Doctorate programmes
Engineering

Ready for the next step after your MSc?
“Are you ready?”

The two-year post-MSc programmes of 4TU.School for Technological Design, Stan Ackermans Institute, can become your passport to a faster successful career in industry or business. This passport is the degree Engineering Doctorate (EngD) which you will be awarded upon the successful completion of the programme.

Innovation is the driving force behind the high-tech industry. Close collaboration between industry and universities is crucial for innovation. For this we need excellent engineers. Our technological designer programmes train the most talented master graduates, engineers who want to further develop their skills in the field of technological design and who want to contribute to the needs of the high-tech industry by developing innovative solutions.

As you become an employee of one of our universities of technology in the Netherlands, you combine learning and earning throughout the programme. During the design project, which is done in and for industry and often takes place in the second year, you demonstrate your ability to apply your theoretical knowledge in solving a real-life, complex design problem. Many of our graduate EngD trainees joined the company where they carried out their design assignment and now fulfill management positions.

Are you ready to join our EngD community and boost your career?

Prof.dr Paul Koenraad
Director 4TU.School for Technological Design, Stan Ackermans Institute

Switch PDEng to EngD

On September 1, 2022, the name of the Professional Doctorate in Engineering (PDEng) degree changed to Engineering Doctorate (EngD). Because the Dutch Universities of Applied Sciences start with Professional Doctorate programs as well, and we want to keep the distinction clear, the name of the degree is changed.

Boost your career!

Are you a graduated young professional or currently completing your Master of Science programme at a (technological) university? Are you looking for an even faster successful career in industry or business? Then you should consider applying to one of our 2-year training programmes (with salary) and become a technological designer at the 4TU.School for Technological Design, Stan Ackermans Institute.

Two-year programmes

The Dutch universities of technology - TU Delft, Eindhoven University of Technology, University of Twente and Wageningen University & Research - offer two-year programmes that will put you on a faster track to a successful career in industry. In addition to broadening your technological expertise, you will learn more professional skills that will enhance your career opportunities. It is a paid position; you become an employee of the university. Industry offers graduated designers from our programmes excellent jobs, because of the strong reputation of our graduates.

High-tech industry

The technological designer programmes were initiated at the request of the Dutch high-tech industry. High-tech companies need professionals who can design and develop complex new products and processes and offer innovative solutions. All programmes work closely together with high-tech industry, offering you the opportunity to participate in large-scale, interdisciplinary design projects. With this unique cooperation we provide you with a valuable network of contacts in industry. Over the past twenty-five years more than 4,500 of our graduates have found challenging and exciting jobs with (multi-)national companies, including Philips, ASML, Thermo Fisher Scientific, Sabic, Shell and TNO. These companies are united in their praise for the quality of the technological designer programmes and their graduates, and offer them a faster track in their career. To ensure their continued enthusiasm, the programmes employ a strict selection process, accepting only excellent young professionals and graduates.

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Professor Stan Ackermans, PhD
Professor Stan Ackermans, PhD, (1936-1995), professor and rector at TUE, championed the introduction of the design educational programmes. Following his death, the institute was renamed Stan Ackermans Institute in his honor. Since 2006 it’s called 4TU.School for Technological Design, Stan Ackermans Institute.
The 4TU technological designer programmes offer you an opportunity to enhance your expertise and project management skills with an extensive hands-on assignment, supervised by experienced professionals. Each programme covers a different technological field, for example managing complex architectural construction projects, designing efficient and effective maintenance processes from a multidisciplinary perspective, developing high-tech software systems for software-intensive systems. The focus of each programme is described further on in this brochure.

As part of their increasing intensive cooperation, the Dutch universities of technology decided in 2006 to combine their technological designer programmes in the 4TU.School for Technological Design, Stan Ackermans Institute.

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4TU.School for Technological Design, Stan Ackermans Institute

I design an anomaly detection application for Air-Handling Units. The industry partner on the project, Kropman B.V. is one of the largest building’s installations company in the Netherlands. They value this initiative as key to their digital transformation strategy. I find myself closely collaborating with stakeholders from industry, academia, and public research institutions to prevent energy wastage in buildings and lower carbon emissions.

Before I joined the EngD programme, I led business development for IoT startups in Mumbai. Having worked with product teams on several projects, I was looking for an opportunity to experience its development hands-on. I found the EngD programme to be the right vehicle for this leap. It has helped me acquire and combine skills from several disciplines.

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Process and Product Design (PPD)
The chemical design (CD) requires capacity demand for an integrated approach of the disciplines chemical engineering, applied physics, mechanical engineering, and technology management. PPD focuses not only on process design, but also on the design of the product. The relationship between the production process and product properties like e.g. functionalty and microstructure is the connecting thread in the PPD programme. The mission of the BPE programme trains engineers to become effective designers in the chemical process. Of course, engineering skills and knowledge of physiology are relevant. But also communication with health care professionals (and patients) is crucial to really get clear what their needs are and to determine how technology can improve their treatment and care. The BPE trainees are placed in close cooperation with hospitals and other care institutions all over the Netherlands. All trainees in the programme are required to be fluent in Dutch.

SmartBuildings and Cities (SB&C)
SB&C trainees are capable of integrating state-of-the-art technology in an intricate and complex product, resulting in innovation for smart energy systems for the built environment. From different backgrounds, a SB&C trainee contributes to the development of intelligent, energy efficient buildings and their energy systems. The SB&C trainees are fluent in English and have a multidisciplinary approach. Besides the technical focus, the programme also offers a multidisciplinary background within the field of civil engineering, with knowledge of the different technical and nontechnical aspects of actual civil engineering issues (such as economics, policy, law and business administration, but also knowledge on project and process management). These engineering skills need to have the skills to play a key role in multidisciplinary design teams that are concerned with solving these complex issues.

Energy and Process Technology (EPT)
The technology designer in the field of EPT creates innovative technical solutions for products and process in the intricate energy efficient systems for the built environment. For this purpose a multidisciplinary approach is required starting from fundamental and market oriented requirements. The EPT trainee is expected to have a multidisciplinary background with on-site experience in the energy, environment, safety, sustainability and recycling. Besides deepering and broadening of knowledge during the whole EngD programme in EPT, several assignments in industry will be carried out.

Museum (M)
The Total project presents a valuable opportunity for the student to engage in a multidisciplinary and interprofessional setting, as well as the opportunity to develop skills and knowledge that will be valuable in the student’s future career. The student will be required to take on the role of a leader in their project, and to coordinate the efforts of other students on their team. They will also be expected to work closely with faculty members to ensure that the project is completed on time.

Robotics (R)
The Techno Design Engineer in Robotics creates innovative robotic solutions for medical, industrial and safety purposes, such as rehabilitation robotics, welding robots, and independently operating robots performing inspection tasks. Therefore a multidisciplinary approach is required with contributions from mechanical, electrical, computer and control engineering.

Location Wageningen University & Research

For more information: www.4tu.nl/ai

Design for AgriFood and Ecological Systems (DAES)
DAES trainees will be able to create high-value, creative, and innovative designs to improve sustainability in an independent and multidisciplinary way under the supervision of the university and experts outside academia. The final results will be valuable ideas that are directly or indirectly, contribute to increasing the sustainability of agr- or horticulture, livestock farming, or the living environment in general.
Application, selection and degree

Application

Application to an EngD programme is open to university graduates from the Netherlands and other countries. You will at least need a Master of Science degree or equivalent, preferably in the exact sciences. There will be an assessment and selection procedure before you can enter the programme. The programmes of the Stan Ackermans Institute use strict selection criteria to ensure the required high quality. Excellent marks, motivation and a design-oriented attitude are vitally important. You should also have an excellent command of the English language.

Selection

You can apply by sending your letter of application with a complete curriculum vitae and at least two letters of recommendation (in English). Suitable candidates will be invited for an interview with the selection committee of the relevant programme. Please note that each programme has different starting dates, as well as its own specific admission requirements and selection procedure. The exact requirements and selection procedure for each programme are listed on www.4tu.nl/sai. Click on ‘education’ and visit the individual website of the programme. You can also contact the coordinator of the programme.

Appointment

If you are selected for the programme, you are appointed as a trainee for the duration of the programme, up to two years. You are a member of the scientific staff and receive a salary in accordance with government regulations. Because you are a trainee, you do not have to pay a tuition fee.

Diploma and degree

On successfully completing the programme, you will receive a certified diploma. You are entitled to use the academic degree Engineering Doctorate (EngD degree) and are registered as a Technological Designer in the Dutch register kept by the Royal Institution of Engineers in the Netherlands (KIVI). The quality of the programmes is assured by an assessment and certification procedure on behalf of the Dutch Certification Committee for Courses to become Technological Designer (CCTO, Nederlandse Certificatie Commissie voor Opleidingen tot Technologisch Ontwerper).

Tom Vrancken, Alumnus EngD Software Technology

“I opted for an EngD to
> deepen my knowledge and skills about software architecture and design
> acquire practical experience with complex real-world technical problems in industry
> broaden my skill set with management and coaching skills
> get trained by experts from both academia and industry
> acquire experience with multidisciplinary and multicultural teams.”
Universities of technology in the Netherlands

4TU
www.4tu.nl

The four leading universities of technology in the Netherlands - TU Delft, Eindhoven University of Technology, the University of Twente and Wageningen University & Research have joined forces in the 4TU.Federation. This federation maximizes innovation by combining and concentrating the strengths of all four universities in research, education and knowledge transfer.

The Association of Engineering Doctorates (AEngD)

The Stan Ackermans Institute is an affiliate member of the Association of Engineering Doctorates (AEngD) – the UK-based organisation which promotes the value of the Engineering Doctorate (EngD) to government, industry and commerce. The affiliation between Stan Ackermans Institute and AEngD establishes a wider and more strategic industrial research collaboration and builds international links across the engineering research community.

TU Delft
www.tudelft.nl

TU Delft (TUD) is an entrepreneurial university at the forefront of technological development. As such it is constantly involved in furthering technological advances in the interests of society. By means of its fundamental and applied research and educational programmes, TU Delft trains the engineers of tomorrow.

Eindhoven University of Technology
www.tue.nl

Eindhoven University of Technology (TU/e), founded in 1956, is a research-driven, design oriented university of technology, with the primary objective of providing young people with an academic education within the engineering science & technology domain.

University of Twente
www.utwente.nl

University of Twente (UT), founded in 1961, is one of Europe’s finest educational resources encouraging research and entrepreneurship in both technology and social sciences. A young and innovative institute, UT is internationally respected in areas ranging from public policy studies and applied physics to biomedical technology.

Wageningen University & Research
www.wur.nl

Wageningen University & Research is the only university in the Netherlands to focus specifically on the theme ‘healthy food and living environment’. We do so by working closely together with governments and the business community.

Nastaran Bajalan, EngD trainee Software Technology

“My (confidential) project is closely related to the in-house projects I did in my first year as an EngD trainee. I am working at ASML for 10 months and I am happy to work in a a bigger team of professionals in the field, while having the autonomy of working on the specific tasks.

During my master’s in Iran, I was working in the industry as a full-stack developer and software engineer. Comparing the research and the job positions I would like to see the results in real-world applications rather than researching the basis of the field. So the important factor for me to choose an EngD was to advance my software engineering knowledge while being a part of the industry. Secondly, I wanted to work more with other people and improve on my soft skills which is one of the main focus areas in EngD programs. Thirdly, the fact that an EngD traineeship is paid, was an important motive.”

“I am working on a project based on Machine Learning Approaches for ASML.”
The 4TU.School for Technological Design, Stan Ackermans Institute offers two-year post-master technological designer programmes.

The institute is a joint initiative of the four universities of technology in the Netherlands:

TU Delft,
Eindhoven University of Technology,
University of Twente and Wageningen University & Research.

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www.4tu.nl/sai

Photography by Vincent van den Hoogen