

## Update.

3TU is very pleased with the extra 11 million euros which the Ministry of Education, Culture and Science is providing annually to the three universities of technology. This grant is based on plans in the areas of education, research and knowledge transfer, as described in the Sector Plan for Technology. This Sector Plan is the basis for the cooperation between the three universities of technology. In this newsletter more about the implementation of the plans.



## Interview with... Dirk Jan van den Berg

Secretary of State Halbe Zijlstra has kicked-off the implementation of the 3TU Sector Plan for Technology, and is making available an extra investment of three times 11 million euros. At the request of the Secretary of State, these funds will be used entirely for education in 2011, 2012 and 2013.

### Why is 3TU receiving this extra investment of 11 million euros a year?

"The Sector Plan for Technology addresses the themes of the Strategic Agenda for Higher Education, Research and Science entitled 'Kwaliteit in verscheidenheid' (Quality in diversity), for example in relation to specialisation and profiling of educational programmes. It also helps in the implementation of the agendas of the top sectors, for example because technological and scientific talent is a prerequisite for achieving the defined ambitions in the top sectors. The excellent reputation and the quality of the educational programmes of the three universities of technology are recognised. The granting of new funding for the Sector Plan shows recognition for the performance of 3TU up to now, and the importance that is placed on the technical-scientific sector."

### Which educational programmes will be started?

"We have defined seven programmes in which we intend to work on strengthening our education. One of the results we want to see is that students complete their studies more quickly. Two programmes will contribute directly to achieving this aim: the 'educational restructuring' programme and the 'monitoring

and coaching' programme. We are also making extra capacity available to further improve the core courses and the transition from VWO (pre-university education) to university. The 'mathematics education' programme will contribute to this. Finally, we also have the 'excellent lecturers', 'internationalisation of education', 'digitalisation of education' and 'Stan Ackermans Institute' programmes."

### What plans are there for 3TU research and knowledge transfer?

"Initially, Secretary of State Zijlstra has decided that the 11 million euros will be used for educational programmes. As a result of the movement that has been initiated with the 3TU Centres of Excellence, new bottom-up research proposals have recently been developed and submitted in the fields of applied mathematics, ethics and building (3TU.AMI, 3TU.Ethics and Technology and 3TU.BOUW respectively). It goes without saying that these initiatives will have support from the 3TU Executive Board. In addition, the three universities of technology are working together in the field of knowledge transfer, in particular on activities to strengthen the regional impact of the three universities."

## • Restructuring of programmes

Restructuring of the educational programmes is needed to ensure the availability of sufficient highly qualified engineers. The aim is to make engineering programmes more attractive, and to remove obstacles to the successful completion of these programmes. A number of performance indicators have been defined to make the results concrete and measurable. These include the average number of study points gained per student per year, the maximum study drop-out rate in the second and third years of the Bachelor's programmes, and the inflow. Higher scores need to be achieved on these points. Each of the three universities of technology is following its own philosophy and strategy in restructuring its programmes. There are of course some common elements at all three universities, such as replacing many small, parallel courses with larger and integrated educational modules, gaining a stronger commitment from students and recalibrating the awarding of credits.

## • Monitoring and coaching

Education at universities of technology is regarded as demanding. One of the ways in which the three universities of technology aim to address this is by providing intensive education in small working groups, through the 'monitoring and coaching' programme. This makes studying more structured, and helps beginning students in particular to get used to the required level. During the educational programme, coaching is intended to develop into an open and adult discussion between students and scientists. As well as this personal support, the universities of technology intend to assign academic mentors to students. These tutors will provide the students with course-related support, helping to create enthusiasm and acting as a source of inspiration. A specific element of monitoring and coaching is discussing about study choice, so that students gain awareness as early as possible of the importance of making the right study choice. The amount of extra capacity required for coaching and support and the number of intakes held will be monitored.

The seven educational programmes to which the three universities of technology will allocate the funding granted by the Ministry of Education, Culture and Science are:

- Restructuring of programmes
- Monitoring and coaching
- Excellent lecturers
- Internationalisation of education
- Digitalisation of education
- Stan Ackermans Institute
- Mathematics education



## • Excellent lecturers

An excellently qualified body of lecturers also contributes to providing sufficient highly qualified engineers. Lecturers who are able to inspire students are very important for successful education. The 'excellent lecturers' programme addresses this need, and is also a prerequisite for all the other targets. Only with excellent lecturers is it possible to optimally achieve digitalisation, internationalisation, attractive educational programmes that are feasible for students and strengthened student support. An example of a project in this area is the establishment of a Centre of Excellence in University Teaching in Engineering. With a challenging programme the three universities of technology intend to encourage lecturers to get the maximum out of their teaching, and to explore other educational approaches. The 'excellent lecturers' programme will also enable lecturers to further develop their English-language, digital and 'multicultural classroom' teaching skills. The number of participants taking specialised training will be monitored.



### • Internationalisation of education

The core activities of universities of technology (science, design and engineering) have a highly international focus. The international character of the curricula will be further strengthened, so that students are optimally prepared for an international professional career. The inflow of international students is also an important factor in gaining international recognition for the three universities of technology. International students help to drive national knowledge development, and contribute to the international development of Dutch students. After graduating, international students act as valuable ambassadors for the universities and for the Netherlands in other countries. The three universities of technology therefore intend to establish an alumni network of international students and staff by setting up digital communities together with them. This network will enable (potential) international students to gain information interactively about living and studying at the three universities of technology. The universities will also make stronger efforts to promote participation by their students in international exchange programmes. The effect will be measured by the percentage of first-year international Master's students and the number of (Bachelor's and Master's) students who attend parts of their educational programmes in other countries.



### • Stan Ackermans Institute

The 3TU.School for Technological Design, Stan Ackermans Institute (SAI), is currently working on initiatives for new postdoctoral design programmes in Enschede (Robotics, Chemical Process Technology, Civil Engineering), Delft (Civil Engineering, Chemical Product Design) and Eindhoven (Smart Energy Building, Healthcare Systems Design, Automotive Systems). Prof.dr. Kees van Hee, director of the SAI, explains that design programmes help in implementing the agendas of the Dutch top sectors. "The top sectors aim to address the shortage of technologically trained talent. Due partly to the greying population, there is less availability of 'home-grown' talent, which means it is more important than ever to recruit the people we need internationally. A large proportion of PDEng (Professional Doctorate in Engineering) trainees are international, which means there is a brain-gain. As well as that, these trainee designers work in their second year on an innovation project in industry, in which they can apply the knowledge of the university of technology to develop a new product, process or system. This makes a direct contribution to the innovation targets of the top sectors." In the next five years, Delft intends to increase the student inflow into the design programmes from 27 to 55 students. Eindhoven aims to increase the number of trainee designers from 98 to 140, and Twente is aiming for an inflow of 20 trainee designers in 2015.



### • Digitalisation of education

Digital educational facilities contribute to better preparation by future students from HBO (higher vocational education) and VWO (pre-university education), as well as those from other countries. They can for example follow courses, do self-assessments and watch video lectures, all of which will give them a true impression of what technology education involves. As well as that, online availability of lectures can provide extra support in the form of self-study by current students. With the 'digitalisation of education' programme, the three universities of technology are investing in setting up a strong digital learning environment. This includes attention for the 'hard' aspects (technology, software), the capacity (teaching methods, knowledge about the use of the digital learning environment) and the content (making available courses, lectures and examination material). All these efforts are intended to lead to an increase in the number of available hours of video lectures and the number of digital programmes aimed at study choice.

### • Mathematics education

Mathematics is a subject in its own right, and is also an essential part of other (technology) disciplines. 3TU.AMI (Centre for education, research, knowledge transfer and outreach in relation to mathematics) uses the funding from the Sector Plan for Technology primarily to consolidate the basis of mathematics education and to strengthen the transition from VWO (pre-university education) and HBO (higher vocational education) to university. In this way the three universities of technology are making an important contribution to the Ministry of Education, Culture and Science's action plan entitled 'Beter presteren' (Better performance). E-learning is a central element, although investments are also being made in intensifying the personal contacts between mathematics teachers and lecturers in secondary schools, higher education institutes and university. Prof.dr.ir. Bernard Geurts, scientific director of 3TU.AMI, explains that the three universities of technology are facilitating this process. "For example by setting up a website for teachers and students in secondary schools and higher education institutes, through which E-learning is actively offered and information is provided about mathematics activities at the universities of technology."



## 3TU.BOUW

To promote cooperation, increase the quality of research and bridge the gap between research and its practical application, the four deans of the departments of Built Environment and Civil Engineering, with support from 3TU, have carried out a successful exploratory study into further cooperation. 3TU.BOUW was developed on the basis of this study, and combines the expertise of the four departments in four societally important research themes: energy, mobility, health and the urban environment. The Centre creates critical mass by bringing together researchers from the various departments, and promotes cooperation between industry and science. The plans for 3TU.BOUW have been very positively received: the idea that the knowledge side of the building sector and the industry itself are jointly drawing up a research agenda to promote innovation in the sector is very attractive, and is a seamless fit for the knowledge transfer goals of these organisations.

## 3TU.Ethics and Technology

3TU.Ethics and Technology integrates the expertise of the philosophy departments of the three universities of technology in relation to the ethics of science, technology and engineering. The joining of forces in ethics and technology in this centre addresses the increasing need for a balanced, high-level reflection on moral, political and policy issues in relation to science and technology. Education is also an important aspect, because in their professional lives scientists and engineers are often faced with ethical issues. 3TU.Ethics and Technology was rated as excellent in an international research assessment. The committee expressed a high level of appreciation for the work of the ethics specialists at the universities of technology: "Innovative work in the philosophy of technology, a relatively new branch of the subject in which Dutch philosophers can claim to be pre-eminent."

## Credits

3TU.Newsletter is a publication of the 3TU.Federation ([www.3tu.nl](http://www.3tu.nl)). The newsletter is sent to the staff and external contacts of Delft University of Technology, Eindhoven University of Technology and the University of Twente.

For more information or to subscribe or unsubscribe, please contact:  
Veronique van 't Westeinde  
Member of 3TU policy staff.  
[beleidsmedewerker@3tu.nl](mailto:beleidsmedewerker@3tu.nl)  
Telephone +31 (0)15 278 82 55



The next newsletter includes attention for the lustrum (fifth anniversary) celebrations of 3TU in 2012.