and many research programmes are performed in an international context. Moreover, the community of staff and students becomes increasingly international. Therefore, the UT needs to prepare its students for this.

However, crossing borders is more than internationalisation. In its education, the UT places great emphasis on a multi- and interdisciplinary approach. The Bachelor's curriculum was redesigned in 2013 by introducing thematic modules with project-led education. In these modules students are confronted with complex problems the society faces. This requires creative and inter-disciplinary thinking and students often work in multidisciplinary teams to design a solution. Next to this, reflection on science, technology, and society is integrated as a learning line in all Bachelor's Programmes. This broad development is followed by a Master's phase where students deepen their disciplinary knowledge and skills.

UT's graduates are thus considered T-shaped professionals with an international outlook, thorough knowledge of their discipline and the ability to apply their knowledge intelligently and usefully, fully aware of the interdependence of technology, humans and society. This is what the UT means with the global citizens of tomorrow.

### ENTREPRENEURIAL MINDSET

As the most entrepreneurial university in the Netherlands, the UT stimulates an entrepreneurial mindset among all staff and students. The UT sees this as a mindset of someone who would like to make an impact in society in the broadest sense of the word. Given the drive to have an impact on society, this mindset encompasses that students and staff seek and create opportunities for value creation. The UT is convinced that this entrepreneurial mindset is necessary in a world that is rapidly changing. Students should be able to deal with uncertainty and they should be flexible, bold, and creative in responding to new situations. In education students are stimulated to become self-directing and proactive and to develop problem-solving and design competences.

Stimulating the entrepreneurial mindset has similarities with UT's principle of student-centred learning. The UT wants to educate and encourage its students to become professionals who are capable of steering their own career development, by giving them greater control over their own learning process. In addition to preparing students for the future, giving them more autonomy over their own learning also increases their motivation. The University College Twente, the Bachelor's programme in Technology and Liberal Arts & Sciences (ATLAS), is a great example of how students approach challenges that they are passionate about and become equipped to gather knowledge and support they need inside and outside of the UT ecosystem. The new Master's programme Spatial Engineering is another example of a degree programme with a student-centred approach and a solid mentoring system that supports students in making comprehensive choices that are important for their future careers.

### INCLUSIVE CAMPUS AS STIMULATING LEARNING ENVIRONMENT

Besides being an entrepreneurial university, the UT is also a real campus university. The UT campus is an area of 156 hectares, where people live, learn, do research, and start new businesses. Students highly value the small-scale character of the campus, which enables them to collaborate beyond the classroom. Specifically, personal contact between students and staff, small group sizes, and the general atmosphere within the degree programmes are highly appreciated by students (National Student Survey 2018).

The campus is an environment where students and staff work together on real-life cases. The UT's student run DesignLab is a distinct example of this. In the DesignLab, new and unexpected connections between students and staff from the university and society are realised by linking academic research and education to societal issues and challenges. Students and researchers with various backgrounds and from different disciplines are actively engaged in this process, thereby having an interdisciplinary community in which new solutions are made to the challenges in the society in an unsuspected way.

Students are seen as partners. Many students employ activities next to their studies and/or are member of an association. The Student Union is responsible for, and has the mandate to develop policy on culture and sports and to organise student events. The 'More Than A Degree Programme' of the Student Union is exemplary for its mission. The Student Union stimulates and facilitates students to develop relevant competences next to their degree programmes, for example regarding leadership and entrepreneurship. The Student Union, run by and for students, is a direct partner of the Executive Board. Besides, students are also partners in shaping the quality assurance of degree programmes. Study associations are closely involved in discussions about a programme's curriculum and concerning facilities and activities that are related to the programme. By having this ecosystem, students' perspectives are interwoven in plans that are developed to improve education.

### SUMMARIZING UNIVERSITY'S EDUCATIONAL PROFILE

The UT-profile is visualised in Figure 2. The circle of Crossing Borders symbolises that boundaries between scientific disciplines are overstepped and synergy is sought. It also refers to cultural boundaries, the drive to bring different worlds together at one campus, and the ambition to expand international partnerships. At last, it refers to crossing boundaries between the university and society in order to have a real impact. The entrepreneurial mindset of students and staff explains the innovative power of the UT. This mindset is recognised and developed in a learning environment that is characterised by its small-scale nature. There is intensive contact between students and staff on the campus. The campus is an expressive ecosystem where the academic community learns, conducts experiments, and interacts with each other and with society.

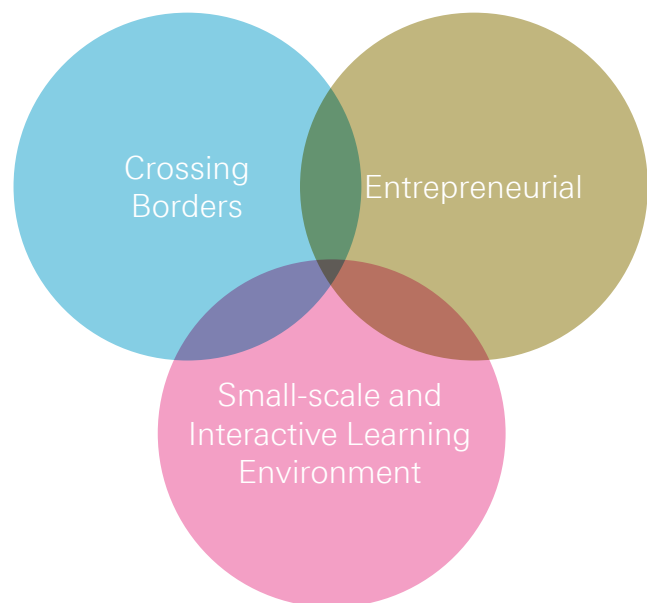
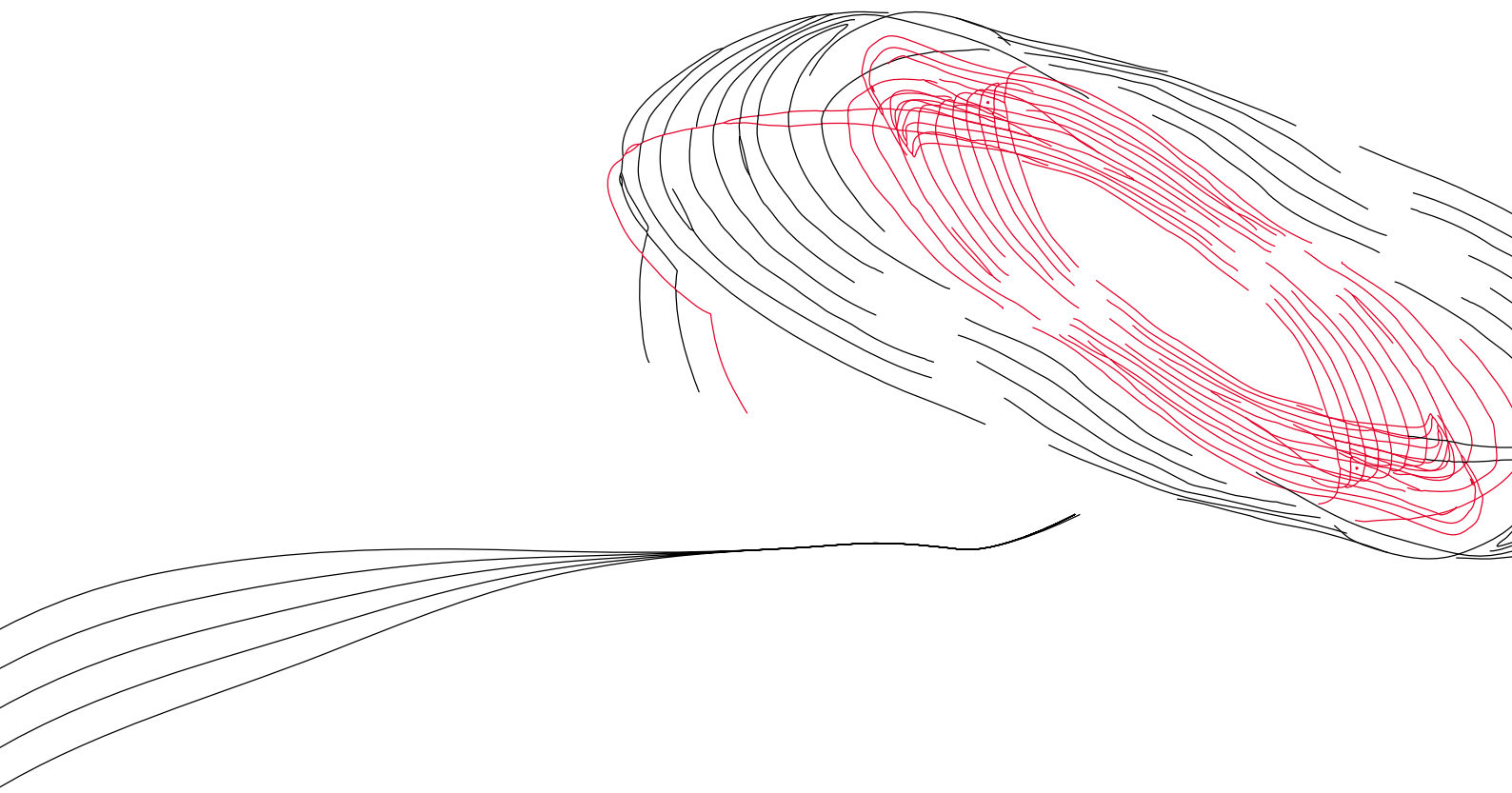
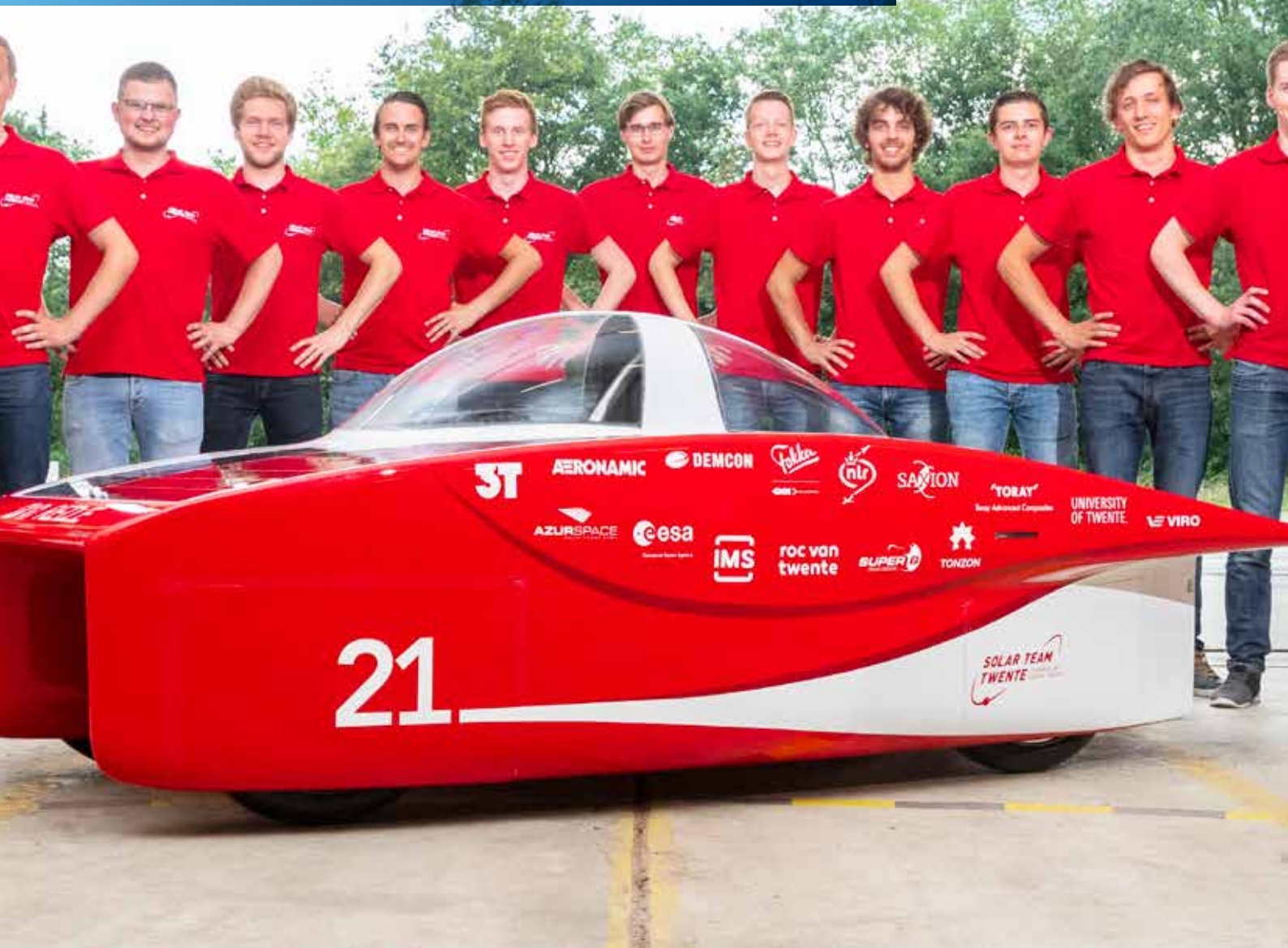


Figure 2. Main components of UT's educational profile



# 3. DEVELOPMENTS IN EDUCATION





### 3. DEVELOPMENTS IN EDUCATION

**Building on the presented values (see Figure 2), it is now explained how each of these values will develop in the next six years. Drivers behind this evolution are identified. Directions of development for education will be linked to these drivers, identifying what they mean for the degree programmes, staff and students.**

#### SMALL-SCALE AND INTERACTIVE LEARNING ENVIRONMENT

The Twente Education Model (TOM) of UT has been fine-tuned by teacher teams over the years, leading to higher student appreciation. Further improvements and developments that the UT envisages are in the areas of improved formative feedback, well-organised interdisciplinarity and increased options for students to pursue their own interests within the context of their programme (student-centred learning). These aspects are relevant for both Bachelor's and Master's programmes. As higher education will be an international market even more, students will be eager to find the added value of offered programmes. Also, technological solutions now allow for flexible, personalised learning routes through basic content and skills trajectories. This allows for teachers to spend more time on the small-scale and expert elements in the degree programmes. The UT expects that a more individualised approach will require more support at intake and via coaching throughout the programme.

The UT and its staff have shown huge commitment when implementing the Twente Educational Model throughout all Bachelor's programmes. A logical next step is that the UT will increase the career incentives for those that excel in innovating education or take a leadership role in large educational innovations. Professional development with respect to education is also being strengthened. University's teacher teams are at the core of designing new education. Teams will be supported, in particular via their module coordinators. Two groups of educational frontrunners have pioneered with the Senior University Teaching Qualification (SKO). Together with the participants in the educational leadership programmes they will be key to new educational developments. In connection with an international group of universities this approach of rewarding and supporting teaching excellence has been developed and will now be implemented and monitored<sup>1</sup>.

As part of the long-term Strategy plan on Housing, adequate measures will be taken to have enough space to accommodate the expected growth of the student population. The quality agreement programme regarding community building involves students in the design and development process of home basis inclusive learning environments. In the coming years, extra staff will be attracted to maintain the small scale and interactive learning environment. This desired growth of teaching staff will be a result of two developments. Firstly, the UT has the ambition to expand its research portfolio, thereby increasing the number of academic staff. Secondly, the 'Sector Agreements on Science and Engineering' will give an impulse to research in the Science, Engineering, and Information Technology domains. With these funds, extra staff can be attracted. Next to research, this new staff will also be involved in education. Altogether, the growth in research will lead to an increase in staff. This will be the solution to cope with the expected growth of the student population and to keep the small-scale character.

#### CROSSING BORDERS

International students are selecting UT's campus-based university in increasing numbers also due to Bachelor's programmes now being taught in English. The UT will have to increase efforts to keep the small-scale character. Also, when the student population becomes more diverse, it is important that every student feels welcome. The UT intends to make diversity a positive aspect of living and studying on campus.

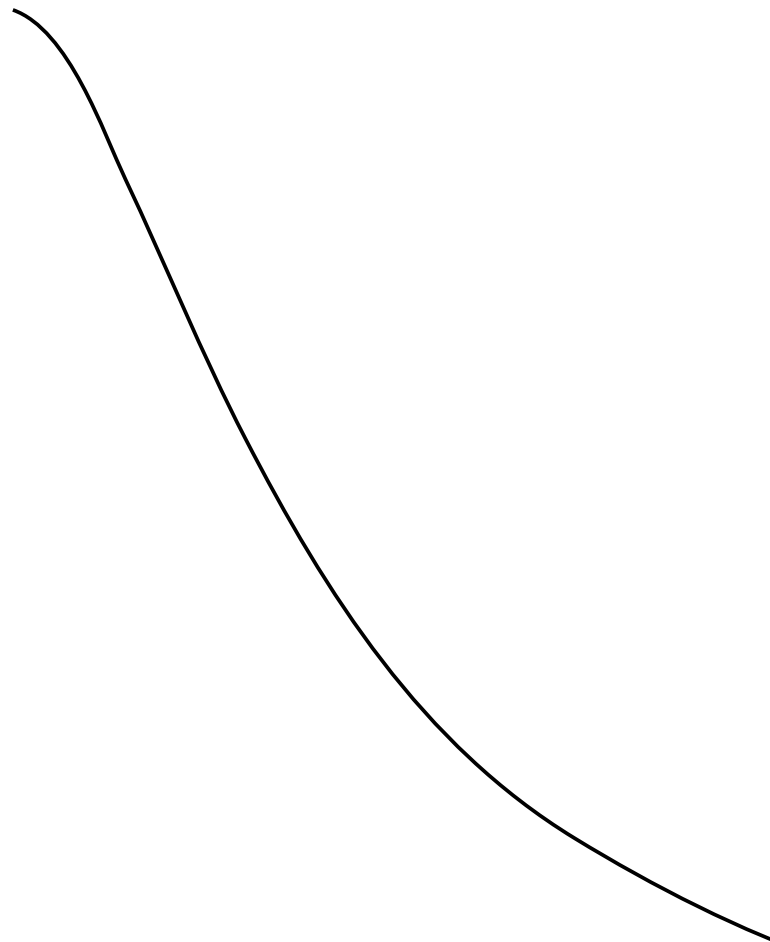
The UT expects enhanced synergy from crossing borders in both research and education. The societal and technological drivers connect well with UT's expertise areas such as robotics, artificial intelligence, energy transition, nanotechnology, (bio)medical technology, sustainability, and resilience of urban and rural areas including water-related issues. This will lead to new routes through existing programmes and new educational initiatives. The UT teacher team approach, with staff from different disciplines working together, is well-suited for implementing new border-crossing types of education. As new expertise is required at a fast pace, UT's alumni and their colleagues will be eager to upgrade their expertise and skills. The UT will develop a series of long-term partnerships with alumni and the businesses and organisations they work for. Lifelong learning can and will take place both in these professional settings as well as on the campus. Joint endeavours with other parties, both academic and professional, will enable new educational combinations in, for example, the energy transition, nanotechnology and technical medicine. UT's small-scale eco-system will also serve as a hub where ad hoc and

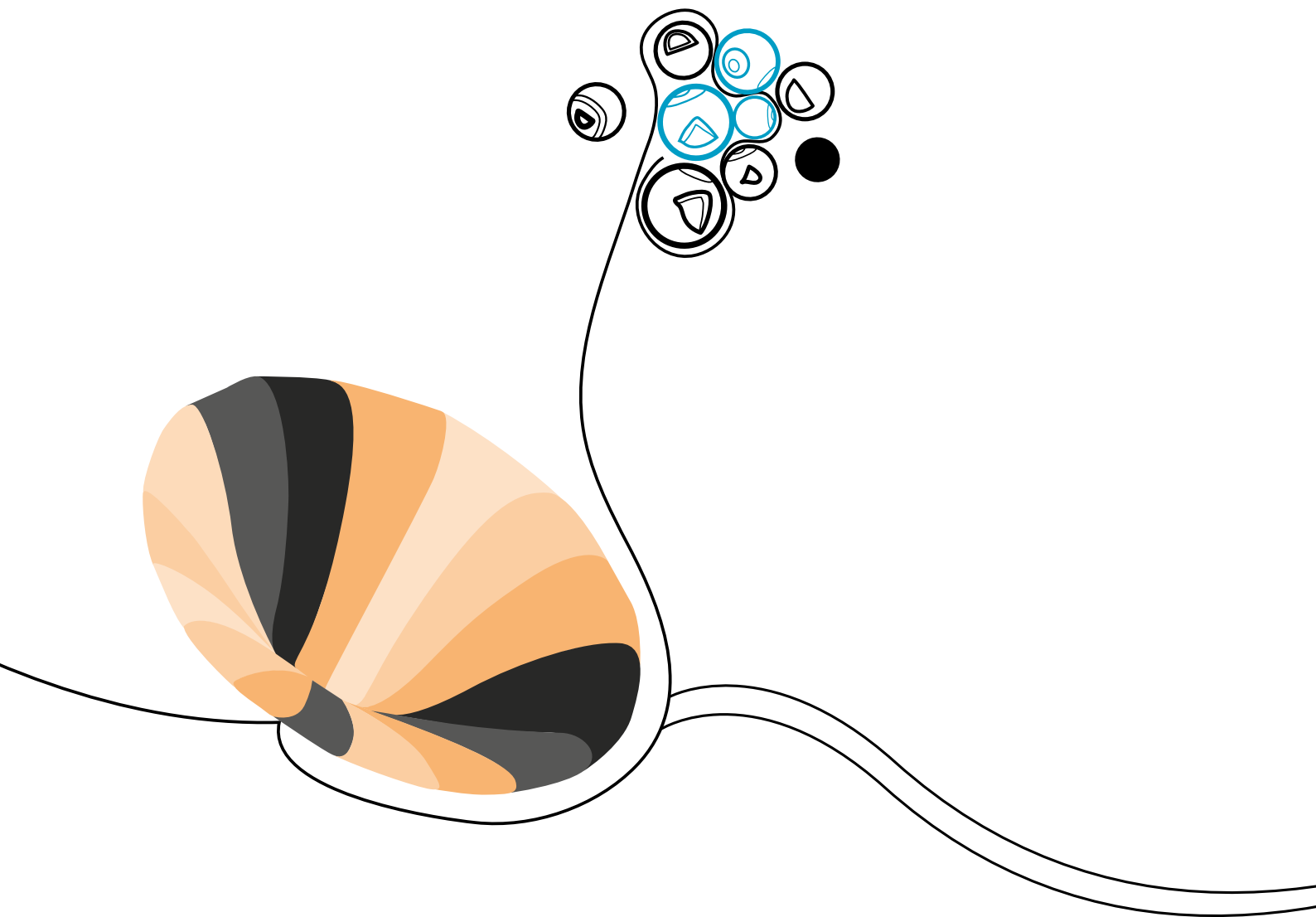
<sup>1</sup> <http://www.evaluatingteaching.com>

longtime partners can work together on innovation and related research and development with opportunities for students and alumni to bring their creativity and inspiration while learning with and from experts and peers.

### **ENTREPRENEURIAL**

The UT's mission is to interact with society, and by doing so, to have impact. Every degree programme therefore has connections with society, regionally and worldwide. Students and staff will be supported in developing and applying their entrepreneurial skills and ambitions. The university offers a wide variety of interfaculty programmes and initiatives in which technology-inspired solutions are designed for real life challenges. These initiatives and the aforementioned ad hoc and long-term partnerships can use the DesignLab facilities as well as excellent start-up facilities. Across the programmes entrepreneurial skills will be incorporated for a wider group of students.





# 4. PROGRAMMATIC APPROACH

A photograph showing three people—two women and one man—collaborating around a large, horizontal touch-screen display. They are all looking at the screen and pointing at various elements, suggesting a collaborative work or learning environment. The woman on the left has curly red hair and is wearing a blue top. The woman in the middle has long dark hair and is wearing a pink top. The man on the right is wearing a blue and white plaid shirt. The background is a brightly lit, modern interior space with warm tones.

## 4. PROGRAMMATIC APPROACH

To direct the aspired and required development of education, five programmes are formulated. The programmes are defined based on the input provided by students and staff within faculties. This input is clustered around a number of themes, such as Community building, Tailored education, and Coaching. The programmes and the main elements per programme are presented in Figure 3 and explained in detail in chapter 5. This figure also shows how the programmes match with the university’s educational profile. Faculties have the freedom to develop their educational quality within one or more of these programmes in the years to come (2019 – 2024).

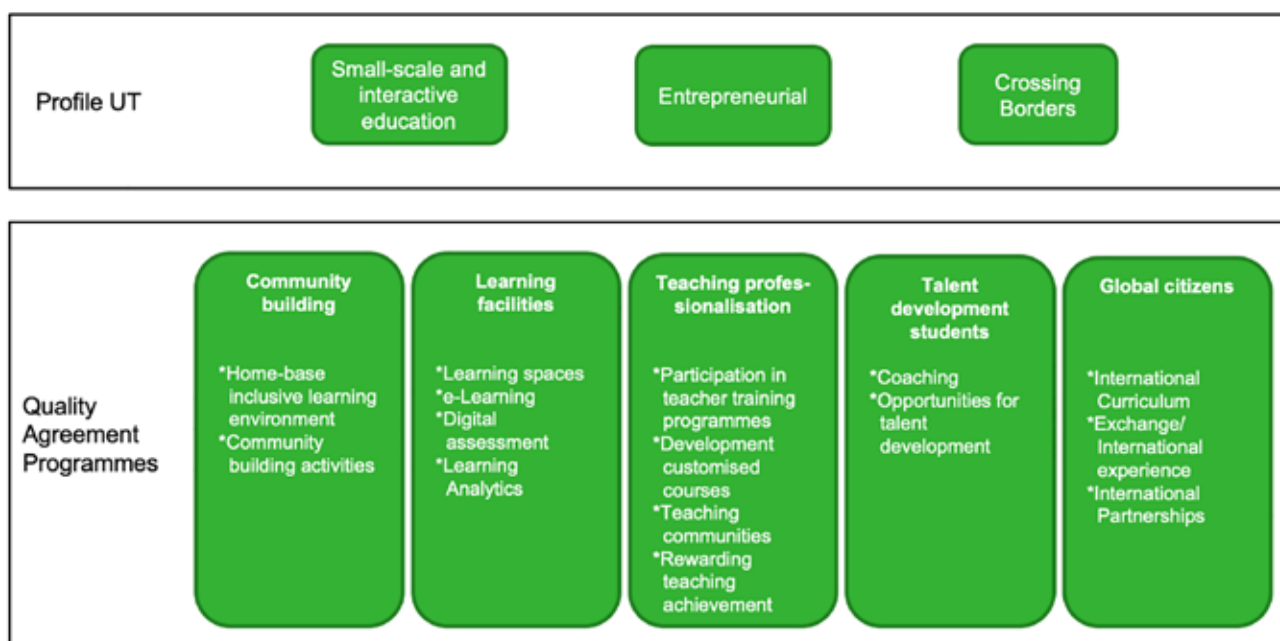


Figure 3: Relationship between UT’s educational profile and UT quality agreement programmes

Each programme has long-term ambitions in order to consolidate action plans and to focus the efforts that the UT will take in order to improve education and to foster innovation. The results that the UT will deliver in the coming years will strengthen the profile of the UT, including for example small scale and intensive education.

Improvement and change are dynamical processes and by means of a programmatic approach the UT supports mutual learning and stimulates that education continuously develops. For each programme the balance was sought between the right ambition level and focus on the one hand and sufficient flexibility on the other hand in order to determine with participatory bodies on annual

basis what follow-up is desirable within a programme. Because the duration of the quality agreements is long (six years), the programmatic approach provides enough room to respond adequately to new situations and to incorporate unforeseen opportunities.

The activities within a programme are worked out in more detail for the first couple of years. Especially for 2019, it’s clear what the UT in general, and the faculties in particular, will do within the programmes. The intentions for the second half of the quality agreements (2022 - 2024) are described in more general terms. Based on new insights, the course of a programme will be further defined in coming years, again in close consultation with relevant participatory bodies.

The UT quality agreement programmes are related to the quality themes that the Ministry of Education, Culture and Science (Dutch acronym: OCW) has defined. The table below shows how the programmes cover the Quality Themes that are described in the Sector *Agreement Investing in Quality of Education* (April 2018).

		Quality themes Sector Agreement					
		Intensity	Study success	Differentiation	Teacher quality	Guidance	Facilities
Quality themes Sector Agreement	Learning facilities		=+				++
	Community building	+	=+				+
	Teaching professionalisation	+	=+	+	++	+	
	Talent development of students		=+	++		+	
	Developing global citizens		=+	++	+		

Table 1: Overview of the mapping of UT quality agreement programmes to the quality themes presented in the Sector Agreement (Legend: ++ very strong relationship, + strong relationship, =+ indirect relationship)

The relationship between the quality agreement programmes of the university and the quality themes of the Sector Agreement is explained for each quality theme:

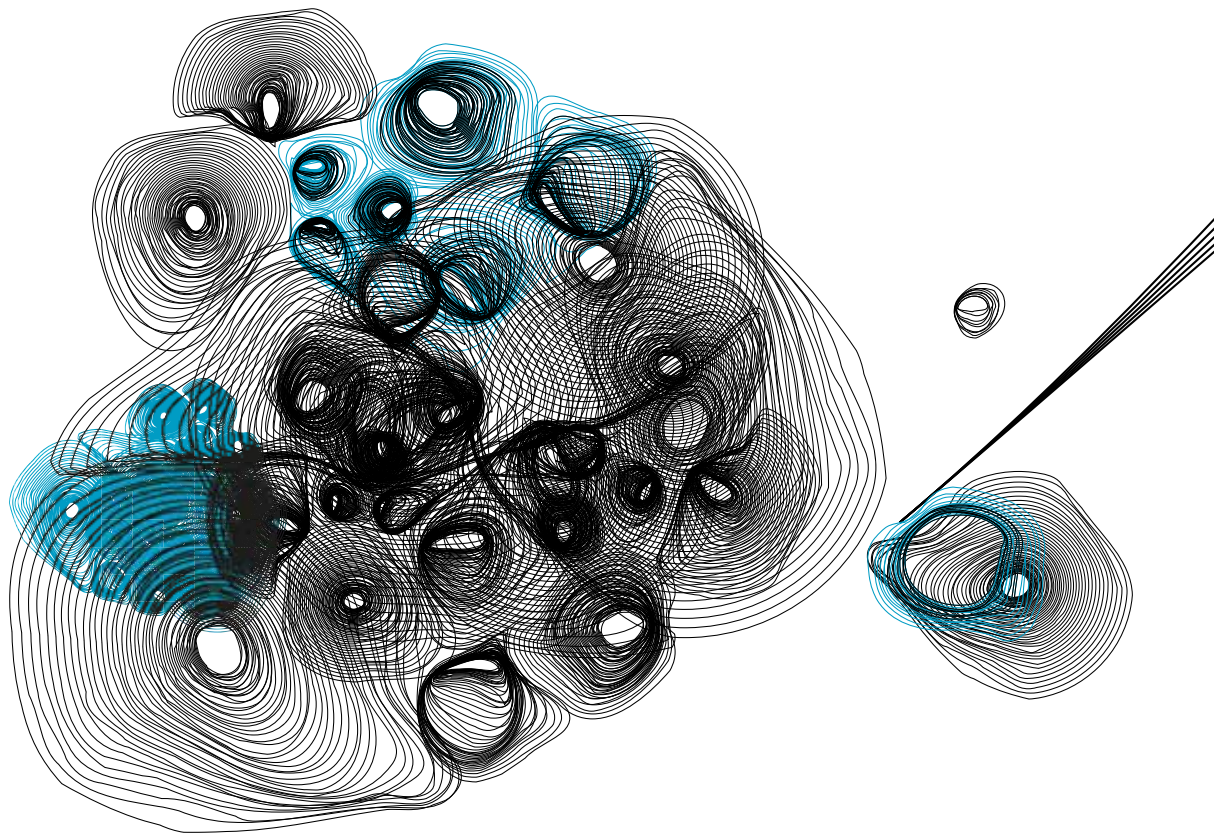
- **Intensity.** The university wants to maintain its small scale character. The quality agreements are used to invest in the quality of personal contacts within the academic community. This community consists of both students and staff. Within the UT quality agreement programme Community Building, the university has the ambition to ensure that each student feels part of a community, which supports the students in their learning process and contributes to their well-being. Next to community building, the UT will pay extra attention to the coaching of students. Because students are responsible for their own learning process, teachers will, to a greater extent, have the role as tutors who support students in this process. This means that the type of contact between students and teachers will gradually change and will focus on the personal development of each student.
- **Study Success.** The university defines study success by the commonly known parameters such as drop-out rates and graduation rates. The quality agreements are expected to have an effect on study success. The UT quality agreement programmes improve the learning environment of students and the support they receive from the academic community. The university expects that this will positively influence study success.
- **Differentiation.** One of the UT quality agreement

programmes aims at talent development of students. The ambition of the university is that students are stimulated and have the possibility to create their own learning experiences. This means that differentiation within degree programmes will increase, for example by creating flexible trajectories and learning paths, and by using a variety of learning methods. Next to differentiation within the context of a degree programme, the university will inquire whether current extracurricular programmes, like the honours programmes, Student Teams, and DesignLab, sufficiently meet the need of students to develop themselves in a broader way. Because the university is becoming increasingly international, one of the UT quality agreement programmes focusses on developing global citizens. Having an international community of students and staff requires that degree programmes pay extra attention to intercultural aspects. Concerning continuous professionalisation of teachers, the university offers training programmes that teach how to deal with intercultural differences and that help teachers to support students in their learning process. The quality agreements are also used to invest extra in continuous professionalisation of teachers.

- **Teacher quality.** The University will have a specific UT quality agreement programme on Teaching Professionalisation.
- **Guidance.** As part of the UT quality agreement

programme on Talent Development of Students, the university wants, in addition to current efforts of study advisors and teachers, invest extra in coaching of students, so that students are stimulated and supported to shape their personal development. The principle of student-driven learning requires that teachers are able to support students in their learning process. That is why training of these competences will be included in the UT quality agreement programme on Teaching Professionalisation.

- Learning facilities. The University will have a specific programme for learning facilities. This programme concerns both utilizing digital technologies to support the learning process as well as physical facilities.



# 5. QUALITY AGREEMENT PROGRAMMES





## 5. QUALITY AGREEMENT PROGRAMMES

**The quality agreement programmed that the UT has defined, are described in the following paragraphs. For each programme the overarching ambition is described, the programme's components are explained and the aspired development is presented.**

### 5.1 PROGRAMME COMMUNITY BUILDING

#### CURRENT POLICY

Community building has been an essential part of the philosophy of the University of since its foundation in 1961. This is expressed in the form of small-scale and interactive learning environments. The importance of being able to collaborate and interact with people from other disciplines is still strongly emphasised, for example in project-led education of Bachelor's modules. Next to that, mentoring, tutoring, and coaching have always been crucial aspects of education. The importance of community building is also expressed in the form of the campus, which offers a small scale residential system with student housing to promote social interaction.

The UT distinguishes two types of communities: 1) Communities within the context of degree programmes and 2) Interfaculty communities based on a common mission and/or similar interests. Examples of the latter are the student teams (e.g. Solar Team, the Dream Team, the Pre-U Team) and the Honours Community. These communities help to bring the university's core values into practice (Entrepreneurship, Global citizenship, Synergy, and Societal Impact).

The UT applies the home base concept to foster community building. Based on an extensive qualitative research among students and staff, the following elements turn out to be important for a successful home base<sup>2</sup>:

- Work and relaxation. The most important element for a student's home base is the possibility for them to have a mutual place for both work and relaxation.
- Connection to the study programme and to fellow students. It starts with the connection of freshman students to this home base. The presence of different cohorts at this location is important, so that students can exchange experiences. Regarding interfaculty

communities, it is also important that students have a place where they can meet for cooperation or bonding.

- Recognition. A student should feel at home and part of the community. It must be a recognizable place but still accessible to all students.
- Location. Regarding a home base that is related to a degree programme, the environment is ideally in the vicinity of the study association and the teaching staff.

Relevant policy in view of the above also includes the long-term Strategy plan on Housing (LTSH). In this plan all the real estate developments are calculated as a prognosis for the next five years. The latest version, still in progress, will reflect the housing from 2018-2023, taking into account the importance of developing home bases.

#### PROGRAMME'S AMBITION

**The UT aims at having students feel part of a community, consisting of staff and fellow students, which supports individual members in their learning process and contributes to their well-being.**

#### RELEVANCE OF PROGRAMME IN TERMS OF QUALITY IMPROVEMENT EDUCATION

Being part of a community is an important psychological need, contributing to overall well-being. Experiencing "a fit" in academic life strongly correlates with lower sense of adversity and distress, thus a better fit promotes resilience. Taking measures to enhance the feeling of belonging and sense of community are, therefore, expected to have a positive effect on both student well-being and study success.

Especially for new / incoming students it is important that this supporting community is visible and accessible. The learning environment is an important factor to promote this for both majority and minority students, which is important, since the student population is increasingly diverse. From interviews with students, that were conducted as part of the aforementioned research on home base, the vast majority confirm the importance of a physical home base.

As part of the university's vision on education, the university promotes cross-overs and an interdisciplinary approach. The university aims to deliver graduates that can transcend the borders of specific scientific disciplines and promote students to tackle problems that challenge them to both cooperate with other disciplines, as well as developing disciplinary depth. Crossover communities promote interaction between disciplines and cooperation between different student groups. The DesignLab is an example of an interfaculty home base, a place where students and staff are part of a community outside of their

<sup>2</sup> Lindemann, M., Vollenbroek, W., Oude Vrielink, R. (2018) Rapportage onderzoek thuisbasis. University of Twente.

‘degree programme related’ community, which enriches their experience at the university. Another example of an excellent home base, is the University College Twente.

A home base, which is related to a degree programme, simulates quality culture. Students, teaching staff, and study advisors can discuss quality of education at a low-key level. An association like the Student Union can use that input to find out how to further improve the atmosphere at the UT.

## MEASURES AND DELIVERABLES IN RELATION TO PROGRAMME'S AMBITION

The programme community building consists of two elements:

- home bases
- activities that support community building

An overview of the activities concerning Community building is presented in Figure 4.

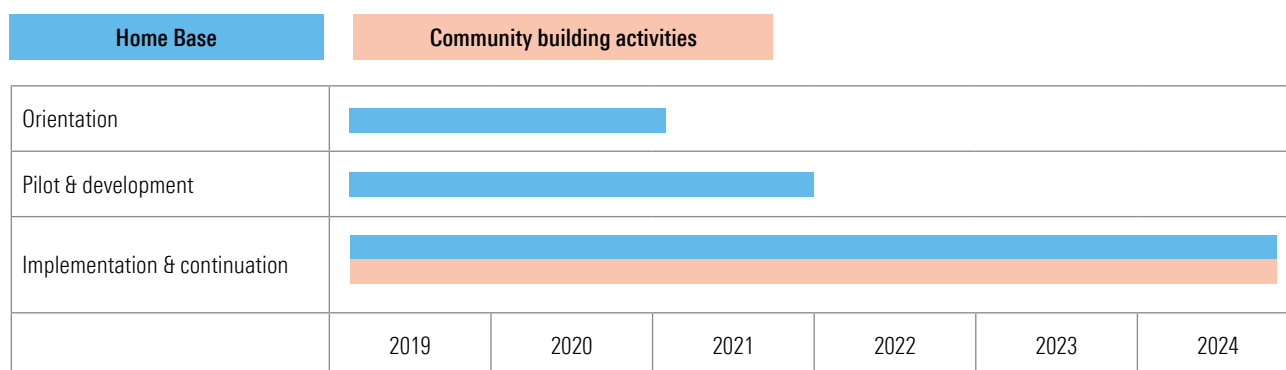


Figure 4: Overview the development of UT quality agreement programme ‘Community building’ in time

### *Needs and requirements analysis home base*

The report on home bases describes four elements of a successful home base. However, specific information on the needs and possibilities regarding a home base per programme are not available yet. Therefore, a needs and requirements analysis will be performed in 2019. Campus Facility and Management and Center for Educational Studies (service departments) will assess what the consequences are of the requirements for housing and timetables, because scheduling near a home base has effect on usage of class rooms and the capacity of the Central Education Facilities.

### *Developing home base*

One of the main motives to have a home base is that it facilitates interactions of students and teaching staff. That is why both groups should have a say in how a home base should be developed. Concerning home bases in the

context of degree programmes, study associations are important stakeholders. Study associations have a crucial role for programmes, not only with regard to community building, but also in the quality monitoring of the programme. Study associations can provide students with a location where they can easily go to for a short relaxation or for a longer period to study/work together in an environment that is accessible to visit and a place to get information. Because of this, the needs of study associations have to be considered while developing a home base area.

In accordance with the long term housing plan of the UT, some degree programmes and the ITC faculty will move to (another location at) the campus. This is the reason why the faculties S&T and ITC plan to develop new home bases. The ET faculty will develop a comprehensive plan for community building that will answer the question what (type of) facilities, personnel and actions are required to

stimulate community building and how this can be realised over time. The home base concept will be incorporated in this plan. The BMS faculty plans to continue its home base in the Cubicus, which was developed recently.

#### ***Implementation & continuation home base***

After a plan phase, a home base will be implemented. This requires funding to build or refurbish a physical location. Next to this, the implementation might also imply that lectures and tutorials will be scheduled more often close to the physical home base.

The programmatic approach gives room to incorporate activities that are yet unforeseen, but turn out to be important to support community building. Decisions to adjust plans and budget will be taken as part of the Planning & Control cycle. After a home base is realised, it will be evaluated in consultation with its users, and adjusted if necessary and possible.

#### ***Community building activities***

The experience of belongingness with the study programme and with fellow students is an important result of community building. The first important opportunity to do so is the introduction period. The introduction for new students should stimulate the formation of a community of student cohorts. Especially because the student population becomes increasingly diverse as a result of internationalisation, the introduction period is important to make every student feel welcome. Next to the introduction period, faculties organise other activities that stimulate communion. For example, the BMS faculty plans to annually organise a BMS Master Day. The study associations will play an important role to stimulate integration of international students during this day.

## **5.2 PROGRAMME LEARNING FACILITIES**

### **CURRENT POLICY**

The Twente Educational Model forms the basis for bachelor education at the UT. Characteristics of this model: project-led education, large coherent educational modules, with a project at the heart, interaction with peer students and teachers on campus in project teams, and active learning. The UT vision on ICT in education, "Learning 2020: Student Driven & Technology Enhanced", supports the educational model. Key concepts in Learning 2020: student driven learning, blended learning, flipped classroom, interactive lectures, guidance of the learning process by formative feedback. Most of the concepts in TOM and Learning 2020 also apply to the master education. The learning facilities should be in line with this vision.

### **PROGRAMME'S AMBITION**

The programme aims to increase the quality, availability and usage of learning facilities, physical as well as digital. The actions will be based on practice-oriented research with and for teaching staff and students. To accommodate this, the UT will use experimental learning spaces to experiment and test, under guidance of technical and educational experts.

Firstly, the UT wants to **increase the quality, quantity and usage of learning spaces for individual study as well as teamwork** (student projects). The UT also wants to enhance regular lecture rooms for more interactive learning. The learning spaces will be designed in close cooperation with students and educators. The UT aims to apply adaptive scheduling, in order to make more effective and efficient use of all of the physical learning spaces. As an intermediate step, the UT will improve the user-friendliness of the real-time booking system for project rooms, to accommodate students better.

Secondly, to guide the learning process of students better, the UT strives to **improve the availability and use of digital tooling**. The focus will be specifically on the different forms of digital assessment (summative and formative). Formative testing covers the broad spectrum of peer feedback, online discussions, quizzing and peer assessments. The UT also aims to scale up the physical facilities for digital summative testing and examinations.

Thirdly, the UT will **explore how learning analytics can help students to improve their learning process**. The focus will be on the students, although using data analytics for improving the activities of the teaching staff can be a welcome side-effect.

Proper usage of the learning facilities will not come naturally for most of the teaching staff. Therefore, this programme is closely linked to the Teacher professionalisation programme. The UT foresees to invest in resources providing ample opportunities for teachers to get trained in using the learning facilities to their best.

### **RELEVANCE OF PROGRAMME IN TERMS OF QUALITY IMPROVEMENT OF EDUCATION**

Increased quality, quantity and usage of learning facilities improves the quality of the learning environment and thus the quality of education. For example, it is widely recognised that formative assessment helps the student in taking ownership of his/her own learning. Digital tooling that facilitates formative assessment thus supports in achieving this. Flipping the classroom, blended learning and learning analytics can similarly improve student learning. Investing in learning facilities thus contributes to quality improvement of education.

### MEASURES AND DELIVERABLES IN RELATION TO PROGRAMME'S AMBITION

The programme learning facilities consists of four elements: learning spaces, e-learning, digital assessment, and learning analytics.

#### Learning spaces

Currently, the number of learning spaces are: 1.500 self-study places, 100 project rooms, exam rooms with 280 places. The UT intends to grow to approximately 1.750 self-study places, 130 project rooms and additional 40-50 places for digital exams. Additional learning spaces will be designed with input from students and educators. The facilities within classrooms will be enhanced to support active learning, depending on the outcome of several experiments, pilot studies and practical / technical possibilities. The UT will create one or more experimental learning spaces on campus. The (existing) Classroom of the Future is a perfect place to experiment with different setups and digital facilities.

All faculties strongly emphasise the importance of improving the learning spaces. However, they differ in their needs regarding learning spaces. The faculty of Engineering Technology will develop a comprehensive plan for ideal

learning spaces in 2019. This plan will be an offspring of a strategic discussion about the 'Engineer of the Future' and the implications of this graduate profile for education. The faculty of Electrical Engineering, Mathematics and Computer Science requires more room for small project groups and an upgrade of student workspaces in labs of the research groups. The faculty of Science and Technology requires both an expansion and upgrade of lab facilities. The faculty of Behavioural, Management and Social Sciences wants to develop and exploit its BMS lab for study purposes. The faculty of Geo-information Science and Earth Observation specifically mentioned a need for learning spaces that allow for different types of learning.

Currently the students experience too low availability of learning spaces. The real-time booking system for project rooms will be improved, so students can easily find alternative spaces, preferably close to their home base. The possibilities of sensor techniques will be explored to free spaces with no-show or early leaves. In addition, the possibilities of adaptive scheduling will be investigated. Adaptive scheduling promises to allow for dynamic changes in the schedule depending on current demand for learning space (number of seats, as well as desired facilities).

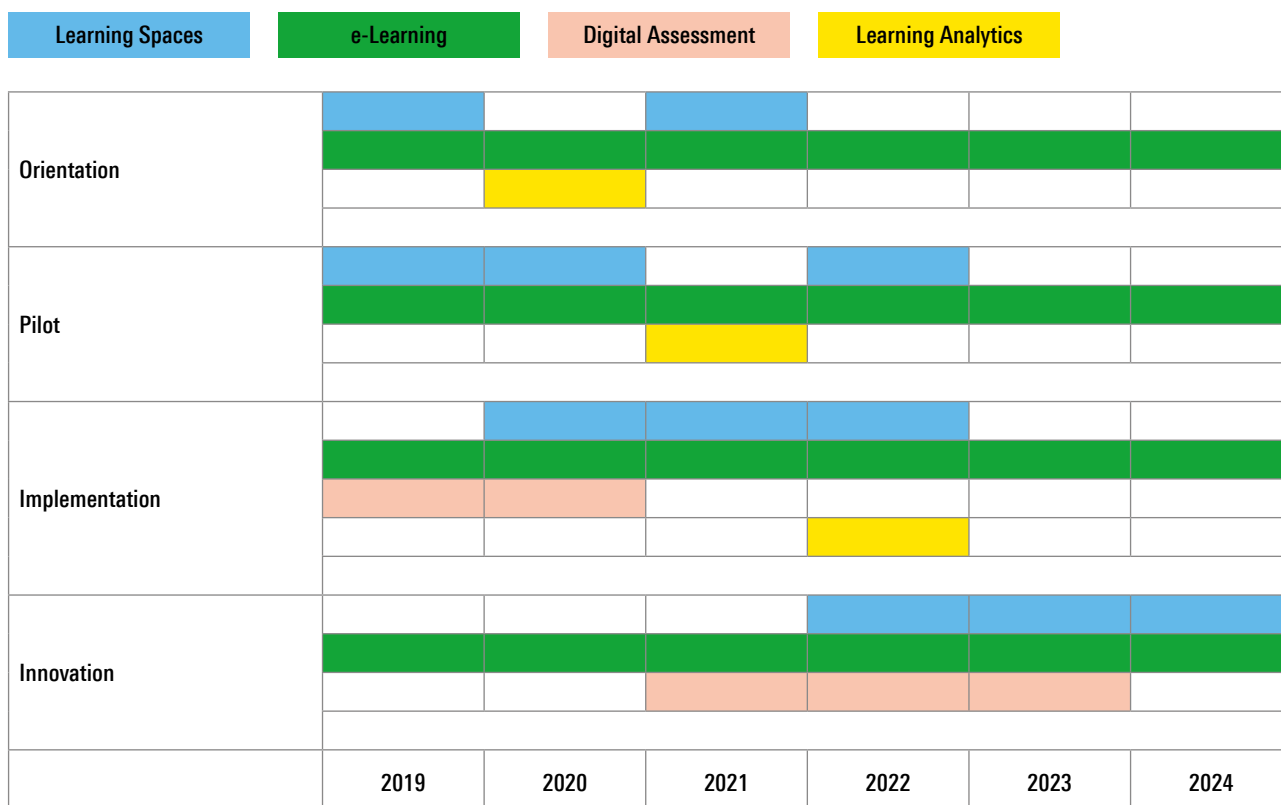


Figure 5: Overview of the development of UT quality agreement programme 'Learning facilities' in time

### *Facilitate and stimulate use of e-learning*

In the coming years, teaching staff will be facilitated to select and use the right digital tools for flipping their classroom, making use of blended learning and increase interactivity in the classroom. In 2018 the UT switched from Blackboard to Canvas, with the basic functions of Canvas. In 2019-2022 the UT plans to introduce advanced functions of Canvas, possibly connected to satellite systems.

### *Digital assessment*

Currently, digital assessment is mostly used for summative assessment and by a limited number of courses. In addition, most of the digital assessments are with traditional types of questions (MC, etc.). In 2021, the UT aims to have digital assessment broadly available for all degree programmes of the UT, supported by professional staff. Not only for summative, but also formative assessment and not only with traditional question types, but also with software based testing (in which the student performs tasks with discipline-specific software). In the years to come, the UT intends to further broaden the use of formative digital assessment: peer feedback, online discussion, etc.

Most of the faculties plan to invest in the use of e-learning and digital assessment. Some examples are: first pilots with digital technologies (ET) and, further develop and professionalise the use of e-learning and distance education programme (ITC).

There is a growing interest of faculties and individual teachers to make use of e-learning and digital assessment. The demand for support in this area is growing rapidly.

### *Learning analytics*

In 2020 the UT plans to explore the possibilities that learning analytics can offer. First steps of realization are to be expected in 2022, further development in the years up to 2024.

## 5.3 PROGRAMME TEACHING PROFESSIONALISATION

### CURRENT POLICY

As sketched in previous chapters, the UT prides itself on the small-scale and interactive learning environment. The UT and its staff show huge commitment by implementing new ways to improve education, increase student learning and innovate their teaching. The UT recognises the unequivocal interdependence between educational improvement and teacher development: teachers are crucial in delivering high quality education and implementing student-driven learning. Therefore, policy concerning recognition and rewarding of teaching achievements was recently adopted. In addition, the policy emphasises academic career opportunities for scientists that show excellent impact on education, teaching and learning.

At the same time, several areas for improvement are known, most notably:

- *Time* for educational improvement is limited, causes that are mentioned are high work pressure and the current remuneration that covers costs of teaching enactment, and not the costs of reflecting on or revitalizing courses and programs.
- Access to *collegial expertise* (e.g. peers on education, digitalisation, leadership) can be hindered by existing organizational structures and other barriers.
- In daily practice, teachers are still *rewarded* more for their research performance than for their teaching performance. The recently adopted policy concerning recognition and rewarding of teaching achievements is the first step toward change. The next step is the implementation and translation into daily practice.

### PROGRAMME'S AMBITION

The university as a whole aims to:

- Further **strengthen expertise on educational improvement**: By facilitating access to the expertise of colleagues both at the university level (CELT, CEE/ Center for Engineering Education, TELT, Leadership experts at HR, etc.) and within the faculties (peers, teacher communities).
- **Reward teaching achievement**: By embracing a culture of excellence that recognises and appreciates investments in educational improvement, teaching quality and teacher development.

Regarding the first, the university specifically wants to increase the number of teaching staff that obtained a University Teaching Qualification (BKO), a Senior University Teaching Qualification (SKO), and/or an Educational Leadership Programme (LOL) certificate. The university will also facilitate teachers and students who have a role in education to further enhance their competences on small scale and interactive education by developing customised courses. Initiatives regarding teacher communities will be supported and facilitated by the university so that teaching staff is stimulated to learn from and with each other.

To accommodate variety and recognise success, the university has endorsed the use of a framework<sup>3</sup> that articulates four levels of university teacher development. This framework is used to structure career development of teachers and is used as an inspiration for structuring training and coaching activities concerning teacher development at the UT. (Like the BKO, SKO, LOL, etc.)

<sup>3</sup> Graham, R. (2018) The Career Framework for University Teaching: background and overview. London: Royal Academy of Engineering. Available at: <http://www.rhgraham.org/resources/Career-Framework-University-Teaching-April-2018.pdf>

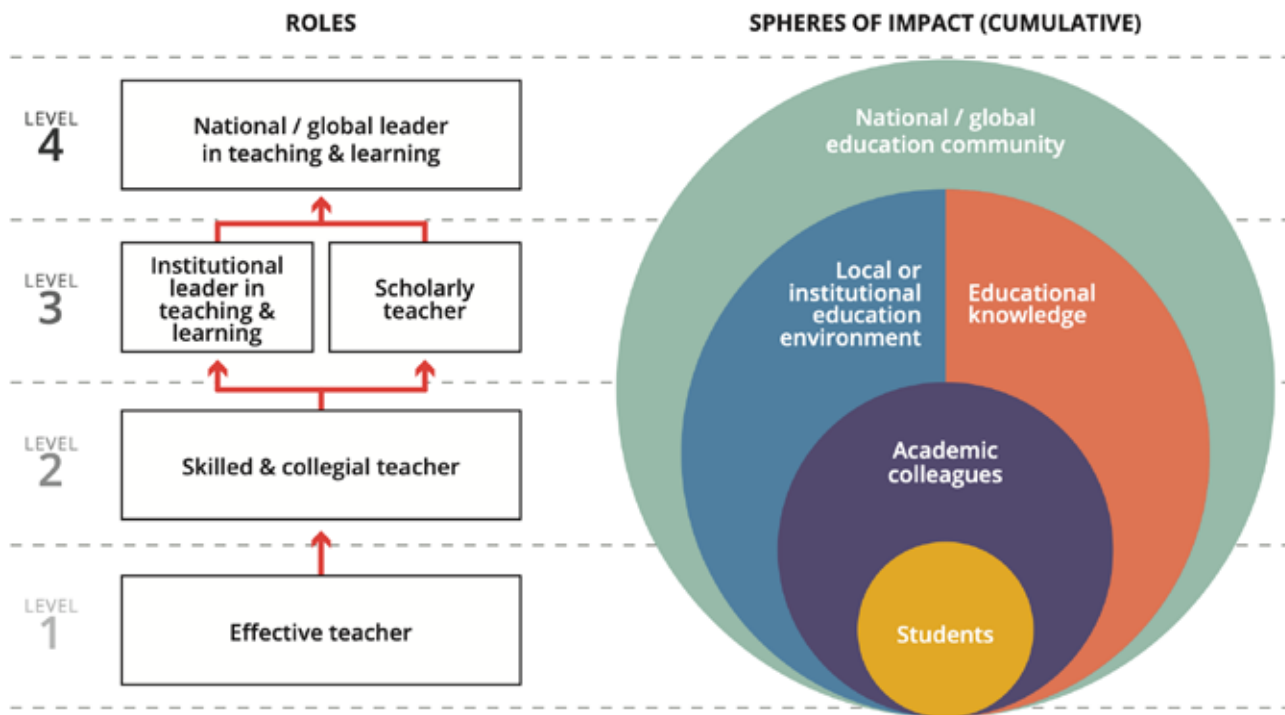


Figure 6: Overview of Grahams's Career Framework for University Teaching

### RELEVANCE OF PROGRAMME IN TERMS OF QUALITY IMPROVEMENT EDUCATION

Based on an international review of the literature, Villegas-Reimers reports that teacher's professional development has an impact both on teachers themselves and student learning<sup>3</sup>. Specifically, a number of studies report that the more professional the knowledge teachers have, the higher levels of student achievement. It is also known that professional development plays an important role in improving teaching methods, which again positively impact students' learning.

### MEASURES AND DELIVERABLES IN RELATION TO PROGRAMME'S AMBITION

The programme teaching professionalisation consists of four lines of actions:

1. Increasing participation in training programmes  
The university supports educational improvement and teacher development by offering solid training programmes: the BKO and SKO programmes and the Educational Leadership Programme. The number of

teaching staff who obtained an BKO and SKO and who completed the Educational Leadership Programme will increase. In 2021, the UT aims for at least 70 percent of the teaching staff will have an appropriate qualification, preferably a BKO. Specific targets concerning participation in the SKO programme and Educational Leadership Programme vary per faculty and will be defined at a later moment.

2. Development of customised courses  
The UT will stimulate staff and students to participate more in customised courses. The content of the courses will be about main concepts of university's educational model, like student-driven learning and project-led education. The customised courses also aim to further develop the different skills that educators need. For example a course about tutorship or a course that help teaching staff to design a module or course. The faculty of Science and Technology will start a pilot with Learning Assistants. Within the faculty, there is sizeable group of students with an interest in teaching who want to actively participate in education. A specific course will be developed for Learning Assistants in which students from the faculty can participate and receive a pedagogical training. Depending on the success of this pilot, the course can be further

<sup>4</sup> <https://www.teachertivity.org/files/PDF/UNESCO%20-%20Teacher%20Professional%20Development.pdf>

developed into a programme and extended to other faculties who are interested.

3. Teaching communities

The university will support initiatives regarding teacher communities. The faculty of Electrical Engineering, Mathematics and Computer Science will introduce the UTeachers' Academy@EEMCS. This will be a network of teachers within the faculty who have the ambition to improve their performance based on literature, experiences elsewhere, or input from colleagues. Members get the opportunity to execute pilot studies and to discuss the outcomes with colleagues. Other ideas are explored. For example, the alumni of the Educational Leadership Programme, are exploring how to start a platform/ community with, from and for

teachers at the UT. This kind of initiatives will be supported.

4. Rewarding teaching achievement

All faculties have recently adopted the policy concerning recognition and rewarding of teaching achievements and are planning implementation. The faculty of Geo-information Science and Earth Observation explicitly connects implementation of this policy to the quality agreements by mentioning further development of its pilot on rewarding teaching achievement by introducing a peer review system and enhancing the development of impact narratives. The university will support initiatives that aim to reward teaching achievement and will help to implement this across the university if the pilots are successful.

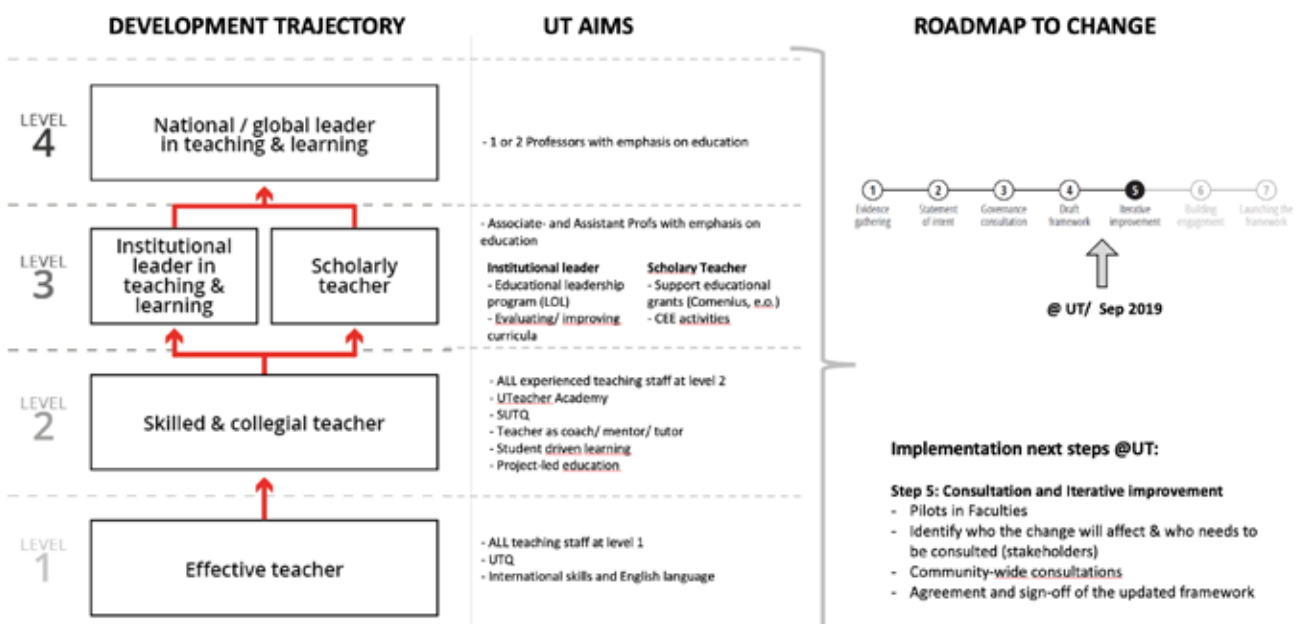


Figure 7: Overview of UT quality agreement programme 'Teaching professionalisation'

Most of the actions can be characterised as supportive actions (e.g. supporting to initiate teacher communities), each of which aligns with a specific level in the aforementioned framework. Additionally, several pathways identified by the faculties help shape the infrastructure through which the supporting actions can take place (e.g. elaborating policies like recognition and rewarding teaching achievements).

An overview of the plans and initiatives is given in Figure 7, which shows how the supportive actions aligns with the four levels of teacher development, as well as key aspects of infrastructure that will enable them.

## 5.4 PROGRAMME TALENT DEVELOPMENT OF STUDENTS

### CURRENT POLICY

At the UT, education means student-centered learning where students enjoy freedom of choice and opportunities to develop themselves. This is, for example, reflected in the Twente Educational Model, which is project-based bachelor education that enables students to develop themselves not only academically but also personally and professionally, for example in the roles of researcher (onderzoeker), designer (Ontwerper), and organiser (Organisator). For the top-10% cognitively talented students, the UT offers extracurricular honours education in the form of 5 bachelor and 3 master tracks. A broader set of talent development opportunities is also facilitated extracurricular, for example in the form of student engagement (often called “activism” at the UT), student teams (e.g. solar team) and entrepreneurial development. Students are thus facilitated in many ambitions and talents. However, talent development is mostly offered to the already recognised (cognitively or otherwise) talents. Students who have not discovered their talents or passion yet or who are underachievers are not sufficiently seen or challenged. No structure is provided to support students in their choices and insufficient guidance is provided to students to help them discover their talents or to seek opportunities. Currently, a university-wide vision on talent development for students (UTalent) is under development, which addresses these points and also embodies the concrete programmes as formulated below.

### *Programme's ambition*

The ambition of the Quality Agreements Talent programme is that all students are stimulated and have the possibility to create their own learning experiences. The aim is to both increase the amount of students reached by the UT's talent programmes and to lead to greater diversity in talents explored by students, thus enhancing student's career possibilities, employability, and wellbeing.

The intention is therefore to build a UT talent development programme upon two pillars (thereby expanding upon the current situation which mainly focuses on the first pillar):

1. Talent development with the goal to recognise and challenge the highly talented students (top 10%).  
Students may be gifted in the classical cognitive competencies, but also in leadership competencies, design competencies etc. (excellent students)
2. Talent development with the goal for every student to achieve their full potential by becoming aware of, exploring, and developing their own talents (growth of all students).

	Extracurricular	Intra-curricular	Individual guidance
<b>Recognise and challenge highly talented students</b>	5 bachelor and 3 master honours tracks, University Innovation Fellows	Deepening programmes (e.g. Star and Plus), Double programmes, ATLAS	Coaching
<b>Stimulate all students to become aware of ,and explore, their own talents</b>	Student teams, career market, lunch lectures, DesignLab, DreamTeam	Design own learning paths, professional development activities within modules	Coaching, Mentoring, buddy system

Table 2: Perspectives on talent development and examples



Facilitating students to discover and develop their own talents is a process that consists of two essential interacting processes. Firstly, a bottom-up approach in which the individual student is central in exploring questions as: Who am I, What are my talents, What is important to me, What do I have to offer, What do I want to develop? And secondly a top-down approach in which the environment is central: What is out there? What are career options? What is expected from graduates in my field? These two types of questions should be answered not in isolation, but related to each other. In view of this and figure 10, the following two goals are formulated at the UT level:

1. Currently the individual guidance is underdeveloped. Student advisors only have the capacity to talk to their students (on average) once per year and the Career Service Centre does not have the capacity to provide intensive support to all students. Therefore, **exploration of the possibilities and added value of offering coaching or mentoring in relation to talent development that is available to all students has to be done.**
2. Initiatives to become aware, explore and develop one's own talents, both for the highly talented students as for the complete student population are now scattered. However, becoming aware of one's own talent and walking the extra mile is more difficult to do in isolation, than in a community. The confrontation and interaction with both like-minded and otherwise-minded people is stimulating and will aid reflection on and exploration of own talent. Therefore, it is important **to explore the possibility of developing a UTalent Hub (digital and physical) that facilitates talent development.** This could vary from the availability of digital tools to get feedback and become aware of one's own talents, an overview of talent development programmes, a story-lab, a place to hang-out and interact with others, etc.

Coaching and the UTalent Hub are closely connected: i.e. physically happening on the same location, coordinated by the same individual, and coaching students to explore their own talents allows them to develop their talents in the various opportunities at the UT (brought together in the UTalent Hub).

## RELEVANCE OF PROGRAMME IN TERMS OF QUALITY IMPROVEMENT EDUCATION

Research in various study programmes has shown that a clear view of students about their talents, beliefs and motives in relation to their (future) profession (a clear professional identity) positively influences their well-being, motivation to learn, study outcomes and quality of career

choices.<sup>5</sup> A clear professional identity is an important catalyst for students to direct their career development and making informed choices<sup>6</sup> as it contributes to their career clarity and career confidence<sup>7</sup>. Developing a strong professional identity is not an individual process, it is shaped in relation to the sense of belonging to the community<sup>8</sup>. The prototypical image and role models that study programmes (unconsciously and consciously) provide can therefore be very influential on the extent to which students can identify themselves with their future profession. If students experience a mismatch between who they are and this prototypical image (e.g., because they differ in gender, cultural background, interests, etc.), more effort is needed to build a strong professional identity. If they fail to do so, this often results in drop-out. To support students in developing their professional identity, two components are central as they mutually influence each other: 1) supporting reflection on one's own talents and motives via career dialogues and 2) activating student to explore future possibilities<sup>8</sup>. A talent development programme will need to consider at least these components<sup>9</sup>.

The literature thus shows a clear link between a talent development program, the professional identity of the student and study success. Talent development is thus an essential aspect for achieving a high educational quality at the UT.

## MEASURES AND DELIVERABLES IN RELATION TO PROGRAMME AMBITION

As said, the aim is to increase the amount of students reached by the UT's talent programmes and to lead to greater diversity in talents explored by students in order to enhance student's career possibilities, employability, and wellbeing. To reach these aims coaching and opportunities for talent development are specifically looked at. The former will be an initiative at the institutional level and the latter consists of both of an initiative at the level of the institution as well as faculty specific plans.

5 Canrinus, E. T., Helms-Lorenz, M., Beijjaard, D., Buitink, J., & Hofman, A. (2012). Self-efficacy, job satisfaction, motivation and commitment: exploring the relationships between indicators of teachers' professional identity. *European journal of psychology of education*, 27(1), 115-132.

6 Meijers, F., Kuipers, M., & Gundy, C. (2013). The relationship between career competencies, career identity, motivation and quality of choice. *International Journal for Educational and Vocational Guidance*, 13(1), 47-66.

7 Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of vocational behavior*, 45(1), 79-122.

8 Meijers, F., Kuipers, M., & Gundy, C. (2013). The relationship between career competencies, career identity, motivation and quality of choice. *International Journal for Educational and Vocational Guidance*, 13(1), 47-66.

9 Research project Bridge the gap (BMS): <https://www.techyourfuture.nl/a-955/bridge-the-gap>

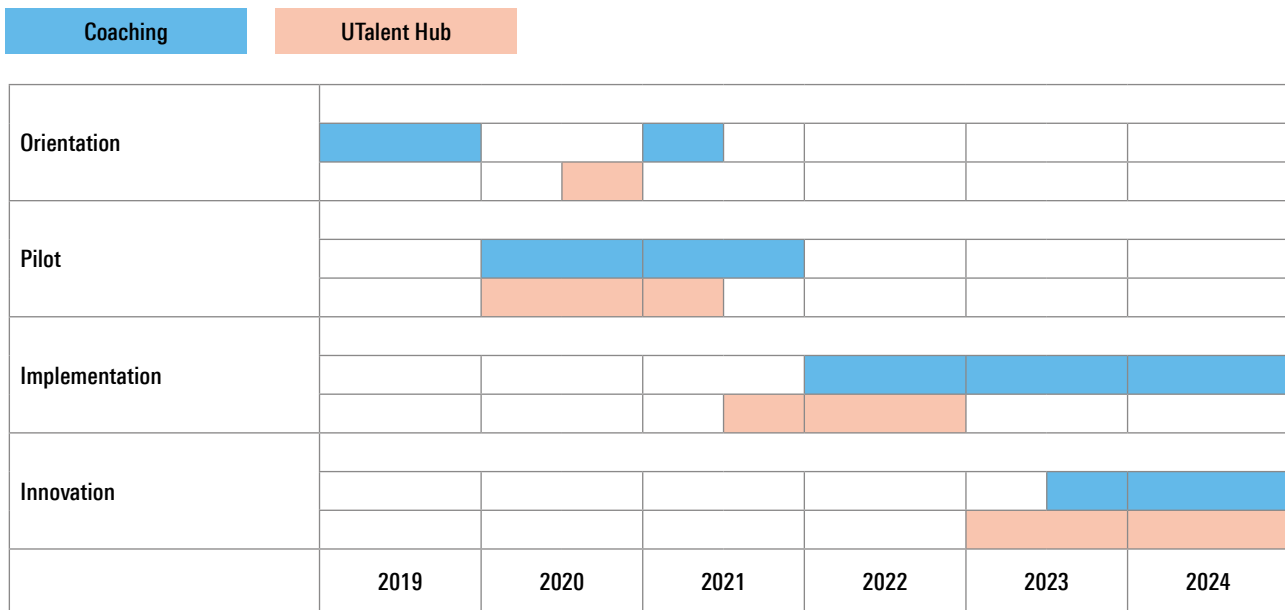


Figure 8: Overview of the development of UT quality agreement programme 'Talent development of students' in time

### Coaching:

- Inventory of ongoing coaching activities, needs and possibilities including recommendations for pilot years (start 2019)  
For example, ET and EEMCS already indicate the need for additional personnel and expertise with regards to coaching students in their faculty plans. Besides, BMS and S&T wish to hire additional teaching staff in view of the teaching professionalisation programme which recognises the important role the teacher has as coach to students.
- Feedback tools on talent and career development (e.g. Carriere Kompas) (2019-2020)
- Training for coaches developed (2019), coaches at pilot programmes trained (2020)  
For example, ITC proposes to develop a mentor system for its master students.
- Coaching offered to a wider range of students in pilot programmes (2020)
- Effect measurement on contribution of enhanced coaching on career confidence, career exploration and career clarity (2020-2021)
- Pilot evaluation, including recommendations for UT-wide implementation (2021)
- Coaches at all faculties trained, capacity adapted at CES (start 2023)
- Coaching/mentoring facilities offered to all/more defined subsets of students (2023)
- By 2024 coaching will be more widely implemented, in line with conclusions on contribution of enhanced coaching on career confidence, career exploration and career clarity.

### Opportunities for talent development:

#### 1. Diverse learner needs

Important in considering the opportunities for talent development is the growing diversity of students. This calls for attention to 1) intercultural competencies (see also the Global Citizens programme), for example by having a special skill learning line around internationalisation (ITC) or providing international experiences within all degree programmes (EEMCS); 2) diverse learner needs, for example by offering services in multiple formats (ITC); and 3) deficiencies, for example by having flexible premasters (BMS).

#### 2. Challenge highly talented students

This is the focus of BMS, who intends to do by developing an additional bachelor honours track 'Open Innovation & Entrepreneurship', increasing participation of the existing intra-curricular and extracurricular bachelor honours programmes and offering double degrees for 80% of their master programmes.

#### 3. Develop new talent initiatives

ITC will develop a specific elective course around entrepreneurship, ET will introduce a new master project for developing academic and professional skills, and EEMCS will start with the Data Science Lab where master students deal with real world problems. Both S&T and EEMCS will also offer extra training facilities in support of the development of teaching talents: see also the Learning Assistant Programme (specified under the teacher professionalisation program).

4. UTalent Hub:

- Inventory of existing talent development opportunities related to the diverse types of talent, needs and possibilities (2019)
- Recommendations for further development of initiatives and/or further exploitation of existing UT units (DesignLab, Student teams, Honours, UCT)
- Online exploration tool, relating opportunities to the diverse types of talents (2020)
- Virtual UTalent Hub (2020)
- Physical UTalent Hub at a central location (2020)
- Communication/marketing plan on talents, role models and PR activities (2020)
- Pilot evaluation, including recommendations for UT-wide implementation (2021)
- UT-wide implementation, with continuous innovation loops, in a dynamic environment of the UTalent Hub relating coaching and talent discovery with UT-opportunities (2021-2024)
- By 2024 the UTalent Hub is fully running and has even seen first rounds of innovation.

**Extra teaching staff:**

Within the UT, the focus is on small-scale and interactive education. For Bachelor’s programme this implies that students often work in project groups and regularly receive feedback. Within Master’s programmes, the connection with research groups is strong and students receive an intensive guidance during the graduation period. A number of faculties will to recruit extra (teaching) staff in order to guarantee this small-scale and intensive learning environment.

**5.5 PROGRAMME GLOBAL CITIZENS CURRENT POLICY**

The UT wants its students to be as prepared as possible to succeed in an international working environment after graduation. To put this aim into practice, the UT needs to shape the language, content and form of the degree programmes to better fit this international context. Furthermore, the UT believes it is important for students to gain international experience, either by going abroad (for example, through exchange programmes, internships, joint course work, online cooperation and joint education programmes) or by way of the local, campus-based international classroom.

To accomplish this, the UT formulated the Internationalisation Vision 2020: “Educating the Global Citizen” (2015). It describes ambitions regarding international curricula, participation in international networks, building an international community and international student intake.

**PROGRAMME’S AMBITION**

After optimizing processes (2015-2018) concerning international student intake, admission and the customer journey, the focus for the coming years will be on the international curriculum. Based on their vision, **degree programmes will shape their content and form to better prepare the students for being and working as a global citizen.** The service departments will support the faculties by having the right expertise or resources available so that faculties can devote their time to improve education. Next to this, efforts are scheduled to make the UT a more **inclusive international organization.**

To reach these ambitions the UT has launched the programme International Projects. The quality agreements – the programme Global Citizens – will be an integrated part of this bigger programme. The latter consists of the projects International Curriculum, Exchange/ International experience and, in support of that, International Partnerships, which will focus directly on the improvement of quality of education.

The projects language policy, incoming degree students and contact center focus on improvement of support/ quality of services provided to students and therefore have an indirect link with the quality of education.



Figure 9: Overview of the embedment of UT quality agreement programme ‘Global citizens’ in Programme International Project

## RELEVANCE OF PROGRAMME IN TERMS OF QUALITY IMPROVEMENT EDUCATION

The Education Council of the Netherlands (in Dutch: onderwijsraad) have stated that internationalisation contributes to a higher quality of education<sup>10</sup>. The programme Global Citizens aims to further develop this and address internationalisation explicitly within education.

Besides, it is one of the goals of education to prepare students for the labour market. As the labour market is expected to be more internationally oriented in the future, students can be prepared for this now, thus increasing their employability. The Erasmus Impact Study confirms this, having found that graduates with an international experience fare much better on the job market<sup>11</sup>. Further evidence is found in a Dutch study from CEO “Studie en Werk 2016” which focused on Dutch Higher Education Students and shows that the “study abroad experience” leads to a decrease in time to find a job<sup>12</sup>.

The goal of the Global Citizens programme is not only to support the students having an international experience, but embed this experience in an international curriculum. This underlying motive fits the goal of internationalisation as formulated by Professor Leask. She is best known for her research focused on engaging academic staff in the process of internationalisation of the curriculum, including Internationalisation at Home. To contribute to solving big problems of the world, Professor Leask believes that graduates of tomorrow should not be restricted or parochial of mind. Internationalisation, in the sense that students have access to knowledge and wisdom from all parts of the world and are open to new ideas regardless of the origin of those ideas, is important in achieving that<sup>13</sup>. Hence, the UT believes that internationalisation strengthens the UT’s ambitions towards education in general. “Our ambition with respect to education is to prepare students for the future in which they are expected as global citizen to contribute to Grand Challenges and sustainable development goals.”<sup>14</sup>

## MEASURES AND DELIVERABLES IN RELATION TO PROGRAMME’S AMBITION

As explained, the programme Global Citizens consists of the following lines of action:

- International Curriculum,
- Exchange and International experiences,
- International Partnerships.

### 1. International curriculum

Better prepare students on working in an international environment by the educational programme. In such an International Curriculum it is recognised that internationalisation requires incorporating a global, international or intercultural dimension into teaching (i.e. in the preparation and delivery of education) and learning (i.e. in the learning outcomes of the degree programmes). For this (the quality of) internationalisation will be assessed and improved by using the methodology of Certificate on Quality in Internationalisation (CeQuInt).

- In co-creation with all faculties an analysis of strengths and weakness of the internationalisation of all programmes as well as of UT-central level is available (2018-2019).
- Support (expertise/manpower) of programmes in the process of working towards a CeQuInt-certificate is organised.
- Pilot: transform existing curricula to International Curricula in 3 programmes of EEMCS and 1 of ITC (2019-2021)
- Expand number of pilot programmes with 5, of which 3 will be from EEMCS (2020)
- All programmes have integrated intercultural competencies in their curriculum or developed plans to do so, also the programmes that are not working towards the CeQuInt (2021).
- At least 3 programmes are awarded with a CeQuInt certificate or are in an advanced state of getting it (2021)
- At least 7 programmes are awarded with a CeQuInt certificate or are in an advanced state of getting it (2024).

### 2. Exchange and International experiences

ET wishes to increase the number of bachelor and master students that have an international educational experience. In order for all faculties to widely facilitate international experiences, the service departments will improve their support to students and faculties by redesigning (where needed) the Exchange-chain (2019-2020).

### 3. International Partnerships

ET, ITC, and BMS want to develop and strengthen existing International Strategic Partnerships & Networks (ISPN) as a means to create enough and qualitative good places for outgoing students in an efficient way. For example, by

<sup>10</sup> Onderwijsraad Den Haag mei 2016. De volle breedte van onderwijskwaliteit Van smal beoordelen naar breed verantwoord <https://www.onderwijsraad.nl/upload/documents/publicaties/volledig/De-volle-breedte-van-onderwijskwaliteit1.pdf>

<sup>11</sup> [http://europa.eu/rapid/press-release\\_IP-14-1025\\_en.htm](http://europa.eu/rapid/press-release_IP-14-1025_en.htm)

<sup>12</sup> [http://www.seo.nl/uploads/media/2016-47\\_Studie\\_Werk\\_2016.pdf](http://www.seo.nl/uploads/media/2016-47_Studie_Werk_2016.pdf)

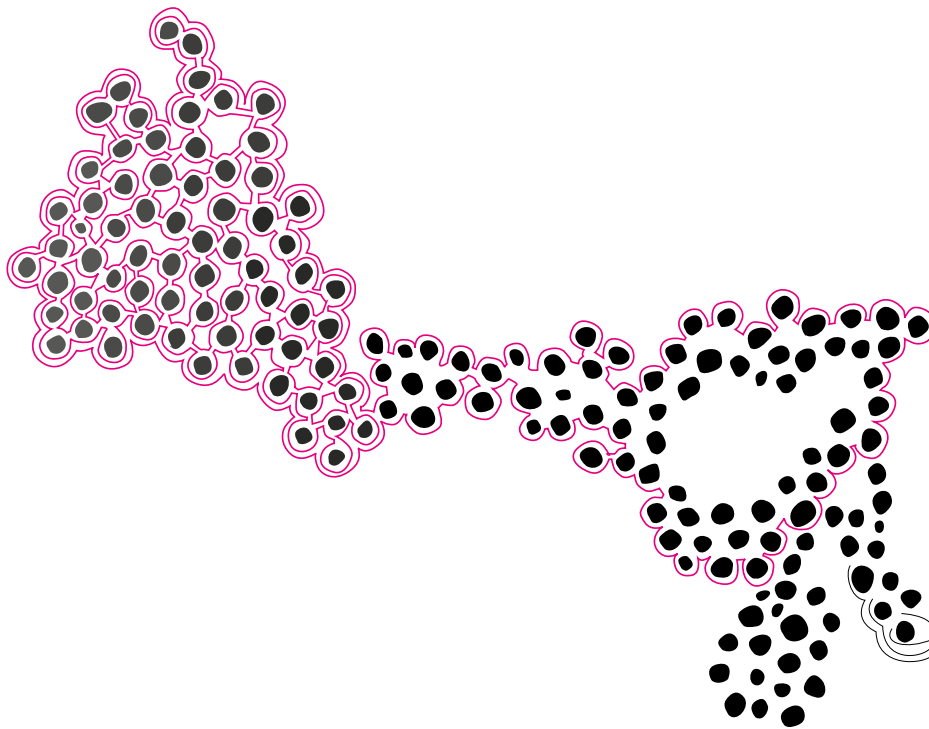
<sup>13</sup> Betty Leask, Internationalizing the curriculum, 2015

<sup>14</sup> EEMCS Quality agreements investment agenda 2018-2022 for UT voorbehoud instemming FR

offering double degrees for 80% of the English master programmes (BMS, 2022) or extending ECIU Exchange Partnerships to other degree programmes (ET, 2021). Service departments will support this with redesigned contracts (2020) and looking to extend contract at a UT-level (2022).

	International curriculum	Exchange/ international experience	International partnerships			
Orientation						
Pilot						
Implementation						
	2019	2020	2021	2022	2023	2024

Figure 10: Overview of the development of the UT quality agreement programme ‘Global citizens’ in time



# 6. GOVERNANCE ON QUALITY AGREEMENTS



## 6. GOVERNANCE ON QUALITY AGREEMENTS

The UT has chosen to implement the quality agreements by means of a programmatic approach. That is why the UT designed a process for continuous development that will lead to tangible results per programme. The way of working to keep track on the quality agreements, and to adjust plans if necessary, fits into the regular quality improvement cycle of education. This means no extra programme organization needs to be established. People who normally are responsible to guarantee that education is of high quality, and service departments that support in this process, also are involved in realizing the quality agreements. The UT highly values the involvement of students in discussions on development of education. Because students are partners in achieving high-quality education, students will be enabled and stimulated to co-determine the course of the quality agreements. At faculty level they will contribute via regular evaluations, Programme Committees, Study Associations and the Faculty Council and if necessary through specific surveys. At university level they will contribute via Student Union and in the University Council.

### 6.1 PLANNING AND CONTROL CYCLI

At the UT, quality of education is assured by means of plan-do-check-act cycli (PDCA) that operate on programme level, faculty level and institutional level. These layered PDCA-cycli are utilized to direct the development of the quality agreements programmes. Discussions have different levels of detail, depending on the organizational level. Because in general, education is experienced within the context of a programme, it is important that the right information ascends to the next organisational level. Deans, Vice-Deans Education, and Programme Directors have a pivot role in this process. They are responsible to determine whether input from degree programmes require follow up at faculty level. A Vice-Dean Education can also decide to address an issue at university level and to stimulate university-wide decisions are taken. All Vice-Deans of Education participate in the University's Commission of Education, which is chaired by the Rector Magnificus. This commission is responsible to advice on education related strategy and policy. This body also advices on the course of the quality agreement programmes.

The UT developed the plan on quality agreements bottom-up. In the coming years, the faculties will remain responsible to decide what will be done within a quality agreement programme and to motivate how the corresponding budget will be spend. The annual plans that are related to the WSV-budget need approval from the faculty councils. At University level, it has to be decided

what common facilities are needed per quality agreements programme, and which initiatives require central budget. Each year, the University Council has the right to approve how central WSV-budget is spend for the next year.

The Planning & Control cycle of the UT consists of the following elements:

- Plan: Plans for further development of the quality agreement programmes are presented in the Spring memorandum of the UT and the UT budget, derived from the annual plans of the faculties.
- Do: Execution of the plans and activities per quality agreement programme as further specified in the annual plans per faculty and the UT plan on quality agreements (Continuous process).
- Check: Besides the annual report and faculty reports on the progress of the Quality agreements once a year, the UT management reports of March and October will be used to report on the progress of the quality agreement programmes at UT level. Each faculty presents its own report, which the Faculty Board communicates with the faculty council. The reports of the faculties are combined into one UT management report. This management report is discussed within the Executive Board (and Supervisory Board) and afterwards send to the University Council for information. By having a system with management reports, the UT can check whether activities are on schedule and processes are in control. If necessary, additional measures can be taken.
- Act: Based on information that is presented in Management Reports and the Annual Report, both faculties and the university will determine the desired course of action within a programme. If necessary, plans will be adjusted and budget will be reallocated.

During a calendar year, there are fixed moments for reporting on the progress of the quality agreements, and for adjusting plans and budget. This is presented in chronological order in Table 3.

PDCA	When	Who	What
Check	January - February	Faculty Boards & Faculty Councils	Faculty's Annual Report on quality agreements. Each faculty will explain what is achieved within the quality agreement programmes. Related to this, each faculty will provide insight in how WSV-budget has been used to realise these results.
Check	January - March	Executive Board & University Council	University's Annual Report. The University will report on the progress of the quality agreement programmes, thereby also providing insight in best practices per quality agreement programme. By means of the annual report, the university shows how the WSV-budget has been used to improve education. The University Council will be invited to attach their reflection regarding the realization of the quality agreements to the Annual Report. Monitoring of the progress will be done in both qualitative and quantitative ways.
Plan	March	University's Commission on Education	Based on the Annual Report, University's Commission on Education will discuss whether it is opportune for faculties to combine forces by commonly implementing a plan. For example, a pilot that was initiated within a programme by a limited number of faculties, and which has proven to be effective. The Vice-Deans of education are expected to consult with students and their faculty councils to hear whether they agree on such a plan and to discuss how to implement the plan in their faculties.
Plan & Check	April	Executive board and Faculty Boards	Spring meetings with the Executive Board and each Faculty Board. Based on information regarding the progress of the faculty within the quality agreement programmes, the intended course of the faculty within these programmes will be discussed. The minutes of the spring meetings provide input for the spring memorandum.
Plan	April	Executive board and Faculty Boards	Spring memorandum is a multi-annual plan (4 years). The memorandum provides a framework for annual plans of faculties. Directions for further development and implementation of the quality agreement programmes will be part of the spring memorandum.
Plan	June-September	Faculty Boards & Faculty Councils	Developing annual plan and associated budget per faculty. Faculty council has the right to approve how the WSV-budget is invested. Plan on how the faculty is involved in the quality agreements programmes can be adjusted and/or defined to more detail. The perspective of degree programmes has to be considered while developing the annual plan. The programme improvement plans provide input for this.
Plan	October	Executive board, Faculty Boards, and Service Departments	Autumn meetings between the Executive Board and each Faculty Board. The Executive Board will discuss with each Faculty Board what their concrete plans are for the following year regarding their involvement within the quality agreement programmes. The annuals plans of the faculties form the basis for these discussions. Faculties' needs for support from service departments will be discussed during the autumn meeting with service departments so that appropriate measures can be taken. Outcomes of the autumn meetings provide input for the UT budget (t+1).
Plan	December	Executive Board & University Council	Approval of University Council on main components of university's budget for following year.

Table 3: Overview of the implementation of the quality agreements in the Planning &amp; Control cycle of the university

## 6.2 MONITORING INSTRUMENTS

As part of the regular quality assurance, the university has a broad range of monitoring instruments to collect information on the basic parameters of educational quality and to keep track on the implementation of UT's strategy. A set of key performance indicators (KPIs) are defined that are used within university's planning & control cycle. Several of these KPIs provide relevant information regarding the impact of the quality agreements. At the same time, the KPIs show the effects of all the efforts the

university takes to improve quality of education. So changes in performances cannot solely be related to the quality agreement programmes.

KPIs that provide an indication of the impact of the quality agreements programmes are:

- Student appreciation regarding learning facilities (source: National Student Survey),
- Student appreciation regarding academic guidance and counselling (source: National Student Survey),
- Student appreciation regarding lecturers (source:



- National Student Survey),
- Number of teachers with a BKO (source: BKO Monitor, Human resource database),
  - Study success, specifically drop-out rates of first year bachelor students and pass rates of bachelor and master students who graduation within nominal study time plus one year (source: 1 cijfer HO).
  - Student-staff ratio at university level (sources: 1 cijfer HO and Human resource database)

support only benefits their own faculty. Actions that are relevant for the university as a whole, are covered by the university’s central budget. For example, development of new training programmes for teacher professionalisation can be used by all faculties and are centrally funded. The costs to train teaching staff from a specific faculty are paid by the concerning faculty. Annually, service departments should know what support is required for the year to come in order to have an adequate budget and to make the right preparations.

### 6.3 PROGRAMME SUPPORT

Faculties are responsible for bringing their plans into practice and achieving their goals. Service departments support faculties in this process. Depending on the quality agreement programme, different service departments are involved. This support may consist of policy development, strategy execution, and organization of activities or processes. Service departments have regular contact with faculties so their support can be adjusted to the needs of faculties.

Each programme element is coordinated by a service department (see Table 4 for an overview of the elements per programme). This service department is responsible for integrating the reports of the faculties into a report at programme level. This coordination also includes that, based on the needs of the faculties, decision-making will take place in order to deliver appropriate support.

Service departments are financially compensated for their work either from university central budget or from faculties. In general faculties pay for services when this

	Centre for Educational Support*	Campus & Facility Management	Library, ICT-Services & Archive	Marketing & Communication	Human Resources	Strategy & Policy
Learning facilities	x	x	x			
Community building	x	x				
Teaching professionalisation	x				x	
Talent development of students	x	x	x	x		x
Developing global citizens	x					x

Table 4: Service departments that are involved in the UT quality agreement programmes

\* Following departments of CES contribute to the quality agreements: 1. Centre of Expertise in Learning and Teaching, 2. Technology Enhanced Learning & Teaching , 3. Time scheduling & Exam office, 4. Student Affairs, Coaching and Counselling



# 7. INVESTMENT OF WSV-BUDGET DECEMBER 2018

## 7. INVESTMENT OF WSV-BUDGET

### 7.1 INCOME WSV-BUDGET

The university allocates the WSV-budget to the faculties by means of student based funding. This means that every faculty receives a budget for those students who are funded by the Minister of OC&W. The faculties invests these WSV-budgets for the realization of the quality agreements. Twenty percent of the WSV-budget is allocated to the UT’s central budget in order to cover the costs of initiatives or services that benefit the university as a whole. The UT estimated the size of the WSV-budget that the university will receive for the upcoming four years. This is presented in Table 5: Estimation of the WSV-budget the UT will receive coming years. The WSV-budget is approximately two percent of the total budget that the UT spends on education.

Benefits	2019	2020	2021	2022
Faculty of Engineering Technology	448	508	885	1097
Faculty of Electrical Engineering, Mathematics and Computer Science	391	444	772	980
Faculty of Science and Technology	539	706	1146	1429
Faculty of Behavioural, Management and Social Sciences	659	765	1329	1654
Faculty of Geo-information Science and Earth Observation	45	55	100	136
Central budget	506	599	1030	1293
<b>Grand-total</b>	<b>2588</b>	<b>3077</b>	<b>5262</b>	<b>6589</b>

Table 5: Estimation of the WSV-budget the UT will receive coming years

### 7.2 BUDGET PER QUALITY AGREEMENT PROGRAMME

Based on the quality agreements of the faculties and the costs of university wide initiatives, the budgets of the programmes are calculated. The figures below present the long-term budget per programme. The budgets for 2020 until 2022 are an indication of expected costs. For 2021 and further, the investments in the quality agreement programmes will be specified in more detail. In doing so, the total WSV-budget will be allocated. Annually, expenditure of the WSV-budget needs approval of faculty councils and the university council. An inherent consequence of the programmatic approach is that the budgets for these years can be adapted as part of the planning and control cycli. This could mean, for example, that a part of the WSV-budget of 2020 is transferred to 2021. It is also possible, for the years 2020 till 2024, to change the budget between programmes. Nevertheless, the tables below are the best indication the university can

provide at the moment. The information is provided for four years, because the Spring Memorandum also describes the policy agenda for a four years period.

Budget community building	2019	2020	2021	2022
<b>Grand total</b>	<b>478</b>	<b>578</b>	<b>491</b>	<b>491</b>
Need assessment home base	87	87	0	0
Developing home base	178	0	0	0
Implementation & continuation home base	164	416	416	416
Community building activities	50	75	75	75

Budget learning facilities	2019	2020	2021	2022
<b>Grand total</b>	<b>741</b>	<b>733</b>	<b>797</b>	<b>815</b>
Learning spaces	459	443	442	460
e-Learning	222	222	272	272
Digital assessment	60	60	60	60
Learning analytics	0	8	23	23

Budget teaching professionalisation	2019	2020	2021	2022
<b>Grand total</b>	<b>332</b>	<b>472</b>	<b>447</b>	<b>447</b>
Increasing participation training programmes	141	216	216	216
Development of and participation in customized courses	104	179	154	154
Teaching communities	59	59	59	59
Rewarding teaching achievement	19	19	19	19

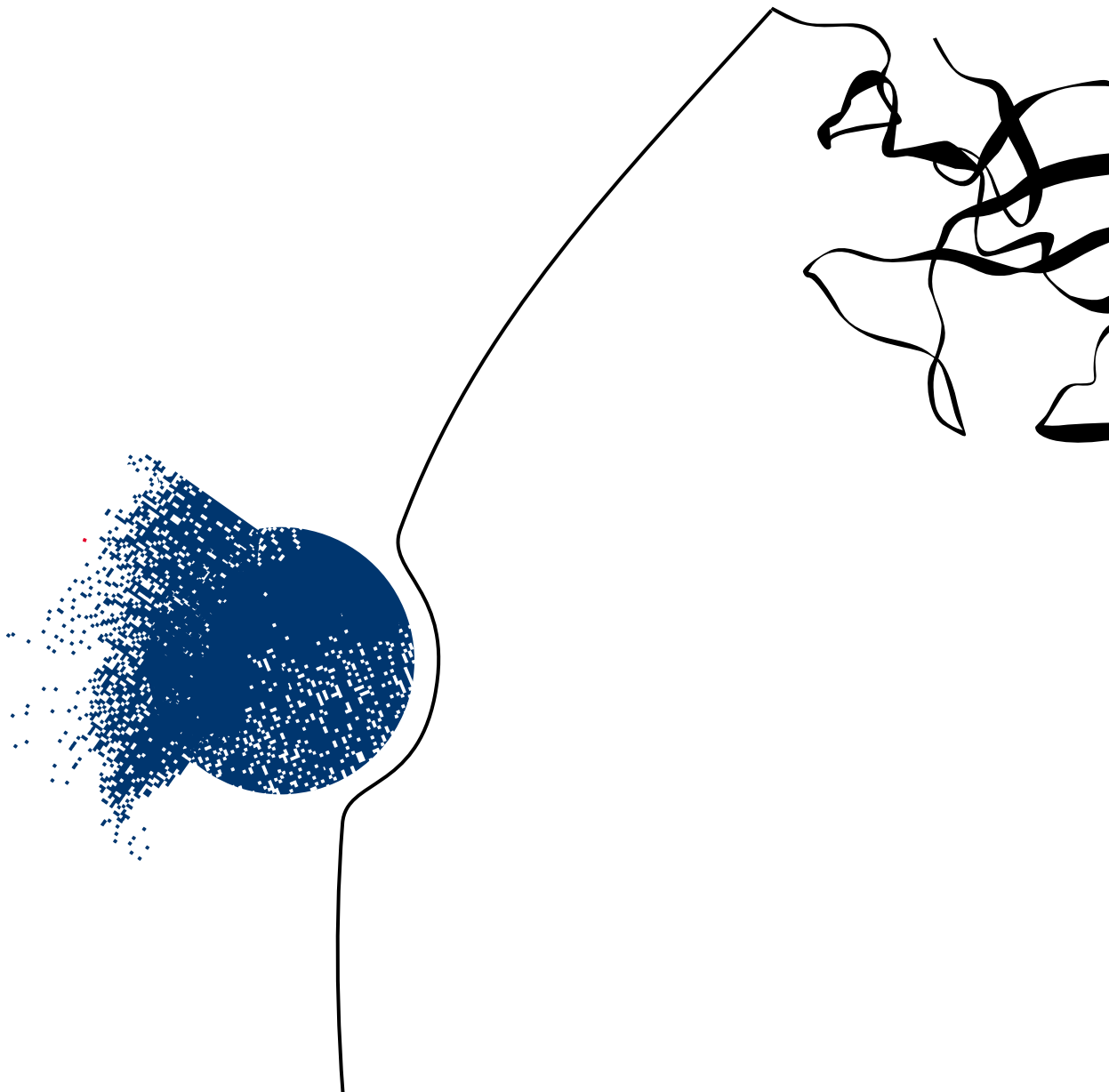
Budget talent development students	2019	2020	2021	2022
<b>Grand total</b>	<b>745</b>	<b>1035</b>	<b>1633</b>	<b>1927</b>
Coaching	101	194	200	206
Opportunities for talent development	95	38	88	38
Extra staff	549	803	1345	1683

Budget global citizens	2019	2020	2021	2022
<b>Grand total</b>	<b>404</b>	<b>411</b>	<b>517</b>	<b>571</b>
International Curriculum	130	130	130	130
Exchange / International Educational Experience	224	231	287	341
International Partnerships	50	50	100	100

Table 6: Indication of long-term investments of WSV-funds in UT quality agreement programmes

## LIST OF ABBREVIATIONS

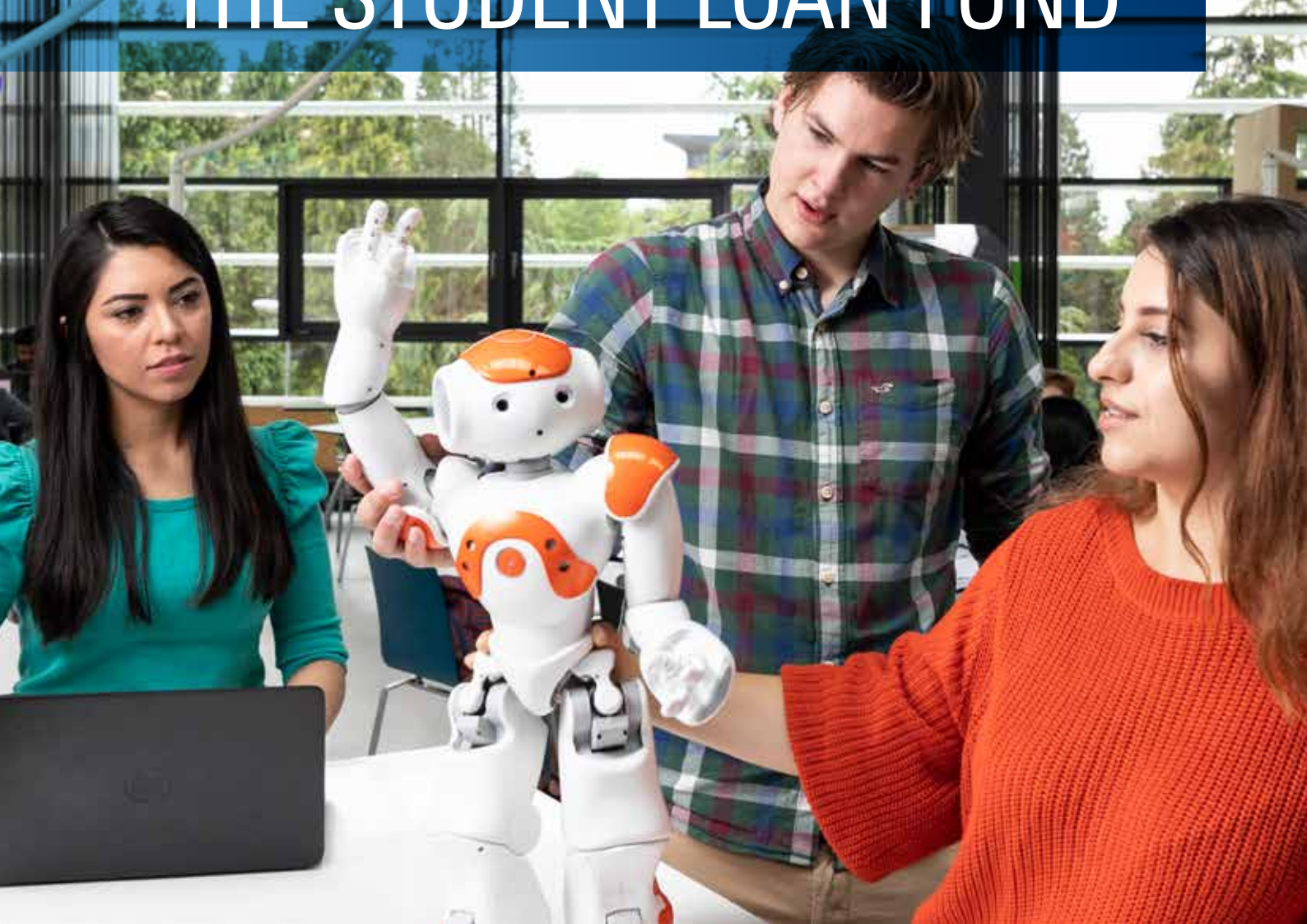
BKO	University Teaching Qualification
BMS	Faculteit Behavioural, Management and Social Sciences
CELT	Centre for Expertise in Learning and Teaching
CES	Centre for Educational Support
C&FM	Campus & Facility Management
EEMCS	Faculty of Electrical Engineering, Mathematics and Computer Science
ET	Faculty of Engineering Technology
HR	Human Resources
ITC	Faculty of Geo-information Science and Earth Observation
LISA	Library, ICT services & Archive
M&C	Marketing & Communication
SKO	Senior University Teaching Qualification
S&P	Strategy & Policy
TELT	Technology Enhanced Learning and Teaching (multidisciplinary virtual team)
S&T	Faculty of Science and Technology
TOM	Twente Educational Model
UT	University of Twente







# 8. INVESTMENT PLAN CENTRAL BUDGET FROM THE STUDENT LOAN FUND





# INVESTMENT PLAN CENTRAL BUDGET FROM THE STUDENT LOAN FUND

Enschede, 25 September 2019

## INTRODUCTION

The UT plan on Quality Agreements, that was finalised in November 2018 and approved by the University Council on 12 December 2018, describes the aspired and required development of education. This development focusses on five programmes: Learning facilities, Community building, Teaching professionalisation, Talent development of students, and Global citizens (see Figure 1). Each programme has a long-term ambition in order to consolidate action plans and to direct the efforts the UT will take in order to improve education and to foster innovation. Faculties have the freedom to develop their educational quality within one or more of these programmes in the years to come. Service departments support faculties in this process. Support from service departments that is of benefit to all faculties and actions that are relevant for the university as a whole, are covered by the university's central budget. That is why twenty percent of the income from the student loan system, the

WSV-budget (Dutch abbreviation of Wet Studievoorschotmiddelen), is allocated to the UT's central budget.

This plan explains in more detail how the central WSV-budget is used. The ambitions describe the long term aim of the investments. All the ambitions are subdivided over the five quality agreement programmes. Per ambition, measures are listed and a description is given of the intended results until December 2021. Next to this, it is explained how the measures contribute to realizing the ambition and what the effect for students will be.

At the moment, the UT is in the middle of a process to define its vision and strategy for 2030: Shaping 2030. Because the investments of the WSV-budget should support the university's strategy, the UT will consider if adaptations of the central WSV-budget are required when Shaping 2030 is finalised. An option is to cluster the investments of the central WSV-budget more specifically around the areas that will be identified as part of the Shaping 2030 process. Naturally, possible adjustments regarding the investments of the central WSV-budget will be the outcome of an annual dialogue within the UT community.

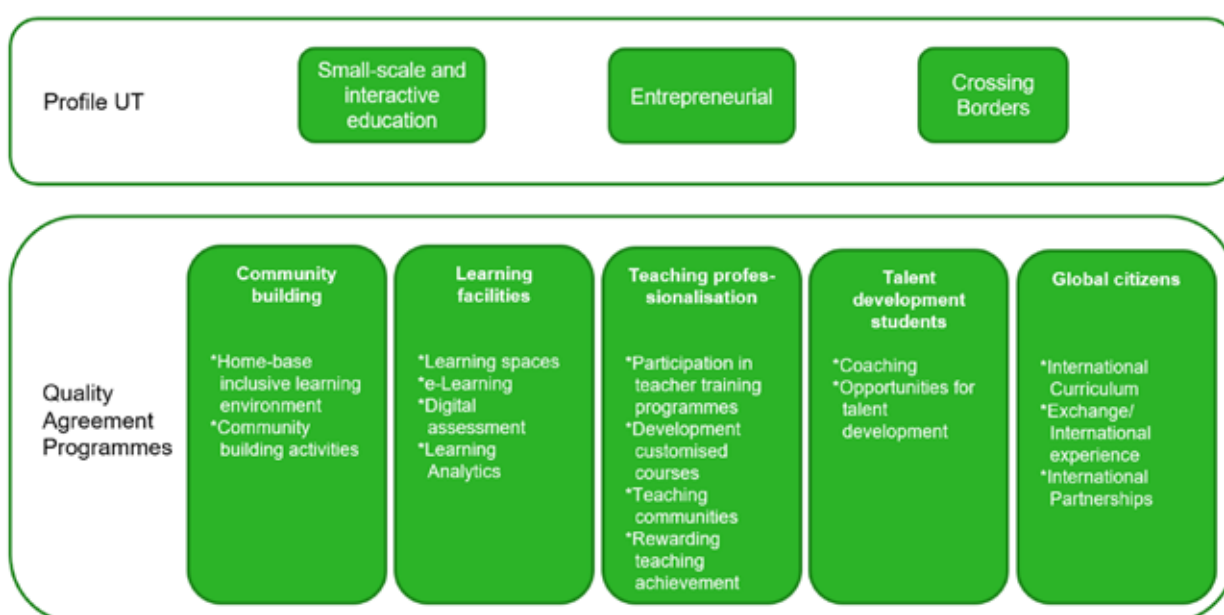


Figure 11: Relationship between UT's educational profile and UT quality agreement programmes

## CONTINUOUS DEVELOPMENT

Improvement and change are dynamical processes and by means of a programmatic approach the UT supports mutual learning and stimulates that education continuously develops. The UT believes that the involvement of its students is crucial in this respect. That is why the UT welcomes critical and creative thinking from students and incorporates moments in UT's annual planning & control cycle where students reflect on the current situation and make suggestions for further development.

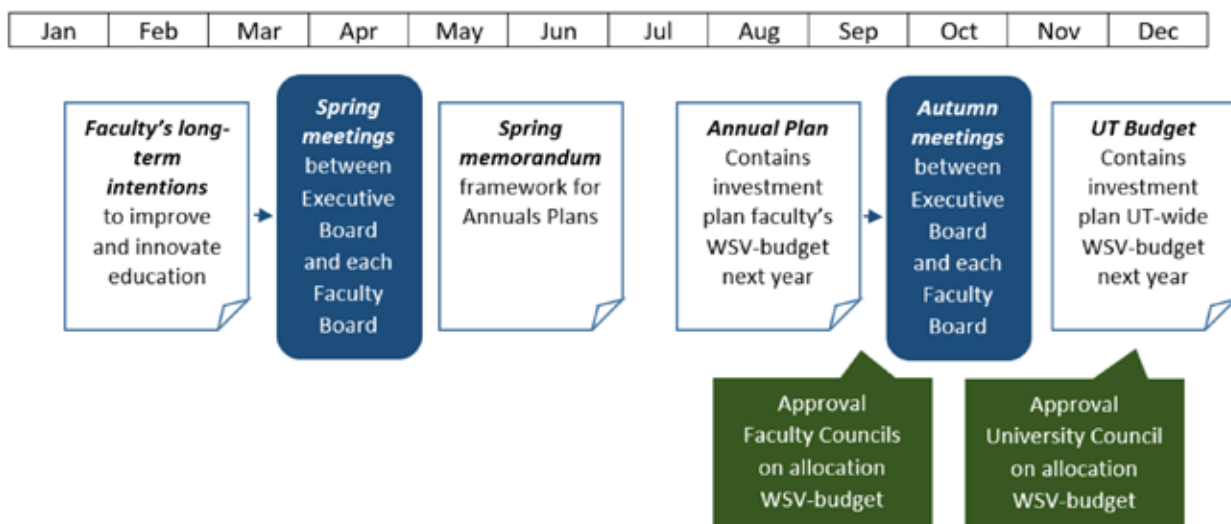


Figure 12: Overview of the annual recurring 'plan-phases' at university level that concern the quality agreements

By means of the UT's education development cycle, the UT keeps track of the quality agreements, adjusts plans if necessary, and incorporates new ideas that are supported by the UT community. At faculty level, faculties have their own planning & control cycle to monitor their plans and to adjust and further define the course of their agreements. The Vice-Deans of Education, make sure that students and staff are involved in this process. The cycle at faculty level is interconnected with the cycle at university level. Regarding the 'plan-phase' of the education improvement cycle at university level, the following documents and events are important (see also Figure 2):

- During the **spring meetings**, which take place between the Executive Board and each Faculty Board in April, **long-term intentions to improve and innovate education are discussed (t + 1 till 4 years)**. Faculties define their long term intentions regarding development of education, based on 1) general insights that are derived from points of improvement that Degree Programmes defined, and 2) the current situation which

is explained in the management report of December.

Outcomes of the spring meetings can be included in the spring memorandum. The **spring memorandum** sets the framework for the annuals plans that faculties and service departments submit in September.

- **Annual plans of faculties and service departments describe what will be done upcoming year to improve education (t + 1 year)**. Specifically, faculties and service departments have to explain how the WSV-budget will be invested in the next calendar year. Faculty Councils have the right to annually approve the allocation of the WSV-budget. In October, annual plans of the faculties and service department are discussed during the **autumn meetings** between the Executive Board and the Faculty Boards and between the Executive Board and the Directors of the service department.
- The UT **annual budget** explains how the central WSV-budget (20%) is used in the next calendar year (t + 1 year). The allocation of the central WSV-budget needs

approval from the University Council. The annual budget is discussed with the University Council in December.

Regarding the 'check-phase' of the education improvement cycle at university level, the following documents are important:

- The UT report on the progress of the quality agreements in its **annual report**. Faculties and service departments report on the realisation of their quality agreement plans via the management report of December (t – 1 year). This information will be included in UT's annual report.
- Halfway each calendar year, faculties and service department report on the progress of their quality agreement plans via the **management report of May** (t).

The University's Commission on Education (in Dutch: Universitaire Commissie Onderwijs, abbreviated as UC-OW) discusses long term intentions regarding development of education. The UC-OW advises on the central WSV-budget, so that the support from service departments can be adjusted to the common needs of faculties and to initiatives that are beneficial for the whole UT.

The progress of the 'central measures', based on the information provided in the management report of May, will be discussed between the Rector Magnificus, the study associations via the commissioners of educational affairs, the two student representatives within the UC-OW, and student representatives from University Council's commission on Education (in Dutch: Commissie Onderwijs, Onderzoek en Studentenzaken). Reflections and suggestions that come up during this meeting, provide input for service departments and UT policy.

As explained in chapter 10 of UT's plan on quality agreements, the UT has a broad range of monitoring instruments to collect information on the basic parameters of educational quality and to keep track of the implementation of UT's strategy. Several of these key performance indicators (KPIs), which are part of the regular quality assurance, provide relevant information regarding the impact of the quality agreements. At the same time, the KPIs show the effects of all the efforts the university takes to improve quality of education. The UT uses these KPIs to have an informed discussion with its community about whether the efforts and measures, which are part of the quality agreements, contribute to realizing the long-term ambitions. Naturally, interpretation of the KPIs is required, and therefore, these KPIs are discussed at UT level, together with the progress reports, by the Rector Magnificus and students (see explanation above).

## INTENDED MEASURES BY MEANS OF UT CENTRAL BUDGET FROM THE STUDENT LOAN FUND

The intended measures and efforts of the service departments are explained in this chapter. The plans are subdivided over the five quality agreement programmes.

### PROGRAMME COMMUNITY BUILDING

**AMBITION: APPLYING A HOME BASE CONCEPT IN AN EFFICIENT WAY TO THE DEGREE PROGRAMMES OF THE UT, SO THAT STUDENTS FEEL PART OF A COMMUNITY, CONSISTING OF STAFF AND FELLOW STUDENTS FROM THEIR DEGREE PROGRAMME, WHICH BENEFITS THEIR LEARNING PROCESS AND CONTRIBUTES TO THEIR WELL-BEING.**

During the first three years of the quality agreements, the focus is on communities within degree programmes, consisting of staff and students. Moreover, the community includes alumni as well and can, therefore, be called the 'UT community for life'. By building this 'UT community for life' with members all over the world, students are inspired with stories about scientific research, innovations, start-ups from UT research groups, alumni, and business relations. This community stimulates its member to develop themselves as global citizens. The UT intends to put more effort in developing this 'UT community for life' during the second term of the quality agreements (2022-2024).

#### Measures

- 1. A needs and requirements analysis will be performed that shows to what extent the home base elements should be implemented per degree programme. Campus and Facility Management (C&FM) and the Center for Educational Studies (CES) will assess what the consequences are of the requirements for housing, digital capabilities, and timetables, because scheduling near a home base has effect on usage of class rooms and the capacity of the Central Education Facilities.***
- 2. Increase capacity of the Scheduling Team with 0.5 fte, as the application of the home base concept is more time intensive and requires more customisation.***

Target until 2021:

- Needs and requirements analysis regarding the home bases of degree programmes is completed. Based on this analysis, a follow-up plan is defined.
- Apply the home base concept in the schedule system per the academic year 2020/2021.

Intended effects for students:

Adaptations in scheduling make that students more often follow courses and study in the vicinity of their study association and/or the location where most academic staff of the degree programme work. Hereby, students are supported to interact with academic staff and fellow students. Further development of the home base per degree programme should enhance the feeling among students that they are part of a community. A community that supports individual members in their learning process and contributes to their overall well-being.

The National Students Survey provide information about the small-scale character of a degree programme. Relevant items are the experienced group size, teachers' availability outside contact hours, and the general atmosphere within the degree programme.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>37</b>	<b>37</b>	<b>30</b>	<b>90</b>	<b>90</b>	<b>90</b>
Measure 1	37	37				
Measure 2			30	30	30	30
Future investments				60	60	60

## PROGRAMME LEARNING FACILITIES

**AMBITION: INCREASE THE QUALITY, AVAILABILITY AND USAGE OF LEARNING FACILITIES, PHYSICALLY AS WELL AS DIGITALLY. SPECIFICALLY THE UT AIMS TO:**

- 1. INCREASE THE QUALITY, QUANTITY AND USAGE OF LEARNING SPACES FOR INDIVIDUAL STUDY AS WELL AS TEAMWORK (STUDENT PROJECTS).**
- 2. IMPROVE GUIDANCE OF THE STUDENTS' LEARNING PROCESS BY IMPROVING THE AVAILABILITY AND USE OF DIGITAL EDUCATION TOOLS (DIGITAL ASSESSMENT, PEER FEEDBACK, BLENDED LEARNING, FLIPPING THE CLASSROOM)**
- 3. EXPLORE HOW LEARNING ANALYTICS CAN HELP STUDENTS TO IMPROVE THEIR LEARNING PROCESS BY PROVIDING DASHBOARDS TO STUDENTS. HEREBY, LEARNING ANALYTICS IS A TOOL TO STIMULATE AND IMPROVE STUDENTS' REFLECTION ON THEIR LEARNING.**

As the UT states in its plan on quality agreements, learning facilities should support the UT's educational model, which can be characterised by interaction with peer students and teachers on campus, active learning of students, a variety of teaching methods that appeals to different learning styles, and, specifically for bachelors' programmes, project-led education. The UT expects that digital education tools will increasingly provide opportunities to support its educational model. Digital education tools like learning analytics, digital assessment (also in the sense that peer feedback among students is supported), and blended learning, are expected to be more prevalent from 2022 onward. Because the UT believes that on-campus learning remains important, the UT intends to invest on the longer term in experimental learning spaces, in which the advantages of digital tools and a classroom are combined. The UT intends to invest more WSV-budget in learning facilities during the second term of the quality agreements, due to the new possibilities for student learning, that go along with digital tools.

Regarding the second term of the quality agreements, the UT intends to further improve provision of information to empower students to help themselves as well as possible and to diminish avoidable stress caused by lack of clear and timely information. It would be helpful for students that information about topics like study progress, classroom schedules, composition of project groups, and possibilities for talent development, are available at one digital platform.

### *Measures*

#### **1. Measures regarding learning spaces:**

- a. Improve the real-time booking system for project rooms.
- b. Develop a real-time booking system for study workplaces.

Both measures regarding the real time booking system make use of the results of a pilot project with sensor techniques that identify free spaces with no-show or early leaves. This pilot will be executed in 2020 by means of other recourses. The pilot will provide information about the feasibility of measuring and visualizing availability of learning spaces.

When the UT has real-time information about the availability and usage of spaces, a next step in the long term would be to explore the possibilities of adaptive scheduling. Adaptive scheduling allows for dynamic changes in the schedule based on previous and current demand. The UT keeps this in mind for the second term of the quality agreements. With adaptive scheduling the learning spaces for the regular class schedule are used more efficiently, so more learning space is available for project work and individual study workplaces.

#### **2. Measures regarding digital education tools:**

- a. Introduce advanced functions of Canvas, or from satellite systems connected to Canvas.
- b. Expand capacity for digital assessment. The central income of the student loan fund is used to acquire additional software licenses, which are necessary to administer web-based and software-based tests. Faculties will cover the other costs that are required to implement and expand digital testing.
- c. Facilitate teaching staff to apply digital tools within education (e.g. making use of blended learning, and increase interactivity in the classroom).

#### **3. Explore and implement possibilities of learning analytics for students.**

- Create and collect data that will be used for early warning signals and for dashboarding. Experiments with digital didactics (e.g. online quizzes) to create appropriate data for analytics. For useful personal insights we need to know: "What do we need to measure, and what can we measure?"
- Experiment and pilot with dashboarding for personalised learning insights and early warning signals to improve student well-being

- Target until 2021:
1. Intended results regarding learning spaces: a real-time booking system for project rooms and study workplaces is available for students in 2022.
  2. Intended results regarding digital education tools:
    - a. Canvas and its satellites provide for extra functionalities to create a richer digital learning environment for students.
    - b. Software licenses available to accommodate web-based and software-based tests. The overall plan, in which facilities participate, intends to increase the capacity for digital assessment from 250 test sites in 2018 to 500 test sites in 2019.
    - c. Teachers are supported by means of the development, implementation, and application of digital tools within education. The capacity of the support team will be expanded by 0.5 FTE per 2021, increasing to 1.0 fte in 2022.
  3. In 2020 the UT plans to further explore the possibilities that learning analytics can offer to students to improve their learning process. Digital didactic experiments have been successfully implemented to explore useful data for learning analytics. First steps of realization are to be expected in 2022, further development in the years up to 2024.

Intended effects for students:

In general, improvements and innovations regarding learning facilities will enable the UT to execute its educational principles even better, thereby improving student learning. Students will experience that learning facilities accommodate group work, increase the variety of teaching methods, and provide ways to gain regular and useful feedback on the learning process.

Intended effects per measure are:

- Learning spaces: Currently, the students experience insufficient availability of learning spaces. The investments in the real-time booking systems will make it easier for students to find alternative spaces, preferably close to their home base. Students will have real-time information about available project- or study workplaces. Thus, students are stimulated to use these on-campus facilities and spend less time on finding them. The UT considers to explore the possibilities of adaptive scheduling starting from 2022. The benefits of adaptive scheduling would be that the learning space for the regular class schedule is used more efficiently, so more learning space is available for project work and individual study workplaces.
- Digital education tools: Digital education tools will provide a richer digital learning environment. Regarding the advanced functions of Canvas, and satellite systems connected to Canvas, specific effects for student depend on the added functionalities. By supporting teaching staff to apply digital tools within education, the UT also intends to create a rich and innovative learning environment. Often, teachers themselves come up with ideas to stimulate the learning experience by means of digital tools. Teachers with these ideas are supported by the TELT-team (TELT is an abbreviation of Technology Enhanced Learning and Teaching), in such a way that other teachers can use these innovations as well.

By means of software-based testing, alignment between the real-life situation and the test improves. Digital assessment makes it possible to simulate a realistic testing environment, thereby providing better feedback regarding acquired skills and competences (e.g. programming-skills). Next to this, the use of digital tests is expected to reduce the workload for teachers. Formative assessment and peer feedback enriches the students' learning experience.

- Learning analytics: Learning analytics inform a student about his or her study process, thus enabling him or her to adjust and adapt it where necessary.

The National Student Survey provides information about how students experience the learning facilities. Specific items are surveyed, such as availability of workstations, suitability of classrooms and the digital learning environment. Regarding the curriculum, the National Students Survey asks whether students are satisfied with the learning methods used in the degree programme, and whether students are satisfied with the quality of the study materials. These questions are relevant to get an impression of how students experience the learning environment.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>172</b>	<b>192</b>	<b>387</b>	<b>604</b>	<b>584</b>	<b>584</b>
Measure 1a			50			
Measure 1b			50			
Measure 2a		20	20	20	20	20
Measure 2b	60	60	60	60	60	60
Measure 2c	112	112	152	192	192	192
Measure 3			55			
Future investments				332	312	312

## PROGRAMME TEACHING PROFESSIONALISATION

**AMBITION: SUPPORT TEACHERS, PROGRAMME DIRECTORS, MODULE COORDINATORS, AND STUDENT-ASSISTANTS TO IMPROVE THE QUALITY OF TEACHING AND THE CURRICULA.**

**REWARD TEACHING ACHIEVEMENT BY EMBRACING A CULTURE OF EXCELLENCE THAT RECOGNIZES AND APPRECIATES INVESTMENTS IN EDUCATIONAL IMPROVEMENT, TEACHING QUALITY AND TEACHER DEVELOPMENT.**

During the first three years of the quality agreements, the focus is on communities within degree programmes, consisting of staff and students. Moreover, the community includes alumni as well and can, therefore, be called the 'UT community for life'. By building this 'UT community for life' with members all over the world, students are inspired with stories about scientific research, innovations, start-ups from UT research groups, alumni, and business relations. This community stimulates its member to develop themselves as global citizens. The UT intends to put more effort in developing this 'UT community for life' during the second term of the quality agreements (2022-2024).

### Measures

- 1. Develop the Learning Assistant Programme<sup>1</sup> in cooperation with participating faculties.**
- 2. Develop (short) customised courses, e.g. about project-led education or tutorship, or courses for programme directors and module coordinators. In the short term, an introductory course for new teachers will be developed and implemented.**
- 3. A number of faculties want to increase the number of teaching staff that obtained a University Teaching Qualification (UTQ), a Senior University Teaching Qualification (SUTQ), and/or an Educational Leadership Programme certificate. To accommodate these intentions, more coordination is required. As part of this, the UT intends to designing 2 additional SUTQ tracks.**
- 4. Support initiatives regarding peer review and teacher community. Follow up on the 'international Survey Teaching Cultures' in 2019 with a focus on**
  - Teacher professionalisation**
  - Career opportunities (Professorship with emphasis on education and teaching talent on associate professor level)**
  - Evaluate and reward teaching achievements****Final decision making on the roadmap of actions, results and the appropriate budgets will take place in the second half of 2019.**

<sup>1</sup> Learning Assistants are selected students who have a clear interest in education; they receive a pedagogical training and participate in the degree programme by, for instance, facilitating discussions among groups of students in a variety of classroom settings that encourage active engagement. The idea of a Learning Assistant Programme is inspired by the programme developed in Colorado for improving the recruitment and education of Science, Technology, Engineering and Mathematics (STEM) teachers. See <https://www.colorado.edu/program/learningassistant/>

- Target until 2021:
1. Courses for the Learning Assistant Programme are developed.
  2. A needs analysis for short customised courses, to improve didactic and pedagogic competencies of staff involved in education, is completed. Based on the outcomes of the needs analysis additional courses will be developed from 2019 onwards.
  3. CELT has capacity to coordinate the UTQ, SUTQ, and the Educational Leadership Programmes in order to accommodate the increasing demand from faculties. An additional SUTQ track is developed, a pilot for a second SUTQ track is executed, and the design of a third track is started.
  4. Improved hands on guidance on teaching evaluation in performance management and recruitment interviews. Appoint a full professor based on her/his excellence in education (in line with the adjusted career path policy)

Intended effects for students:

The aforementioned measures can be characterised as supportive actions to improve quality of education. In general, teaching professionalisation has an impact both on teachers themselves and student learning. It is intended that professionalisation of staff and students involved in education improves teaching methods and educational design, thereby positively impacting students' learning.

Regarding the Learning Assistant Programme specifically, training of Learning Assistants should improve the design of tutorials and feedback students receive during tutorials. By getting students involved in the Learning Assistant Programme themselves, students are able to develop their educational skills and might even be triggered to continue a career in education. A survey will be conducted among the first cohort of Learning Assistants to find out how the training could be further improved.

Student appreciation regarding lecturers is monitored via the National Students Survey. This provides an indication about whether effort put in teaching professionalisation has an effect on how students experience teachers' teaching skills and the quality of feedback teachers provide. Next to this, the UT monitors the number of teachers with a UTQ.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>127</b>	<b>147</b>	<b>147</b>	<b>147</b>	<b>147</b>	<b>147</b>
Measure 1		20	20	20	20	20
Measure 2	56	56	56	56	56	56
Measure 3	56	56	56	56	56	56
Measure 4	15	15	15	15	15	15

## PROGRAMME GLOBAL CITIZENS

**AMBITION: SUPPORT DEGREE PROGRAMMES IN DEVELOPING AN INTERNATIONAL CURRICULUM AND CREATING AN INCLUSIVE INTERNATIONAL ENVIRONMENT, TO PREPARE STUDENTS FOR THEIR FUTURE IN A GLOBAL ENVIRONMENT.**

**Measures**

1. *Support development of an international curriculum*
2. *Support of exchanges and international partnerships*

- Target until 2021:
1. The Centre of Expertise in Learning and Teaching (CELT). supports degree programmes that implement an international curriculum. Approximately three degree programmes will be supported until the end of 2021.



2. A number of faculties want to increase the number of exchange programmes and double degree programmes. These efforts are supported by CES. Regarding support of exchanges and international partnerships the following activities are done:
  - a. Exchanges. Activities to improve student wellbeing of international students are executed (e.g. support international student associations). These activities aim to improve inclusiveness among students. Activities are organised for both incoming and outgoing students (e.g. events like Let’s go, and the Scholarship Ceremony).
  - b. Partnerships. Partnership programmes with international universities and governments are supported. This includes an analysis of the prospective partner to have insight in its academic level, support to draft (exchange) contracts, and scouting of prospective partners. Research is conducted on global qualifications of the UT in regards to international partnerships.

Intended effects for students:

Students involved in an internationally oriented programme will be prepared for a career in an international environment. The goal of the Global Citizens programme is not only to support the students having an international experience, but embed this experience in an international curriculum. Internationalisation requires incorporating a global, international and/or intercultural dimension into teaching (i.e. in the preparation and delivery of education) and learning (i.e. in the learning outcomes of the degree programmes). For this, internationalisation will be further implemented in English taught degree programmes by applying the principles of the Certificate on Quality in Internationalisation (CeQuInt).

To give students the opportunity to have an international experience, the UT stimulates that student participate in an exchange programme and have the option to do a double degree programme with an international partner university.

The UT has a programmatic approach to internationalisation. A programme plan, based on clear goals and KPIs is executed. Programme management, consisting of a programme managers and project leaders, monitors the progress and adjustments are made if necessary.

At UT level, the National Students Survey provides information about students’ experiences regarding internationalisation. Items are surveyed such as:

- Encouragement to study abroad
- Encouragement to learn about other cultures
- Focus of your programme on international subjects
- Opportunities offered to you to study abroad or complete a work placement abroad

Next to this, experiences of international students are monitored via the International Student Barometer that provides information about students’ appreciation on topics like encouragement to learn about other cultures, and focus on international subjects.

The UT monitors the number of students that participate in an exchange programme. The UT has an up-to-date overview of partner universities with whom the UT organises double degree programmes.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>150</b>	<b>150</b>	<b>150</b>	<b>150</b>	<b>150</b>	<b>150</b>
Measure 1	50	50	50	50	50	50
Measure 2	100	100	100	100	100	100

## PROGRAMME TALENT DEVELOPMENT OF STUDENTS

**AMBITION: ALL STUDENTS ARE STIMULATED AND HAVE THE POSSIBILITY TO CREATE THEIR OWN LEARNING EXPERIENCES. THE AIM IS TO BOTH INCREASE THE AMOUNT OF STUDENTS REACHED BY THE UT TALENT PROGRAMMES AND TO LEAD TO GREATER DIVERSITY OF TALENTS EXPLORED BY STUDENTS IN ORDER TO ENHANCE STUDENTS' CAREER POSSIBILITIES, EMPLOYABILITY, AND WELLBEING.**

Currently, the UT supports talent primarily on the basis of an excellence model: selected students, i.e. with recognized talents, are given the opportunity to develop themselves through a variety of intra- and extracurricular activities. UT's aim is to transition to a growth model, in which all students of the UT have access to tools, facilities, and opportunities to explore and develop their talents. That is why the UT, on the one hand, invests in measures that improve coaching of students, so that students reflect on/ become aware of their strengths, motives and ambitions. On the other hand, the UT invests in the UTalent Hub, so that students know what opportunities for talent development are offered by the UT, and are activated to explore future possibilities.

For the years 2019, 2020, and 2021, this implies that the UT employs several supportive activities in order to improve coaching and student guidance within faculties and the UT. Next to this, a UTalent Hub will be developed that, on the short term, should provide an overview of possibilities for talent development at the UT. Related to the UTalent Hub, initiatives that would result in an expansion of talent development opportunities, and for which all UT student can apply, will be developed as well. In the short term, this implies the development of a minor student team. In the long term this might imply an increase of the student teams.

For the years 2022 and further, a physical UTalent Hub might be developed at a central UT location. A precondition for this is that students express the need for a dynamic environment, which relates coaching and talent discovery with UT-opportunities at a central location. If an inventory turns out that such a need exists, students will be involved in the design of this physical hub. During the second phase of the quality agreements, it is expected that coaching within faculties will intensify and will be more widely implemented in the faculties. This would imply that training programmes and customised courses for coaches, among which are study advisors and mentors, should be developed and kept up-to-date in the long term.

Regarding talent development, it is important that the UT has a suitable infrastructure for students who suffer from depression or anxiety. These personal circumstances ask for professional treatment. Because the number of students with these kind of symptoms is increasing, and the UT has the ambition to offer the right support, the UT will invest extra in student well-being.

### **Measures**

#### **1. Develop a UTalent Hub. Until 2021, this includes the following components:**

- a. Regarding talent development, the UT wants to realise the following phases in the short- and mid-term:
  - Perform an inventory of existing talent development opportunities related to the diverse types of talent and needs (2019). Based on this inventory, recommendations will be made for further development of initiatives and/or further exploitation of existing UT units, e.g. DesignLab, Student teams, Honours Programmes, UCT (2020).
  - Develop a virtual Talent development Hub. This UTalent Hub should be an online exploration tool that relates opportunities to the diverse types of talents (2021).
  - Set up a communication plan and PR activities to raise awareness of talent development possibilities (2021).

As explained in the ambition, it could be beneficial for students to have a physical UTalent Hub at a central location. Depending on the inventory, this physical hub could be developed from 2022 onwards.
- b. Expanding career services activities. Since job orientation is part of the process in which students discover and develop their own talents, career services fit well within the UTalent Hub idea. In the short term, the UT will invest extra in career service activities. In the long term, career services might be connected with the physical UTalent Hub.
- c. Develop and initiate the minor student teams.

d. Offering GoodHabitZ to all students. GoodHabitZ is an online platform with a variety of training courses.

**2. Employ several supportive activities in order to improve coaching within faculties:**

- Employ an inventory of ongoing coaching activities, the needs and possibilities of degree programmes regarding coaching. Based on the inventory, recommendations are made for the pilot project regarding coaching (start 2019).
- A training for coaches is developed (2020), coaches from degree programmes, which are involved in the pilot, are trained (2021).
- Feedback tools on talent and career development are available for degree programmes, e.g. Carriere Kompas (2021).
- Coaching is offered within the pilot programmes, thereby reaching a wider range of students (2021).
- Pilot evaluation, including recommendations for UT-wide implementation regarding coaching. This includes an effect measurement on contribution of enhanced coaching on career confidence, career exploration and career clarity (2022).

In the long term, the UT foresees to expand professionalisation activities for coaches (e.g. study advisors, mentor) in the degree programmes of the UT. The results of the pilot evaluation will be used to decide what relevant next steps are.

**3. Expanding mental health support by hiring an extra student psychologist.**

Target until 2021:

1. Regarding the UTalent Hub:
  - a. The inventory of existing talent development opportunities, related to the diverse types of talent and needs, is completed. A virtual Talent development Hub is developed. A communication plan to raise awareness of talent development possibilities is developed and PR activities are undertaken.
  - b. Increasing support job orientation for students with 1.0 fte.
  - c. GoodHabitZ is available for all students
  - d. The 'minor student teams' has been developed and is available for bachelor students. The first students enrol during the academic year 2021/2022.
2. The needs analysis regarding coaching is completed. A training for coaches is developed. Based on the needs analysis, a pilot project on coaching with several degree programmes is conducted. Next to this, a feedback tools on talent and career development is available for degree programmes.
3. Expand services of student psychologists with 1.0 fte per 2020, increasing to 2.0 fte in 2023.

Intended effects for students:

Research has shown that a clear view of students about their talents, beliefs and motives in relation to their (future) profession (a clear professional identity) positively influences their well-being, motivation to learn, study outcomes and quality of career choices.<sup>2</sup> Developing a strong professional identity is not an individual process, it is shaped in relation to the sense of belonging to the community.<sup>3</sup> As stated in the UT plan on quality agreements, facilitating students to discover and develop their own talents is a process that consists of two essential interacting processes. Firstly, a bottom-up approach in which the individual student is central in exploring questions like: Who am I? What are my talents? What is important to me? What do I have to offer? What do I want to develop? And secondly, a top-down approach in which the environment is central: What is out there? What are career options? What is expected from

<sup>2</sup> Canrinus, E. T., Helms-Lorenz, M., Beijaard, D., Buitink, J., & Hofman, A. (2012). Self-efficacy, job satisfaction, motivation and commitment: exploring the relationships between indicators of teachers' professional identity. *European journal of psychology of education*, 27(1), 115-132.

<sup>3</sup> Meijers, F., Kuijpers, M., & Gundy, C. (2013). The relationship between career competencies, career identity, motivation and quality of choice. *International Journal for Educational and Vocational Guidance*, 13(1), 47-66.

graduates in my field? These two types of questions should be answered not in isolation, but related to each other. That is why the quality agreements programme 'talent development for students' focusses at the UTalent Hub and coaching.

Student teams are a way in which a community gets shape. Students involved in a student team develop their own learning experience within the context of the team's international challenge (e.g. the World Solar Challenge with solar cars, the Shell Eco Marathon with hydrogen fuel cell cars, the RoboCup that is about football with robots, and the Moto E Championship with electric motorcycles). It enhances their entrepreneurial attitude, and problem-solving skills, students apply knowledge from their own scientific domain and students learn how this domain is related to other domains that are relevant for the challenge. Next to this, because student teams work with sponsors, companies and researchers on innovation and product development, they learn to work in a professional environment and get acquainted with career perspectives and the labour market. The minor student teams will allow students to obtain credits (30 EC max) for the learning goals they achieve while being part of a student team. Now students generally stop their studies temporarily.

Both the pilot on coaching and the experience regarding the virtual UTalent Hub will be evaluated. Based on these evaluations, which take place in 2022, decision will be made about the future development of these initiatives.

The National Students Survey provides information about the ways in which students are invited to excel. Specifically, students can rate to what extent they are challenged to give their very best, and students are asked to what extent they are satisfied with the opportunities provided to pursue their own interests. The National Students Survey also provide information about academic counselling: opportunities for receiving guidance and the quality of guidance provided.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>35</b>	<b>132</b>	<b>331</b>	<b>388</b>	<b>403</b>	<b>403</b>
Measure 1a	22	22	38			
Measure 1b			90	90	90	90
Measure 1c			30	30		
Measure 1d			25	25	25	25
Measure 2	13	20	58	58	58	58
Measure 3		90	90	135	180	180
Future investments				50	50	50

**BUDGET (SEPTEMBER 2019)**

MEASURES PER PROGRAMME	2019	2020	2021	2022	2023	2024
<b>Community building (sub-total)</b>	<b>37</b>	<b>37</b>	<b>30</b>	<b>90</b>	<b>90</b>	<b>90</b>
1. Needs and requirements analysis home bases degree programmes (CES)	37	37				
2. Increase capacity of Scheduling Team to accommodate Home base scheduling (CES)			30	30	30	30
F.I. Support 'UT community for life' (M&C)				tbd	tbd	tbd
Future investments				60	60	60
<b>Learning facilities (sub-total)</b>	<b>172</b>	<b>192</b>	<b>387</b>	<b>604</b>	<b>584</b>	<b>584</b>
1a. Improve the real-time booking system for project rooms (LISA)			50			
1b. Develop a real-time booking system for study workplaces (LISA)			50			
F.I. Explore the possibilities of adaptive scheduling (CES)				tbd	tbd	tbd
F.I. Create an experimental learning space (C&FM)				tbd	tbd	tbd
2a. Extension of possibilities Canvas (CES)		20	20	20	20	20
2b. Expand capacity for digital assessment – licences (LISA)	60	60	60	60	60	60
2c. Facilitate and stimulate use of e-learning (TELT)			40	80	80	80
2c. Facilitate and stimulate use of e-learning (TELT)	112	112	112	112	112	112
F.I. Innovation of education with ICT (TELT)				tbd	tbd	tbd
3. Explore possibilities Learning analytics (LISA)			55	tbd	tbd	tbd
F.I. Develop an online student communication app or platform (M&C)				tbd	tbd	tbd
Future investments				332	312	312
<b>Teaching professionalisation (sub-total)</b>	<b>127</b>	<b>147</b>	<b>147</b>	<b>147</b>	<b>147</b>	<b>147</b>
1. Develop Learning Assistant Programme (CES)		20	20	20	20	20
2. Develop (short) customised courses (CES)	56	56	56	56	56	56
3. Designing 2 additional SUTQ tracks (CES)	56	56	56	56	56	56
4. Support initiatives regarding peer review and teacher community (Policy development regarding (HR)	15	15	15	15	15	15
<b>Global citizens (sub-total)</b>	<b>150</b>	<b>150</b>	<b>150</b>	<b>150</b>	<b>150</b>	<b>150</b>
1. Support International Curriculum for faculties (CES)	50	50	50	50	50	50
2. Support exchange programmes and international partnerships (CES)	100	100	100	100	100	100
<b>Talent development students (sub-total)</b>	<b>35</b>	<b>132</b>	<b>331</b>	<b>388</b>	<b>403</b>	<b>403</b>
1a. Develop a UTalent Hub (S&P)	22	22	38			
1b. Expanding activities career services (CES)			90	90	90	90
1c. Develop and initiate the minor student teams (AZ)			30	30		
1d. Offering GoodHabitZ to students (HR)			25	25	25	25
F.I. Increase the number of student teams (M&C)				tbd	tbd	tbd
2. Employ several supportive activities regarding coaching (S&P/CES)	13	20	58	58	58	58
3. Expanding support mental health (CES)		90	90	135	180	180
Future investments				50	50	50
<b>Total costs</b>	<b>521</b>	<b>658</b>	<b>1.045</b>	<b>1.379</b>	<b>1.374</b>	<b>1.374</b>
<b>Central budget</b>	<b>506</b>	<b>599</b>	<b>1.030</b>	<b>1.293</b>	<b>1.293</b>	<b>1.293</b>
<b>Difference budget – costs</b>	<b>-15</b>	<b>-59</b>	<b>-15</b>	<b>-86</b>	<b>-81</b>	<b>-81</b>

Yellow shading = measure already part of Spring Memorandum 2019-2022

Green shading = new investments

F.I. = future investments

tbd = to be decided



ORGANIZATION

# 9. FACULTY OF BEHAVIOURAL, MANAGEMENT AND SOCIAL SCIENCES



## 9. FACULTY OF BEHAVIOURAL, MANAGEMENT AND SOCIAL SCIENCES

*(including WSV Quality Agreements funded projects)*

### INTRODUCTION

In October 2018, the first BMS plan for the allocation of the WSV-budget (Quality Agreements) was made. This plan was developed in close cooperation with the programme directors and the programme committees. As input for the plan, also results were used of a survey concerning the preferences of students in relation to the quality agreements. In April 2019, the BMS plan Quality Agreements was expanded with ambitions of individual programmes, which were formulated in the Programme Development Plans 2018/2019 (ref: QA2689), resulting in the Action Plan Education BMS (ref: QA 2689/13). This action plan provides an overview of all the actions that have been planned within BMS in relation to the improvement of education, including Quality Agreements and the regular quality assurance and improvement actions of programmes. This action plan has been submitted to the OLDs for verification and subsequently sent to the chairs of the OLCs and the departments for (formal and informal) advice.

In June 2019, the NVAO has sent a letter to the universities regarding its experiences with the reviewing process of the Quality Agreements. Based on their findings so far, the NVAO has urged universities to provide plans that are more precise and contain detailed project plans for investments funded by WSV budget. As a response to this letter, the Board of the UT has asked faculties to revise their plans in order to meet the requirements of NVAO. To achieve this, the mentioned Action Plan Education BMS has been updated and its structure has been adjusted; now it also includes detailed project plans. The result of this revision is included in this document.

### BMS VISION ON EDUCATION

The vision on education of the BMS faculty is in line with the broader vision and ambitions of the UT. Although the UT 'shaping 2030' strategy has not been yet finalized, tackling societal challenges related to digitalisation, sustainability, and inclusion form the core of its vision. BMS aims to, directly and indirectly, contribute to effectively address those challenges through fitting educational approaches. Particularly, it believes that providing technology-oriented teaching from a social science point of view is pivotal in this endeavor. Technology is drastically changing our world. Technological developments and innovations are shaping

a dynamic, fast-paced and continuously altering society and are increasingly influencing virtually all facets of our lives. As a result, current jobs might not exist anymore in the future and new jobs that currently not exist might emerge, which instigates debates about the development of so-called transferrable skills. In order to keep up with these developments and steer and regulate them responsibly, as well as face and tackle the mentioned societal challenges, it is crucial to raise technological awareness and develop technological sensibilities and suitable capacities and skills among citizens and professionals. Being part of a technical university that "wants to put people first," BMS has a privileged position to contribute to empowering society through providing education that focuses on socio-technical solutions. Besides studying (new) technologies (such as AI and IoT) and their influence on humans and society, technology-oriented teaching also amounts to teaching students how to employ (support) tools for data collection, data analysis and design of solutions, as well as teaching them how to develop a (value sensitive) design/engineering approach. The technological context at the University enables students to experience technology in practice and to study how the use of technology can be improved and enhanced.

Besides strengthening and enriching programmes through hooking into the UN's Sustainable Development Goals, BMS, being part of an engineering university, aims more particularly to engage students with Grand Engineering Challenges. In short, BMS wants to groom employees of the future through technology and engineering oriented teaching who can 'put the human touch in the high tech.'

This technology and engineering oriented teaching that ultimately aims to contribute to benefitting society is, in line with the University TOM model, characterised by a student-driven problem and project-based approach. This approach can only be successful in combination with small-scale interactive teaching that takes place in an international classroom and promotes international experience in cooperation with national and international students who actively co-shape their learning trajectory; this active role implies students having an investigating, entrepreneurial and hands-on attitude.

Improving the quality of teaching at BMS and the UT can only be understood and evaluated in the light of what it wants to achieve, which is expressed by the sketched vision on education. Providing high quality technology and engineering oriented education from a social science point of view that anticipates the future needs of society and industry requires particular investments: enough teachers and tutors and ongoing professionalisation of teachers and

tutors in order to be able to offer small-scale and interactive education; optimal technology-oriented learning facilities; community building among national and international students; integrating the needs of society and industry in curricula and strengthening the interaction between programmes and the professional field; developing knowledge and skills of individual students that enable student driven and problem and project-based learning; offering expertise that is applicable in society and industry; developing transferrable skills that are applicable to rapidly changing environments; offering programmes to mixed international students and promoting the international experience of both the Dutch and the international students in order to enable students to become global citizens.

These BMS aims and means are further elaborated and incorporated in the UT scheme consisting of 5 UT themes, namely *talent development of students, global citizens, teaching professionalisation, learning facilities and community building*. BMS has formulated a sixth theme, namely *Continuous Development of Educational Programmes*, which contains plans for the regular development and improvement of the educational programmes. The ambitions and measures proposed in this Action Plan reflect how the BMS faculty aims to improve its quality of education and reflects the BMS educational policy for the coming years.

#### The Revised Action Plan Education BMS

For each of the above mentioned UT themes, BMS has formulated ambitions that the faculty wants to pursue in the coming years. In this revised Action Plan Education BMS in total eleven ambitions have been identified. To realise these ambitions, specific measures have been formulated. In general, there are two different types of measures:

- a. Measures that include WSV-budget will be indicated by the color blue. Within this category we distinguish between projects and teacher time compensation (the BMS capacity model can be used to monitor teacher time). The measures on project base are described in detailed project plans, which contain the aim of the project and the progress that needs to be achieved in 2021 (for an overview of the proposed projects, see Annex 3 WSV-budget: project plans). Each year, the board of the faculty makes specific arrangements with programme directors and departments with regard to these investments (for example in the provision of additional time for teachers or possibilities to hire additional teachers to enable other teachers to do specific tasks or engage in professionalisation). Measures concerning teacher time compensation will be funded based on measure 5.2.
- b. Measures that are funded from the regular budget and

do not include WSV-budget will be indicated by the color green. These measures will be financed using regular financial means.

For each measure, concrete targets have been formulated that the faculty wants to reach by 2021 (and/or later). Appendix 1 contains tables for internal use that make it easy for both management and participation bodies to monitor whether the set targets have actually been achieved. The information is made available annually in the beginning of October.

In this document, the following abbreviations will be used:

CELT = Centre of Expertise in Learning and Teaching  
 EB = Examination Board  
 OER = Education and Examination Regulations  
 ILO's = programme Intended Learning Goals  
 OLC = Programme Committee  
 OLD = Programme Director  
 PDP = Programme Development Plan  
 SDGs = UN Sustainable Development Goals  
 BKO = University Teaching Qualification  
 WSV = (Dutch Wet Studie Voorschot), funds available for the Quality Agreements with Ministry of Education

Annex 1: Tables for monitoring (for internal use).

Annex 2: Deployment of WSV funds.

Annex 3: WSV-budget: project plans.



## TALENT DEVELOPMENT OF STUDENTS

Taken into account the student driven learning approach of the University of Twente, it is important that students discover their strong and weak points and are able to improve both these strong and weak points. BMS on the one hand wants to stimulate students to explore and development their talents in excellence and honours programmes, and on the other hand students should be able to further develop their skill, especial the transferrable skills. Talent Development also means that students are well prepared for the future labour market.

### AMBITION 1: FOSTERING TALENT DEVELOPMENT WITHIN AND OUTSIDE EDUCATIONAL PROGRAMMES

For BMS talent development is not limited to challenging students with high grades. It also refers to to facilitate students with broader interests (societal, political, ethical, administrative, managerial, etc.). In addition, BMS wants to prepare students for a fast changing world by equipping them with transferrable skills.

**Measure 1.1:** *Stimulating participation in intra-curricular BMS STAR excellence programmes and in the extra-curricular honours programmes Philosophy of Science and Technology and Processes of Change and in the honours track Entrepreneurship and Business Development.*

Effect:	Students are able to further develop their talents in various areas.
Targets:	<ol style="list-style-type: none"> <li>1) 10 to 15% of the bachelor students actively participate in the Star Programmes in the study year 2019-2020.</li> <li>2) in 2019 and the following years "Philosophy of Technology" and "Processes of Change" will show a growth in the number of participating students of 5%</li> <li>3) The honours track "Entrepreneurship and Business Development" within the bachelor International Business Administration (IBA) will start in the academic year 2019-2020. In the year 2021-2022, 5% of the IBA students will participate in this track.</li> </ol>
Programmes involved :	Bachelor's COM, IBA, MS&T, PSY (star-programmes), honours programmes "Philosophy of Technology" and "Processes of Change" and Honours track "Entrepreneurship and Business Development".
Monitoring:	<ol style="list-style-type: none"> <li>1) Monitoring through registration number of students that actively participate in a Bachelor's STAR programme modules and counting the number of stars granted (a star is granted after finishing three star modules from 18/19 till 23/24.</li> <li>2) Monitoring the number of students in the honours programmes Philosophy of Technology and Processes of Change from 18/19 till 23/24.</li> <li>3) Monitoring the number of students in the honours track Entrepreneurship and Business Development from 18/19 till 23/24.</li> </ol>
Budget:	Regular BMS budget. No additional WSV-budget involved until 2021. From 2022, BMS intends to invest WSV funds to further expand talent development opportunities (see annex 2, Deployment of WSV funds).

**Measure 1.2:** *Equip students with Transferrable Skills.*

Effect:	Students are equipped with skills that can be used in constantly changing situations and environments
Target:	An inventory will be made to understand which transferrable skills are important for the majority of the educational programmes. Based on the inventory staff will discuss and reflect on transferrable skills that are especial important in coping with technological change. After identifying the most important skills, educational materials will be developed to support the education process in relation to these skills. The aim is to have these materials available in September 2021. In addition, attention will be paid to skills that are important for cooperation in small groups, such as peer-review and providing other forms of feedback.
Programmes involved :	All educational pogrammes.
Monitoring:	Monitoring through yearly Education and Examination Regulation of Programmes (in which the Programme Committee is involved).
Budget:	Regular BMS budget. Compensation of teacher time via measure 5.2 (see annex 3, project plan 5.2).

## **AMBITION 2: STRENGTHEN THE INVOLVEMENT OF THE OCCUPATIONAL FIELD IN THE (DESIGN OF THE) EDUCATIONAL PROGRAMMES AND TO OFFER STUDENTS MORE POSSIBILITIES WITHIN THE CURRICULA THAT PREPARE STUDENTS FOR THE OCCUPATIONAL FIELD.**

Another element of talent development is that students are able to connect to future national and international occupational fields. This requires good connections between educational programmes and occupation fields, possibilities for student to experience the occupational field and sufficient support to enable this.

### ***Measure 2.1***

#### ***Improve the connection between educational programmes and the Dutch and international occupational field e.g. by establishing (international) occupational field committees.***

The aim of the occupational field committees (or panel) is to enable study programmes to optimally prepare students for their future jobs. This can be done by enabling the occupational field committee to provide feedback on the aims of the study programme (intended learning outcomes) and the design of the curriculum from an international perspective.

Effect:	Students are offered study programmes that have a good and visible connection to the future, (international) occupational field.
Target:	All bachelor- and master programmes of BMS have a well-functioning occupational field committee (and, if suitable, an occupational field panel) that communicates with the programmes on a regular basis, also in the light of preparations by the programme for the future occupational field. This goal will be realized in 2019–2020.
Programmes involved:	All BMS Bachelor's and Master's programmes.
Monitoring:	Via the yearly PDP (Programme Development Plan) (OLC involved).
Budget:	Regular BMS budget. To develop occupational field committees and improve connections to the occupational field, a time compensation for the teachers involved will be offered via measure 5.2. This can have a permanent character by giving some teachers the role of coordinator with regard to connections with the occupational field.

### ***Measure 2.2:***

#### ***Improving possibilities for students to do internships in programmes.***

Within all BMS educational programmes, students will be offered the opportunity to do an internship within a company or organization, possibly in combination with their thesis.

Effect:	Students have possibilities to do internships within programmes, which enable them to achieve some work-related experiences in a particular field.
Target:	The goal is that in 2020-2021 (depending on the aim of the educational programme) 40 to 80% of the students use this possibility to orient themselves on the occupational field.
Programmes involved:	All BMS Bachelor's and Master's programmes.
Monitoring:	Monitoring through yearly Education and Examination Regulation of Programmes (in which the Programme Committee is involved). Registration of the number and percentage of students that use the possibility of an internship (including thesis research at an external organisation from 18/19 till 23/24).
Budget:	This measure will be funded by WSV budget, based on arrangements. To develop internships and to improve connections to the occupational field, a time compensation for the teachers involved will be offered via measure 5.2. This can have a permanent character by giving some teachers the role of coordinator with regard to connections with the occupational field, including internship related communication.

### ***Measure 2.3:***

#### ***Organizing sufficient support for offering internships for programmes and individual students using the Student Mobility Centre (which will be operational in March 2020). The support of the Mobility Centre focuses on administrative processes, information on rules and regulations, legal affairs and, if applicable, factual acquisition of possibilities for internships in cooperation with teachers.***

Effect:	Sufficient support for students who wants to get work experience through an internship.
Target:	In September 2022, of the eligible students that can follow an internship, 50% has been supported in some way by the Student Mobility Centre.
Programmes involved:	All BMS Bachelor's and Master's programmes.

Monitoring: Registration of the number and percentage of students that use the possibility of an internship (including thesis research at an external organisation from 18/19 till 23/24).  
 Budget: This measure will be funded by WSV-budget on a project base.

**Effort WSV funds (in k€)**

Project 2.3	2018	2019	2020	2021	2022	2023	2024
<b>total</b>			<b>75</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
Staff mobility center			64	82	82	82	82
Travel costs			1	3	3	3	3
Promotion and relationship management			10	15	15	15	15

**Measure 2.4:** *Better preparing students for the future occupational field by providing sufficient attention to the occupational field in curricula, e.g., by developing learning lines "preparation occupational field" within curricula.*

Effect: During their study, students are offered information and experiences about the future occupational field. This enables students to make better choices in relation to the degree programme and the future occupational field, which can also foster student driven learning. NSE scores on this item could be a useful indicator.  
 Target: Two programmes have developed a learning line "preparation occupational field" in 2021-2022. Based on the evaluation in 2022, it can be decided to further develop these learning lines in additional programmes.  
 Programmes involved: In principle all (English language) BSc and MSc programmes, but in practice not all programmes will participate.  
 Monitoring: Advice of the PC about the developed learning line preparation occupational field and NSE.  
 Budget: This measure will be funded by WSV budget, based on arrangements. To develop a learning line occupational field, a time compensation for the teachers involved will be offered; see measure 5.2.

**Measure 2.5:** *Enable students to develop their talents in relation to a more specific occupational field*

Effect: Improved ability for students to connect their study path to preferred occupational fields. Develop specific tracks in the master Philosophy of Science, Technology and Society (PSTS) and in the master Industrial Engineering and Management (IEM)  
 Target: a) From the academic year 2019-2020, the master PSTS will include specific tracks that focus on particular areas of application. In the year 2021-2022, these tracks in total have at least 7 students.  
 b) From the academic year 2019-2020, the master IEM will include specific tracks that focus on particular areas of application. In the year 2021-2022, each of these tracks has at least 10 students.  
 Programmes involved: MSc IEM and PSTS.  
 Monitoring: The effects will be monitored by registration of the number of students in the new PSTS and IEM tracks.  
 Budget: This measure (PSTS) will be funded by WSV budget on a project base.

**Effort WSV funds (in k€)**

Project 2.6	2018	2019	2020	2021	2022	2023	2024
<b>total</b>	<b>75</b>	<b>73</b>					
Staff project*	75						

\* Semi integral tarif

**Measure 2.6:**

***Strengthening the relation with alumni and the use of alumni in curricula by the appointment of a coordinator that provides administrative support to all alumni associations, and keeps records of alumni, including alumni that are willing to do specific support for educational programmes.***

For educational programmes, it is important to have good connections to alumni. Alumni who work in the intended occupational field have often good ideas about developments in the occupational field and can support finding internships for students and practice assignments. If suitable, alumni can also provide educational support to the students at an academic level during their internship or practice assignment.

Effect: For the students, additional internships and guidance during the internship by alumni teachers will become more available.

Target: In 2021, alumni organizations aligned to BMS will be supported by the faculty and all educational programmes have a record of alumni that are prepared to cooperate with the educational programme in providing internships and guidance of students during internships.

Programmes involved: All educational programmes.

Monitoring: Number of alumni that are willing to support and internship or graduation place and number of alumni that supports educational programmes from 18/19 till 23/24. Data provided by the alumni office BMS.

Budget: This measure will be funded by WSV budget on a project base.

***Effort WSV funds (in k€)***

Project 2.6	2018	2019	2020	2021	2022	2023	2024
<b>total</b>			<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>
Staff alumni bureau			20	20	20	20	20
Website			10				
Events			20	30	30	30	30

## GLOBAL CITIZENS

The world is becoming more and more international. The BMS faculty wants to prepare students for living and working in an international environment. This aim is in line with the internationalization vision of the UT, as well as with the mentioned 'Shaping 2030' ambitions. To become global citizens, BMS educates students during their study on how to communicate in an international context and how to cope with intercultural differences. These skills are also a proper preparation for students to work in an international work environment. According to BMS, responsibility and ethical behavior are important characteristics of global citizens. Global citizens need to pay sufficient attention to sustainability and global responsibility. In line with the UT strategy 2030, we want to develop the capabilities of students in this respect and promote that them becoming future generators of sustainable value for business and society at large, and can contribute to an inclusive and sustainable global economy, with sufficient attention to the Grand Challenges for Engineering in the 21<sup>st</sup> century.

### **AMBITION 3: CREATING POSSIBILITIES WITHIN THE CURRICULA THAT ENABLE STUDENTS TO FUNCTION WELL IN AN INTERNATIONAL CONTEXT WITH REGARD TO COMMUNICATION AND COPING WITH INTERCULTURAL DIFFERENCES.**

The BMS faculty wants to equip students with sufficient capacities and skills in order to cope with and function in international situations. The BMS faculty offers students a number of possibilities to achieve international experience, such as studying in educational programmes in international classrooms with students from various countries, double educational programmes in cooperation with renowned international partner universities, and student exchange programmes that enable students to study at an international university as part of their study (usually half a year). In addition, the BMS faculty aims to offer international students optimal support and guidance.

**Measure 3.1:**

***Developing double degree programmes for one year master programmes to enable talented students to study both at the UT and at an international partner university.***

Effect: Available for students of international study programmes to practice coping with intercultural differences.

Targets: a) Each year, at least one (one year) master programme within BMS agrees on a double degree contract with an international partner.  
b) In the study year 2021-2022, 80% of the English language one year master programmes within BMS offer students the possibility to follow a double degree.

Programmes involved: All (English language) Master's programmes (also Bachelor's and JOINT programmes if applicable).

Monitoring: Number of English language double degree Master's programmes from 18/19 till 23/24.

Budget: Regular BMS budget. To develop double degree programmes, departments will be offered a compensation for the teachers time involved via measure 5.2 (see annex 3 project plans, project 5.2 Innovation of educational programmes).

**Measure 3.2: *Developing exchange programmes.***

In the summer of 2018, an exchange coordinator was appointed to strengthen and maintain the network of partner universities and to support students with regard to (selecting) exchange programmes.

Effect: For students, exchange programmes are available that offer them possibilities for international experience at international universities.

Target: In agreement with the UT policy, 2020-2021 at least 50% of the BMS bachelor student will follow at least 15EC of education internationally.

Programmes involved: All (English language) Bachelor's programmes.

Monitoring: The effects will be monitored by using Mobility Online to monitor the percentage of bachelor students that follow 15 EC at an international university.

Budget: This measure will be funded by WSV-budget on a project base.

**Effort WSV funds (in k€)**

Project 3.2	2018	2019	2020	2021	2022	2023	2024
<b>total</b>	<b>59</b>	<b>73</b>	<b>75</b>	<b>76</b>	<b>77</b>	<b>78</b>	<b>79</b>
Projectleader*	55	67	69	70	71	72	73
Travel costs	5	6	6	6	6	6	6

**Measure 3.3: *Providing sufficient support to international students. To achieve this an International Student Support Officer has been appointed in 2018.***

Effect: For international students better guidance and optimal support will be available. All students will be able to study in an international classroom that supports their international learning experience.

Target: a) By 2021 the number of talented students that start a study at BMS after scholarship coaching shows an annual rise of 10%.  
b) In 2022 70% of the students are satisfied to very satisfied with the support at the UT and at least 30% of the students are willing to act as ambassador for BMS/UT in their home country.

Programmes involved: All BMS (English language) Bachelor's and Master's programmes.

Monitoring: The aim is that more and more students are guided and do receive appropriate scholarship coaching. This will be monitored by over the years monitoring the number of applicants, the scholarship coaching and the number of applicants that with a scholarship have successfully started a study from 18/19 till 23/24. To monitor the satisfaction of the international students, who receive support, information will be used from the International Student Barometer.

Budget: This measure will be funded by WSV budget on a project base.

**Effort WSV funds (in k€)**

Project 3.3	2018	2019	2020	2021	2022	2023	2024
<b>total</b>	<b>34</b>	<b>37</b>	<b>37</b>	<b>39</b>	<b>39</b>	<b>40</b>	<b>40</b>
Projectleader	34	37	37	39	39	40	40

**Measure 3.4**

***The BMS faculty aims to realise international classrooms with a balanced mix of Dutch and international students from various origins. To highlight the international character of their educational programme, at least two programmes will aim to achieve the special feature Internationalization of the NVAO (ECA certificate) in the next accreditation.***

Effect:	Students will receive their education in classes with a balanced national and international composition.
target:	<p>a) In the study year 2021-2022, all English language bachelor and master programmes do have an internationally mixed composition with a substantial contribution of international students (at least 30%, calculated over the faculty as a whole). The recruitment of students is performed in such a way that it contributes to realising this goal.</p> <p>b) Two programmes will aim to achieve the NVAO distinctive feature Internationalization (European Consortium for Accreditation provided Certificate for Quality in Internationalisation). The planning to achieve this, will be depending on the time of the accreditation.</p>
Programmes involved:	All BMS (English language) Bachelor's and Master's programmes
Monitoring:	Monitoring through MISUT data on international composition of students in bachelor programmes.
Budget:	<p>For measure a), no additional WSV funds involved.</p> <p>For measure b), WSV funds can be used on project base (from 2022) for those programmes that aim to achieve the distinctive feature Internationalization.</p>

**AMBITION 4: STRENGTHENING AND ENRICHING CURRICULA BY INCLUDING THE VALUES OF GLOBAL SOCIAL RESPONSIBILITY, SUCH AS THE UNITED NATIONS GLOBAL COMPACT (SUSTAINABLE DEVELOPMENT GOALS) AND, MORE PARTICULARLY, GRAND CHALLENGES FOR ENGINEERING.**

**Measure 4.1:**

***Appointing a project manager to stimulate the implementation of the SDG's in curricula (as evidence shows from ILO's of educational programmes and from learning objectives of modules and courses) and attention for Grand Challenges for Engineering.***

From January 2017, the BMS faculty has signed the Principles of Responsible Management Education (PRME). To execute this policy and to promote the implementation of the SDGs in the curricula from 2018 on the project leader has organized a yearly SDG award for students and writes the two-yearly PMRE SIP-report (sharing information on progress). From 2020 also attention will be given to the Grand Challenges for Engineering.

Effect:	Students are challenged to solve assignments in a responsible and sustainable way with a particular focus on grand engineering challenges.
Target:	<p>a) the first SIP report will be published in December 2018 and then every two years (each time containing the plans for the next two years). The yearly SDG student award will be granted from 2019.</p> <p>b) In 2021, at least 8 educational programmes have SDG's in the ILO's and in the learning goals of 30% of the courses within these programmes.</p>
Programmes involved:	All BMS Bachelor's and Master's programmes.
Monitoring:	via the two-yearly SIP-Report, which include the progress of the project and includes an overview of plans for the next two years. The SIP report will also be sent to the Faculty Council to inform them.
Budget:	This measure will be funded by WSV-budget, both on project base as based on arrangements. To include SDG's in curricula, modules and courses, a compensation for the teachers time involved will be offered compensation via measure 5.2

**Effort WSV funds (in k€)**

Project 4.1	2018	2019	2020	2021	2022	2023	2024
<b>total</b>	<b>Via 5.2</b>	<b>Via 5.2</b>	<b>72</b>	<b>122</b>	<b>122</b>	<b>122</b>	<b>122</b>
Projectleader			50	70	70	70	70
Support staf (student assistant)			20	50	50	50	50
Student-award			2	2	2	2	2

## TEACHING PROFESSIONALISATION

Teachers with good academic and didactic knowledge who teach in an inspiring way are of key importance in every educational programme. Besides basic qualifications, sufficient attention should be given to continuous professionalisation. Not only in training or workshops, but also in promoting cooperation between teachers. Also stimulation of innovation in education and SKO trajectories can contribute to further professionalization. Small scale and interactive (interaction between student-teacher and student-student) education in project groups with regular testing and optimal feedback is part of TOM and strongly embraced and encouraged by BMS.

### AMBITION 5: STIMULATING CONTINUOUS TEACHING PROFESSIONALISATION

Teaching methods change and evolve over time and BMS wants to stimulate teachers to continuously engage in educational professionalisation, including the ability to request from students feedback on their teaching skills. In concordance with the ambition to further develop small-scale and interactive education, future efforts in the area of teacher professionalisation will focus on strengthening the role of teachers as coach and tutor, also with the aim to promote student driven learning (the student as owner and motivator of his/her own learning) with e.g. optimal feedback for students.

**Measure 5.1:**

***All teachers will have achieved the University Teaching Qualification (BKO) and all teachers will participate in professionalisation activities for 24 hours each year.***

- a) The basic UT policy is that teachers have achieved the BKO three years after their initial appointment. The first focus of the policy is to monitor and persuade teachers to apply to this rule. In the past teachers with many years of teaching experience were provided an exemption and did not need to achieve the BKO. To stimulate these teachers to achieve the BKO, Pressure Cookers (two-day intensive workshops) will be developed that enable also these teachers to achieve the BKO. BMS wil also stimulate trajectories like SKO, SKE etc. (see also measure 5.2 for funding)
- b) To promote continuous professionalisation the policy is introduced for each teacher to engage in teaching professionalisation for 24 hours each year (starting 2021). Teachers will be stimulated to take courses or workshops that support developing necessary and new skills in relation to the role of tutor and coach. This requires a wide range of available courses and trainings. An additional option is to offer lunch meetings to teachers organized by the Programme Director in cooperation with CELT in relation to specific themes or subjects (evaluation September 2022).

Effect: Students are guided by teachers with state of the art forms of education that are in line with the educational vision of the UT and BSM.

Target: 1) In 2019 the majority of teachers have achieved their BKO, including those with exemptions, by the use of short and intensive guidance (Pressure Cookers). The aim is that in 2021-2022 65% of all teachers have acquired the BKO.  
2) In September 2022, at least 80% of the teachers has completed two or more professionalisation trainings (including workshops during teacher lunches). These will be documented in the annual interviews of teachers with their department head and registered in cluster documentation.

Programmes involved: All BMS Bachelor’s and Master’s programmes.

Monitoring: 1) Registration of the number and percentage of teachers with BKO from 18/19 till 23/24. Data provided by HRM BMS.  
2) Registration of the number and percentage of teachers that have used the available 24 hours continuous professionalisation from 2021 till 2024.

Budget: This measure will be funded by WSV budget on a project base.

**Effort WSV funds (in k€)**

Project 5.1	2018	2019	2020	2021	2022	2023	2024
<b>total</b>				<b>337</b>	<b>337</b>	<b>337</b>	<b>337</b>
b1: CELT				22,5	22,5	22,5	22,5
b2: time for teachers				314	314	314	314

**Measure 5.2:*****Making available an innovation budget for educational programmes.***

Each year Programme Directors thoroughly evaluate their educational programme and record their findings and the measures they want to take in a Programme Development Plan. Small innovations and improvements can be financed from the regular budget. The faculty wants to use the WSV funds to generate a budget for

- (1) larger innovations, possibly beneficial to other programmes, and
- (2) for activities that fit in the BMS education policy. Teachers will be able to participate in the development of these plans. For example teachers will be stimulated to develop evidence-based teaching; SKO trajectories in which a teacher studies a specific subject, in agreement with the dean of education, are also an option. After finishing SKO, the teacher can provide workshops on the subject and can act as a coach of (junior) teachers of his team.

Effect:	Students will be educated within modern and up-to-date educational programmes taught by teachers who master needed competencies.
Target:	From 2020 the programmes will provide project plans to be considered for the innovation budget. For 2018 and 2019 no plans were asked (see annex 3. project plan 5.2 Innovation of educational programmes).
Programmes involved:	All BMS educational programmes.
Monitoring:	via Programme Development Plans (OLC involved).
Budget:	This measure will be funded by WSV-budget, both on a project base as based on arrangements.

***Effort WSV funds (in k€)***

Project 5.2	2018	2019	2020	2021	2022	2023	2024
<b>total</b>	<b>169</b>	<b>119</b>	<b>119</b>	<b>213</b>	<b>428</b>	<b>428</b>	<b>428</b>

**Measure 5.3:*****Stimulating teachers to use the feedback instrument IMPACT or other comparable instruments to get anonymized but specific and instant feedback from students on their classes.***

Effect:	This leads to higher student involvement and satisfaction on teaching items in student opinion surveys.
Target	a) In 2021-2022, 50 % of teachers who have followed a professionalisation training (see measure 5.1) use, on a voluntary bases, IMPACT, or a comparable instrument, to get student feedback.
Programmes involved:	All BMS Bachelor's and Master's programmes.
Monitoring:	See results student questionnaires in programme factsheet QA (OLC involved).
Budget:	This measure will be funded by WSV budget, both on a project base as based on arrangements. A time compensation for the teachers involved will be offered; see measure 5.2.

***Effort WSV funds (in k€)***

Project 5.3	2018	2019	2020	2021	2022	2023	2024
<b>total</b>			<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>
Use of IMPACT			15	15	15	15	15
Training of teachers			5	5	5	5	5



**Measure 5.4:**

***Stimulating optimal intensive feedback to students in small and intense education***

Effect: This leads to higher student satisfaction on teaching items in student opinion surveys

Target: a) In 2021-2022, 50% of the teachers will use methods to improve optimal feedback to students. Providing optimal feedback will be a main focus in this approach, e.g. by using digital feedback instruments that enable the teachers to provide in an efficient way digital feedback in written assignments, using a list of prior established feedback options.

Programmes involved: All BMS Bachelor's and Master's programmes.

Monitoring: The actual use of digital feedback methods and student opinion about quality of feedback (SEQ).

Budget: Providing optimal feedback will be funded by WSV budget on a project base.

***Effort WSV funds (in k€)***

Project 5.4	2018	2019	2020	2021	2022	2023	2024
<b>total</b>	<b>145</b>	<b>145</b>	<b>145</b>	<b>200</b>	<b>200</b>	<b>200</b>	<b>200</b>
Digital tools for feedback				20	20	20	20
Training of teachers and (student) tutors				35	35	35	35
Extra tutors to give feedback in small groups	145	145	145	145	145	145	145

**AMBITION 6: STIMULATE PROFESSIONALISATION OF TEACHERS THROUGH COOPERATION IN TESTING AND ASSESSMENT**

For the quality of education it is important that teachers properly reflect on the aims of tests and assignments. By discussing tests and assignments with peer teachers, this critical reflection of the reason of testing may lead to stronger focus on the crucial elements of testing and a reduction of the number of tests and assignments. Reduced testing will also contribute to a reduction of the teacher workload. An other element is the discussion between teachers about the grading of theses (calibration). Results of screening and calibration will be reported to the BMS examination boards and enable them to perform their safeguarding tasks.

**Measure 6.1:**

***Stimulating test screening by peers next to the existing screening of tests and assignments by experts.***

In 2019, a pilot was performed at one educational programme with regard to screening of tests and assignments by fellow teachers (of the same educational programme). According to the participating teachers, this was an instructive experience and also the Examination Board was satisfied with the results that were obtained. The plan is to broaden this peer screening of tests and assignments to other educational programmes.

Effect: Students face tests and assignments that have undergone a thorough check by peer teachers, and students encounter higher quality exams and assignments.

Target: a) Regular screening: Every Bachelor's programme ensures that each year at least one module is screened. Every Master's programme ensures that each year at least two courses are screened. (from PDP 2018) 2019: Bachelor's IBA; Master BA, EEM, ES, IEM.  
b) Peer screening: In 2022, for most programmes at least two tests (or assignments) are screened each year by fellow teachers (teachers that are involved in the same educational programme).

Programmes involved: See above.

Monitoring: Registration of the amount of actual test screening within educational programmes. The target is that every year at least one module from each Bachelor's programme and two master courses from each master are screened. Report with results of test screening is also provided to the examination boards (EB is involved).

Budget: Regular BMS budget. Given the high learning experience of teachers by peer-screening tests and assignments, compensation of teacher time via measure 5.2 (see annex 3, project plan 5.2).

<b>Measure 6.2:</b>	<b><i>Organising calibration sessions for improving assessment and grading of thesis (will also foster community building).</i></b>
Effect:	Proper grading of thesis is very important, given the civil effect of a graduation. The grading of theses will be more reliable and individual students become less dependent on the judgment of individual teachers.
Target:	All programmes organise thesis carousel and calibration of assessment at least once in 3 years (preferably with international educational programme). (from PDP 2018) 2019: Bachelor's IEM, MS&T and Master EEM, ES, IEM, PSTS 2021: Master PA.
Programmes involved:	See above.
Monitoring:	Registration of the presence of calibration sessions within each educational programme over the years 17/18 till 26/27. The reports of the results of the calibration session will be sent to the examination boards (EB involved).
Budget:	Regular BMS budget. Compensation of teacher time via measure 5.2 (see annex 3, project plan 5.2).

## LEARNING FACILITIES

For BMS, learning facilities are related to creating better and timely learning environments and integrating digital technologies in the learning process. Using labs and e-learning in education is in line with the BMS education vision of restructuring educational programmes towards technology in relation to social science. The availability of modern technology oriented learning facilities also prepares students for professions that require experience with big data, profiling, data science, etc., which will be increasingly important in the future. To promote student driven learning and the autonomy of students, special attention will be given to digitalisation in learning.

### **AMBITION 7: MAKING AVAILABLE MODERN TECHNOLOGY ORIENTED LEARNING FACILITIES THAT ALLOW NEW TYPES OF TEACHING AND TRAINING IN THE CURRICULA TO PREPARE STUDENTS FOR PROFESSIONS THAT REQUIRE EXPERIENCE WITH BIG DATA, PROFILING, DATA SCIENCE, ETC.**

The facilities of the BMS lab are unique for a social science faculty in the Netherlands. By making the research equipment of the lab available for educational purposes, students will experience the use of modern research methods (e.g. virtual reality) that enable them to test certain hypotheses by experimentation and measurements. Student experiences in labs enable them not only to get knowledge, but also enables them to develop transferrable skills and attitudes towards the application of technology in social sciences. Next to the lab, currently a mobile lab is under development which allows students to do field research. Apart from experiencing state of the art equipment in the lab, students will also learn to analyse the data with modern open source statistical software. In line with with the UT vision to promote student driven learning and autonomy of students, BMS will pay attention to digitalisation in learning, enabling enrichment of education materials. As part of digitalisation strategy, also digital testing will be promoted, both as a method for formative and summative assessment.

It should be mentioned that plans are being made for the future development of an Industry 4.0 Learning factory (supply chain lab) that allows students to do physical and virtual research into the design of supply chains in and between organizations. From 2022, a WSV-budget is reserved for this lab (see annex 2, 7.0).

<b>Measure 7.1:</b>	<b><i>Implementing use of modern data production, acquisition and analysis into the curricula of all educational programmes. This will be partly taught by a teacher from the BMS lab. Give students the possibility to do research with a mobile facility for ambient measuring (also coached by members of BMS-lab).</i></b>
Effect:	During their study students will acquire knowledge of and have experiences with modern types of data acquisition and –analysis, allowing them to develop transferrable skills.
Target:	a) In the curriculum of all bachelor and master programmes of BMS attention is paid to the possibilities of modern data production, acquisition and analysis, available and with the support of the BMS lab. This type of education will become a structural component of the programmes. The goal is to start with this in 2018 and to realise this in the years 2020-2021.

- b) A mobile facility for ambient measuring by students will also be realized in 2018 (evaluation Sept. 21).
- c) BMS lab support by thesis preparation of students

Programmes involved: All BMS Bachelor's and Master's programmes.

- Monitoring:
- 1) Registration of the modules and courses in curricula in which attention is paid to modern data acquisition and analysis with support of the BMS lab.
  - 2) Number of students that use the BMS lab and the mobile facility in their thesis research.
  - 3) Registration of the number of lectures about BMS lab facilities.

Budget: This measure will be funded by WSV-budget on a project base.

**Effort WSV funds (in k€)**

Project 7.1	2018	2019	2020	2021	2022	2023	2024
<b>total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
BMS lab	55	55	55	55	55	55	55
Mobile facility	25	25	25	25	25	25	25
Support students	20	20	20	20	20	20	20

**Measure 7.2: Supporting the implementation and use of the open source statistical programme "R". Among others by training teachers to be able to teach students "R".**

Effect: Students receive training in their ability to analyse data with a modern open source programme.  
 Target: Teacher training "R" will start in de academic year 2019/2020 and will continue in the following years. From Sept. 2020 "R" will be implemented in the first year curricula, with gradual implementation in the following years.

Programmes involved: All BMS Bachelor's and Master's programmes.

Monitoring: See annex 1 Monitoring tables, Table 7.2. Further info in OER, OLC involved.

Budget: No additional WSV funds required.

**Measure 7.3: Investing in an e-learning specialist to support teachers to set-up digitalisation in learning.**

The BMS faculty will appoint an e-learning specialist (Spring 2020) that supports teachers to offer students flexible and adaptive methods of studying which are more adapted to the learning needs of the students, in line with making students owner and motivator of their own learning proces. The use of these flexible methods may save teachers lecturing time and allow them to spend more time in answering questions and providing feedback. The e-learning specialist will also be involved in providing support in digital testing (formative and summative). Use of e-learning may also offer further possibilities of enrichment of educational materials in relation to technology development (beyond books and written texts). Digitalisation in learning will also contribute to a reduction of workload among teachers.

Effect: Students will have the possibility to engage in digital education, like simulation, MOOCs , interactive fora, animation, supporting various learning styles, and develop digital competencies and skills, like digital testing and possibilities for flexible and adoptive education using e-learning.

Programmes involved: All BMS educational programmes.

Monitoring: Registration of the number of courses with digitalisation in learning.

Budget: No additional WSV funds required.

## COMMUNITY BUILDING

For a university it is important to pay sufficient attention to community building. A good social network of students within the university promotes well-being of students and supports study success. A good social network among teachers contributes to a good quality culture and mutual exchange of information and support.

### AMBITION 8: PROMOTING SOCIAL COHESION AMONG STUDENTS

For BMS, community building focuses among others on the promotion of social cohesion among students within a particular educational programme and, if possible, also between students from various educational programmes. Social events and a building environment that promotes social interaction are important elements to achieve this.

**Measure 8.1:** *Investing in study areas in the Cubicus Building that promote studying in groups and enable social interaction between students (In the Ravelijn building study areas are a basic part of the building).*

Effect:	The availability of study areas will stimulate more social interaction between students
Target:	In 2018 and the following years, means will be made available to facilitate study areas in the Cubicus building and to keep them available for students.
Programmes Involved:	Bachelor's programme COM and PSY; Master's programmes COM, EST, PSTS and PSY
Monitoring:	Relevant NSE items on social integration of students (programme factsheet QA) will be used for evaluation.
Budget:	This measure will be funded by WSV-budget on a project base.

**Effort WSV funds (in k€)**

Project 8.1	2018	2019	2020	2021	2022	2023	2024
<b>total</b>	<b>62</b>	<b>62</b>	<b>62</b>	<b>62</b>	<b>62</b>	<b>63</b>	<b>63</b>
Rent of the study area	62	62	62	62	62	63	63

**Measure 8.2:** *Paying extra attention to the social integration of foreign students and organise e.g. a BMS Master Day with the help of student associations, in which all new master students participate.*

Effect:	International students will get to know fellow students and members of the student association, that play a central role in the social integration of students.
Target:	In 2018, a start has been made with the Faculty BMS Master Day. This will be developed further, with the help of students and student associations, and continued in 2019 and the following years.
Programmes involved:	All BMS Master's programmes.
Monitoring:	Relevant items in the International Student Barometer will be used for monitoring and presented to programme management in programme factsheet QA (OLC involved).
Budget:	Regular BMS budget.

**Measure 8.3:** *TEM budget to strengthen social interaction.*

Effect:	For students and staff in TEM, for each module a budget of 1k was available for activities and initiatives that strengthen social interaction.
Target:	The budget was made available on request for staff and students in 2017 and 2018.
Programmes involved:	All BMS Bachelor's programmes.
Monitoring:	It was in the financial administration monitored what types of activities were undertaken, based on the budget.
Budget:	The WSV funding of the project will finish at the end of the year 2019. From 2020, the project will be funded using regular BMS budget.

**Effort WSV funds (in k€)**

Project 8.3	2018	2019	2020	2021	2022	2023	2024
<b>total</b>	<b>50</b>	<b>50</b>					
TEM module budget	50	50					

## AMBITION 9: IMPROVING QUALITY CULTURE

An important element of community building among teachers are shared values and ideas that contributed to a quality culture. Quality culture refers to a shared focus and proper communication on improvements in education, close cooperation, shared (academic) professionalism and mutual understanding that commitments will be honoured (accountability). Participatory bodies play an important role in community building, both among students and teachers and should be well supported.

### **Measure 9.1:** *Professionalisation and facilitation of participatory bodies to make them well equipped.*

Support and training will be provided to ensure that teacher and student members of participatory bodies are well able to participate in participatory bodies. Members of these participatory bodies do have a legal advisory role (and sometimes they even have the right of consent) in relation to the quality of education. Common training and communication between students and teachers is also beneficial for promoting a quality culture.

Effect: Students will be facilitated better to execute their participatory rights in participatory bodies.

Target: In 2019 and the following years, members of the participatory bodies (Programme Committees and Faculty Council) will have the possibility to develop skills that are useful in fulfilling their specific tasks. Next to that, they will be provided with practical tools, like an annual cycle and formats for reporting.

Programmes involved:: All BMS Bachelor's and Master's programmes (they have all a Programme Committee)

Monitoring: Registration of the number of participants in training for members of participatory bodies (input CELT).

Budget: Regular BMS budget.

### **Measure 9.2:** *Further development of quality culture within programmes.*

This will be achieved by stimulating teacher meetings, project BMS etc.

Effect: Optimisation of communication about quality of educational programmes

Targets: (from PDP 2018) For 2019 the following educational programme have planned to do so: Bachelor's COM, IBA, IEM and Master's BA, COM, IEM, PSTS. Indicators: teacher meetings, teacher cooperation, teamwork etc. (An extensive list is provided in the document QA 1413).

Programmes involved: See above.

Monitoring: Via yearly Programme Development Plans (PDP)

Budget: Regular BMS budget. After an evaluation in 2022, it is possible that specific projects are set up using WSV-budget.

## CONTINUOUS DEVELOPMENT OF EDUCATIONAL PROGRAMMES (FROM PDP'S)

The quality assurance system of the BMS faculty is focused on continuous improvement and development (ref. BMS QA 2560). To close quality circles at various levels, teachers use Course Development Plans and Programme Directors use Programme Development Plans. At the level of the faculty, each year the quality circle is closed by the Annual Faculty Plan For Education. In principle, no WSV budget is used for the regular development and improvement of educational programmes. For more drastic innovations, an innovation budget is available, which uses WSV budget (see measure 5.2). To be eligible for this budget, educational programmes have to submit project proposals.

## AMBITION 10: TO IMPROVE THE QUALITY OF ASSESSMENT

An important element of improvement of the quality of assessment is reflection and mutual communication among teachers about the aim and goals of assessment (see also measure 6.1), with a good balance between formative and summative testing. BMS aims to support programme directors in the easy update of assessment plans. Developing rubrics contributes to a more reliable grading of assignments. Rubrics also provide students with better feedback (see also measure 5.4).

### **Measure 10.1:** *Supporting further development of assessment plans.*

Effect: For students, the learning objectives of modules or courses are in line with the intended learning objectives of an educational programme. For students, this also means that the assessments

are in line with the learning objectives of involved courses of modules and in line with the aims of the programme.

Target:	To facilitate further development of assessment plans (available in BMS QA 2690), in 2020, in cooperation with LISA, a project will start to develop a system that will enable educational programmes to digitally update their assessment plans.(ref: UTpK 111). It is planned hat this system will be available in July 2021.
Programmes involved:	All educational programmes.
Monitoring:	Monitoring will be done by the yearly report of the Examination Board. From august 2012, EB's will yearly receive the updated assessment plan.
Budget:	No additional WSV-funds required.

**Measure 10.2: *Development of rubrics.***

Effect:	The use of rubrics in grading of assignments provides students with optimized feedback, because rubrics describe the various levels of performance and thus explicate the expectations students can live up to.
Target:	(from PDP 2018): In 18/19 the following educational programmes have planned to develop rubrics: Bachelor IBA, Master EEM, Master IEM
Programmes involved:	See above.
Monitoring:	OLC provides OLD advice.
Budget:	No additional WSV-funds required.

**AMBITION 11: STRUCTURAL DEVELOPMENT AND IMPROVEMENT OF EDUCATIONAL PROGRAMMES**

Yearly in October, a Factsheet Quality Assurance is provided to all educational programmes. The management of the programme can use this information (and other available information) to update the Programme Development Plan (PDP). In this plan, also an evaluation in retrospect is made of the plans of the previous year. In the yearly PDP, programmes can, if applicable, update the Intended Learning Outcomes , improve tracks or learning lines, or more in general e.g. take measures to increase progression rates.

**Measure 11.1: *Adjust Intended Learning Outcomes (ILO's) to changing circumstances (incl. SDG's).***

Effect:	Students will be confronted with up-to date curricula that incorporate the latest scientific developments.
Target:	When necessary, each programme updates ILO's at least once in three years. (from PDP 2018): In 18/19 the following educational programmes have planned to do so: Bachelor COM, IBA, IEM and PSY; Master BA, COM, EEM, ES EST, IEM, PA, PSTS, PSY and Teacher Programmes.
Programmes involved:	See above.
Monitoring:	OER + via yearly Programme Development Plan (PDP) (adjustment of the ILO's can also be subjects of discussion with the workfield committee or be subject to a questionnaire among alumni to ask their opinion on the proposed changes). In all cases of changes, the programme committee will be involved.
Budget:	No additional WSV-funds required.

**Measure 11.2: *Development or improvement of tracks and learning lines.***

Effect:	Curricula will have a more structured content with learning goals of increasing complexity.
Target:	a) (from PDP 2018) For 18/19 the following educational programmes have planned to development tracks/profiles: Master EEM, PA, RM, Teacher Programmes. (from PDP 2018) For 2019 the following educational programmes have planned to development or improve learning lines: Bachelor COM, IBA, IEM, MS&T, Master's EEM, PSTS, RM.
Programmes involved:	See above.
Monitoring:	Via yearly Programme Development Plan (PDP).
Budget:	No additional WSV-funds required.

**Measure 11.3:** *Increase progression rate of students/improving study success.*

Effect: Students have the possibility to finish their programme in nominal time, avoiding unnecessary delays.

Target: (from PDP 2018) for 18/19 Master's BA, PA, PSY.

Programmes involved: See above.

Monitoring: See annex 1 Monitoring tables, Table 11.3a, 11.3b + via yearly Programme Development Plans (PDP) (OLC involved).

Budget: No additional WSV-funds required.

**AMBITION 12: STRUCTURAL DEVELOPMENT AND IMPROVEMENT OF MODULES AND COURSES**

A basic element of quality assurance is the continuous improvement of courses and modules. This not only refers to updates in reaction to changing circumstances, but also to improvements of flaws and failures.

**Measure 12.1:** *Adjust learning objectives of courses to changing circumstances.*

Effect: Students study up-to-date curricula with up-to-date intended learning outcomes.

Target: (from PDP 2018) for 2019 the following educational programmes have planned to do so: Master EEM, EST, Teacher Programmes.

Programmes involved: See above.

Monitoring: via yearly Programme Development Plans (PDP) (OLC involved).

Budget: No additional WSV-funds required.

**Measure 12.2:** *Development or improvement of specific (parts) of modules or courses.*

Effect: Students study modules and courses that are subject to continuous improvements and do not contain unnecessary errors or lack of quality.

Target: (from PDP 2018) for 2018-2019 the following educational programmes have planned to do so: Bachelor IBA, IEM and PSY; Master BA, IEM, PSY and Teacher Programmes.

Programmes involved: See above for involved educational programmes.

Monitoring: Via yearly Course Development Plans (and also PDP; OLC involved) + yearly overview for faculty council.

Budget: No additional WSV-funds required.

A photograph of two students in a workshop. In the foreground, a student with blonde hair tied back, wearing safety glasses and a blue hoodie, is operating a lathe machine. In the background, another student with blonde hair and safety glasses, wearing a dark blue hoodie with a '73 PARKWEAR REPAIR INDUSTRIES' logo, is looking on. The workshop is filled with various tools and equipment, including a computer monitor displaying technical data.

# 10. FACULTY OF ENGINEERING TECHNOLOGY



# 10. FACULTY OF ENGINEERING TECHNOLOGY

## 1. INTRODUCTION

In response to the request of the Ministry of Education, Culture and Science (Dutch acronym: OCW), the University of Twente develops an agreement on the quality of education (in Dutch: kwaliteitsafspraken) in the Framework of the “Wet Studievoorschot” (WSV). These so-called Quality Agreements will be effective until the end of 2024.

In line with the above-mentioned process, in 2018 the Faculty of Engineering Technology (ET) was expected to: (i) come up with actions to improve the quality of education financed with the WSV money and (ii) to develop a long-term Quality Agenda (2019-2024) in which the vision on educational quality is given and the relation to the OCW themes is made explicit.

### *The OCW themes are the following:*

- i. Intensity of Education: Relation and contact between teachers and students, small groups, creating communities;
- ii. Study Success;
- iii. Differentiation in Education: Talent development within and outside the curriculum, relevant education (relationship education and research, social impact, international and intercultural experience);
- iv. Teacher Quality: Expertise and teaching skills, availability of and guidance by teachers, continuous professionalisation, rewarding teachers’ efforts, mutual sharing teaching materials and expertise.
- v. Guidance of Students: Equal opportunities for students regardless of background or origin, learning how to study, proactive study guidance;
- vi. Educational Facilities: Facilities to foster intensive and small-scale education, combination of physical and digital methods, future-proof facilities.

This report describes the action plans that ET has developed to improve the quality of education and how these plans fit within the educational philosophy of UT and ET, as well as the relation to the themes set by the Ministry of Education.

## 2. CONTEXT WITH UT AND FACULTY

### UT MISSION AND QUALITY AGREEMENT PROGRAMMES

The UT mission is “High Tech, Human Touch”. The UT educational vision is in line with this mission and is translated into a UT-profile consisting of the following

three elements: 1) Small-scale and interactive environment, 2) Entrepreneurial and 3) Crossing Borders.

The UT has formulated five university-wide quality agreement programmes, in line with its own educational vision:

1. Learning facilities
2. Teaching professionalisation
3. Community building
4. Talent development students
5. Global citizens

### ET EDUCATIONAL PHILOSOPHY AND AMBITIONS

The UT wide educational vision is further developed in the faculty. The educational philosophy of ET can be characterised by the following three keywords: project-led education, bottom-up approach and a design and action-orientation, all three reflecting the entrepreneurial, interdisciplinary and interactive style of our education.

Firstly, the faculty of ET has been at the forefront of project-led education for many years and has set the standard for other educational programmes at UT as well. Already in the 90’s of the previous millennium the programme Mechanical Engineering implemented project-led education as the educational model. Project-led education is - so to speak - in the DNA of ET. Educational developments that took place at ET have always taken into account the project-based nature of education. Secondly, the fact that staff and students together shape this education; bottom-up, not top-down, is another characteristic of the educational vision that sets apart ET from other faculties around the country. Thirdly, educational developments have been always designed and action orientated. It is good to think before you act, but too many projects perish before they are implemented. Not so at the faculty of ET, where designing solutions and “getting things done” is an important value. A good example of this, is the development of the joint Bachelor’s programme on Mechanical Engineering with the VU University in Amsterdam. Within 1.5 years after this idea came up, it is implemented and already Bachelor’s students from Amsterdam are flocking around the campus.

It is important that the awareness of the staff about project-led education, as well as a bottom-up approach of educational development and “design and action-orientation” is maintained and further increased. Awareness, therefore, plays an important role in the action plans as detailed in section 3.

The textbox on page 85 gives an impression of the educational culture at ET.

The educational ambitions of the Faculty are in line with the educational vision of ET. Summarised, the ambitions of the faculty ET are to:

- Educate engineers of the future: Engineers who are global citizens and are able to acquire deep knowledge, apply this knowledge in a meaningful way in order to create innovative solutions for new complex challenges of the future;
- Stimulate development of T-shaped professionals;
- Stabilise the high inflow in the bachelor while maintaining our high quality of education;
- Increase inflow in Master's programmes (by making sure that we do not lose Bachelor graduates for wrong reasons, by attracting students from other universities (inside/outside NL) and from universities of applied sciences);
- Diverse inflow of students (at least 33% non-Dutch students);
- Graduation rates: 70% at N+1;
- Best programme compared to fellow programmes in NSE.

These ambitions are also reflected in the investment plan of ET for the Sectorplan Techniek.

The existing policy keeps in place:

- Keeping small-scale character of the programmes;
- Master's programmes connected to research themes of the faculty;
- Stimulate students to develop their own talents (elective programmes in Bachelor and Master, stimulate honour's programmes, other specific programmes in- and outside curriculum).

The relation between the UT profile, the Quality Agreement Plans and the ET Action plans is summarised in Figure 1. The action plans are also consistent with the educational vision and help to reach the ambitions of ET. Figure 1 also shows how the Action plans of ET fit into the themes that the Ministry of Education prescribed.

**An impression of the educational culture at ET**  
**Interview with dr. ir. Farid Vahdatikhaki, Assistant Professor in Civil Engineering at ET and teacher of the year of the UT in 2018. Farid did his BSc in Iran, his MSc at the TU Delft, and got his PhD in Canada.**

Farid:

"What is very striking about education at ET is, off course, the project-led education. Not the fact that the assignment of a course is a project – that can be seen at other universities as well – but how the entire course is project orientated. In the case of the BSc-programmes and the

TOM-model (i.e the Twente Education Model), it is amazing to see that all courses are centered around a big project. With our projects, students are never left wondering: what is the use of this theory?

That said, we leave the project itself also very open, intentionally ill-defined. This stimulates creativity, innovative thinking and out-of-the-box thinking. Much is left to students to drive their own education.

And then we create a lot of feedback moments. By giving as much feedback as possible we give structure to students. This feedback takes place in the form of formative assessment. Whatever students submit during the project gets a dummy-grade, ie. this is the grade that you would receive giving the work done. The feedback gives students more clarity on what to do. Giving feedback in the way we do, means a lot of direct interaction between lecturers and students, which is really appreciated by students, but is also time-consuming. In order to give students this much attention it is important to maintain small groups, and small-scale education.

Most of the projects that students carry out are based on actual up-to-date cases. Moreover, every year an entirely new project is created. For example, we go the city-municipality and ask for a real problem. This gives students a lot of enthusiasm and motivation, since their solution might be eventually used to solve a real-life problem.

To work with projects means getting a lot of hands-on experience. Projects are design and action-oriented: students have to visit the site, do field observations etc. Eventually this leads to having more practical insights in how to solve problems. This is very much appreciated by the future employers of these students.

Another aspect of the courses at ET is their intercultural nature. Diversity is taking place at two levels: at the student level and at the staff level. International students have a different mindset, different ways of dealing with a situation. Both international students and staff bring in their own strengths, e.g. the foreigners' social perspective and the proactive perspective of the Dutch. By "marrying" those perspectives, students will be better prepared for their future (international) workplace.

Connections between education and industry are very strong and active. Take, for example, the currently 3D-printed bridge. The bridge has been produced by industry and is now being tested by ET. This follows a bottom-up approach: student groups are formed, (research) assignments are made by staff and students alike, to test this bridge in many different aspects. Students can make their wishes heard. The voice of the student is important and we act upon it in decision making."

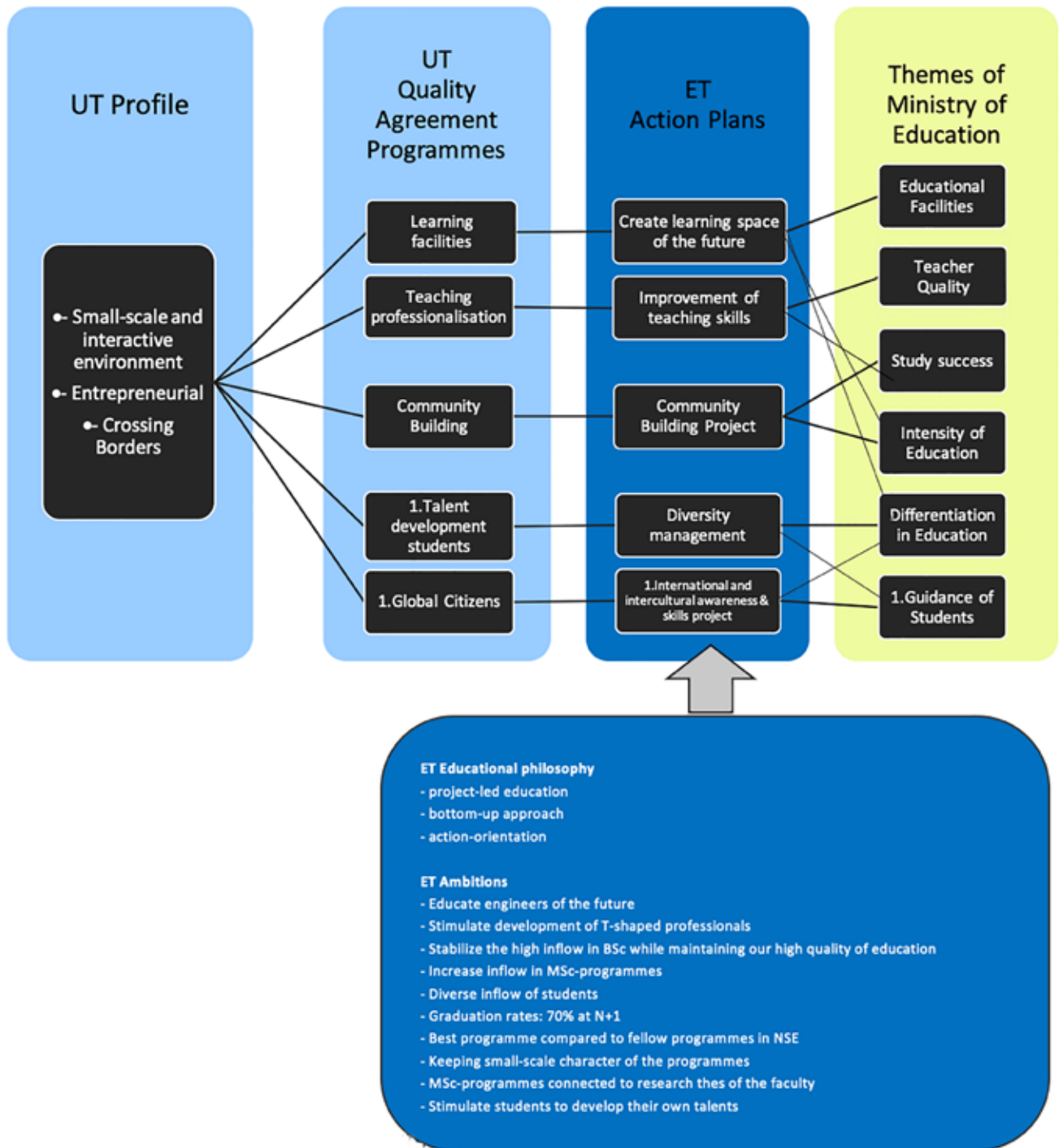


Figure 1: Relation between the UT-profile, the UT-wide Quality programmes and the ET Action plans. Also shown is the underpinning of the action plans by the Educational philosophy and Ambitions of ET.

### 3 ET ACTION PLANS

The ET action plans are:

- Create the learning space of the future
- Improvement of teaching skills
- Community Building Project
- Diversity management
- International and intercultural awareness project

As explained in the previous section, all action plans fit in the ET educational vision and help reach our ambitions and faculty goals.

The faculty ET structured their action plans according to five UT quality agreement programmes. See also figure 1. The action plans will now be described in detail.

## LEARNING FACILITIES

### ACTION PLAN: CREATE LEARNING SPACE OF THE FUTURE

#### **AMBITION: TO CREATE FACILITIES THAT ENABLE THE SMALL-SCALE CHARACTER OF OUR EDUCATION WITH A LOT OF INTERACTION; FACILITIES ENABLE COMPETENCE OF STUDENTS TO WORK IN MULTIDISCIPLINARY TEAMS; STUDENTS GET ACQUAINTED WITH STATE-OF-THE-ART KNOWLEDGE AND TECHNOLOGY**

**Context:** This action plan fits into the UT-profile: “Small-scale and interactive environment” as well as the UT-wide Quality Agreement programme “Learning facilities”. It helps to fulfil the ministry of Education’s theme “Educational facilities” as well as “community building”. It also helps to fulfil the ET ambition to educate T-shaped professionals and keep the small-scale character of the education. Lastly, this action plan perfectly fits the educational vision of working in projects. To execute this plan and fulfil our ambition we need to: 1. Invest in additional teachers, 2. Develop a plan how the ideal learning facility should look like, 3. Invest in the learning space, 4. Recruit a e-learning specialist, 5. Do pilot projects and 6. Integrate digital technologies in learning. These measures are further detailed below:

**Measure:**

**1. Investing in additional teachers (about 2.5 fte, i.e. about 0.5 FTE per department).**

Student numbers are rising. This is a necessary measure, in order to keep our small-scale education small-scale as well as to manage project-based learning.

**2. Developing a comprehensive plan for ideal learning facilities.**

This plan is being developed at the moment. It focuses on extension of the Horst-building with integrated facilities for project-led education, practical workshops and flexible learning spaces. In addition, in collaboration with the facility manager of the faculty and with interactive input from teachers, students and study associations, plans are being developed on how to improve/extend existing learning spaces (e.g. more flexible lecture rooms, spaces to accommodate active learning methods and different types of education for different groups sizes, learning spaces for individual learning/self-study etc.). This measure is also related to the programme of Community Building, in which people as well as facilities play an important role. Budget-wise the realisation of the building is not part of the Quality Agreements. However, within the Quality Agreements we invest in specific facilities to facilitate learning (see also point 3)

**3. Investments in learning spaces as developed in the plan (see measure 2).**

These investments are, amongst others: flexibles spaces, possibility of digital meetings with different stakeholders, Skype-facilities, the classroom of the future, visualisation technology, space-dividers to adjust spaces to the ideal working space, hybrid spaces that can be used for different purposes, e.g. conferences, design labs etc.

**4. Investing in an e-learning specialist to support teachers to set-up digitalisation in learning.**

**5. Pilot projects on digitalisation in learning, such as digital testing, digitally supported peer-feedback, etc. The e-learning specialist will support/help teachers in these pilots.**

**6. Integrate digital technologies in learning. The e-learning specialist will support teachers in this.**

This may require additional facilities to facilitate e-learning. Some of them are already developed at the moment (e.g. facilities for digital testing in the NoordHorst).

Target until 2021:

The investment in 2.5 FTE additional teachers has been realised in 2018. Departments will keep this (limited) increased budget for additional teachers for the coming years. A more detailed planning of the building activities will be ready before 2021. Depending on the (UT-)planning of the extension of the Horst, building activities may have started in 2021. It will also be clear what adaptations to existing learning spaces are required and desired and which of those are possible given the budget and the physical limitations. This will include a planning of how/when the facilities can be adapted. Investment in an e-learning specialist to support teachers to set-up digitalisation in learning has been realised as of June 2019. The intention is that this is a permanent position. In 2021 it will be evaluated if this position should indeed be continued. Pilot projects on digitalisation in learning has been carried out – at least one in each cluster of programmes. Until 2021 at least one course/module in each cluster of programmes in which digital technologies are integrated in the course.

Intended effects for students:

The taken measures will have the following impact on our students:

- A decrease of our student-staff ratio. Students will experience a (slightly) higher capacity amongst staff for education (in supervising project, getting feedback etc.)
- The students will experience a larger variety of, and more flexible, learning spaces, that are better aligned with the specific learning activities.
- Students will experience improved education because digital tools i) will enable a larger variety of teaching methods that are more in line with specific teaching activities and implemented in such a way that it fits with the intended learning outcomes, ii) will give teachers more time for personal contact with / feedback to students, because some aspects are handled digitally.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>307</b>	<b>345</b>	<b>440</b>	<b>500</b>	<b>415</b>	<b>415</b>
- Measure 1	248	248	248	248	248	248
- Measure 2	pm	pm	pm	pm	pm	pm
- Measure 3			95	125		
- Measure 4	39	67	67	67	67	67
- Measure 5	20	30				
- Measure 6			30	60	100	100

## TEACHING PROFESSIONALISATION

### ACTION PLAN: IMPROVEMENT OF TEACHING SKILLS

#### **AMBITION: ALL TEACHERS HAVING THE ATTITUDE TO CONTINUOUSLY IMPROVE THEIR TEACHING. ALL TEACHERS ARE FAMILIAR WITH AND COMPETENT IN STUDENT-DRIVEN LEARNING AND PROJECT-LED EDUCATION.**

**Context:** It is important that the ET philosophy of student-driven learning and project-led education will continue to not only be part of the DNA of the faculty, but it should especially be in the DNA of our staff. Improvement of awareness of project-led education and the skills of using this in the classroom, therefore, is paramount. We will request the Centre of Excellence in Learning and Teaching (CELT) of UT to make sure that ample attention is paid to project led education and student driven learning in the basic teaching qualification for new teachers (BKO) and in the Senior University Teaching Qualification programme (SKO). With this action plan we give new and current staff the opportunity to become (even more) familiar with the fundamentals of our educational philosophy and further expand their teaching knowledge and skills. Moreover, we will invest in didactic training of students (learning assistants programme) to give them some essential teaching skills and to make also them familiar with our educational philosophy of project-led education and student-centred learning.

This action plan fits in the UT Quality Agreement "Teaching professionalisation", as well as the Ministry of Education's theme "Teacher Quality". Implementing the action plan supports our ET educational philosophy of project-based education.

To execute this plan and fulfil our ambition we need to: 1. Compensate teachers for time on professionalisation, 2. Stimulate staff to participate in professionalisation activities on education, 3. Develop educational career paths, 4. Support applying for educational grants, and 5. Setting up a learning assistance programme. These measures are further detailed below:

**Measure:**

- 1. Staff that are participating in a Senior University Teaching Qualification (SKO) programme, a Senior Examination Qualification (SKE) programme and/or a Programme on Educational Leadership ("Leergang Onderwijskundig Leiderschap", LOL), will be compensated some of their time (i.e. about 0,2 fte) spent on these programmes.**
- 2. Stimulate staff to participate in professionalisation activities on education, e.g. lunch lectures, best practices.**
- 3. Develop career path for scientific staff with increased focus on education**
- 4. Stimulate and support staff to apply for education grants**
- 5. Setting up a learning assistants programme**

**Target until 2021:** At least 5 staff members per year are participating in SKO, SKE or LOL (compensation is available for 3 staff members in 2019, for 4 staff members in 2020 and for 5 staff members per year from 2021 onwards, i.e. about 1 FTE compensation per year). We have organised at least four educational activities by (staff of) ET, e.g. lunch meetings organised by programme directors, educational meetings for professors organised by Vice-Dean Education, etc.). Each year at least 50% of the staff taking part in some sort of activity on professionalisation of teaching (outside or inside UT; e.g. lunch meetings / workshops organised by CELT/4TU-CEE or by staff from ET or other faculties). We will have identified 5 potential staff members to follow a career path with a larger focus on education and setting up a plan with them for this career path. There will be at least 3 staff members per year who apply for an educational grant (Comenius, 4TU-CEE, BIG). We stimulate this by offering support and awarding the candidate with some additional budget when prestigious grants are awarded (e.g. Comenius). A learning assistance programme is in place and at least 20 ET-students are participating in the learning assistants programme per year, starting from academic year 2019-2020. The target beyond 2021 is that all teachers develop to level 1 of Graham's teaching skills within 2 years after the start of their teaching career and level 2 of Graham's teaching skills within 5 years after the start

of their teaching. At least 15 % of teachers developing their teaching skills to level 3 and a few individuals to level 4 of Graham.

Intended effects for students:

The taken measures will have the following positive impact on our students:

- Students will experience improved quality of teachers who are able to implement innovative teaching in their education and who learned from others about innovative teaching methods. Also, teacher quality improves because staff members with a passion for education / educational leadership will have more opportunity to develop their skills and implement this in the curriculum and in their own teaching.
- Students will experience improved assistance in learning by student-assistants, because an increasing number of student-assistants will have been trained in didactic skills and will participate in teaching in a more structural way.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>99,4</b>	<b>108,2</b>	<b>128</b>	<b>128</b>	<b>128</b>	<b>128</b>
- Measure 1	59,4	79,2	99	99	99	99
- Measure 2	pm	pm	pm	Pm	pm	pm
- Measure 3	pm	pm	pm	pm	pm	pm
- Measure 4	15	15	15	15	15	15
- Measure 5	25	14	14	14	14	14

## COMMUNITY BUILDING

### ACTION PLAN: COMMUNITY BUILDING PROJECT

**AMBITION: ALL STUDENTS FEEL PART OF AT LEAST ONE COMMUNITY, FORMED BY STAFF AND FELLOW STUDENTS OF THEIR PROGRAMME, IN SUCH A WAY THAT IT CONTRIBUTES TO THE WELL-BEING OF STUDENTS, AND THEREFORE TO THEIR STUDY-SUCCESS.**

**Context:** One of the objectives of ET is to achieve high graduation rates. Being part of a strong community is a prerequisite for study success, as does an environment that stimulates interaction between teaching staff and students. It also helps to fulfil the ET ambition of educating engineers of the future as in communities there are ample opportunities to develop yourself, e.g. socio-emotional skills.

This plan also has a strong relation with the plan for ideal learning facilities, e.g. timetable schedulers could schedule classes on preferred locations in order to facilitate community building. Moreover, the plan has a link to internationalisation / global citizen, because it will include aspects on how all students feel part of the community, irrespective of their international background, for example by organise activities such a language cafés, international food festivals. Lastly, as a result of the BaMa-structure, more community building is necessary because after three years a new inflow of students take place, whereas in the past students stayed together for at least five years.

Our action plan fits in the Ministry of Education's themes "Study Success", and "Intensity of Education". As well as the UT-profile of "small-scale and interactive environment".

To execute this plan and fulfil our ambition we need to: 1. Develop a comprehensive plan for the "Community Building Project" and 2. Do investments to enhance community building. These measures are further detailed below:

**Measure:**

- 1. Develop a comprehensive plan for the "Community Building Project" that gives an answer to the question of what (type of) facilities/personnel/actions are needed to fulfil our ambitions "Community Building" and on "Learning Facilities" and how this can be realised over time.**
- 2. Investments to enhance community building, as developed in the plan.**

**Target until 2021:** The plan on "Community Building" will be ready in 2021.

**Intended effects for students:**

The taken measures will have the following positive impact on our students: Students will be informed that this plan is being developed and will be able to give their input. Eventually, the students will experience facilities in place to make them feel part of a community, as well as activities and organisation, e.g. timetables that facilitate community building, accessible possibilities of interaction between staff and students, activities that facilitate contact and community building amongst all students, etc.

**Budget:**

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>
- Measure 1	pm	pm				
- Measure 2		pm	50	50	50	50



## TALENT DEVELOPMENT

### ACTION PLAN: DIVERSITY MANAGEMENT

**AMBITION: IT IS OUR AMBITION TO CREATE A LEARNING ENVIRONMENT IN WHICH STUDENTS FROM ALL OVER THE GLOBE HAVE A PLACE AND CAN DEVELOP THEIR TALENTS. THEREFORE, WE AIM TO HAVE A LARGER DIVERSITY OF INFLOW OF STUDENTS, A STRENGTHENED SMALL-SCALE AND INTERACTIVE LEARNING ENVIRONMENT FOR A DIVERSE COMMUNITY, STUDENTS THAT HAVE A BETTER OVERVIEW OF ALL THE POSSIBILITIES FOR DEVELOPING THEIR TALENTS (WITHIN AND OUTSIDE THE CURRICULUM).**

**Context:** Academic skills are very important. Because of the diverse inflow, there is a variety in skills of students when they enter the programme. Each student should have the opportunity to develop his/her talents – not only the top-5 percent of best performing students. For example, by offering additional training on teamwork or other academic or professional skills for students who have not been educated in the TOM-model.

At UT and ET many arrangements are already in place to develop talent. An important goal is to communicate more clearly what opportunities already exist and how students can make use of the activities offered.

This action plan clearly has a relation with the educational ambition at ET of delivering T-shaped professionals, as well as the objective to stimulate students to develop their own talents. At UT level this action also has a link to the programme on Community Building and Internationalisation / global citizen. At national level this action is connected with the Ministry of Education's themes of 'Differentiation in Education' and 'Guidance of students'.

To execute this plan and fulfil our ambition we need to 1. Invest in an additional programme coordinator, 2. Invest in additional capacity for teaching academic skills, 3. Increase capacity of student counsellors, 4. Hire additional capacity for student / learning assistants, 5. Facilitate student teams who participate in projects that help to develop their talents, and 6. Make an overview of all possibilities of talent development. These measures are further detailed below.

**Measure:**

- 1. Invest in an additional programme coordinator (0.5 fte) to better facilitate the increasingly diverse inflow of students. For students it is important that the study programme matches their expectations and their skills. Therefore, this programme coordinator will initiate activities to facilitate a smooth transition to the university (e.g. by organising activities to prepare international students to study in NL, specific matching activities, etc).**
- 2. Invest in additional capacity for teaching academic skills (0.5 fte) to set-up a project for Master students, as part of their curriculum, focusing on specific professional/academic skills, necessary to be successful in the master (teamwork, project work, independent learning, problem solving, critical thinking). This project will be embedded in the disciplinary context of the Master's programme of the student.**
- 3. Increase capacity of student counsellors. For students to be successful in the programme, it is important that they get support in case of study or personal problems.**
- 4. Additional capacity for student/learning assistants. This is a way for students to develop their talent as a teacher (while at the same time it fits with the small-scale character of our education, with a lot of interaction between educators and learners).**
- 5. UT and ET are known for their active students, who grasp opportunities to develop their own talents further, both inside and outside the curriculum. We want to stimulate this further by facilitating student teams that set up projects in which they develop their talents further. In 2021 we will determine what the best way is to facilitate these student teams which we will implement in the following years.**
- 6. Make an overview of all possibilities of talent development available through the website and other information channels to students (e.g. Canvas programme-sites, through student counsellors).**

**Target until 2021:** The additional programme coordinator will be hired as of 2021. The additional capacity for

teaching academic skills will be hired as of 2021.

The new project for Master students will be set-up as of 2021-2022. As of 1-3-2019 we have hired an additional student counsellor. This is a permanent position, so there is structurally more capacity to support students in developing their own talents. Under 'learning facilities' we included budget to set-up a learning assistants programme and train at least 20 students/year. Here, we include some budget to hire additional student/learning assistants.

Intended effects for students:

The taken measures will have the following positive impact on our students:

- As a result of the additional capacity for a programme coordinator, students will experience that we are better able to prepare them before the start of the programme and facilitate them during the programme to match their needs.
- Students will experience that we will help them to develop their skills to such a level that they are better prepared for the rest of the programme and that all students have reached a certain minimum level early in the programme to facilitate fruitful cooperation amongst students.
- As a result of the additional capacity for student counselling, students will experience improved guidance during their study.
- In addition to the effects mentioned under "Teaching Professionalisation", students will experience improved assistance in learning by student-assistants, because of the increased amount of teaching assistant capacity.
- Students will have a good overview of all the different possibilities for talent development.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>45</b>	<b>57</b>	<b>178</b>	<b>223</b>	<b>223</b>	<b>223</b>
- Measure 1	0	0	33,5	33,5	33,5	33,5
- Measure 2			49,5	49,5	49,5	49,5
- Measure 3	33	40	40	40	40	40
- Measure 4	12	17	25	50	50	50
- Measure 5			30	50	50	50
- Measure 6	pm	pm				

## GLOBAL CITIZENS

### ACTION PLAN: INTERNATIONAL AND INTERCULTURAL AWARENESS PROJECT

#### AMBITION: STUDENTS ARE GLOBAL CITIZENS THAT ARE FAMILIAR WITH AN INTERNATIONAL WORKING ENVIRONMENT

**Context:** UT and ET want to educate students to become “global citizens”, as can be derived from the UT-profile “Crossing Borders” and the ET ambition to educate engineers of the future, in which the international aspect plays an important role. This “global citizen” knows what it is like to work in an international workplace or to work together with international partners. This action plan seamlessly fits in the UT Quality Agreement Programme “Global Citizens” as well as the Ministry of Education’s themes of “Differentiation in Education and “Guidance of Students”.

To execute this plan and fulfil our ambition we need to 1. Facilitate international experience for students, 2. Extend the exchange programme, and 3. Set up a training on intercultural competences and internationalisation of the curriculum. These measures are further detailed below.

**Measure:**

- 1. Facilitating international experience for students, e.g. make it (even) easier to study abroad or do an international internship or graduation project.**
- 2. Extend the exchange programme within ECIU to other programmes.**
- 3. Setting up training on intercultural competences / International Classroom teaching / Internationalisation of curriculum for teachers. This also means facilitating the internationalisation of courses, e.g. educational advisors that support teaching staff in adjusting courses to an international context.**

**Target until 2021:** 50% of the students has substantial international experience, e.g. minor abroad, internship abroad, thesis project abroad, content-driven study tour abroad, extra-curricular activities abroad such as voluntary work. (Note that foreign students studying at UT automatically have this experience). The inventory of possibilities and required measures to set-up ECIU-exchange programme for Civil Engineering and for Industrial Design Engineering will be ready. The development of a training on intercultural competences will start after 2021.

**Intended effects for students:**

The taken measures will have the following positive impact on our students:

- Student will experience that different possibilities are in place to gain international experience and exchange (after 2021) and that the faculty stimulates/facilitates this.
- In 2024 students will experience improved education, because teachers are better equipped to deal with the diversity in nationality and will experience a curriculum that prepares them better to work in an international context.

**Budget:**

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>0</b>	<b>0</b>	<b>90</b>	<b>200</b>	<b>280</b>	<b>280</b>
- Measure 1			50	100	100	100
- Measure 2			40	50	80	80
- Measure 3				50	100	100

A woman with long dark hair, wearing a dark blazer over a grey shirt and dark pants, stands in a room pointing at a large screen. The screen displays a satellite image of a coastal area with green vegetation and a white shoreline. In the foreground, the back of a person's head and shoulder is visible, wearing a red shirt. To the left, a colorful abstract painting is on the wall. The room has orange carpeting and a white radiator. A laptop is on a stand to the right of the screen.

# 11. FACULTY OF GEO- INFORMATION SCIENCE AND EARTH OBSERVATION

## 11. FACULTY OF GEO- INFORMATION SCIENCE AND EARTH OBSERVATION

In November 2018 the ITC Faculty Board, with approval of the ITC Faculty Council and the Programme Committee of the master programme M-GEO and M-SE, approved the plan for the quality agreements (investment of the 'WSV gelden') for the Faculty ITC.

In June 2019, the CvB asked the faculties to provide an adjusted plan based on new insights and developments. This document presents the updated plan, including the ambitions and intentions regarding the quality agreements for the Faculty ITC for the period 2019-2024. The plan has the consent of the ITC Faculty Council, the Programme Committee of the ITC master programme as well as the Programme Committee of the bachelor programme ATLAS.

The Quality Agreements apply to initial education ("bekostigd onderwijs"). Until 2018, the Faculty ITC has been offering only the following types of initial education:

- The master programme Spatial Engineering that started in September 2018.
- the HTHT minor courses (2\*15EC) Geographic Information System (GIS) and Earth Observation (EO) during the third year of the UT Bachelor's programme (within ITC called "the UT minor").

From 1 January 2019, University College ATLAS joined the Faculty ITC. The process of integration in the faculty is still ongoing. However, the plans of the Faculty ITC had been developed already before UCT joined the Faculty. Therefore UCT has developed separate Quality Agreements that are included as an addendum to the Faculty ITC's agreements. In the following years, the faculty will work towards a further synthesis and integration of the different agreements and measures.

Annually, the Faculty will report on the progress and realization of the ambitions and measures. At UT level, there will be two moments where the realization of the intentions will be assessed; a mid-term assessment in 2022 based on the progress until 2021 and a final evaluation based on the results until 2024.

### FACULTY ITC (WITHOUT UCT)

Education and the master programme of the faculty ITC have a very strong and widely recognised international orientation. The mission of the faculty and the diversity of backgrounds of incoming students requires didactic concepts that not only accommodate the different backgrounds, but also let students learn from each other with a clear orientation towards their further career. The international classroom as well as lifelong learning skills are part of this.

A considerable part of ITC's education is post-initial education. As a result, the allocated WSV resources for the Faculty ITC are relatively small (compared to other UT faculties as well as to the entire faculty's budget). The earmarked resources for ITC sum to €17K in 2019; €17K in 2020; €27K in 2021; and €35K in 2012; and €36K per year in 2023-2024<sup>1</sup>.

Next to that, ITC is presently investing already considerably in the quality of its master programmes. The master programme Spatial Engineering (M-SE) just started and the post-initial accredited master programme Geo-information Science and Earth Observation (M-GEO) was restructured from an 18-month to a 2-year programme, which started in this setup for the first time in September 2018.

Therefore, the definition of these quality agreements at programme and at faculty level are of limited relevance for ITC. Still, ITC saw the quality agreements as an opportunity to develop a structural plan with proposed actions to further improve the quality of education at programme and faculty level and define elements of a quality agenda for 2019-2024 in which the vision on educational quality is made explicit.

In the formulation of the quality agreements, the faculty ITC opted for an approach in which existing ambitions and plans within the master programmes and at the faculty at large are used. A summary of these ambitions and plans were used as a basis for feedback from the participation bodies within the faculty in which the students play an active role (Faculty Council and Programme Committees).

This has resulted into a set of themes and objectives along the lines of which improvements in education will be made during the period 2019-2024. These ambitions will only to a small extent be fulfilled through the investments of WSV resources. The remainder of the resources required to fulfil the ambitions originate from the regular budget and already planned investments. So the investment of WSV should be considered in a broader

<sup>1</sup> Please note these figures can be subject to change because of changing student numbers

framework for ongoing educational improvement within the faculty ITC.

#### UCT-ATLAS

The Bachelor's programme in Technology and Liberal Arts and Sciences (ATLAS) was founded to address the need for a new kind of engineer. Modern engineering solutions require not only technical but also social perspectives and understanding. They require an integrated socio-technical perspective and an understanding of how technical solutions function in the real world. They require engineers who can identify connections across boundaries between disciplines and see interrelatedness of problems and solutions across different fields. They require a new kind of engineer.

The ATLAS programme was developed to address this need for a new type of engineering education (*content*), using a radical vision on learning (*concept*), under the premise that a strong *community* of learners is essential. These three pillars - content, concept, and community - embody the ATLAS programme. Together, they support not so much a curriculum or a programme, but rather a distinctive learning and teaching experience. The ATLAS programme puts the student in the lead, and the individual academic development of students at the heart of the curriculum. Apart from ensuring an academic foundation through required domains, the programme is not based on a specific set of prescribed courses, nor on curriculum requirements or restrictions. ATLAS students are encouraged to explore academic opportunities within and beyond what is offered by the programme. The academic development of each student is guided and driven by the intended learning outcomes of the programme, that are translated into learning goals for each semester. Students plan courses and projects to achieve the semester goals

and set out milestones around which they design their own path.

The ambitions from UCT for the Quality Agreements are based on the feedback that was received in the recent accreditation (December 2018), on the Student Chapter that was written for the accreditation report (by twenty students that together represented every ATLAS cohort so far), and on the many informal conversations the programme continuously has with current students.

### LINK BETWEEN AMBITIONS OF ITC WITH THE UT QUALITY AGREEMENTS

The Quality Agreement Programmes formulated at UT level are:

1. Learning facilities
2. Community building
3. Teaching professionalisation
4. Talent development of students
5. Global citizens

The ambitions of the faculty ITC related to education quality originated in first instance from the ambitions as laid down and formulated in a number recent plans and reports (ITC vision 2020, accreditation report 2015, synthesis of on-going renewal and restructuring of education at ITC, programme development plans, results alumni survey, pilot project evaluation teaching achievement). A synthesis of these ambitions resulted in the formulation of five major themes, which are further explained in the attached original ITC plans.

The Quality Agreement programmes of the UT are being addressed by the ITC faculty themes for quality improvement of education as outlined in the table below:

QUALITY AGREEMENT PROGRAMMES AT THE UT	Faculty ITC themes
Learning facilities	Study facilities E-learning and blended learning
Community building	Study facilities Internationalisation
Teaching professionalisation	Staff development and evaluating teaching achievement
Talent development of students	Career support Staff development
Global citizens	Internationalisation Career support

## **MOTIVATION TO BE ACTIVE IN EACH OF THE UT QUALITY AGREEMENT PROGRAMMES:**

### ***1. Learning facilities***

The housing developments for the Faculty ITC will address in a direct manner the further development of the study and learning facilities. In the plan of requirements for the new housing for the faculty ITC a number of points of departure are formulated that relate explicitly to development of learning facilities that support the learning experience of students.

ITC has always at the forefront of integrating digital technologies in learning (as exemplified through the high adoption rate and diverse use of the LMS) and offering parts of its education programme at a distance. ITC wishes to continue along those ways for which up-to-date and modern technologies and facilities are required.

### ***2. Community building***

The international and diverse community at the faculty of ITC (students and staff) requires the faculty to support explicitly the further development and building of a community. The new housing of the faculty ITC aims explicitly to create a home for staff and students and being inclusive for other groups at the campus at the same time.

### ***3. Teaching professionalisation***

Faculty ITC was one of the first faculties that adopted a pilot project on teaching evaluation. The faculty aims to continue giving follow-up to the recommendations of this pilot project in the frame of the university-wide policy and actions on evaluating teaching achievement. New educational approaches in the master programmes will require the enhancement of skills of staff in the mentoring and support of the highly diverse group of students.

### ***4. Talent development of students***

Regarding talent development of students, the faculty ITC refers to the activities in the field of career development (internship positions; entrepreneurship; lifelong learning activities). Further, students are more and more interested to study in a more flexible way and follow courses offered by other faculties and at other universities. These opportunities will be better facilitated. Besides, staff will be further trained to assume a more coaching rather than advising role in their teaching to move more towards student-centred learning for an international diverse student community.

### ***5. Global citizens***

Global citizenship and internationalisation will continue to be at the core of the mission and education of ITC.

Although the international aspect seems a given at the faculty ITC, the faculty will continue to invest in maintaining and fulfilling this image. A number of elements regarding internationalisation seem implicit, but educational performance and learning and assessment trajectories requires ITC to make these elements more explicit. The faculty will continue to further strengthen and develop joint programmes with international partners and increase the possibilities for international exchange.

In what follows, a summary is given of the ITC ambitions, measures, targets and effects and budget for the UT Quality Agreements. Please note: regarding the budget only the WSV resources are indicated. The complementary resources from the faculty itself to realise the various ambitions are not included in this overview (please note: a summary of allocation of WSV resources only is provided on p.102)<sup>1</sup>.

<sup>1</sup> Pro memori: required resources originate from regular budget and planned investments and from WSV-resources

## LEARNING FACILITIES & COMMUNITY BUILDING

**AMBITION:** • OFFER FACILITIES FOR STUDENTS THAT ENHANCE AND SUPPORT THEIR LEARNING AND ALLOW FOR DIFFERENT TYPES OF EDUCATION AND MAINTAIN STUDENT APPRECIATION REGARDING LEARNING FACILITIES AT HIGH LEVEL.

- CREATE A HOME FOR STAFF AND STUDENTS AND BEING INCLUSIVE FOR OTHER GROUPS AT THE CAMPUS AT THE SAME TIME.

**Measure:** *1. Principles that ITC earlier defined for learning environment will be applied when ITC will move to the UT campus. In addition explicit attention will be given to the home-base concept.*

Target until 2021: 1. Modern study facilities are available and actively used. Student appreciation regarding learning facilities remains at high level (relocation of Faculty ITC to UT campus estimated beginning 2022-so the impact of his measure will be beyond 2021).

Intended effects for students:

Availability and active use of modern study facilities. Student appreciation regarding learning facilities (source: National Student Survey) will provide an indication on this effect.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	p.m.	p.m.	p.m.			
- Measure 1	p.m.	p.m.	p.m.			

## LEARNING FACILITIES

**AMBITION:** FURTHER DEVELOP AND INTEGRATE E-LEARNING IN EDUCATION TO ENHANCE LEARNING AND MAKE EDUCATION AND LEARNING MORE EFFICIENT.

**Measure:** *1. Develop policy on e-learning and blended learning.  
2. Further develop and professionalise the e-learning and distance education.  
3. Improve infrastructure for e-learning and distance education to allow for modalities of education for a diverse student population.*

Target until 2021: 1. Limited number of active e-learning (distance) courses (+ 5) are developed.  
2. Increased enrolment in e-learning/distance courses (60+ per year).  
3. 5-10 graduates from blended master programme (i.e. master programmes partly face-to-face and partly at a distance).  
4. Improved infrastructure for e-learning and distance education.

Intended effects for students:

Material and didactics from e-learning courses will also be used in the regular programmes. Next to that, there will be more opportunity for students to follow e-learning / blended / distance courses.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	17	10	10	10	10	10
Measure 1	p.m.	p.m.	p.m.			
Measure 2	p.m.	p.m.	p.m.			
Measure 3	17	10	10			



## TEACHING PROFESSIONALISATION

### AMBITION: DEVELOP AND MAINTAIN HIGH STANDARDS FOR STAFF IN THEIR EDUCATIONAL PERFORMANCE

**Measure:** *1. Participation of staff in University Teaching Qualification Programme and Senior University Teaching Qualification Programme.*

Target until 2021: 1. 90 percent of the staff possess a University Teaching Qualification.  
2. 8 staff possess a Senior University Teaching Qualification.

Intended effects for students:

Benefit from improved and good educational performance from staff. Student appreciation regarding lecturers (source: National Student Survey) will provide an indication on this effect.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.
Measure 1	p.m.	p.m.	p.m.			

### AMBITION: REWARD TEACHING WITHIN THE FACULTY AND OFFER MORE POSSIBILITIES FOR TEACHERS' PROFESSIONAL DEVELOPMENT IN A QUALITY CULTURE IN WHICH THIS IS FACILITATED AND SUPPORTED

**Measure:** *1. Run Pilot Stimulating Teacher Evaluation and Professionalisation (STEP) and evaluate outcomes.  
2. Develop and implement a toolbox on teaching evaluation and development for teaching staff (e.g. with tools on peer review, design, evaluation) .  
3. Prepare for addressing teaching development as a standard recurrent issue in annual performance interviews.*

Target until 2021: 1. The pilot is completed and lessons learned are used to enhance the quality culture.  
2. A toolbox teaching evaluation and development for teaching staff is developed and used.  
3. Professional development in teaching is a recurrent issue in annual performance interviews

Intended effects for students:

More committed and motivated teachers. Student appreciation regarding lecturers (source: National Student Survey) will provide an indication on this effect.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	p.m.	3	5.	p.m.	p.m.	p.m.
Measure 1	p.m.	3	p.m.			
Measure 2	p.m.	p.m.	5	p.m.	p.m.	p.m.
Measure 3	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.

### AMBITION: FURTHER PROFESSIONALISATION OF THE STUDY ADVICE.

**Measure:** *1. Developing a more formalised system of study advice.  
2. Training for staff in professional mentoring and coaching skills for an international diverse student community.*

Target until 2021: 1. 15 staff developed professional mentoring skills.  
2. Study advisors have a BKS.

Intended effects for students:

Clear defined and more formalised roles in the chain of study advice, taking into account the specific needs of the ITC student for study career counselling, with advisors that have acquired the BKS. Student appreciation regarding study advice, mentoring and coaching (source: National Student Survey) will provide an indication on this effect.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	p.m.	4	5	5	p.m.	p.m.
Measure 1	p.m.	p.m.	p.m.			
Measure 2	p.m.	4	5			

## TALENT DEVELOPMENT

### AMBITION: OFFER EFFECTIVE SUPPORT TOWARDS STUDENTS IN THEIR FURTHER PROFESSIONAL AND ACADEMIC DEVELOPMENT DURING AND AFTER COMPLETION OF THEIR STUDY

**Measure:**

- 1. Developing an internship programme with national and international internship positions by appointing an internship coordinator.**
- 2. Facilitate and offer more opportunities for students to follow courses offered by other faculties and at other universities.**
- 3. Further incorporate elements of international entrepreneurship and entrepreneurial skills into Master programmes' curricula.**
- 4. Further strengthen activities towards career support and ITC alumni, e.g. offering meetings with professional organisations, offering refresher courses and organising professional and social events for alumni (strengthened alumni programme towards career development).**

Target until 2021:

1. An internship programme with national and international internship positions is developed
2. Demand by students to follow courses offered by other faculties and at other universities is fulfilled.
3. Enrolment of students in ITC international entrepreneurship course.
4. In-house tailor-made programme for career development for students (linked to UT career services).
5. Active alumni programme.

Intended effects for students:

To enhance their further career, students have the possibility to gain (extra) international experience by doing an internship abroad or in the Netherlands, and they also have the chance to follow courses on entrepreneurship. After finishing their studies, students have the opportunity to further develop their skills through the alumni programme (lifelong learning). Student appreciation regarding career support (source: National Student Survey) will provide an indication on this effect.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	p.m.	p.m.	7	15	21	21
Measure 1	p.m.	p.m.	p.m.			
Measure 2	p.m.	p.m.	p.m.			
Measure 3	p.m.	p.m.	3			
Measure 4	p.m.	p.m.	4			

## GLOBAL CITIZENS

### AMBITION: ACHIEVE HIGH STANDARD IN INTERNATIONALISATION IN EDUCATION; I.E. OFFERING EDUCATION THAT IS HIGHLY RECOGNISED AS AN EXAMPLE OF INTERNATIONALISATION IN EDUCATION

- Measure:**
- 1. Implement action to acquire the distinctive feature Internationalisation for the master programme Spatial Engineering. Preserve this feature for the master programme Geo-Information Science and Earth Observation. Formulate the M-GEO learning outcomes around internationalisation more explicit and align assessment according to these outcomes.**
  - 2. Further develop policy on joint educational partnerships.**
  - 3. Enhance the existing educational partnerships and identify potential new partnerships.**
  - 4. Develop and implement exchange policy at faculty level .**

- Target until 2021:
1. Distinctive feature Internationalisation (with “good” on all standards)
  2. Partner (JEP) policy and exchange policy in place.
  3. Enhanced educational partnerships to be further specified upon availability (and content) of new policy and partnerships.

Intended effects for students:

The certificate for the distinctive feature in internationalization guarantees continued attention for genuine internationalisation. Next to that, there will be more opportunities for students from educational partners to study (partly) at ITC and/or obtain ITC degrees and vice versa.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>p.m.</b>	<b>p.m.</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
Measure 1	p.m.	p.m.	p.m.			
Measure 2	p.m.	p.m.	p.m.			
Measure 3	p.m.	p.m.	p.m.			
Measure 4	p.m.	p.m.	5			

## SUMMARY OF MEASURES AND ALLOCATION OF WSV-RESOURCES<sup>1</sup>, FACULTY ITC (EXCL. UCT)

BUDGET:	MEASURE <sup>2</sup>	2019	2020	2021	2022(*)	2023(*)	2024(*)
Learning facilities					10	10	10
	Improve infrastructure for e-learning and distance education	17	10	10			
Teaching Professionalisation	Run Pilot Stimulating Teacher Evaluation and Professionalisation (STEP) and evaluate outcomes		3				
	Develop and implement a toolbox on teaching evaluation and development for teaching staff (e.g. with tools on peer review, design, evaluation)			5			
	Training for staff in professional mentoring and coaching skills		4	5	5		
Talent Development					15	21	21
	Further incorporate elements of entrepreneurship and entrepreneurial skills into Master programmes' curricula		3				
	Further strengthen activities towards career support and ITC alumni, e.g. offering meetings with professional organisations, offering refresher courses and organising professional and social events for alumni (strengthened alumni programme towards career development)			4			
Global citizens					5	5	5
	Develop and implement exchange policy at faculty level			5			
<b>total</b>		<b>17</b>	<b>17</b>	<b>27</b>	<b>35</b>	<b>36</b>	<b>36</b>

(\*) at ambition level

<sup>1</sup> Amounts refer only to WSV-resources

<sup>2</sup> Details are given in the earlier sections.

# UNIVERSITY COLLEGE TWENTE - ATLAS

## LINK BETWEEN AMBITIONS OF ATLAS WITH THE UT QUALITY AGREEMENTS

University wide Quality Agreements Plans have been formulated and the aims and goals of ATLAS align well with these.

### ***1. Learning facilities***

The housing developments for ATLAS will largely influence the learning experience that ATLAS can offer her students. In the plan of requirements for the new housing for ATLAS, very detailed aspects are formulated that explicitly address how learning facilities are meant to support the learning experience of students.

### ***2. Community building***

ATLAS is a small-scale, tight-knitted, international learning community of students and teachers alike. ATLAS strives to be not just a study programme, but an inclusive home to all who are part of this community. This requires facilitation to further maintain and develop of this community on many different levels; from curriculum design that fosters this community to learning facilities that allow for interaction.

### ***3. Teaching professionalisation***

The unique approach to teaching and learning in ATLAS requires the continuous development of skills of staff in educational approaches. The small and dedicated pool of teaching staff makes that teachers fulfil multiple roles beyond teaching, which requires the development of skills and competencies in these diverse roles.

### ***4. Talent development of students***

ATLAS students aspire goals beyond the semester goals and appreciate that this is acknowledged, stimulated, and given feedback on by the programme. As a result, students develop talents (skills and expertise) beyond the intended learning outcomes of the programme. Resources are needed to facilitate this further in the future.

### ***5. Global citizens***

ATLAS is one of the most internationally oriented Bachelor's programmes at the UT, an image that ATLAS needs to continue to invest in maintaining and fulfilling. Besides, the international aspect largely dominates the shaping of the learning community, adding highly to students becoming global citizens.

## LEARNING FACILITIES & COMMUNITY BUILDING

### AMBITION: FACILITATE HANDS-ON LEARNING TO DEVELOP HANDS-ON SKILLS AND TO SATISFY STUDENTS APPRECIATION OF LEARNING BY DOING.

**Measure:** *1. In the new building, create an ATLAS maker lab that enables students to build design prototypes and have research materials readily available.*

Target until 2021: 1. Increase the availability and use of 3D printers, electronics, and sensors. Ensure that these are well used in the projects and courses (e.g. sensors for movement and temperature in Physics courses, Arduino's and 3d Printers in projects, etc).

Intended effects for students:

Enhanced learning experience through learning by doing, better understanding of theory in practise. Course and project evaluations will be used to evaluate the hands-on skill development

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>17</b>	<b>17</b>	<b>17</b>
Measure 1	6	5	5	...	...	...

## TEACHING PROFESSIONALISATION

### AMBITION: OFFER OPPORTUNITIES FOR ATLAS STAFF TO CONTINUOUSLY DEVELOP THE SKILLS THAT THE UNIQUE APPROACH TO TEACHING AND LEARNING AT ATLAS REQUIRES, AND FOSTER CONTINUOUS DEVELOPMENT OF THESE 'INNOVATIVE EDUCATION' SKILLS BY DRAWING EXPERIENCE FROM HOW EDUCATION IS APPROACHED AT OTHER PLACES.

**Measure:**

- 1. Set-up a programme with CELT on the role of feedback in ATLAS education and how it can be put into practise. Including how to make the process of providing feedback more efficient, which is needed to facilitate the growth of ATLAS.*
- 2. Visit other educationally inspiring programmes and visit educational conferences to share our ideas and knowledge on our unique approaches to education and to gain new insights and inspiration on how to improve it.*

Target until 2021: 1. Together with CELT, setup and run an ATLAS specific project on feedback in ATLAS.  
2. ATLAS attends at least three other programmes or conferences a year.

Intended effects for students:

Benefit from improved quality of feedback.

Benefit from state-of-the-art ATLAS educational approaches.

NSE scores (specifically the student appreciation regarding lecturers) and the related student-programme discussions will be used to evaluate

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>12</b>	<b>10</b>	<b>10</b>	<b>40</b>	<b>40</b>	<b>40</b>
Measure 1	12	10	10	...	...	...
Measure 2	0	0	0	...	...	...

**AMBITION: ATLAS HAS SEVERAL INTEGRATIVE PROJECTS, BUT THE INTEGRATION OF NATURAL AND SOCIAL SCIENCE SHOULD ALSO TAKE PLACE IN MORE THEORETICAL, COURSE SETTINGS. THESE NEED TO BE DEVELOPED. THIS DEVELOPMENT WILL STIMULATE NOT ONLY THE INTERDISCIPLINARY MINDSET IN STUDENTS, BUT ALSO IN OUR TEACHERS.**

**Measure:** *1. Have teaching staff collaborate on developing more in-house interdisciplinary electives. Which would be integrative courses where natural and social sciences meet; and where teachers need to understand each other's discipline in order to teach successfully.*

Target until 2021: 1. Develop and run three more in-house ATLAS-like electives.

Intended effects for students:

Greater possibilities for students to join ATLAS-like electives, which is a way of learning is much more appreciated by ATLAS students.  
Course and project evaluation will be used to evaluate.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>8</b>	<b>8</b>	<b>8</b>	...	...	...
Measure 1	8	8	8	...	...	...

## TALENT DEVELOPMENT

**AMBITION: ATLAS STUDENTS ASPIRE GOALS BEYOND THE SEMESTER GOALS AND APPRECIATE THAT THIS IS ACKNOWLEDGED, STIMULATED, AND GIVEN FEEDBACK ON BY THE PROGRAMME. AS A RESULT, STUDENTS DEVELOP TALENTS (SKILLS AND EXPERTISE) BEYOND THE INTENDED LEARNING OUTCOMES OF THE PROGRAMME.**

**Measure:** *1. Setup and run a process through which ATLAS can provide feedback on the development of the personal goals and ambitions of the students.*

Target until 2021: 1. Students and teachers design a process that allows for feedback on the personal goals, yet is time efficient. ATLAS implements the process.

Intended effects for students:

Students receive feedback on their personal goals and their relation to their academic goals. This should ensure a stronger set of talents.  
NSE scores and the related student-programme discussions will be used to evaluate.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>0</b>	<b>11</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>
Measure 1	0	11	20	...	...	...

## GLOBAL CITIZENS

**AMBITION: ATLAS IS ONE OF THE MOST INTERNATIONALLY ORIENTED BACHELOR'S PROGRAMMES AT THE UT, AN IMAGE THAT ATLAS NEEDS TO CONTINUE TO INVEST IN MAINTAINING AND FULFILLING. BESIDES, THE INTERNATIONAL ASPECT LARGELY DOMINATES THE SHAPING OF THE LEARNING COMMUNITY, ADDING HIGHLY TO STUDENTS BECOMING GLOBAL CITIZENS.**

**Measure:**

- 1. Allocate more hours to exchange coordination, to strengthen and maintain the network of partner universities and focus on expanding the number of exchange partnerships to allow students to further develop as global citizens.**
- 2. Enable students to travel to conferences/international workshops etc. and be ambassadors for ATLAS.**

Target until 2021:

1. Ensure that ATLAS can participate and use the existing UT contracts for exchange. Generate new contracts that include ITC and ATLAS.
2. Have 5 students per year attend an international event as 'ATLAS ambassador'.

Intended effects for students:

Students have the possibility to gain international experience by studying abroad.  
Students benefit from the international community and develop as a global citizens. Semester evaluations will be used to evaluate the effect.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>	<b>2</b>	<b>2</b>	<b>26</b>	<b>20</b>	<b>20</b>	<b>20</b>
Measure 1	0	0	20	...	...	...
Measure 2	2	2	6	...	...	...



### SUMMARY OF MEASURES AND ALLOCATION OF WSV-RESOURCES<sup>5</sup>, UCT

BUDGET:	MEASURE <sup>6</sup>	2019	2020	2021	2022(*)	2023(*)	2024(*)
Learning facilities					17	17	17
	Create in the new building infrastructure that enables students to build design prototypes and have research materials readily available	6	5	5			
Teaching Professionalisation					40	40	40
	Develop a more effective and efficient feedback system	12	10	10			
	Develop in-house interdisciplinary electives	8	8	8			
	Develop and implement a toolbox on teaching evaluation and development for teaching staff (e.g. with tools on peer review, design, evaluation)			5			
Talent Development					20	20	20
	Setup a feedback system about the personal development of students		11	20			
Global citizens					20	20	20
	Expand exchange coordination to strengthen and maintain the network of partner universities			20			
	Enable students to travel to international conferences	2	2	6			
<b>total</b>		<b>28</b>	<b>36</b>	<b>69</b>	<b>97</b>	<b>97</b>	<b>97</b>

(\*) at ambition level

<sup>5</sup> Amounts refer only to WSV-resources  
<sup>6</sup> Details are given in the earlier sections.



# 12. FACULTY OF SCIENCE AND TECHNOLOGY

## 12. FACULTY OF SCIENCE AND TECHNOLOGY (S&T)

### CONTEXT OF THE QUALITY AGREEMENTS

In 2018, the University of Twente developed a Quality Agreement Plan in response to the sector agreement Investing in Quality of Education. These Quality Agreements will be effective for a period of six years, from 2019 until 2024. Since March 2018, all faculties have been formulating their own plans that describe the aspired and required development of education to which the income of the WSV-budget will contribute.

### FACULTY OF SCIENCE & TECHNOLOGY

Within the Faculty of Science & Technology Students and educational staff have contributed to the development of faculty-specific plans by sharing ideas and suggestions to enhance the quality of education. The planning, carrying out, monitoring and adjusting and updating of the Quality Agreements Plan is embedded in the PDCA-cycle for the Quality assurance of the annual education plans of programmes and the faculty. To ensure persisting participation of students in the monitoring of the execution of the plans and whether the intended outcomes are achieved, bi-annual meetings will be organized by the Faculty Council with representatives from the Faculty Board, the Programme Committees, and the Study Associations. The Faculty Council has the right to annually approve the allocation of the WSV-budget. The Faculty Board will discuss the plans with the Executive Board during the Spring Meetings (vojo) in April and the Autumn Meetings (najo) in connection with the annual plans of the faculty.

In the following sections, the vision of faculty and the plans for the quality agreements for the upcoming years are described.

### VISION ON TEACHING AND LEARNING FOR THE FACULTY OF S&T

Within the faculty of Science & Technology, we emphasise the importance of educating 'T-shaped professionals'. We want to educate students that have in-depth knowledge and skills, combined with a broad scope of problem-solving skills either in a mono or a multi-disciplinary domain. Our students should be experts dealing with future problems, have a pro-active attitude in problem solving and be perfect team players in individual and group projects that go beyond the knowledge taught in

the programme. For student learning, we believe it is important to have a strong community of students, teachers and staff. We therefore value the quality of our students higher than student quantity, implying that our focus is on small scale teaching where possible, e.g., project work, lab work, tutorials.

It is our mission to offer excellent education for both students in health and sciences. For the upcoming years, we therefore want to improve our *learning environment* to support students' learning in project work, lab-classes, e-learning; give our highly qualified teachers and student assistants more options to *continue and deepen their educational professionalisation*; and put effort in strengthening our student community so that they can feel @home, meet each other, discuss and work on (interdisciplinary) projects, networks, activities etc.

The faculty attaches strong importance to this inclusive community feeling and the strong student engagement and considers the WSV-funds as an ideal means to further strengthen these. The allocation of the WSV fund are directly coupled to the wishes and goals of our students, to enhance their learning experience. The faculty will make additional resources, e.g. from the Sectorplan Bèta and Van Rijn initiatives, available to further support the necessary personnel and infrastructure investments that underlie these goals.

## LEARNING FACILITIES

### AMBITION:

Within the Twente Education Model (TOM), projects are key to applying and deepening domain knowledge and skills. To make project work really work, students need well equipped locations where they can meet, discuss and work on their projects. Now, students must find a spot all over the university, often far away from teaching staff. We believe it is important that students do have good project rooms near the faculty, so that student groups can easily discuss with each other (and if necessary, can easily walk to the teachers for some advice). In science, demonstrations of phenomena can help the learning process. Teachers have asked for a special location where they can give demonstrations (a room with a high table, gas, water, etc.)

In addition to projects, most of our programmes offer high quality lab-classes. We want to offer all our students opportunities to work with state-of-the-art equipment. As influx of students has increased, and technology develops, we need to redesign our lab facilities.

### ALL IN ALL, IT IS OUR AMBITION TO HAVE WELL EQUIPPED PROJECT ROOMS NEAR THE FACULTY AND TO UPDATE OUR LAB FACILITIES TO THE CHANGED NEEDS.

#### Measure:

1. *Extending the number of dedicated learning spaces, in particular spaces suited for the project-based education that is inherent to the Twente Education Model (TOM).*
2. *Expansion and upgrade of the student lab facilities with state-of-the-art equipment.*

#### Target until 2021:

1. Extra 207 m<sup>2</sup> project rooms/study cubicles. In addition, one special lecture room particularly equipped for education involving practical demonstrations.
2. Extra 86 m<sup>2</sup> RT5 lab space equipped with equipment for bio-oriented practical education.

#### Intended effects for students:

1. A readily available suitable high-quality learning environment has been identified by our students as a pre-requisite for their effective learning. In particular, for the project-based education within TOM the suitable spaces will facilitate (the engagement in) group-wise activities.  
Evaluation will be on 'actual implementation': are the learning spaces suited for project work and are these locations used by our students (observations) and on 'student opinion' in the regular quality assurance activities for Bachelor's and Master's programmes (e.g. panel meetings and surveys).
2. Lecture room for demonstrations: Evaluation of this measure will be on the actual use of this location: how often is the lecture hall reserved? How often demonstrations are given. Throughout the coming years, we expect to see an increasing number of demonstrations. Evaluation will also be on the 'student opinion' through the regular quality assurance activities for Bachelor's and Master's programmes.
3. Lab facilities. Evaluation of the extension of lab facilities should lead to increasing numbers of students being able to follow lab classes). New state of the art lab facilities will enable the opportunity for new types of lab classes (skills). To evaluate this measure, we will ask the teachers who use this lab facility what new types of lab classes they have developed.

#### Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>						
- Measure 1		36	72	72	72	72
- Measure 2	50	50	50	50	50	50

**AMBITION:** E-learning unites Learning and Technology. The developments in technologies give ample opportunities for teachers to deliver their teaching. We want to give our teachers the opportunity to profit from new e-learning technologies (e.g., voting tools, pencasts, MOOC, web lectures) and in that way also support our students' learning.

**IN ORDER TO SUPPORT TEACHERS IN DISCOVERING APPLICABLE TOOLS AND TRENDS IN E-LEARNING, WE WANT TO HAVE E-LEARNING SPECIALISTS IN OUR FACULTY.**

**Measure:** *1. Appoint dedicated e-learning specialists to implement digitalisation in learning by helping teachers to provide their educational materials in an appropriate digital form, identify and introduce new educational software to the teachers, and by introducing new methods for digital testing.*

Target until 2021: 1. Two e-learning specialists have been appointed.

Intended effects for students:

Now, many lecturers start working with e-learning tools like pencasts, online lectures, and digital assessments. The e-learning experts will support teachers in using these tools in a proper way and in the upcoming years a vision on e-learning within the faculty will be developed. This measure will be evaluated by monitoring what kind of activities have been developed and by making an inventory of the unasked remarks of students in the regular quality assurance activities in this respect.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>						
- Measure 1	147	147	147	147	147	147

**AMBITION:** The quality and the student's appreciation of the education of the different programmes is strongly correlated with the involvement, availability and accessibility of the teaching staff for students. Now, some research groups have relatively high teaching loads. In particular in the Health domain where due to rising student numbers, some research groups have relatively high teaching loads.

**OUR AMBITION IS TO SAFEGUARD THE SMALL-SCALE CHARACTERISTICS AND REDUCE STAFF WORKLOAD BY IMPROVING THE STUDENT-TO-STAFF-RATIO (FOCUS ON HEALTH DOMAIN).**

**Measure:** *1. Extend existing groups with assistant (UD)/associate (UHD) professors, in particular those groups with relatively high teaching loads. In addition, ensure that the UD/UHDs of the three newly established research groups that will strongly contribute to the educational programmes within the health domain (CRPH, M3i, MD&i) can prioritize an increased part of their time focusing on education rather than on research.*  
*2. Employing teachers.*

Target until 2021: 1 additional UD and 1 UHD have been appointed, 6 UDs within the three new research groups are supported to prioritize on education.  
 2 teachers have been appointed.

Intended effects for students:

For the specified research groups, the student-to-staff ratio has improved.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>						
- Measure 1			219	299	299	299
- Measure 2	32	48	132	132	132	132

## TEACHING PROFESSIONALISATION

**AMBITION:** Changes in the educational process (e.g., higher and more international student influx, demands from the government on quality of education, implementation of the new educational model TOM, demands from the work field on the final qualifications of our students) requires from our teachers to be able to continuously adapt and improve their teaching.

**RELATED TO THESE DEMANDS ON OUR TEACHING STAFF, WE HAVE FORMULATED THREE AMBITIONS.**

**NOW, AROUND 55% OF THE TEACHING STAFF HAS A BKO (OR EQUIVALENT). IT IS OUR AMBITION TO INCREASE THE PARTICIPATION OF TEACHERS IN TRAINING PROGRAMMES LIKE BKO, SKO, SKE AND LOL.**

**Measure:** *In conformity with the criteria of the University, staff involved in education obtain the University Teaching Qualification (BKO), all teachers will be encouraged to continuously improve and professionalise their teaching by following courses and workshops and attending relevant events.*

Target until 2021: 5 teachers participate(d) in the trainings Senior University Teaching (SKO) Qualification, Senior Examination Qualification (SKE), and Educational Leadership (LOL).  
3 teachers attend(ed) a conference or other event focused on education.

Intended effects for students:

We expect that students will benefit from the direct advances in the quality of our education ensued by the continued improvement and professionalisation of our educators. Although direct measurement of the 'quality of education' is impossible, we will check the expected increase in students' satisfaction on this aspect by analysing our internal regular surveys and the National Student Survey results on this theme.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>						
- Measure 1	75	75	75	75	75	75

**AMBITION:** In academia, teachers can professionalise and pursue their career by doing high quality research in combination with their teaching tasks. Improving this balance between research and education in career paths is a way to show that we value education skills in our teachers very much.

**WITHIN SCIENCE & TECHNOLOGY WE WOULD LIKE TO EXPLORE OPPORTUNITIES FOR OUR ACADEMIC RESEARCHERS TO BECOME AN AUTHORITY IN EDUCATION IN THEIR OWN FIELD OF STUDY.**

**Measure:** *Enable and promote the aspirations of researchers that have the potential to become an authority in education in their own field of study.*

Target until 2021: Identify 2 professors with a focus on education.

Intended effects for students:

We expect that students will benefit from the direct advances in the quality of our education ensued by the continued improvement and professionalisation of our educators. Although direct measurement of the 'quality of education' is impossible, we will check the expected increase in students' satisfaction on this aspect by analysing our internal regular surveys and the National Student Survey results on this theme.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>						
- Measure 1				152	152	152

**AMBITION:** We want to safeguard our ‘small scale education’ and at the same time provide students with ample feedback on different parts of their project work, while not increasing the workload of the teachers. To support our teachers in all their tasks, throughout the years, teaching assistants have been trained to e.g., help in tutorials and lab sessions. Recently, we realised that we could extend this professionalisation opportunity for teaching assistants. In discussions with students, it seems that quite some students would be interested in such a trajectory.

**IT IS OUR AMBITION TO DEVELOP AN EXTENDED TRAINING FOR ADDITIONAL TEACHING ASSISTANTS SO THAT THEY CAN ENGAGE IN TEACHING, TUTORING AND IN PROFESSIONALISING THEMSELVES.**

**Measure:** *Construct a Learning Assistant programme in which enrolled students will engage in teaching and tutoring and follow a programme designed to develop their didactical skills and their vision on teaching and learning.*

**Target until 2021:** A Learning Assistant programme must have been successfully launched per 2021 with participating students from the TNW faculty. The programme is set-up in collaboration with the faculty of Engineering.  
50 LAs are active and 0.4 FTE is appointed to develop and manage the programme. The number of LAs is in addition to the regular number of student assistants that is generally active within the educational programmes.

**Intended effects for students:**  
The major outcome is that the students participating in the LA programme will have the opportunity to develop their didactical skills and vision on learning, and that they at the same time can probe if they should/could pursue an education-oriented future career. The first evaluation will be on ‘is the LA-programme’ available and what are the opinions on the pilot currently running in BMT. In later years, it can be evaluated whether these LA have chosen an educational career.  
For the students, the LAs will be able to provide timelier, more frequent, detailed, and effective feedback. Evaluation of the enhanced feedback will be carried out by analysing students’ comments about this aspect in the regular quality assurance activities for Bachelor’s and Master’s programmes.  
For the teachers, the assistance of the LAs will lower their workload (measure in the evaluation when LAs have been trained and worked as a LA).

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>						
- Measure 1	71	96	96	121	121	121

## COMMUNITY BUILDING

**AMBITION:** In all occasions where information has been gathered from students regarding priorities for allocating of the WSV funds, the students have indicated that establishing a Home Base for a community has the highest priority. The inviting character of shared physical space provided by the Home base will promote engagement of the students to participate in joint study and social activities.

**IT IS OUR AMBITION TO HAVE A PHYSICAL ENVIRONMENT THAT STRONGLY PROMOTES ACTIVE INTERACTIONS BETWEEN STUDENTS FROM DIFFERENT PROGRAMMES AND IN DIFFERENT STAGES OF THEIR STUDIES.**

**Measure:** *The rooms of the respective Study Associations will be relocated to be close to each other, separated by spaces that are specifically designed for students to meet and socialize. The home base will be in close proximity of the offices of the educational programmes staff, the faculty management, and the lecture rooms including the newly invested learning spaces mention above in the section Learning Facilities. In unison, the Study Associations of the Health-related educational programmes will be accommodated in the newly refurbished Technohal-building together with the Technical Medical Centre.*

Target until 2021: 1. Completed in 2020

Intended effects for students:

The home base will increase interactions between students from the different educational programmes and at different stages in their studies. Students will benefit from their experiences with peers with cultural or otherwise distinct backgrounds and develop a stronger awareness and understanding of the implications of working or existing in an international context. Students will be able to develop a more extensive and stronger network and long-lasting relations with their peers.

Evaluation of this measure: The boards of the Study Associations will report on student use of this home base (is it in use, how is it used, interactions between students of different programmes/nations/backgrounds).

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>						
- Measure 1	98	152	207	207	207	207

**AMBITION: IN RELATION TO THE PREVIOUS AMBITION AND IN STIMULATING THE MUTUAL INTERACTIONS, IT IS OUR AMBITION TO FACILITATE INTERACTION BETWEEN THE DIVERSE STUDENT POPULATIONS/STUDY ASSOCIATIONS, IN PARTICULAR ACROSS THE DOMAINS**

**Measure:** *1. Promote and support activities that increase interaction between the different student populations.*

Target until 2021: 1. Per year financial support for joint student-organised activities, such as 'S&T Do You Agree'

Intended effects for students:

The joint activities of student populations will further amplify the positive effects that will result from establishing the home bases mentioned above. We will monitor how many of this type of events are organized by the students.



Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>						
- Measure 1	25	25	25	25	25	25

## TALENT DEVELOPMENT

**AMBITION:** Soft skills like writing, presenting, giving feedback, collaboration, and information literacy are essential skills in life. However, these soft skills are hard to teach and learn.

**AS WE ACKNOWLEDGE THAT THIS LEARNING PROCESS CAN BE HARD, IT IS OUR AMBITION TO APPOINT DEDICATED STAFF TO FURTHER INCREASE AND ALIGN LEARNING TRAJECTORIES FOR THESE SKILLS.**

**Measure:**

- 1. Appoint dedicated staff to further increase, align, and explicate the educational activities aimed at the development of students' soft skills.*
- 2. Further improve the role of teachers in project-based learning by providing more instructions and training to teachers.*

Target until 2021:

- 0.5 FTE has been appointed for soft skills.
- 0.5 FTE has been appointed for training.

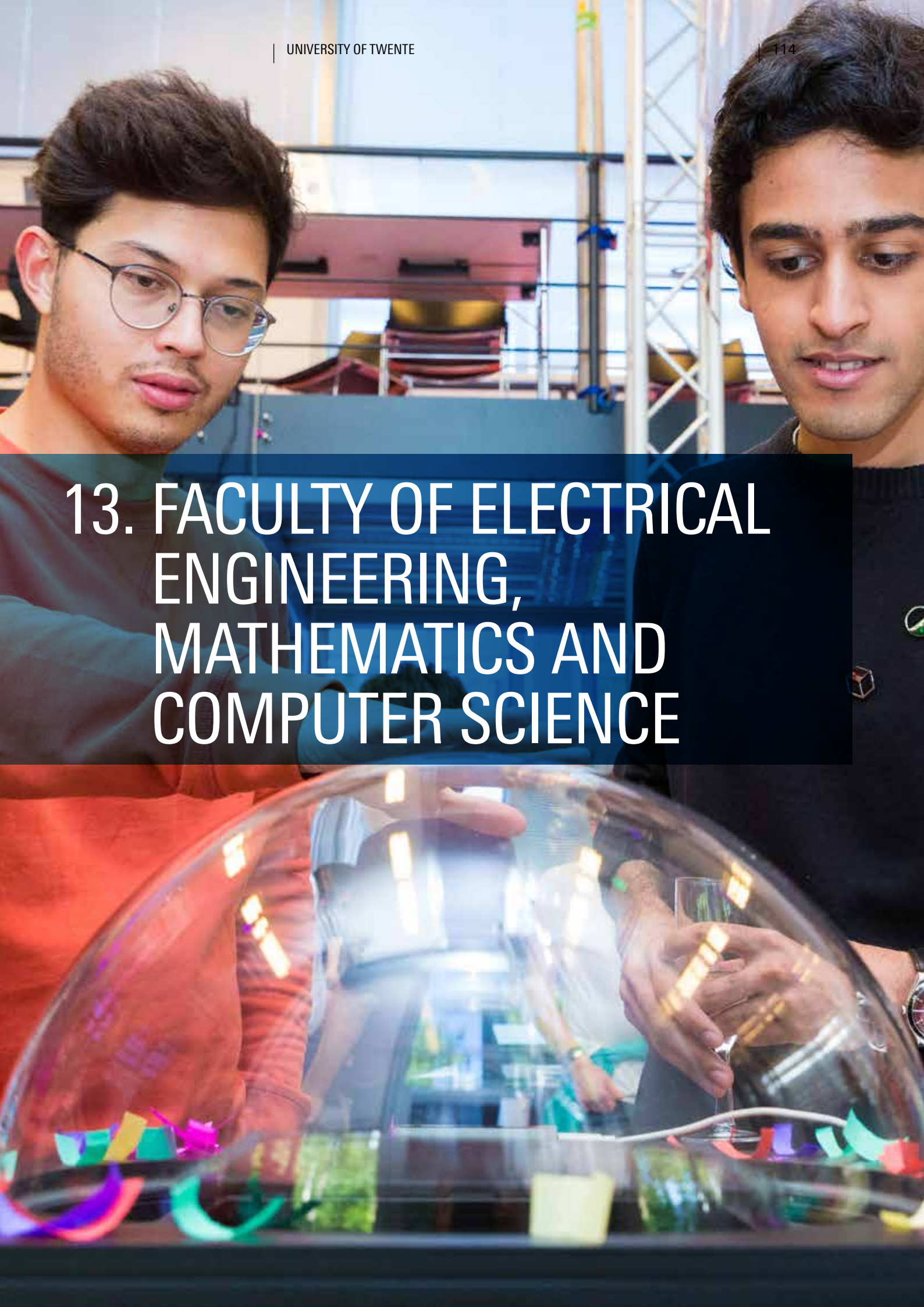
Intended effects for students:

The group-work that is inherent to the TOM tutorship is very important, yet the teachers are not yet fully accustomed to their new role in project-based education. Students will benefit from an increased proficiency of teachers regarding this new role.

Evaluation of this measure: The presence of some learning trajectories for these skills, suitable assessment tools in student programmes. Presence of workshops for teachers to improve project supervising skills.

Budget:

	2019	2020	2021	2022	2023	2024
<b>Ambition</b>						
- Measure 1	32	48	48	48	48	48
- Measure 2	30	30	30	30	30	30

A photograph of two young men in a laboratory or workshop. They are looking intently at a large, transparent, spherical object that is illuminated from within, creating a glowing effect. The sphere is decorated with colorful streamers and ribbons. The background shows industrial equipment and a metal structure. The text '13. FACULTY OF ELECTRICAL ENGINEERING, MATHEMATICS AND COMPUTER SCIENCE' is overlaid in white on a dark blue background across the middle of the image.

# 13. FACULTY OF ELECTRICAL ENGINEERING, MATHEMATICS AND COMPUTER SCIENCE

# 13. FACULTY OF ELECTRICAL ENGINEERING, MATHEMATICS AND COMPUTER SCIENCE (EEMCS)

## 1 INTRODUCTION

In response to the request of the Ministry of Education, Culture and Science (Dutch acronym: OCW), the University of Twente develops agreements on the quality of education (in Dutch: kwaliteitsafspraken). These so called Quality Agreements will be effective until the end of 2024.

In line with the above mentioned process, in 2018 EEMCS was expected to: (i) come up with actions to improve the quality of education financed with the WSV money and (ii) to develop a long-term Quality Agenda (2019-2024) in which the vision on educational quality is given and the relation to the OCW themes is made explicit. Especially for the years 2019-2021, the Quality Agenda should be explicit and measurable, whereas for the years 2022-2024 the description may have a more global character.

## 2 OCW THEMES VERSUS UT PROGRAMMES

For the Quality Agenda it is required to specifically identify how the proposed actions connect to the following themes, prescribed by the Ministry of Education:

- i. Intensity of Education: Relation and contact between teachers and students, small groups, creating communities.
- ii. Study Success.
- iii. Differentiation in Education: Talent development within and outside the curriculum, relevant education (relationship education and research, social impact,

- international and intercultural experience).
- iv. Teacher Quality: Expertise and teaching skills, availability of and guidance by teachers, continuous professionalisation, rewarding teachers' efforts, mutual sharing teaching materials and expertise.
- v. Guidance of Students: Equal opportunities for students regardless of background or origin, learning how to study, proactive study guidance.
- vi. Educational Facilities: Facilities to foster intensive and small-scale education, combination of physical and digital methods, future-proof facilities.

The UT has formulated five programmes, in line with its own educational vision:

1. Community building
2. Learning facilities
3. Teaching professionalisation
4. Talent development students
5. Global citizens

In Figure 1, the relation between the UT profile and these five programmes is indicated. These five Quality Agreement Programmes are meant to consolidate action plans and to focus the efforts that the UT will take in order to improve its education. They do not map one-to-one on the OCW themes, but are a mapping of these themes to our own Quality Agenda.

Additional intentions of an educational programme that fit within one of these programmes can be financed by means of the WSV-budget (budget that is derived from Student Loan Fund). Intentions that don't relate to these Quality Agreements Programmes will be executed as part of the regular Quality Assurance by means of regular funds.

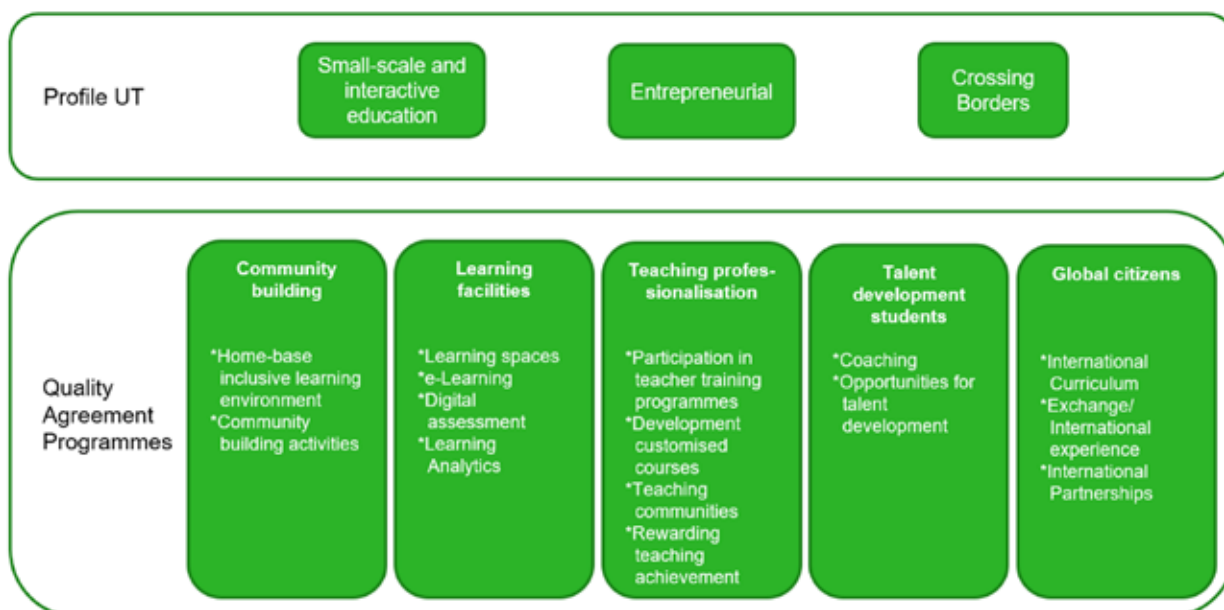


Figure 1: Relation between the UT profile and the five chosen programmes for the Quality Agenda.

### 3 EEMCS' STUDENT PROFILE AND PHILOSOPHY OF EDUCATION

In the rapid changing society new problems arise which ask for new solutions. Who would have thought that virtual reality might relieve isolation for demented elderly people. Knowledge of today is no longer valid tomorrow. What society needs are professionals who not only want to solve today's problems but also anticipate on challenges in the future.

The faculty aims to educate professionals who are intrinsically motivated to gain knowledge and skills in order to solve complex problems within the context of the society, taking into account the possible implications of the proposed solutions. They seek challenges to cross existing borders, are flexible and creative and strive for innovation. Also they are critical and reflective on their actions and the results of their actions related to the society, disciplinary knowledge, collaboration, etc. In order to realise the development of the student profile as described above, the faculty wants to realise an inspiring, stimulating and safe environment in which students learn, experiment, make mistakes, work together, receive feedback and are challenged to improve. Naturally this is largely realized by professional teaching and support staff.

The philosophy of education of the faculty is closely connected to the student profile of the faculty. First of all, the Faculty EEMCS uses the University's profile (High Tech-Human Touch, T-shaped professional, crossing borders, entrepreneurial mindset and inclusive campus) as the basis for her own philosophy of education.

All the educational programmes in the faculty EEMCS are science (Dutch: bèta) programmes. Regarding all the fast developments in the society and the emphasis on application of the disciplinary knowledge and skills in the programmes, multidisciplinary is a natural element of the education. At the bachelor level, the TOM (Twente Educational Model) modules consist of related courses and a project in which the knowledge is applied in order to solve mostly real life problems. In the projects the students work in small groups and attention is paid to not only the (multi)disciplinary knowledge and skills but also to 21<sup>st</sup> century skills in a learning line. This way students learn during the programme to collaborate, to work in multidisciplinary and internationally diverse groups. Also attention is paid to the personal development of the students. They learn to reflect and become more and more aware of their own strengths and points for improvement. Feedback and mentoring are important tools for them to grow in the direction of a professional who embraces

challenges and is creative in finding solutions. During the bachelor students get more responsibility and less direction which leads to the open bachelor final assignment in which they decide on the topic, the methods, the planning and so on. This can be seen as a learning line of Student Driven Learning. The faculty uses different didactic concepts in the TOM curricula, like lectures, practicals, tutorials, team based learning (TBL), problem based learning (PBL), challenge based learning (CBL) and blended learning. The diversity of pedagogical methods supports next to the achievement of the specific final qualifications the development of the students towards becoming a valuable professional in the society.

In the master phase students proceed to become more and more owner of their own learning process. They compose their own programme and are part of a chair in which they work together with PhD-candidates and other staff members in an international diverse group. The students are stimulated to do their internship abroad and their final assignment outside the UT. This way they get real life experience to learn and work as a professional in the society.

The disciplines in the faculty have strong interrelations. This results in shared modules (see module map) and during the master phase students can elect courses of other programmes. The three building disciplines decided to launch data-science as an overarching theme. It has become a specialisation within the master Programmes of Electrical Engineering, Computer Science and Mathematics. The next step is to set up a master programme for Robotics, even across faculties. In this way we strengthen the relation between research and education.

#### 3.1 UTEACHERS' ACADEMY@EEMCS

Continuous improvement of the quality of education is important to the faculty of EEMCS. The faculty board stimulates all efforts aimed at improving the quality of education with the follow-up of the Excellent Teacher Practitioner project (2016-2018) in a new initiative called UTeachers' Academy.

The objective of the UTeachers' Academy is the continuous improvement of the quality of education to increase student satisfaction and increase value of and reward employees dedicated to the professionalisation of their teaching practices. Rewarding for teaching practice extends to the possibility to be promoted to the next level, be it associate professor or full professor.

The results of efforts in the past show an increase in student satisfaction. In 2019 we have four top-rated Bachelor's programmes and one top-rated Master's programme.

## 4 BUDGET FOR THE QUALITY AGREEMENT

### 4.1 BUDGET FOR 2018

In line with the UT-approach at EEMCS, the individual programmes started a dialogue with staff and students about the quality of the programme. The results of these discussions were collected at the faculty level, resulting in the improvement agenda 2018. This agenda was approved by the Faculty Council.

### 4.2 FIRST BUDGET SCHEME FOR 2019-2024

In the course of 2018, the investment agenda for 2018 was translated into a quality agenda for the period 2019-2024. The items on the 2018 investment agenda with a permanent character contribute to the budget of the subsequent years. Objectives for the period 2019-2014 were formulated in line with the five UT programmes. Within these programmes, the emphasis of EEMCS is on community building (1), learning facilities (2), teaching professionalisation (3) and talent development (4). As learning facilities and community building are sometimes difficult to distinguish, they were grouped together. The result of this process is given in Table 1 below. The overview shows the financial consequences of our efforts that started in 2018. If we compare this to the available budgets, we can conclude that the expenses for the Quality Agenda already exceed the available budgets in 2019, and there is a small remaining budget for 2020.

### 4.3 RESIDUAL MONEY FROM 2018

As the money for 2018 was not fully spent, the Programme Committees were asked to formulate additional plans to the amount of 269 ke. Plans were collected in June 2019 and a proposal for a selection of these is presented below, to be discussed with the Faculty Council mid August 2019. In Table 2 we present the new budget form for the years 2019- 2024. The remaining money for 2018 is added to the budget. To get a balanced budget, it is divided over the years 2019-2021, with the largest amount in the budget for 2019.

From Table 1, the only two items that do not come back in the new budget are items numbers 3 and 13. The climate control of the Educafe is realized from general UT budget. The fte's involved in the development of the course filling system can be found on the general EEMCS education budget. Item number 12 got a slightly lower budget attached to it. Item number 13 will be financed from general EEMCS education means.

We plan to have meetings with representatives of the Programme Committees and the Faculty Board twice a

year, once in quartile 2 and once in quartile 4 to discuss progress and development. Although we present a detailed budget in Table 2, we still will have freedom to adjust it, if appropriate. That could even imply that we abandon one of the measures, if it turns out after evaluation not to be successful.

### 4.4 ASSESSMENT OF THE QUALITY AGREEMENTS BY THE NVAO

In June 2019, the board of the university received a letter from the NVAO. In this letter, the NVAO explained how the Quality Agreements will be assessed. Based on this, the board of this university asked to elaborate:

1. how the investments specifically contribute to an increase in the quality of education. (It should be clear that investments concern additional or new measures)
2. what measurable and assessable results the faculty wants to accomplish by means of the revenues from the student loan system. item how the faculty intends to invest the income of the student loan system during the whole period of the quality agreements (until 2024).

This deviates slightly from the original idea that making the plans for the Quality Agreements should be completely a bottom up process. Obviously, there are consequences for the plans we formulated before. *As those plans were based on the input from the students, they will all be realised*, as promised. The only difference is that we realise plans that do not entirely meet the above boundary conditions from our regular budget for education, rather than from the budget for the Quality Agreements.

The additional plans for 2018 that meet the above conditions better than the original ones will be inserted in our Quality Agenda for the years 2019-2024. As required, the Faculty Council will be asked for consent on a yearly basis.

Based on the old plans, the wishes for the spending of the remaining budget from 2018, and the new insights for dealing with the budget for the Quality Agreements, we formulate ten measures for the EEMCS Quality Agreements. These are elaborated in section 5.

### 4.5 INPUT FROM THE PROGRAMME COMMITTEES IN JUNE 2019

The Programme Committees formulated their wish lists after consultation of the Student Associations. From this

		Teacher Professionalisation	Talent Development	Community Building / Learning Facilities	2018	2019	2020	2021	2022
1.	My DAQ's for students			+	20	20	20	-	-
2.	Teacher support for modules (1fte)	+	+		40	60	60	-	-
3.	Improve Climate control Educafé			+	50	-	-	-	-
4.	Upgrading student workspaces in the research groups			+	30	-	-	-	-
5.	Extra capacity for programme coordination	+	+		40	80	80	80	80
6.	Extra training facilities for student assistants		+		5	5	5	5	5
7.	Additional sockets in lecture and project rooms			+	5	-	-	-	-
8.	Technical (software) support staff education	+			40	60	60	60	60
9.	Lecturer capacity for digital testing in programming education (0.5fte)		+		20	-	-	-	-
10.	More room in EEMCS for small project groups			+	10	10	-	-	-
11.	Expand lecture recording facilities including metadata and editing			+	20	-	-	-	-
12.	Professionalisation of student mentoring (0.8 fte)		+		35	70	70	70	70
13.	Design and start using course filling system (1fte)	+			10	-	-	-	-
14.	UTeachers' Academy@EEMCS	+	+		20	40	40	40	40
15.	ECA framework internationalization (0.8fte)	+	+		40	80	80	80	80
Estimated total investment from WSV budget					385	425	415	335	335
Available WSV budget					393	391	444	772	980
Budget still to be allocated and decided upon in consultation with students / programmes					8	-34	29	437	645
Additional Quality investments from general EEMCS education means									
16.	Lecturer capacity for digital testing in programming education (0.5fte)	+			-	40	40	40	40
17.	Design and start using course filing system	+			-	40	40	40	40

Table 1: Quality Agenda of EEMCS, formulated in May 2019, extrapolated from the input in 2018. For a detailed explanation of the items in this list, see p. 130.

list we have selected a few common items that also fit well in the strategy of the faculty and that meet the conditions for the Quality Agenda:

1. Academic skills and mentoring.
2. Professionalisation of Teaching Assistants in the form of a training program, application tool and community building.
3. There is a need for videorecordings of lectures and micro-lectures as a learning tool.
4. There is a need for well equipped study facilities that are directly related to our research programs. In particular this concerns lab facilities for Create/I-tech, data-science and Electrical Engineering (Welpzaal).

In the subsections below we give some additional considerations for the first three items on this list. The last one we address first.

As we plan a new master programme in Robotics, jointly set up with the faculty ET, we plan a Robotics-lab from 2022 on.

#### 4.5.1 STUDENT LABS IN THE VICINITY OF RESEARCH GROUPS

##### *Goal*

- to create student work spaces in the in the form of well equipped labs;
- to create student communities;
- to develop a strong relation between research and education.

##### *Context*

The faculty EEMCS is convinced that having well equipped labs contributes strongly to community building and enables to develop a strong relation between research and education. The data-science lab is under construction, and gets a proper support from all disciplines. It is well worth investing and we foresee a growing need in the future.

The HMI-lab relies at present too much on the research groups. Investments are needed to run this lab more independently, which requires proper investment in tools and staff to maintain it.

The EE-lab (Welpzaal) has some deferred maintenance, and is also in need of support staff to guide student projects. The benefit for students will be that they can work in an up-to-date research environment, well supported by staff.

##### *Planning*

- upgrading of the Welpzaal will start in 2019; additional supporting staff will be appointed;
- setting up a data-science lab has already started; a

postdoc was hired for two years to set it up and to create an environment for master students in data-science;

- at present a joint Master's programme with the faculty ET is under investigation. We plan a student lab and reserve budget from 2022 on.

##### *Costs*

- initial investments in the data-science lab, HMI-lab and EE-lab 80 k€
- support staff for data-science lab, HMI-lab and EE-lab 200 k€/yr
- support staff for robotics-lab (starting 2022), 80 k€

#### 4.5.2 MENTORS FOR LEARNING ACADEMIC SKILLS

##### *Goal*

- to formulate a flexible academic skills line which could be adapted to the needs of the educational programme;
- to better support students in order to develop academic skills;
- high responsibility of students to show growth in academic skills;
- to train mentors to maximize the learning results of the students;
- to help students getting familiar with our education system, culture, finding all resources they need.

##### *Context*

Mentors are students and/or lecturers specially selected and trained to work with students on the development of skills necessary for academic success at EEMCS such as presentation skills, being innovative, teamwork and study strategies. Mentors can help students to explore directions for professional and academic development, stimulate students to make their own development plan and give feedback on the implementation of this plan and feedback on the mastering of academic skills) Mentors draw on their personal experiences as well as their training to mentor younger students. Besides, workshops (given by professionals, or available with self-study materials) are being organized by lecturers to help students to further develop their skills. During the first study year the mentors will also be invaluable in helping first-year students access all the resources available on campus and to give them the feeling that they are part of the EEMCS community.

During the study programme and within modules students get opportunities to practice different academic skills. In each module a certain amount of EC's is made available for the development of academic skills. Several times during the first two bachelor years the development of the skills will be evaluated by mentors, giving the students diagnostic feedback on their development. In the end of

the second year, students show individually their progress on the academic and professional skills in a meeting with at least two different lecturers/assessors. This is done by collecting evidence in a portfolio which is accessible for the assessors and mentor and giving a presentation where the student will show his progress on different academic skills.

### **Planning**

October 2019 - June 2020: startup

- identifying mandatory and choice academic skills and mentoring programme;
- creating content/education, workshops for academic and professional skills;
- review with students/lecturers about the skills and mentoring of first year students;
- improve academic skills programme and mentoring programme based on review findings.

September 2020 - July 2021: Implementation

- Pilot with one EEMCS educational programme: 2020-2021. June - September 2021: Evaluation
- Evaluation with students and lecturers about the academic skills and mentoring programme.

### **Costs**

- Development flexible skills line (100 hr), including workshops given by professionals (300 hr yearly);
- Development of assessment of academic skills line (20 hr)
- Development of mentoring programme (40 hr)
- Development training programme for mentors (40 hr)
- Training for mentors (for mentoring and skills line (25 hr)
- Implementation and evaluation in at least one educational programme (50 hr)

Total budget: 275 hr + 300 hr (for hiring professionals for academic skills line -yearly-). We foresee a growing need for mentoring when we develop to a truly international university and faculty. Consequently we have raised the reservation on the budget in the last three years.

## **4.5.3 TRAINING TEACHING ASSISTANTS**

### **Goal**

The main goal is to improve the quality of guidance of students during tutorials and practicals. The project has the following objectives:

- Research the current problems with teaching assistants and process them into a new skills line;
- Train teaching assistants for tutorials and practicals and self-study;
- Develop a register tool for (potential EEMCS) teaching assistants, where they can describe their availability,

preferences for courses/educational programmes, where they want to guide students, etc.)

### **Context**

A teaching assistant-ship offers students opportunities to learn how to teach in exchange for money. There are many benefits for students and lecturers and faculty. A teaching assistant may help a professor teach an especially large class, grade papers, run classroom related activities, and perform other tasks. Therefore, it's really important to have a pool with teaching assistants and that teaching assistants are very good prepared to their job to increase the amount of teaching time of the professor and to reach high quality guidance of students who follow the specific course/module.

Benefits for students are that they really come to understand the subject through teaching a subject. They will explain (complicated) concepts in their field and develop a more sophisticated understanding of them. The relationships they develop with the professors could be important to their future success. By being a teaching assistant students will be able to interact with professors closely and will become more well known by faculty staff and develop a few close relationships that can lead to important opportunities in the future.

### **Planning**

October 2020-June 2021:

- Research the current problems with TA's;
- Develop a training based on the current DISA training;
- Implement the new training and train TAs for tutorials and practicals and self-study;
- Develop a register tool for (potential EEMCS) TAs where they can describe their availability, preferences for courses/educational programmes where they want to guide students, etc.).

### **Costs**

- Research the current problems with TAs (15 hr);
- Develop a training based on the current DISA training (25 hr);
- Implement the new training and train TAs (40 hr);
- Develop a register tool for (potential EEMCS) TAs where they can describe their availability, preferences for courses/educational programmes where they want to guide students, etc. (45hr);
- Evaluate the results with the teaching assistants and lecturers (25 hr).

Total budget: 150 hr. When successful, we will scale this up in the years 2022-2024.



#### 4.5.4 VIDEO LECTURES AT EEMCS

##### **Goal**

Making the best of video lectures at EEMCS. A video lecture is the recording of a lecture. This will take place in a standard/usual lecture room while the lecturer delivers the lecture as normal. Video lectures are usually used to support students, enabling them to revisit a lecture if they didn't grasp something first-time around or if they were unable to attend. The project has the following objectives:

- to record lectures for students;
- implement one or more interactive aspects in the video lectures to stimulate application, critical thinking and deeper understanding;
- Researching (not only if students watched the video lectures but also, and more important, researching) the question "What did students learn from watching the video lectures?"
- Phase 1: 10% of the EEMCS courses offers video lectures;
- Not in this project: Phase 2: Based on evaluation results a new goal (20%) will be established.

##### **Context**

A video lecture is not intended to replace the live lecture for students. In this project video lectures offer a complementary service to students. Advantages for students:

- If the lecture covers new terminology or complicated material which must be remembered and understood, it is an enormous help to students to be able to play back the lecture at their own pace and look again at specific topics they may not have fully understood the first-time round;
- Students can repeat the material as additional preparation for exams;
- Students who are sick or cannot attend the lecture for other reasons can still follow the lectures;
- Students abroad can also follow the lectures;
- Disabled students can also follow the lectures;
- As different students prefer to learn in different ways and at different paces, giving them the flexibility to view a lecture in their own time. Especially those students who find it difficult to learn from lectures or are lagging behind have an alternative method of delivery to suit their learning style.

Benefits for lecturers:

- use video lectures for (re-)use in other courses, for example pre-knowledge for other courses;
- use video lectures for showing lectures by guest lecturers;
- video lectures offer the possibility of adding additional sources, background information, comments, questions

and feedback;

- Video lectures offer the lecturers to make the lecture even more interactive, for example by adding Multiple Choice questions or small assignments in the video.

Lecturers can sign up for recording their lectures, starting with 10% of the total amount of courses/lectures.

##### **Planning**

October 2019- June 2020 (10% of total amount of courses/lecturers) Start up:

- Finding lecturers/courses/modules for recording video lectures. Realisation;
- Recording lectures (possible in all lecture rooms);
- Adding interactive elements to the video lectures Implementation;
- Making the interactive video lectures available through Canvas Evaluation;
- Evaluation with students and lecturers about the usefulness of video lectures.

October 2020- June 2021: Phase 2 (next 20 % of total amount of courses/lecturers) (Total 30%)

October 2021- June 2022: Phase 2 (next 30 % of total amount of courses/lecturers) (Total 60%)

October 2022- June 2023: Phase 2 (next 40 % of total amount of courses/lecturers) (Total 100%)

##### **Costs**

Phase 1:

- Finding lecturers/courses/modules for recording video lectures. Intake with lecturers(60 hr).

Realisation

- Recording lectures (possible in all lecture rooms) (250hr Lectures, LISA, TELT);
- Adding interactive elements to the video lectures (250hr, Lectures, CELT, LISA, TELT).

Implementation:

- Making the interactive video lectures available through Canvas (is part of the organisation of the course).

Evaluation

- Evaluation with students and lecturers about the usefulness of video lectures (60 hr, CELT, Lecturers).

Total budget: 620 hr in the academic year 2019-2020. We foresee a growing need, if successful, in the years thereafter.

#### 4.5.5 MICRO-LECTURES FOR THE MATH LINE

##### **Goal**

Producing micro-lectures for the math line. The micro-lectures are provided to students as extra learning materials. This means that students can follow the weekly 'normal' lecturers as well. The project has the following objectives:

- Define a relevant kind of microlecture for the math line. (microlecture, pencast, screencast, . . .). Decision on what kind of video should be the focus for the math line;
- to train lecturers to record 'professional' micro-lectures;
- record professional micro-lectures for the math line;
- researching (not only if students watched the microlectures but also, and more important, researching) the question "What did students learn from watching the microlectures?"
- Phase 1: 25% of the math line offers micro-lectures;
- Phase 2: 50% of the math line offers micro-lectures;
- Phase 3: 75% of the math line offers micro-lectures;
- Phase 4: 100% of the math line offers micro-lectures;
- Evaluate results (kind of video, amount of students who think the small lectures are useful, etc.);

Not in this project: Phase 2-4: Based on evaluation results a new goal (phase 2-4) will be established.

##### **Context**

It is important to recognise that micro-lectures are NOT simply a short video; micro-lectures utilise short video but incorporate active learning strategies to promote student learning. Micro-lectures allow students to control the pace and sequence of learning, provide opportunities for unlimited review of course concepts, and promote active engagement with course material. In this project we use micro-lectures for small 2-10 minute lectures, pencasts and screencasts.

With micro-lectures the lecturer can give students a brief overview of the content with key concepts, and demonstrate a problem solving procedure/give a step-by-step instruction for math problems. This is appropriate especially for concepts and assignments that are difficult to understand. Easy re-usability of micro-lectures over time and in different modules (preknowledge). And updating a 5 minute lecture is easier than a 45 minute one.

The main benefits for students are the following. With core-focused micro-lectures students can control their own learning. They can choose which lesson/content to watch and move through them at their own pace. They can return to and replay micro-lecture any number of times.

##### **Planning**

October 2019- June 2020 (one subject), Phase 1: Start up

- Finding lecturers/courses/modules for recording micro-lectures (one subject, for example Linear Algebra);
- Train lecturers to record micro-lectures;
- Develop a plan for micro-lectures. Realisation
- Recording micro-lectures;
- Adding interactive elements to the video lectures Implementation;
- Making the micro-lectures lectures available through Canvas. Evaluation
- Evaluation with students and lecturers about the usefulness of micro-lectures.

October 2020- June 2021: Phase 2 (next subjects) (Total 50%)

October 2021- June 2022: Phase 2 (next subjects) (Total 75%)

October 2022- June 2023:

Phase 2 (next subjects) (Total 100%).

##### **Costs**

Phase 1:

- Finding lecturers/courses/modules for recording video lectures. Intake with lecturers (40 hr);
- Train lecturers to record micro-lectures (100 hr, Lecturers, TELT);
- Develop a plan for micro-lectures (100 hr, Lecturers, TELT). Realisation
- Recording lectures (150 hr Lectures, LISA, TELT);
- Adding interactive elements to the video lectures (100 hr, Lectures, CELT, LISA, TELT).

Implementation

- Making the interactive video lectures available through Canvas (is part of the organisation of the course).

Evaluation

- Evaluation with students and lecturers about the usefulness of video lectures (60 hr, CELT, Lecturers).

Total budget: 550 hr (phase 1). We foresee growing costs when successful. The budget is therefore raised in the years 2022-2024.

## 5 PLANS FOR THE QUALITY AGREEMENTS UNTIL 2024

### COMMUNITY BUILDING & LEARNING FACILITIES

**AMBITION: CREATE LABS WHERE STUDENTS CAN STUDY CLOSE TO EEMCS ACADEMIC RESEARCH GROUPS.**

**Measure:** *Create additional project rooms, well equipped, including technical support staff (HMI,EE and data-science-lab) & education support staff.*

Target until 2021: Three well-equipped and staffed labs.

Intended effects for students:

Students experience the educational building as a safe and stimulating environment, and a good place to develop their talents in close contact to research groups. They feel part of the academic community and contribute to research projects. Students experience environment in which education and research are interwoven. Teachers can find students in regular places. EEMCS intends to apply the lab-concept to other research areas as well. In particular, a robotics-lab is planned from 2022 on.

Budget:

	2019	2020	2021	2022	2023	2024
Datascience-lab	60	40	40	80	80	80
HMI-lab	120	80	80	80	80	80
EE-lab (Welpzaal)	100	80	80	80	80	80
Robotics-lab	-	-	-	80	80	80
measure 1	280	200	200	320	320	320

For the setup of the labs we make a reservation of 80 k€ in 2019. For the datascience lab we foresee a growing need.

## LEARNING FACILITIES

### AMBITION: MAKE USE OF MODERN TOOLS TO FACILITATE STUDENTS AND STAFF AIMING TO

- INCREASE ACCESSIBILITY OF LECTURERS FOR STUDENTS;
- HELP STUDENTS BETTER UNDERSTAND DIFFICULT CONCEPTS;
- OFFER MORE FLEXIBLE WAYS OF LEARNING AND TO SUPPORT STUDENTS IN DESIGNING THEIR OWN LEARNING EXPERIENCE;
- ORGANISE EXPLANATION OF THEORY MORE EFFICIENT SO THAT MORE IS LEFT FOR INTERACTIVE EDUCATION/TUTORIALS..

#### **Measure 2:** *Video lectures.*

Target until 2021: 30% of all lectures are recorded.

Intended effects for students:

Support for Student Driven Learning, flexible learning.

#### **Measure 3:** *Micro-lectures.*

Target until 2021: The math-line is available in micro lectures.

Intended effects for students:

Support for Student Driven Learning, flexible learning, explanation of difficult concepts.

#### **Measure 4:** *Hire additional technical staff to develop software that will be used for digital testing and programming education. This support staff will investigate available tools and integrate them in programming education.*

Target until 2021: In 2021, digital testing is used in all Bachelors programmes as a tool for testing but also as support in the learning process. Programming education is online available.

Intended effects for students:

More and better personalised feedback and programming tools to support the learning process. The outcome of the NSE can serve as a way to measure this.

#### **Measure 5:** *Hire additional staff for programme coordination.*

Target until 2021: Hire 1.5 additional fte for module and master coordination, thereafter extend when successful.

Intended effects for students:

Teachers have more time available for individual contact with students. More and better personalised feedback and programming tools to support the learning process.

Budget:

	2019	2020	2021	2022	2023	2024
Measure 2	40	40	40	75	75	75
Measure 3	40	40	40	80	80	80
Measure 4	60	60	60	60	60	60
Measure 5	120	120	120	180	180	180

## TALENT DEVELOPMENT

### AMBITION: STUDENTS ARE STIMULATED TO DEVELOP THEIR OWN TALENTS

**Measure 6:** *Professional mentoring of students.*

Target until 2021: All staff members with a mentoring task have been trained.

Intended effects for students:

Students

- feel more competent to develop their talents;
- reflect on their own talents and motives;
- actively explore future (career) possibilities.

**Measure 7:** *Student assistants with educational competencies.*

Target until 2021: 50% of the student assistants follow training programmes.

Intended effects for students:

Paradigm shift, responsibility, other perspective on disciplinary content.

Budget:

	2019	2020	2021	2022	2023	2024
Measure 6	40	40	40	110	110	110
Measure 7	10	10	10	50	50	50

## 6 BUDGET FOR THE QUALITY AGREEMENTS

In the first three years 1925 K€ is required, while 1617 K€ is available. The difference, 308 K€, is mostly covered by the remainder of the budget of 2018, namely 269 K€.

### TEACHING PROFESSIONALISATION

#### AMBITION: STIMULATE PROFESSIONALISATION OF TEACHERS

**Measure 8:** *Introduce UTeachers' Academy EEMCS, a network of EEMCS teachers who have the ambition to improve their performance based on literature, experiences elsewhere, or input from colleagues.*

Target until 2021: 15 participants in UTeachers' Academy EEMCS per 2021.

Intended effects for students:

The philosophy and practise of teaching methods is optimal for our student community.

**Measure 9:** *Additional training facilities for teachers.*

Target until 2021: In 2021, we have per year on average two staff members enrolled in the LOL-programme, two staff members enrolled in the SKO traject and one staff member enrolled in the SKE traject.

Intended effects for students:

Students experience a professional education environment. They experience that teachers' teaching skills improve, to be measured via the NSE.

Budget:

	2019	2020	2021	2022	2023	2024
Measure 8	40	40	40	40	40	40
Measure 9	25	25	25	25	25	25

### GLOBAL CITIZENS

#### AMBITION: DEVELOPMENT OF INTERNATIONAL CURRICULUM IN OUR BACHELOR AND MASTER PROGRAMMES

**Measure 10:** *Reserve 0.4 fte to adjust programmes to an international standard.*

Target until 2021: In 2021, two programmes within EEMCS have obtained the ECA qualification for internationalisation.

Intended effects for students:

Experience an international, inclusive classroom, preparing for an international career, and a programme with international and intercultural learning outcomes.

Budget:

	2019	2020	2021	2022	2023	2024
Measure 10	40	40	40	40	40	40

MEASURE	2019	2020	2021	2022	2023	2024
Measure 1	280	200	200	320	320	320
Measure 2	40	40	40	75	75	75
Measure 3	40	40	40	80	80	80
Measure 4	60	60	60	60	60	60
Measure 5	120	120	120	180	180	180
Measure 6	40	40	40	110	110	110
Measure 7	10	10	10	50	50	50
Measure 8	40	40	40	40	40	40
Measure 9	25	25	25	25	25	25
Measure 10	40	40	40	40	40	40
<b>total required</b>	<b>735</b>	<b>655</b>	<b>655</b>	<b>980</b>	<b>980</b>	<b>980</b>
<b>available</b>	<b>391</b>	<b>444</b>	<b>772</b>	<b>980</b>	<b>980</b>	<b>980</b>

Table 2: The budget outline for the years 2019-2024.

## EXPLANATION BUDGET SHEET 2018

1. MyDAQ's are a pc-controlled generator, scope, network analyzer and more. By using these MyDAQs the students will have more freedom for doing their labs, because they are no longer dependent on the Westzaal, so more free space is available in the Westzaal, students experience less study pressure and have more time to learn.
2. Teacher support for modules means that a module gets an extra (non-)technical person to do all the administrative work. This will give the teacher more time for students. So, the guidance, teacher quality and intensity will be much better.
3. Climate control in the Educafé is needed to improve the study environment, which currently often suffers from high temperatures.
4. Upgrading student workspaces in labs of research groups means that there is enough space in the labs for students to do their work. This should also result in students finding their home-base in these labs/ environments, having places to collaborate in projects and being able to study collaboratively.
5. Analysis shows that at EEMCS the programme coordination for the master is too limited. Extra course coordination will lead to more support for teachers and students.
6. Training in particular in the area of professional skills and competencies.
7. No further explanation needed
8. Within Computer Science there is high demand for building, maintaining, and technically supporting various tools and systems for education, such as TAhelp me, TCS M3 Challenges, OpenEdx, and digital programming tests, to increase the observed quality of the teaching. Systems for blended learning and digital tests (exams) are also of interest for BIT.
9. Feedback and correction of practice programmes and tests are perceived as bottlenecks of programming education. Dedicated lecturer capacity to investigate available tools, and integrate them in our programming education could improve this situation, and at the same time help the TCS bachelor deal with the increasing student numbers. Bottleneck in programming education also holds for BIT.
10. No further explanation needed
11. No further explanation needed
12. To alleviate lecturers and to improve mentoring we will hire additional expertise in the area of student mentoring
13. The introduction of a "vakdossier system" (course filing system) containing and disclosing all course relevant information for teachers enhances teacher quality and quality assurance
14. As a follow up of the ETP programme we will introduce the UTeachers' Academy@EEMCS. This is a network of EEMCS teachers who have the ambition to improve their performance based on literature, experiences elsewhere, or input from colleagues. Members get the opportunity to execute pilot studies and to discuss the outcomes with colleagues.
15. We will make a start monitoring the ECA qualifications for internationalisation. This will be a major effort for most of our bachelor/master programs. We intend to achieve that our programmes and teachers pay ample attention to the development of intercultural competences and provide specific international experiences.









