

# Facts & Figures

2019/2020



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# Portrait

TU Delft is the largest technical university in the Netherlands and covers practically the entire spectrum of engineering sciences.

An important characteristic of TU Delft is that we not only strive to be good *at* what we do but also that we want to be good *for* something. At Delft University of Technology, we aim for a balance between pursuing world-class academic excellence, providing high quality education and developing expert solutions for societal challenges.

Also key at TU Delft is the integration of research, education and innovation. Technical-scientific knowledge is a breeding ground for our education and innovation. Conversely, the interaction with students, companies and societal partners leads to new and unexpected research questions. Research, education and innovation inspire each other.

## Vision

Delft University of Technology contributes to solving global challenges by educating new generations of socially responsible engineers and expanding the frontiers of the engineering sciences.

## Mission

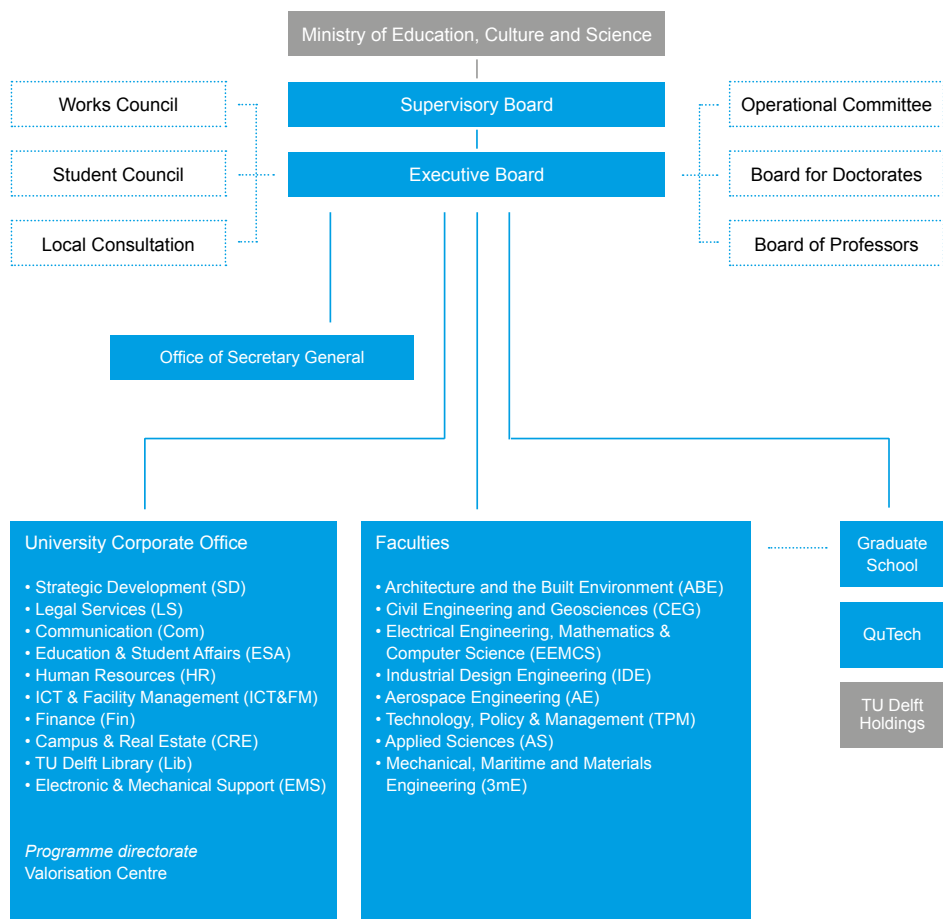
- We perform world-class research by combining science, engineering and design in a socially responsible manner. Thus, we advance and share the benefits of technology.
- We develop and enhance the expertise of tomorrow's engineering leaders and educate professional, high-level and responsible engineers throughout their careers.
- We help to develop and deliver technology-driven, innovative solutions to societal problems through collaborations with leading national and international partners whilst being firmly rooted in Delft.
- We continuously improve our collective effectiveness, performance and organisational resilience through the principles and practice of professionalism, collaboration and openness.

## Values

- Diversity
- Integrity
- Respect
- Engagement
- Courage
- Trust



# Organisation

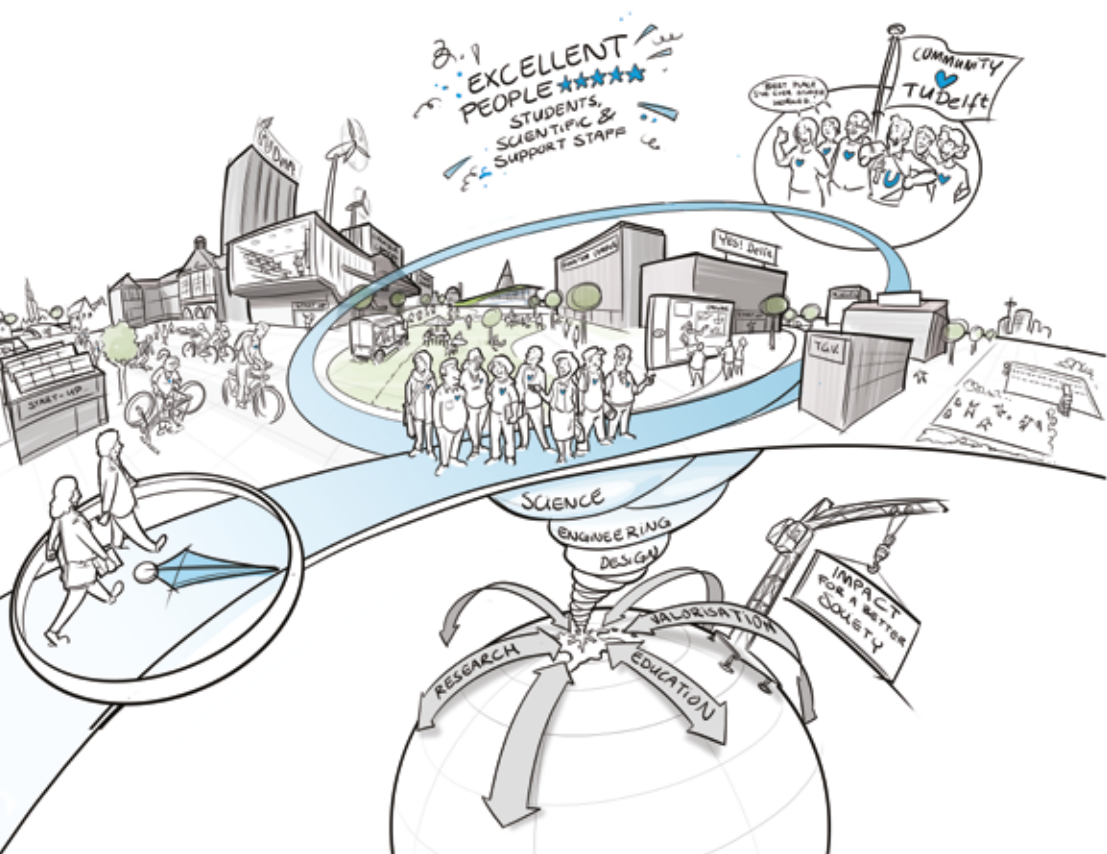


# Strategy on

	Excellence	Impact	Engagement	Openness
<b>Students &amp; Education</b>	We strengthen our ambitious study culture that is characterised by substance, challenges and academic breadth.	We prepare students for solving societal challenges and educate tomorrow's responsible leaders in science, engineering, design and innovation.	We invest in lifelong learning, offering a relevant portfolio in a global environment.	We promote and facilitate Open Education. We strengthen online education.
<b>Research &amp; Innovation</b>	We strive to increase the number of scientific focal points.	We make a significant contribution to the solution of societal challenges by combining science, technology and design in a responsible manner.	We promote outreach to the wider (local) public; we strengthen global engagement via joint research initiatives.	We promote and facilitate Open Science and Open Innovation. We increase the number of large-scale public-private partnerships.
<b>People &amp; Community</b>	We challenge our students and staff to get the best out of themselves and provide them with the necessary support to do so.	We support students and staff members to co-create and deliver solutions to community concerns.	We create stronger engagement with our alumni and people from the surrounding area; together, we build a 'TU Delft community for life'.	We are convinced of the importance of diversity, as a cornerstone for innovation. We aim to integrate internationalisation in all our core activities.
<b>Campus &amp; Services</b>	We develop excellent, user-friendly and efficient services.	We develop the campus as a multi-partner 'Living Lab' in which education, research and innovation contribute to solving societal challenges.	We gear our facilities and services to our aim to make a sustainable and responsible contribution to the region, the Netherlands and the world.	We develop our campus in such a way that we are more welcoming to interested people from the near surroundings.



# one page



# Delft University of Technology at a Glance



Education	Bachelor	Master	Personnel	fte	head-count
Programmes	16	33	Faculty staff (full, associate and assistant professor)	981	
Student population	13,081	11,151	Other scientific staff	1015	
First year students at TU Delft	3,971	1,750	Professional services	2,144	
Diplomas (2017/2018)	2,474	3,357	PhD students (total)		2,798
			out of which employed by TU Delft	1,243	
			<b>Total staff</b>	<b>5,383</b>	
Research	#		Diversity	International	Female
Full professors (fte)	265		Full professors	27%	16%
Publications (scientific & professional)	6,254		Faculty staff (full, associate and assistant professor)	37%	22%
Promotions	364		Other scientific staff	61%	26%
			Professional services	5%	48%
			PhD students (total)	69%	28%
			Bachelor students	11%	27%
			Master students	35%	29%
Valorisation	#				
Technostartups	23				
Patents in Portfolio	203				
Finances	#				
Equity	378.4				
First income stream	504.1				
Second income stream	58.4				
Third income stream	151.6				

(Figures are based on 2018)

[www.tudelft.nl/factsandfigures](http://www.tudelft.nl/factsandfigures)

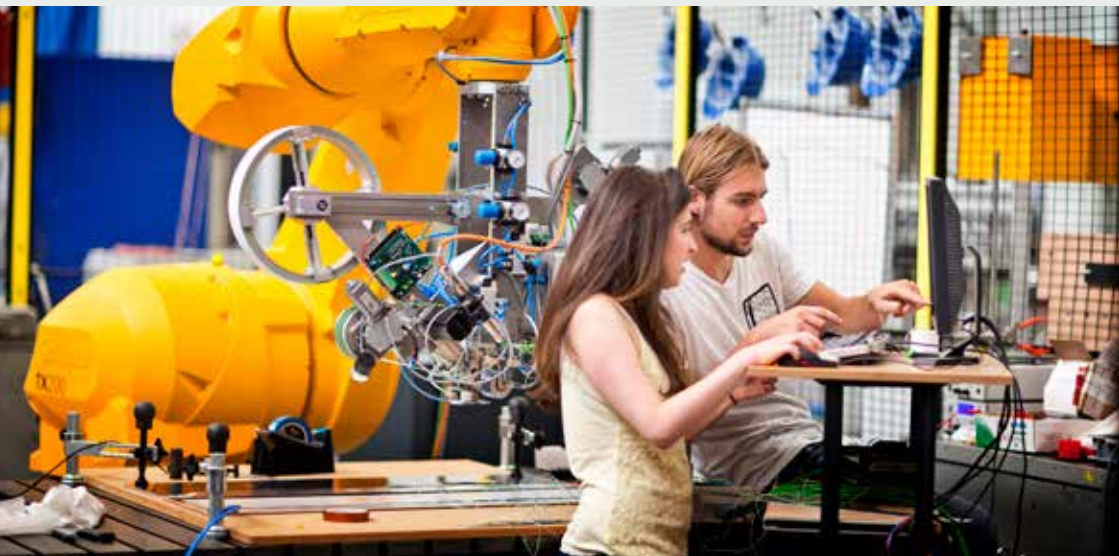
## Faculties

- Aerospace Engineering (AE)
- Applied Sciences (AS)
- Architecture and the Built Environment (ABE)
- Civil Engineering and Geosciences (CEG)
- Electrical Engineering, Mathematics and Computer Science (EEMCS)
- Industrial Design Engineering (IDE)
- Mechanical, Maritime and Materials Engineering (3mE)
- Technology, Policy and Management (TPM)



# Education and Students

- TU Delft has a portfolio of 16 BSc programmes (including four joint degrees), which cover the broad range of engineering disciplines.
- The University offers more than 30 MSc programmes, several of which are unique in the Netherlands.
- Some of these degree programmes are offered in conjunction with other higher education institutions, under the auspices of either the 4TU Federation (the collaborative venture of the four Dutch universities of technology) or our alliance with Leiden University and Erasmus University Rotterdam (LDE).
- Our MSc programmes are taught in English, as are our Applied Earth Sciences, Aerospace Engineering, Computer Science and Engineering and Nanobiology BSc programmes.
- TU Delft encourages ambitious students to participate in the Honours Programme Bachelor or Master: an extra-curricular programme designed to enrich the overall study experience.



## Bachelor's

- Aerospace Engineering
- Applied Earth Sciences
- Applied Mathematics
- Applied Physics
- Architecture, Urbanism & Building Sciences
- Civil Engineering
- Clinical Technology (joint degree)
- Computer Science and Engineering
- Electrical Engineering
- Industrial Design
- Life Science and Technology (joint degree)
- Marine Technology
- Mechanical Engineering
- Molecular Science and Technology (joint degree)
- Nanobiology (joint degree)
- Systems Engineering, Policy Analysis & Management

## Master's

- Aerospace Engineering
- Applied Earth Sciences
- Applied Mathematics
- Applied Physics
- Architecture, Urbanism & Building Sciences
- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Complex Systems Engineering and Management
- Computer Engineering
- Computer Science
- Construction Management and Engineering
- Design for Interaction
- Electrical Engineering
- Embedded Systems
- Engineering and Policy Analysis
- Geomatics
- Industrial Ecology (joint degree)
- Integrated Product Design
- Life Science and Technology
- Management of Technology
- Marine Technology
- Materials Science and Engineering
- Mechanical Engineering
- Metropolitan Analysis, Design and Engineering (joint degree)
- Nanobiology (joint degree)
- Offshore and Dredging Engineering
- Science Education and Communication
- Strategic Product Design
- Sustainable Energy Technology
- Systems and Control
- Technical Medicine (joint degree)
- Transport Infrastructure and Logistics

## Postgraduate Programmes

- Designer in Bioprocess Engineering (PDEng, Professional Doctorate in Engineering)
- Chemical Product Design (PDEng)
- Civil and Environmental Engineering (PDEng)
- European Post-master in Urbanism
- Process and Equipment Design (PDEng)
- The Berlage Post-master in Architecture and Urban Design

# Online Education



## Programmes for Professionals

- Aeroacoustics
- Automated Software Testing in Java
- Business Model Innovation
- Design & Health
- Electric Cars: Technology, Business & Policy
- Leadership Essentials for Engineers
- Photovoltaic (PV) Modeling, Simulation and Analysis
- Project Management for Engineers
- Solar Energy Engineering
- Water Management

## Professional Education Courses

- Adaptive planning for Infrastructure and Water Management
- Advanced Credit Risk Management
- Aeroacoustics: Measurement Techniques
- Aeroacoustics: Noise Reduction Strategies for Mechanical Systems
- Aerobic granular sludge for wastewater treatment - Nereda
- Air Safety Investigation
- Aircraft Performance
- Assessing and Managing Safety Culture
- Cultural Sensitive Design
- Cybersecurity for Executives: Taking the Lead
- Dealing with Ethical Dilemmas in Professional Engineering
- Decision Making Under Uncertainty: Applying Structured Expert Judgment
- Design for Values: Sharpen your Business Proposition
- Design Leadership and Innovation
- Design your Next Career Move
- Digital Manufacturing for Industrial Design
- Energy Friendly Renovation Processes
- Fiber Reinforced Polymer (FRP) Composites in Structural Engineering

- High-rate Anaerobic Wastewater Treatment
- Improving Road Safety
- Multi-stakeholder Strategies: Analysis for Winning Coalitions
- Nanofiltration and Reverse Osmosis in Water Treatment
- New Product Marketing: how to commercialize innovation
- Offshore Wind Farm Technology
- Open Data Governance: from Policy to Use
- Photovoltaic Material and Device Modeling
- Photovoltaic Systems Modeling
- Railway Engineering: Performance over Time
- Railway Engineering: Real Time Operations
- Railway Engineering: Track and Train Interaction
- ROS Industrial in the factory floor
- Smart Structures
- Strategic Leadership for Responsible Innovation
- Thing-Centered Design: A New Approach to Designing for the IoT
- Vision in Product Design

## Online Courses

- Advanced Dynamics
- Aeroelasticity
- Design of Lightweight Structures
- Fatigue of Structures & Materials
- Helicopter Performance, Stability and Control
- Introduction to Wind Turbines
- Linear Modelling (including FEM)
- Modeling, Simulation and Application of Power and Propulsion Systems
- Non-linear modelling
- Rotor and Wake Aerodynamics

# MOOCs in 2019



Photovoltaic Technologies



Photovoltaic Energy Conversion



Sustainable Energy



Leadership for Engineers



Framing



Responsible Innovation



Photovoltaic in Microgrids



Photovoltaic Systems



Introduction to Solar Energy



Cyber Security Economics



Topology of Condensed Matter



Pre-University Calculus



Quantum Cryptography



Data Analysis to the MAX()



Advanced Transport Phenomena



Credit Risk Management



Observation Theory



Building with Nature



Quantum Internet & Computers



Data Analysis: Dashboard



Big Data Strategies



Delft Design Approach



Image | Ability



Functional Programming



Geoscience



Management of Engineering Projects



Sustainable Building Adaption



Design Practice in Business



Solving Complex Problems



Basic Transport Phenomena



Mastering Complexity



Funding of Projects Successfully



Mind of the Universe



Design in Healthcare



Industrial Biotechnology



Design Through Physical & Digital Models



Effective Decision Making



Influence Stakeholders



Communicate Effectively



Rethink the City



Automated Software Testing



Adv. Automated Software Testing



Introduction to Structured Expert Judgment



Waste Management and Critical Raw Materials



Hyperloop: Changing the Future of Transportation



Sustainable Packaging in a Circular Economy



Building Blocks of a Quantum Computer 1



Building Blocks of a Quantum Computer 2

# and 2020



Urban Sewage Water



Water & Climate



Sustainable Urban Development



The Value of Business Models



Future of Wind Energy



Sustainable Urban Freight Transport



Drinking Water Treatment



Aeronautical Engineering



Business Model Metrics & Tools



How to Design a Business Model



Dutch Urbanism



Big Data Strategies



Open Government



Nuclear Energy



Business Model Implementation



Business Model Testing



Programmeren voor kinderen



Programming for Kids



Next Generation of Infrastructure



Healthy Aging in 6 Steps



Entrepreneurship for Engineers



Railway Engineering



Programmeren voor leerkrachten



Programming for Teachers



Circular Economy



Entrepreneurship for Global Challenges



Engineering Design for a Circular Economy



Globally Distributed Software Engineering



Co-Creating Sustainable Cities



Forensic Engineering



Electric Cars: Introduction



Electric Cars: Technology



Electric Cars: Business



Electric Cars: Policy



ROS: Robot Operating System



Building Tomorrow's Responsible Firms



Biobased Products



Zero Energy Design



Engineering Walking & Cycling Networks



Circular Economy for a Sustainable Built Environment



Mathematical Modelling



Inclusive Energy Systems



Open Science: Sharing Your Research



Análisis de datos: Llévalo al MAX()



Diseño y Visualización de Tableros



# Scientific Focus



## Architecture and the Built Environment

- Architecture
- Architectural Engineering + Technology
- Management in the Built Environment
- Urbanism

## Civil Engineering and Geosciences

- Engineering Structures
- Geoscience & Engineering
- Geoscience & Remote Sensing
- Hydraulic Engineering
- Material, Mechanics, Management & Design
- Transport & Planning
- Water Management



## Industrial Design Engineering

- Design Engineering
- Industrial Design
- Product Innovation Management

## Technology, Policy and Management

- Engineering Systems & Services
- Multi-Actor Systems
- Values, Technology & Innovation





## Aerospace Engineering

- Aerodynamics, Flight Performance and Propulsion & Wind Energy
- Aerospace Structures & Materials
- Control & Operations
- Space Engineering

## Applied Sciences

- Bionanoscience
- Biotechnology
- Chemical Engineering
- Imaging Physics
- Quantum Nanoscience
- Radiation Science & Technology



## Mechanical, Maritime and Materials Engineering

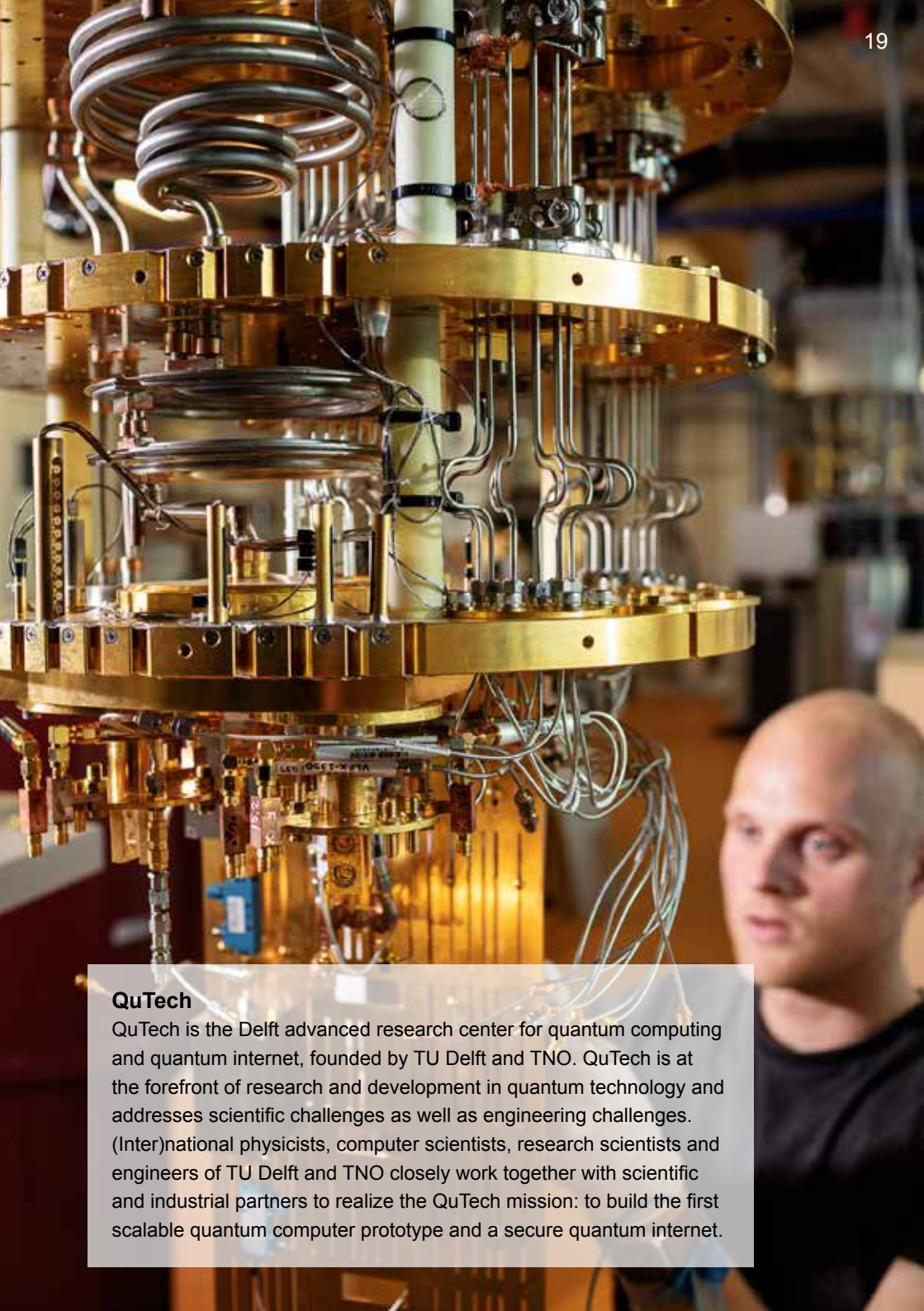
- Biomechanical Engineering
- Cognitive Robotics
- Maritime & Transport Technology
- Materials Science & Engineering
- Precision & Micro-systems Engineering
- Process & Energy
- Systems & Control



## Electrical Engineering, Mathematics and Computer Science

- Applied Mathematics
- Electrical Sustainable Energy
- Intelligent Systems
- Microelectronics
- Quantum & Computer Engineering
- Software Technology





## QuTech

QuTech is the Delft advanced research center for quantum computing and quantum internet, founded by TU Delft and TNO. QuTech is at the forefront of research and development in quantum technology and addresses scientific challenges as well as engineering challenges.





(Inter)national physicists, computer scientists, research scientists and engineers of TU Delft and TNO closely work together with scientific and industrial partners to realize the QuTech mission: to build the first scalable quantum computer prototype and a secure quantum internet.

# Delft Research- based Initiatives

The purpose of the TU Delft Research-based Initiatives (DRI's), established in 2009, is to contribute to solving societal challenges within four themes: Health, Energy, Global Development, and Deltas, Infrastructures & Mobility. The Initiatives engage with societal and industrial partners, and highlight innovative science, engineering and design. In addition to stimulating multidisciplinary research that is in line with (inter)national agendas, the initiatives also have a strong inspirational effect on students and education.

As from 2020, the DRI's are set on a new course. Now that they have laid a broad foundation for collaborative research at the TU Delft, they will build upon this base and concentrate on a selected number of promising focal areas.

## Delft Research-based Initiatives

	Energy	Deltas, Infrastructures & Mobility	Health	Global
				
Objective	Energy innovation for sustainable energy provision	Vital Infrastructures for Water Safety and Smart Mobility	Technological research for medical and health care innovations	Science and Technology for Global Development
Research themes	Wind and solar energy Smart energy networks (Chemical) storage Energy efficiency in design, industry and the built environment Geo-energy/heat	Urban infrastructures Airport of the future Urbanising Delta's	Medical imaging & Image guided medicine Interventions & Care Targeted molecular technology Vitality	Water Urbanisation Healthcare Energy Disaster resilience and response

# TU Delft Institutes

Within TU Delft, high-quality research capacity is clustered - either physically or virtually - into several University-wide institutes: the TU Delft Institutes. This organisational structure helps to strengthen the scientific focus and to enlarge the critical mass. In this way TU Delft aims to enhance its external profile with a view to better positioning itself to join national and international consortia and networks, and to become more attractive to top scientific talent.



## TU Delft Institutes running in 2019:

Name Institute	Focus	Start	Faculties
Bioengineering	<ul style="list-style-type: none"> <li>• Biomass based products</li> <li>• Environmental bioengineering</li> <li>• Bioengineering for health</li> </ul>	2016	AS, CEG, EEMCS, 3mE
Climate	<ul style="list-style-type: none"> <li>• Urban Climate</li> <li>• Ice and Sea-level Change</li> <li>• Water Cycle</li> <li>• (Engineering the) Radiation Balance</li> </ul>	2012	CEG, EEMCS, TPM, AE, ABE (AS, 3mE)
Computational Science & Engineering (DSCE)	<ul style="list-style-type: none"> <li>• Computational Fluid Dynamics</li> <li>• Mechanics and Structures</li> <li>• Solids</li> <li>• Socioeconomics &amp; Life</li> </ul>	2016	EEMCS, CEG, AS, 3mE, AE, TBM
Design for Values (DDFV)	<ul style="list-style-type: none"> <li>• Responsible innovation</li> <li>• Incorporation of values in technology by design</li> <li>• Resolving conflicts between values</li> <li>• Assessment of design for values</li> </ul>	2017	TPM, ABE, EEMCS, IDE
Optics Centre (DOC)	<ul style="list-style-type: none"> <li>• Spectrometry</li> <li>• Imaging</li> <li>• Metrology</li> </ul>	2017	AS, 3mE, AE (partner: TNO)
PowerWeb Institute	<ul style="list-style-type: none"> <li>• Integrated and intelligent energy systems</li> <li>• Electrical power infrastructure of the future</li> <li>• Energy system integration</li> <li>• Creating access to affordable reliable, sustainable and modern energy for all</li> </ul>	2019	EEMCS, AE, IDE, TPM, 3mE
Process Technology (DPTI)	<ul style="list-style-type: none"> <li>• Biochemical process engineering</li> <li>• Process intensification</li> <li>• Process technology for advanced materials</li> </ul>	2012	AS, 3mE
Robotics	<ul style="list-style-type: none"> <li>• Swarm robotics</li> <li>• Robots that work</li> <li>• Interactive robots</li> </ul>	2012	TPM, AE, IDE, EEMCS, 3mE, ABE
Safety & Security (DSyS)	<ul style="list-style-type: none"> <li>• Integrating Cyber – Physical Safety &amp; Security</li> <li>• Interdependency &amp; Complexity in Safety &amp; Security</li> <li>• Integrating approaches to Safety &amp; Security</li> </ul>	2013	EEMCS, CEG, AS, TPM, AE
Space (DSI)	<ul style="list-style-type: none"> <li>• Sensing from space</li> <li>• Space robotics</li> <li>• Distributed space systems</li> </ul>	2015	AE, AS, EEMCS, CEG, 3mE
Sports Engineering	<ul style="list-style-type: none"> <li>• Aero- and hydrodynamics</li> <li>• Biomechanics, materials and human / material interaction</li> <li>• Measurement, feedback and simulation</li> <li>• Motivation</li> <li>• Sports infrastructures and facilities</li> </ul>	2014	3mE, IDE, AE, EEMCS, TPM
Transport	<ul style="list-style-type: none"> <li>• Coordinated, cooperative and automated transport</li> <li>• Urban mobility &amp; active modes</li> <li>• Transport policy &amp; behaviour</li> <li>• Logistics &amp; freight transport</li> <li>• Railway Systems</li> </ul>	2012	CEG, EEMCS, TPM, 3mE
Wind Energy (DUWIND)	<ul style="list-style-type: none"> <li>• Energy Market integration</li> <li>• System Integration</li> <li>• Offshore Wind Farm design and asset management</li> <li>• Wind Turbine Design</li> <li>• Airborn Wind Energy</li> </ul>	2012	AE, CEG, EEMCS, 3mE, TPM

# Technology Transfer

Valorisation concerns the creation of social and economic value based on scientific knowledge and skills. The TU Delft Valorisation Centre stimulates and facilitates technology transfer and provides the necessary support for TU Delft scientists and support staff. This includes supporting researchers in attracting funding for research projects, setting-up innovative R&D initiatives and coordinating these large-scale programmes and projects, the management and commercialisation of intellectual property, business development and establishing and maintaining long-term relationships with commercial partners.



National grant agreements

In 2018, TU Delft scored well within the NWO (Netherlands Organisation for Scientific Research) grants. Public-private partnerships are and will be even more important for TU Delft and the funding teams within the Valorisation Centre will continue to support that. There are different funding schemes to support public-private partnership, one of them is the Public Private Partnership Allowance of the Ministry of Economic Affairs.

<b>NWO Innovational Research Incentives Scheme</b>	<b>13</b>
Veni	7
Vidi	5
Vici	1
<b>NWO Rubicon</b>	<b>4</b>
<b>NWO Gravitation Programme</b>	<b>0</b>
<b>NWO Perspective Programme</b>	<b>5</b>
coordinator	2
beneficiary	3
<b>NWO Take Off</b>	<b>11</b>
Phase I	11
Phase II	0
<b>NWO Open Technology Programme (OTP)</b>	<b>9</b>

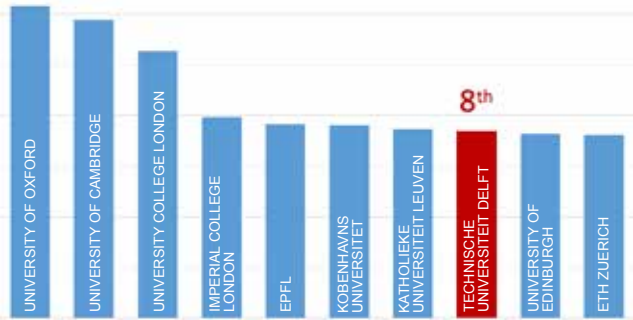
EU Personal grants 2018

Starting ERC Grant	8
Consolidator ERC Grant	2
Advanced ERC Grant	0
MSCA-IF	5

European grant agreements

TU Delft scores very well on obtaining EU funding in the field of Excellent Science, such as funding from the European Research Council (ERC) and Marie Skłodowska Curie Actions (MSCA). Moreover, TU Delft has often won the coordinatorship of project consortia. Among other things, TU Delft coordinates the EU projects AndQC and FASTEN. As far as obtaining EU funding is concerned, TU Delft is in the top 10 in the EU (8th) and number 1 in the Netherlands.

TOP 10 UNIVERSITIES HORIZON 2020



6 EU projects granted where TU Delft is coordinator

Acronims

AndQC, FASTEN, MOVINGRAIL, QIA, RURALIZATION, SAMOSA FER

Cooperation with companies

In 2018, a great deal of attention has been devoted to the Dutch top sector policy and the further development of partnerships with both large innovative companies and small and medium-sized enterprises (SMEs). With SMEs various collaborations have been set up at the YES!Delft incubator and at our testing grounds, such as RoboValley and The Green Village.

X!Delft

For the collaboration with large companies, X!Delft was launched in early 2019. X!Delft closes the gap between academics and corporations with ambition. Based on both the strategic challenges of the corporate partners and the scientific challenges for the researchers, X!Delft is expected to lead to intensive experimentation and innovation within the entire innovation ecosystem around TU Delft. By offering strategic collaborations to inspire, experiment, spark entrepreneurship and develop talent, X!Delft is leading the way in co-innovation.

Entrepreneurship

TU Delft has always been an entrepreneurial university. Over the last 175 years, many inventions and ground-breaking research found their way from the laboratory to society. Large corporations start small, originated from a student or researcher, and TU Delft takes pride in the number of spin-outs that originate here.

Delft Enterprises

Delft Enterprises B.V. participates in innovative, early stage and technology-based spin-off companies of TU Delft. The aim is to empower and speed up the development of these startups, as part of the ambition of the university to turn scientific knowledge into economic value.

Delft Enterprises 2018

New spin-offs in portfolio	5
Exits	1
Total spin-offs in DE portfolio	55
Total funding raised by portfolio companies	>100.000.000

Intellectual Property 2018

Announcement new findings	77
New submitted patents	46
Contracts closed	12
Patents commercialised	11
Total patents in portfolio	203

**TU Delft Experimental locations\***

Fieldlabs	Valorisation programme Deltatechnologie & Water (VPdelta)	Programme that creates fieldlabs where start-ups, scale-ups, SMEs, students and scientists test, improve and demonstrate concepts
	RoboHouse	Smart Industry Fieldlab for Advanced Cognitive Robotics Applications
	Proeftuin op de Noordzee	Offshore test site for the maritime sector
	Fieldlab Unmanned Valley Valkenburg	Test Center for Unmanned Innovation
	SAM XL	The Innovation Accelerator for the Advanced Manufacturing Industry, Technology Suppliers and Research (Smart Advanced Manufacturing XL)
	RADD (Researchlab Automated Driving Delft) and RAS (Researchlab Autonomous Shipping)	Open-air testing sites for automated driving and shipping, enabling experimenting with automated transportation in real-life conditions.
Living Labs	Medical Delta Living Labs	Real-life experimental environments for the health care sector
	Amsterdam Institute for Advanced Metropolitan Solutions (AMS institute)	Institute that uses the city of Amsterdam as a living lab for integrated metropolitan solutions
	The Green Village	Living Lab for the acceleration of sustainable innovations
Public-private innovation clusters:	QuTech	QuTech is the advanced research centre for Quantum Computing and Quantum Internet, founded by TU Delft and the Netherlands Organisation for Applied Scientific Research (TNO)
	RoboValley	RoboValley drives the innovation of cognitive robotics by setting up fieldlabs, growing a startup community and by connecting relevant parties in the field of robotics.
	Holland PTC	HollandPTC is an independent outpatient centre in Delft that provides proton therapy to patients. The centre was jointly established by Erasmus MC, LUMC and TU Delft.

\* TU Delft Research Labs not included

# TU Delft Alumni



TU Delft is very proud of its alumni and is strengthening its relationship with them and involving them more in what is going on at their alma mater. This is done under the motto 'TU Delft for Life'.

We have an alumni community of 100,000 members (79% of them male and 21% female). We welcomed 2,071 MSc graduates (65.8% of them Dutch) and 371 PhD graduates (25% of them Dutch) to our alumni community last year.

We are able to connect with almost 75% of our alumni and keep them up-to-date via newsletters, the *Delft Outlook* magazine, national and international events, LinkedIn and our online community 'TU Delft for Life'. To help alumni broaden or deepen their knowledge, they are offered TU Delft online courses at a discount.



Alumni gathering in San Jose (CA), USA

## International communities

Most of our alumni still live in the Netherlands, but around 25% live abroad and for them TU Delft organises international alumni gatherings. Last year, these were held in several countries including the USA, Germany, China and France. In some places these events were organised jointly with the other three technical universities in the Netherlands (under the flag DEAN: Dutch Engineers Alumni Network). Over 100 alumni work internationally and in the Netherlands as volunteers for TU Delft and help organise these events.

### Top 10 Countries where alumni live

The Netherlands	84,604
USA	2,953
Germany	2,270
United Kingdom	2,011
Belgium	1,626
Spain	1,450
China	1,153
France	1,089
Switzerland	1,028
Australia	904

### Top 10 Employers where alumni work

Shell	906
ASML	818
Rijkswaterstaat	687
TNO	660
Royal Haskoning DHV	606
Philips	476
KLM	285
Arcadis	278
ING	255
ABN AMRO	227

Source: LinkedIn, July 2019

## Stay involved

In total, almost 3,000 alumni visited 56 events in the Netherlands and abroad last year, including the TU Delft for Life | Xperience Day on 4 June 2019 in Delft. During this event, Joop Roodenburg was elected Alumnus of the Year and his name was added to the Alumni Walk of Fame. Joop graduated from TU Delft in mechanical measurement and control engineering in 1977 and is now President of Huisman Equipment.



From left to right:

Drs. Evelyn Esveld (Director Alumni Relations & Delft University Fund), Alumnus of the Year Ir. Joop Roodenburg (president Huisman Equipment) and Prof. Tim van der Hagen (Rector Magnificus and President of the Executive Board)

# University Fund

## **Team up with excellence**

TU Delft is teeming with talent. That talent is driven by passion for technology and the ambition to make a difference in the world. Delft University Fund supports TU Delft by contributing to research, education and talent development. With the help of alumni, staff, foundations and companies interested in science, the Fund does everything possible to help students and scientists to excel and make an impact on society.

## Research with impact

Delft University Fund supports pioneering research with great social impact such as:

### Algorithms against Alzheimer's

The research group of prof.dr.ir. Marcel Reinders, affiliated with the Faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS), conducts research into Alzheimer's disease. They compare the DNA and protein data of Alzheimer's patients to those of people who do not have the disease.



### Can algae replace chromium-6?

Extraordinary things are happening in Dr. Santiago Garcia's laboratory at the Faculty of Aerospace Engineering. His research group is working on new solutions for existing problems in the field of aircraft materials. The group is currently achieving great success using algae in the development of a safe and environmentally friendly corrosion protector to replace the carcinogenic chromium-6.



### Yeast against dementia

Dr. Mark Bisschops, affiliated with the Faculty of Applied Sciences, has developed a unique research method that can lead to a breakthrough in dementia. He uses specially cultured yeast cells as a model for human brain cells.



## Best of TU Delft

Delft University Fund annually presents the TU Delft Best Graduate Award and the Professor of Excellence Award, to showcase the Best of TU Delft and to inspire others to make the most of their time at TU Delft.



*TU Delft Best Graduate Award Ceremony, 12 November 2019*



*Professor of Excellence 2019  
Prof. dr. Jenny Dankelman  
2 September 2019*

**For more information, please visit [www.universiteitsfondsdelft.nl](http://www.universiteitsfondsdelft.nl)**

# Global Engagement & Partnerships



Singing an MoU with FSU, ASML, Carl Zeiss and TNO

## Strategic network membership in the Netherlands and Europe

**4TU:** Eindhoven University of Technology, Twente University, Wageningen University, TU Delft

**LDE:** Leiden University, TU Delft, Erasmus University Rotterdam

**CESAER:** 53 Universities of Technology in Europe

**IDEA LEAGUE:** ETH Zurich, RWTH Aachen, Chalmers University of Technology, Polytechnic Milan, TU Delft

**EUA:** European Universities Association

## Global Engagement

Partnerships are crucial for the TU Delft to be able to find innovative solutions creating impact for tackling today's global challenges and sustainable development goals (SDG) in both the regional and international context. The TU Delft's partnership portfolio includes worldwide academic and research institutions as well as builds on an extensive network with (semi) government, NGO, health sector and business partners. With a participation in these selective global alliances and networks the TU Delft will continue to pro-actively seek a position to influence and assure its visibility as an academic institution in both local and global ecosystems of broad stakeholders with a shared focus and aim to create Global Impact.

The basis of research and education partnerships originates from carefully established 'bottom-up' faculty relations: personal contact in researcher-to-researcher networks where curiosity and focus brings together academics on matching

expertise creating synergy. Some of these TU Delft's short and long term academic collaborations have grown into a number of exclusive joint theme-based research-programme initiatives in both Europe and beyond.

To actively further support academics in strengthening and broadening their collaborations into long-term relations as well as to encourage explicit focus on the importance of the university's position in the world, the TU Delft is embarking on a more focused Global Engagement and Partnership approach. Between 2018-2024 the TU Delft aims to strengthen its relations with a select number of worldwide strategic university partners. In addition, the TU Delft will position focused research fields for scientific collaboration with partners in Brazil, China and India. While through the Delft Global Initiative the university wishes to boost science and technology for global development and impact in Sub Saharan Africa and South-East Asia.



Beijing Institute of Technology (BIT) visiting



Singing a cooperation agreement with UNICAMP, Brazil



## Living Campus

### An Inspiring Campus

TU Delft is at the centre of an attractive 'living campus' that offers a varied and inspiring environment for students, scientists, employees, entrepreneurs, companies and visitors. An innovative learning and working environment that stimulates and facilitates meetings, interaction and innovation. We continue renewing the campus to provide the best facilities at all times. We want to do this in a responsible manner and are firmly committed to the principles of sustainability.

### Education facilities

Within TU Delft we facilitate excellent teaching, and we have inspiring educational spaces to support this. Many of the faculty's education rooms (lecture rooms, self-study spaces, project and computer rooms) have been modernised and refurbished. The new education building Pulse and the Teaching Lab are good examples of an inspiring learning environment that facilitates new forms of education on campus.

### Research facilities

To attract and facilitate outstanding scientific talent, conduct ground-breaking research and train new generations of engineers, TU Delft heavily relies upon excellent research facilities. We use our campus as a living lab which makes it possible for us and our research partners (for example TNO, Deltares and Microsoft) to test for example the real-life practicality of computer models. This is done on a large scale; a defining element of TU Delft's profile within the international research landscape.

### Companies and employment (2018)

Total number of established companies:	245
--	-----

Of which spin-offs:	150
---------------------	-----

Of which startups:	50
--------------------	----

Employment:	2610 jobs
-------------	-----------

Of which spin-offs:	1000 jobs
---------------------	-----------

Of which startups:	200 jobs
--------------------	----------

**Largest companies:**

- ABB
- Microsoft
- 3M
- Applikon
- Exact

**Largest institutes:**

- TNO
- Deltares
- VSL – NMI
- Haagse Hogeschool
- InHolland

**Living Campus:**

- Various catering clusters and supermarket
- Sports and cultural facilities
- Housing for students
- Regular events on campus
- Freezones: meeting and workspaces outside
- Mekelpark: the green heart of the campus





## Co-creation at TU Delft Campus

### High-quality ecosystem

The TU Delft Campus is a high-quality innovation ecosystem where researchers, companies, startups and knowledge institutions work together on groundbreaking new technologies. What sets the campus apart are the hotspots for co-creation and co-innovation: our various fieldlabs and innovation clusters around scientific themes such as quantum (QuTech) and robotics (RoboValley).

### Corporate partners

TU Delft has traditionally been an entrepreneurial university, resulting in many startups and spin-offs. With YES!Delft we have the largest tech incubator in Europe, but many established, large companies want to be here as well. These companies are our partners: they share our ambition, collaborate with our researchers and are part of the community.

### Community

The community on the TU Delft Campus adds the oxygen to the ecosystem. With high-quality research facilities, attractive hospitality, co-working spaces, various campus events and the development of real estate, we ensure that the TU Delft Campus is an attractive place to work, live and visit.

# Research Facilities



### **Aerospace Engineering**

- Aeroplane Hangar
- Cessna Citation II Jet Aircraft
- Cleanroom for Satellite Building
- Flight Arena 'Cyberzoo'
- Flight Simulator Simona
- Kite Laboratory
- Micro Air Vehicle Laboratory
- Propulsion Lab
- Structures & Materials Lab
- Wind Tunnels (Low and High Speed Tunnels)

### **Applied Sciences**

- Chemical Labs
- Fermentation Labs
- Molecular biology Labs
- Bioprocess Pilot Facility
- Imaging Facility
- Advanced Imaging Labs
- Laser Labs
- Cleanrooms
- Nuclear Research Reactor, incl. Neutron and Positron Beam-line Instruments and Irradiation Facilities

### **Architecture and the Built Environment**

- SenseLab
- Chair Collection
- The Lightvan
- Bucky Lab
- Product Development Test Lab
- VR-Lab
- The Sandbox
- Heritage & Technology Laboratory

### **Civil Engineering and Geosciences**

- Cloud Lab
- Geodesy/GNSS Lab
- DiTT-Lab
- Smart Vehicle Lab
- Research Lab Automated Driving Delft
- Drones for Traffic and Geological Research
- CT Scanner
- High Pressure & Temperature Facilities
- Geo-technical Centrifuge
- Macro Lab
- Micro Lab
- Biohazard 1 Wastewater Treatment Lab (ML1 lab)
- Water Engineering Experimental and Analytical Lab (e.g. GC, IC, HPLC, Water Isotopes)
- Flooms for Waves, Currents and Sediment Transport
- Jetski Mobile Platform for Coastal Fieldwork
- Urban Mobility Observatory
- Ruisdael Observatory for atmospheric research



### **Industrial Design Engineering**

- Applied Labs
- Connected Everyday Lab
- Emerging Materials Lab
- Foundational Labs
- ID-StudioLab
- Model making and Machine Lab
- Perceptual Intelligence Lab
- Physical and Ergonomics Lab
- Product Evaluation Lab

### **Mechanical, Maritime and Material Engineering**

- Cleanroom for Micro/Nano Engineering Lab
- Driving and Racing Simulator Labs
- Fluid Mechanics Lab
- Graphene and Thin Film Deposition Lab
- Materials Lab
- Mechatronics Lab
- Perfect Reactors Lab
- Process Technology Lab
- Robotics Lab
- Flume Tank and 2 Towing Tanks
- Delft Lab for Neuromuscular Control
- AGV-Lab
- Optics Lab
- Fuel Cell Lab
- Hexamove/-pod
- Cavitation Tunnel

### **Electrical Engineering, Mathematics and Computer Science**

- Else Kooi Lab, Cleanroom for Microsystems
- Electrical Sustainable Power Lab
- INSYGHTLab for Computer Vision, Interactive Intelligence and Visualisation
- Radar Labs with PARSAX and MECEWI Radars and the Radar Facilities TARA and IDRA
- DUCAT Antenna Measurement Chamber
- Photovoltaics Laboratory
- Social Data Lab
- Tellegen Hall

### **Technology, Policy and Management**

- Gamelab
- Humanitarian Technology Lab
- Policy Modelling Lab
- Simulation Lab

# History of the University

## Royal Academy

On 8 January 1842, King Willem II founded the 'Royal Academy for the education of civilian engineers, to serve both nation and industry, and of apprentices for trade'. The academy also educated civil servants for the colonies and revenue officers for the Dutch East Indies.



1842-1864

1864-1905



## Polytechnic School

An Act was passed on 2 May 1863 imposing regulations on technical education as well as bringing it under the influence of the rules applying to secondary education. Then, on 20 June 1864, a Royal Decree was issued ordering the Royal Academy in Delft to be disbanded to make way for a new 'Polytechnic School'. The school went on to educate architects and engineers in the fields of civil engineering, ship-building, mechanical engineering and mining.

### Institute of Technology

On 22 May 1905, an Act was passed acknowledging the academic level of the Polytechnic School's technical education and it became a Technische Hogeschool, or Institute of Technology. Queen Wilhelmina attended the Institute's official opening ceremony on 10 July 1905. The Institute's first Rector Magnificus was the Professor of Hydraulic Engineering ir. J. Kraus. The Institute was granted corporate rights by an Act passed on 7 June 1956.



1905-1986

1986-present

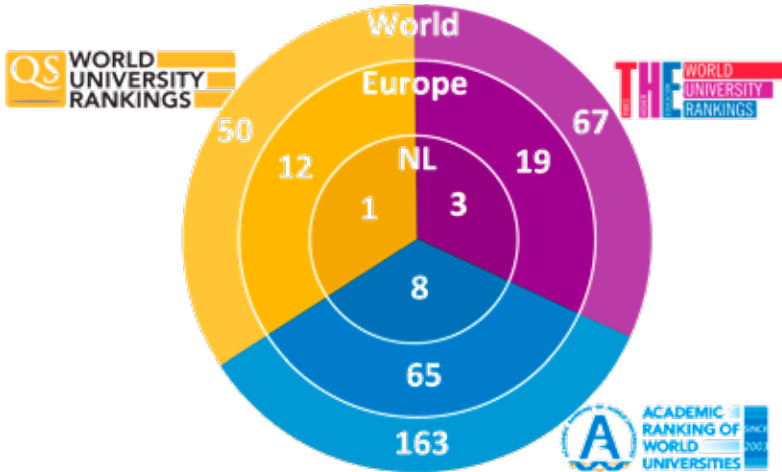


### Delft University of Technology

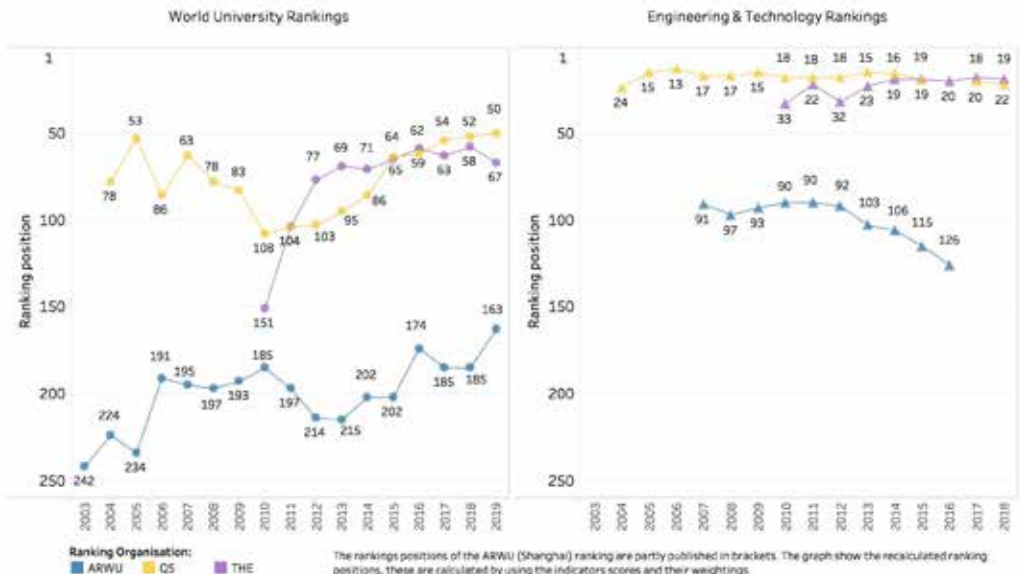
An Act which took effect on 1 September 1986 officially transformed the Institute of Technology into Delft University of Technology, abbreviated to TU Delft from the Dutch name *Technische Universiteit Delft*.

# Rankings

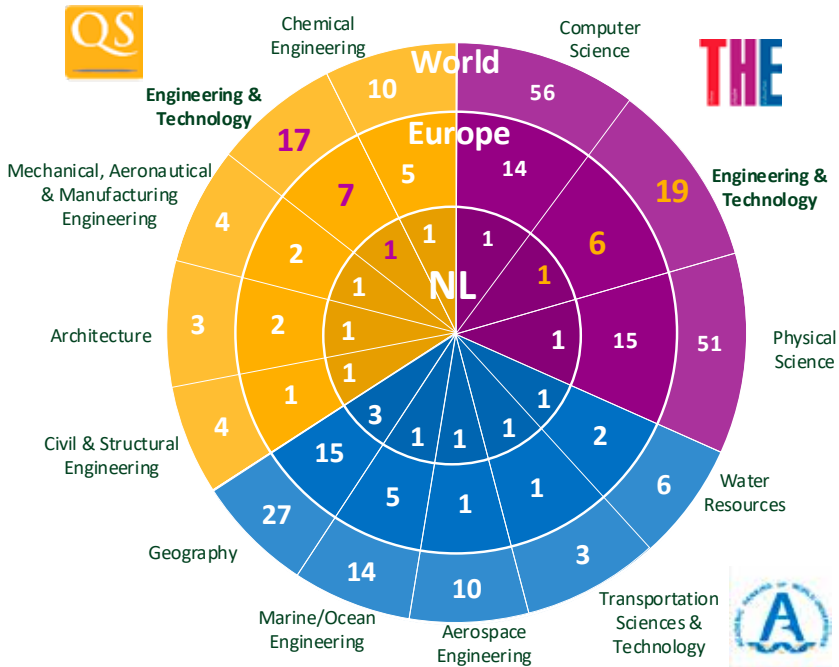
## Position TU Delft in World University Rankings



## Trends in QS, THE and ARWU Rankings



## Position TU Delft in Subject Rankings



## TU Delft in various rankings

Ranking organisation	Edition	Focus			
QS	2020	Graduate Employability Ranking	37	8	1
Times Higher Education	2018	Global University Employability Ranking	55	23	1
Times Higher Education	2019	Most international universities in the world top 200	18	12	1
Times Higher Education	2018	Reputation ranking top 100	51-60	12	1
CWTS Leiden Ranking	2019	Industry collaboration	22	13	2
CWTS Leiden Ranking	2019	PP top 1 % in All Sciences	74	23	1
CWTS Leiden Ranking	2019	PP top 10% in All Sciences	112	43	8
CWTS Leiden Ranking	2019	PP top 50% in All Sciences	76	29	8
Reuters	2019	Top 100 Europe's Most Innovative Universities	16	16	1

# D:DREAM Teams

Living the D:DREAM, it is not just a job for just any student team. Only the chosen teams receive the status of 'D:DREAM team'. But what is a D:DREAM team exactly and what does D:DREAM stand for? D:DREAM stands for 'Delft: Dream Realisation of Extremely Advanced Machines'. Those machines can be anything actually, from human powered submarine to hydrogen-electric race car. They are for instance characterised by their extreme energy efficiency, being powered by sustainable energy or by their technical novelty.

The D:DREAM Hall, the building on campus that never sleeps, forms most teams' headquarters. The multidisciplinary teams in here work hard to perform only the outstanding at the end of the year. They show the world that, with their approach, boundaries can be pushed far. The students are driven, a little bit stubborn, but also realistic. During the year, they learn to use their strengths and to bypass the pitfalls. This turns the team members into outstanding engineers. Notably is that they are solely responsible for all tasks, from team management to the design and production of their inventions. They do it all themselves, at the D:DREAM Hall, where dreams become reality.



<b>AeroDelft:</b>	As one of the newest teams, AeroDelft develops the very first airplane powered by hydrogen. The first flight is planned in 2021.
<b>DARE:</b>	The Delft Aerospace Rocket Engineering team designs, builds and launches rockets. With their Stratos-project, they try to reach space as the first amateur built rocket. The launch is planned in 2020.
<b>Delft Hyperloop:</b>	The Delft Hyperloop designs and builds a hyperloop pod, a high speed transport system in a vacuum tube, and competes in the SpaceX Hyperloop Pod Competition.
<b>Eco-Runner:</b>	The Eco-Runner team builds a super-efficient hydrogen powered vehicle and participates in the Shell Ecomarathon.
<b>Formula Student Team:</b>	The Formula Student Team builds an electric race car with which they participate in several Formula Student competitions. Since this year, they also work on an autonomous electric kart.
<b>Forze Hydrogen Electric Racing:</b>	Forze Hydrogen Electric Racing designs and builds as only student team in the world a full-size race car powered by hydrogen and competes as only team in the world against professional conventional petrol cars.
<b>Human Power Team:</b>	The Human Power Team tries to break the human powered speed record with their VeloX bicycle during the World Human Powered Speed Challenge at Battle Mountain.
<b>iGEM:</b>	iGEM develops a manipulated biosystem with DNA-technology and competes in the iGEM competition.
<b>Project MARCH:</b>	Project MARCH develops an exoskeleton for paraplegics. With this exoskeleton, they compete in the Cybathlon Experience, a race with different obstacles for exoskeletons.
<b>MOR:</b>	MOR designs and builds a circular, modular and self-sufficient office building and competes in the Solar Decathlon Europe.
<b>Nova Electric Racing:</b>	Nova Electric Racing builds an electric track motor and competes in the MotoE competition.
<b>Silverwing:</b>	Silverwing develops an autonomous and electric personal flight vehicle for the GoFly competition.
<b>TU Delft Solar Boat Team:</b>	The Solar Boat Team designs and builds a solar-powered boat with which they participate in the Monaco Solar & Energy Boat Challenge.
<b>Vattenfall Solar Team:</b>	The Vattenfall Solar Team develops a solar-powered car with which they compete in the Bridgestone World Solar Challenge in Australia and the Sasol Solar Challenge in South-Africa.
<b>WASUB:</b>	WASUB aims for breaking the speed record for human-powered submarines during the International Submarine Race.

# The City of Delft

## City of Delft statistics

Square kilometres: 24

Population: 103,169

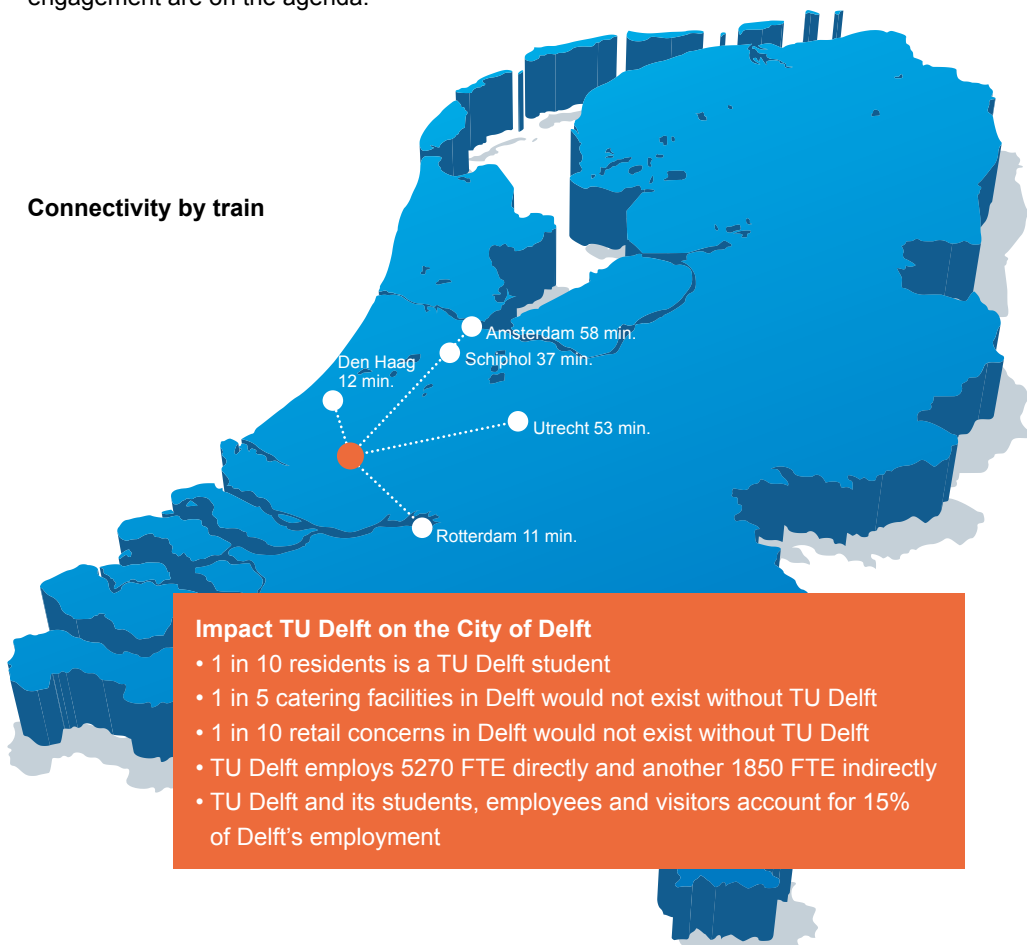
Cafés, bars and restaurants: 220



Delft is a historical city that was established in the 13th century with a rich history including the world-famous Delft Blue china, celebrated painters such as Johannes Vermeer and scientists such as the inventor of the microscope Antoni van Leeuwenhoek. Delft's slogan is: 'Delft, creating history'. The city of Delft is strategically located at the heart of the Dutch knowledge economy and is within easy reach of the TU Delft campus by bike or public transport. The close connection between the city and the University brings together the best of both worlds.

Over the past two decades, Delft has rapidly transformed from an industrial centre into a hub for the Dutch knowledge economy. But Delft is also constantly looking to the future to ensure the city remains vibrant and prosperous. The university and companies based in Delft play an important role in this mission. The University and the city work more and more together in order to become a strong team in the battle for brains. Internationalisation, accessibility of the campus, estate management, attractiveness for students, researchers and tech companies to come and stay in Delft as well as community engagement are on the agenda.

### Connectivity by train



### Impact TU Delft on the City of Delft

- 1 in 10 residents is a TU Delft student
- 1 in 5 catering facilities in Delft would not exist without TU Delft
- 1 in 10 retail concerns in Delft would not exist without TU Delft
- TU Delft employs 5270 FTE directly and another 1850 FTE indirectly
- TU Delft and its students, employees and visitors account for 15% of Delft's employment





#### **Colophon:**

##### **Production**

TU Delft, Department Communication

##### **Text and Figures**

Alexandra Czarnecka  
(Strategic Development, TU Delft)

##### **Design and Layout**

Saskia de Been (Media Solutions, TU Delft)

##### **Printer**

Edauw & Johannissen

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our website [www.tudelft.nl/factsandfigures](http://www.tudelft.nl/factsandfigures)

