

# Labtour Health

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 **TU Delft**

## TU Delft Labtour Health

Curious about the future of healthcare and the crucial role of innovative healthcare technologies? Take part in the TU Delft Health Lab Tour and discover the extensive range of healthcare and care transformation research activities our researchers carry out every day. TU Delft offers a unique and broad spectrum of expertise, varying from fundamental to design and applied research. At every level, we and our partners put a lot of thought into innovations throughout the healthcare system, with the aim of improving well-being for all. This could be patients, medical professionals, informal carers, athletes, the elderly, adolescents, either inside or outside the hospital.

In the dynamic world of healthcare, one truth is crystal clear – technology is an indispensable part of the inevitable healthcare transition. More than 30% of all research at TU Delft is related to healthcare. That amounts to over 600 researchers, working in 45 research groups. On top of that, we train hundreds of students in this dynamic field every year. With our expertise, strong commitment, a network of national and international partners, a top clinical hospital, and two leading teaching hospitals on our doorstep, we are jointly developing the technologies of the future.

Are you ready to explore the future of healthcare?

 **TU Delft**

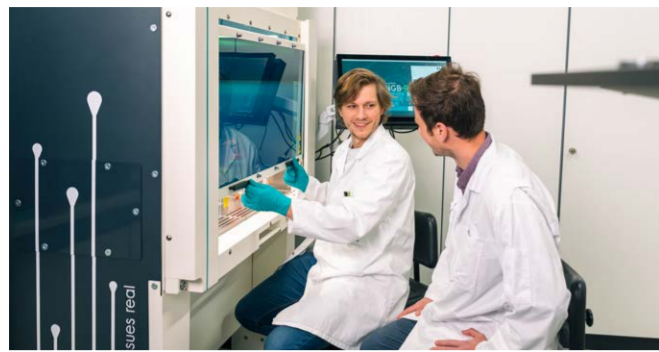


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TU Delft & Healthcare:  
your well-being, our innovation

### Biomaterials & Tissue Biomechanics Lab

Faculty of Mechanical Engineering  
Building 34, Mekelweg 2



Welcome to the Biomaterials & Tissue Biomechanics lab, where we develop advanced biomaterials and 3D print tissues. Discover how our researchers treat complex bone defects, optimise implant osseointegration, and fight the infections that occur around these implants. Their aim is to push the frontiers of medical science by creating innovative biomaterials and implants for more effective treatment of skeletal disorders.

### Laboratory for Magnetic Resonance Systems (MaRS)

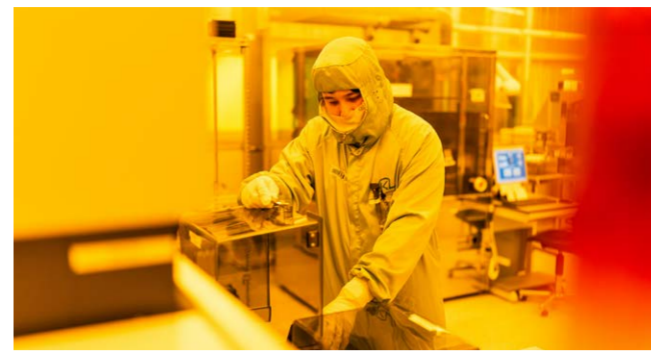
Faculty of Applied Sciences  
Building 22, Lorentzweg 1



Enter the MARS Lab, where researchers are working on innovative imaging techniques to combat heart and brain diseases. Among other things, our team is working on the deployment of Magnetic Resonance Imaging (MRI) that uses hydrogen atoms as microscopic spies to view the smallest blood vessels in the body. A better understanding of this can help treat diseases such as heart failure and dementia. Also in the lab, they are working on optimising MRI techniques.

### Else Kooi Lab (EKL)

Faculty of Electrical Engineering, Mathematics and Computer Science - Building 36, Feldmannweg 17



Discover the EKL, one of the largest cleanrooms in the Netherlands, where we work in a space with extremely clean air! Here, we use advanced, miniature technologies to create nano structures (such as chips). Our researchers produce and study these structures using special techniques such as lithography, thin film deposition, and etching. They also work with biodegradable materials, which means that some devices are degraded in an environmentally friendly way after use. You will be enthralled by this magical place, where the smallest of chips are made and studied for all kinds of applications, from technology to biology.

### Molecular Neurobiology Lab

Faculty of Applied Sciences  
Building 58, Van der Maasweg 9



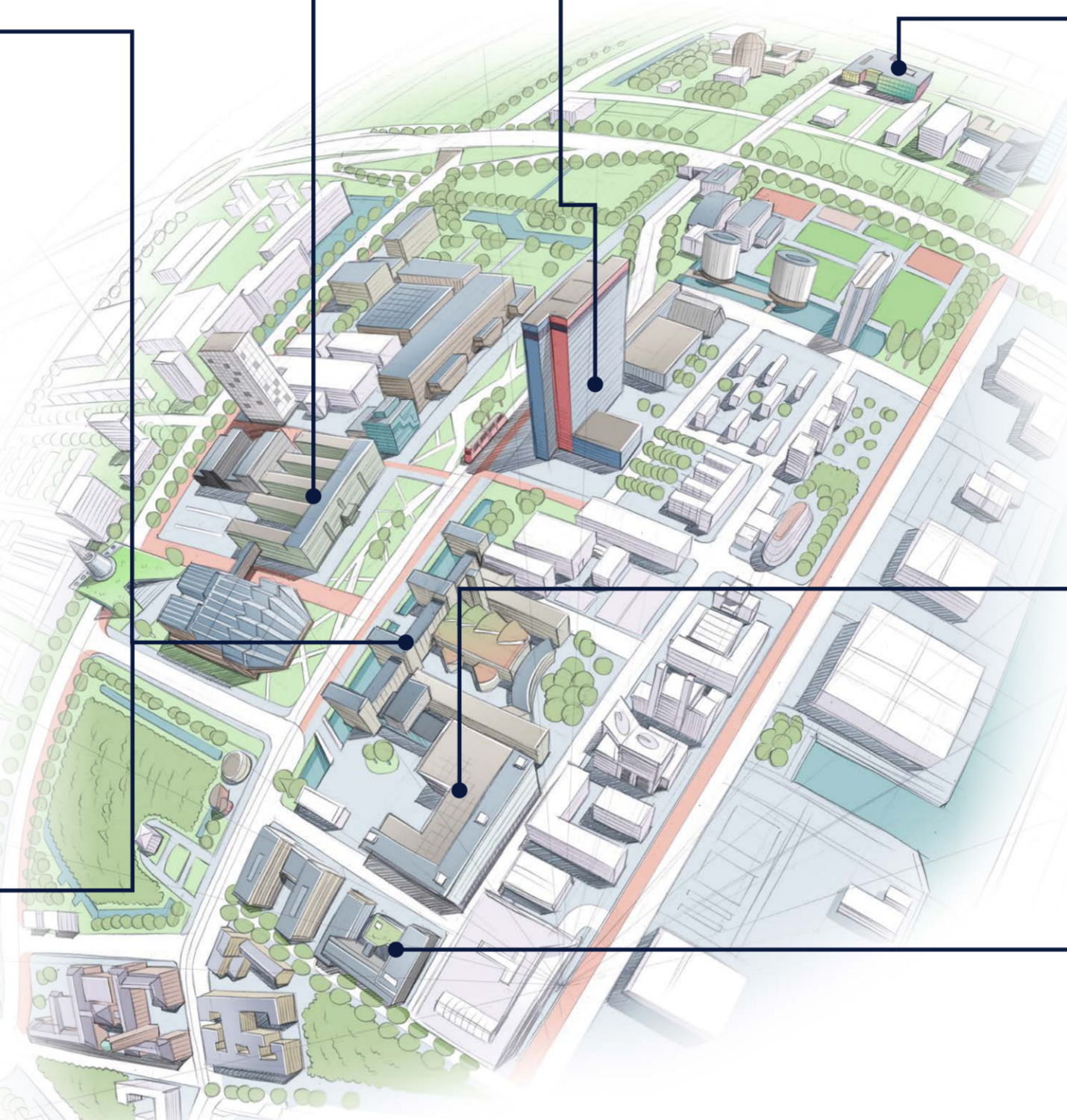
Scientists in the Molecular Neurobiology laboratory unravel the mysteries of the central nervous system by combining structural biology, biophysics, and cell biology. This enables them to uncover the hidden molecular processes that make up synapses, the junctions in our brains. Come inside and enjoy a microscopic view of the complexity of our brain.

### Minimally Invasive Surgery and Interventional Techniques (MISIT Lab)

Faculty of Mechanical Engineering  
Building 34, Mekelweg 2



Surgical robotic systems bring unprecedented precision, comfort, and agility to surgeons, leading to improved outcomes worldwide. Our researchers tackle the challenges relating to these robotic systems, such as maintenance, training, and financial investment, while working on cutting-edge technologies for affordable and sustainable operating theatres. Step inside the MISIT lab, experience the future of surgery, prepare to be amazed about the latest technologies, and try them out in our lab. Tomorrow's operating theatre starts here!



### Industrial Design - Delft Design approach

Faculteit Industrieel Ontwerpen  
Building 32 - Landbergstraat 15



TU Delft designers aim to keep society healthy by addressing health challenges on the broad spectrum from well-being to serious illness, and from product design to new services and systems. Get to know our Delft 'Design approach' by seeing exciting examples like 'The Box', a box with digital equipment that patients can use independently at home to monitor their own health status. Another example is the 'VitalSounds', which aims to reduce stress for intensive care patients by introducing familiar sounds. We also have the 'KidsCAN' project, housed in our Bodylab (pictured), which aims to improve the safety standards of products for children.

### Bio-inspired Technology Research

Faculty of Mechanical Engineering  
Building 34, Mekelweg 2



Enter the fascinating world of Bio-inspired Technology, a dynamic group in the Department of BioMechanical Engineering. It is here that innovative technical systems and instruments for minimally invasive surgery, inspired by nature, come to life. Be amazed by our demonstrations! Find out how our steerable catheters navigate their way through a cardiovascular model – why not give it a go yourself? Experience the power of our pliable, wafer-thin needles, inspired by the parasitic wasp, which raise surgeons' precision to new heights. And that's not all – admire our demos of soft grippers and suction cups, perfected for a range of applications.

### Electroencephalography Lab (EEG)

Faculty of Mechanical Engineering  
Building 34, Mekelweg 2



Join us as we explore the mysteries of the brain and the groundbreaking possibilities of neurotechnology. In the EEG lab, researchers use an engineering approach to better understand the human brain. Using unique robotic manipulators, they gain detailed insights into brain activity as it processes essential information for our daily functioning. Together with leading medical centres, we are applying these techniques to understand how the brain can become impaired after a brain infarct or migraine, for example, and to better understand the mechanisms of function of deep brain stimulation.

### NeuroMuscular Control (NMC) Lab

Faculty of Mechanical Engineering  
Building 34, Mekelweg 2



Enter the exciting world of the Delft Laboratory for NeuroMuscular Control (NMC Lab), where researchers explore the human motor system from an innovative engineering perspective. They reveal the secrets of the complex human motor system by developing new methods and equipment. Explore with us the fascinating details of how our bodies move and function. These techniques are applied to investigate neuromuscular control in both healthy subjects and patients with neurological disorders, in collaboration with leading university medical centres.

### Institute for Health Systems Science

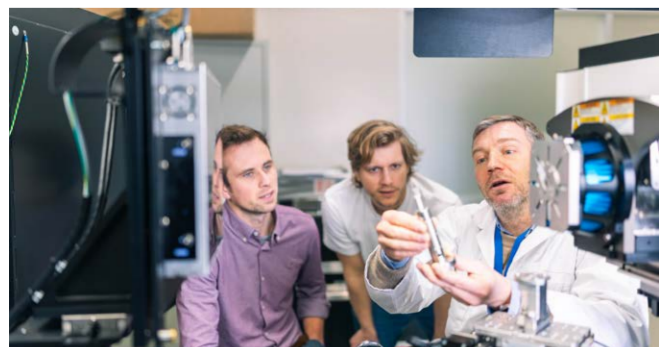
Faculty of Technology, Policy and Management  
Building 31 - Jaffalaan 5



Learn about systems science. To understand and improve how healthcare systems operate and perform, it is necessary to first understand the system – that is, its components as well as the dynamics of their interrelationships. The Institute for Health Systems Science analyses these system dynamics. Using models, we simulate interventions, provide guidelines for decision-making and policy-making at different levels, from hospital distribution across the country and safety management systems to personalised treatments. Our aim is to create, from a system science perspective, people-centred, equitable, safe, and sustainable healthcare and care systems.

### Micro CT-scanner

Faculty of Mechanical Engineering  
Building 34, Mekelweg 2



Researchers at TU Delft's Faculty of Mechanical Engineering explore a wide range of materials, from polymers to metals and from cells to bone tissue. The recent introduction of a micro CT scanner at the faculty has enabled researchers to delve deeper into these materials, allowing better exploration of this invisible world.

### Lab Delft Institute for Prosthetics and Orthopedics (DIPO)

Faculty of Mechanical Engineering  
Building 34, Mekelweg 2

Understanding movement and control, to design innovative assistive technology. This is what happens in the world of biomechanics, where our researchers are working to provide new functionality to people with musculoskeletal impairment, by designing advanced devices such as prosthetics, orthoses, and exoskeletons. Using the newest manufacturing technologies, like additive manufacturing, they create new designs that are accessible and affordable to a broad group of people. Their vision: 'Putting people in control with clear feedback and user-friendly assistive technology.'

### Evolutionary Game Theory Lab

Faculty of Technology, Policy and Management  
Building 31 - Jaffalaan 5



In the Evolutionary Game Theory Lab, researchers focus on evolutionary games and their applications, mainly in mathematical oncology and other medical fields. Did you know, for example, that game theory models can be used to improve the treatment of a type of metastatic lung cancer? Game theory makes it possible to tailor treatment according to each patient's needs completely, improving their well-being but also reducing treatment costs.