Software technology has a major impact on the economies of developed countries.

Data and information-processing systems provide the backbone for almost all administrative and logistics operations within commercial production, business and public administration.

Without software, high-tech systems are useless, whether large (e.g. the Airbus 380 and the Dutch New Waterway Storm Surge Barrier) or small (e.g. the Apple iPhone or even simple electronic watches). Software systems have penetrated all aspects of our society. They include internet-based systems such as email and the web, clouds, online social networks, online games, large-scale scientific computing systems, traffic control systems and wireless sensor systems. These distributed and other systems need to maintain high levels of performance and reliability, and rely on effective algorithms for their correct and efficient operation.

Programme
The TU Delft Master’s in Computer Science programme offers you the opportunity to become an Engineer in computer science.

The Master provides two tracks: the Data Science and Technology track if you are a computer scientist who wants to learn how to engineer systems in which (extremely) large data collections are the key component and the Software Technology track if you are a computer scientist who wishes to design, redesign, build or maintain complex software systems.

A few subject examples of the Software Technology track are:
Designing Health-Related Systems deals with the development of all types of medical and/or health support systems, such as diagnostic support systems, longterm buddies to help people in establishing and maintaining healthy behaviour, eHealth systems, electronic patient record systems, etc. Common factors of these systems are, e.g. security, privacy, distributed systems, and various role players. In the Master track Software Technology you will learn to design software systems that allow access to data on a need to know basis only, that are secure, that can help trace the
My name is Casper van Leeuwen and I am a graduate of the Computer Science Master’s Programme at TU Delft and currently a visualisation consultant at SURFsara. During my Bachelor’s degree in Electronics I discovered that my skills were more in the area of programming than electronics and I started to look for Master’s programmes related to visuals and sound. Eventually I found the Computer Science Master’s programme at TU Delft. This degree programme had everything I wanted, with strong courses in visualisation, image processing, advanced signal processing and more. During the Master’s programme I discovered that TU Delft has a very dedicated and enthusiastic Computer Graphics department so I started following their courses. After just a couple of courses – on computer graphics and data visualisation – I was completely hooked. The professors and researchers were all very passionate about what they were doing and they inspired me to continue in that direction. I finished the Computer Science Master’s Programme with a thesis about blood flow visualisation within the human heart obtained from PC-MRI velocity images. A fun part of this is that I was able to arrange an MRI scan of my own heart and visualise my own blood flow.

Designing Smart Grids deals with creating coupled systems that optimally control the power systems in relation to physical infrastructures, the environment and the interests of the consumers and producers of energy, in real time. Smart Grids are networks of intelligent systems in which smart meters, solar cells, windmills, electric cars, intelligent houses, power plants, and so on, form the essential elements. They refer to the whole infrastructure connecting all systems that consume and produce energy. The challenge is that these systems must meet overall robustness criteria and must be able to reconfigure themselves if necessary. Efficient use has to be made of all appliances, e.g., electric cars, concerning when to consume energy, when to use them to store energy, and when to release energy into the grid. Optimisation has to be geared to the individual, but also system wide. As all components are distributed over land and have their own controllers, you will have to study distributed artificial intelligence, distributed architectures, software engineering, agent technology, cybersecurity, distributed data management, and optimisation and collaboration techniques. Furthermore, all appliances have to be programmable in an easy way and in such a way that the appliances can adapt and learn. This implies that also machine learning, adaptation, and programming languages are important study goals.
Designing Infrastructure Control Systems concerns the design and deployment of computer and information systems that support and control various infrastructures. These are infrastructures that are vital for today's society and economy, like transportation infrastructures, infrastructures for utilities, and infrastructures that are inherently computer systems in themselves (telecommunications systems, the internet). Computer systems control these infrastructures on a global level by air traffic control and routing internet traffic, but also on individual components, such as cars and smart phones. Consequently, these infrastructures have global control points, but may also allow the individual components to communicate between each other and demonstrate collective behaviour, such as cars on highways trying to avoid congestion. The challenge in designing these systems is to make the individual components behave correctly and predictably, and to guarantee the optimal and secure operation of the global infrastructure. To meet this challenge you will learn to design distributed and cloud-based systems, algorithms for logistic planning, agent technologies, distributed and embedded software and data engineering methods, and security enhancing technologies, e.g. for preventing a malicious user from causing traffic jams or hacking the brake systems of cars.

Designing Environment-related Systems concerns the design and deployment of computer and information systems that support and control human interaction with their living environment in a sustainable way.

To ensure sustainability, software and information systems need to register and observe relevant properties of the living environment and the way humans interact with it. This includes, for example, gathering information about the way people live, work and move in given geographic areas, rainfall and temperature measurement across specific locations, or the water levels in urban infrastructures. These systems will employ physical sensors embedded in devices and infrastructures or techniques for social sensing through direct interaction with humans and techniques of data fusion and enrichment to make information actionable. Through interfaces with infrastructural systems, the environment-related systems contribute to the control of the global environment. By supporting people to exhibit behaviour that promotes sustainability, the systems also contribute to a personal environment. In the master track of software technology, you will be challenged to design software systems that produce meaningful and actionable knowledge about the environment and that exhibit properties that ensure the system operates at scale, in real time, and securely. To meet this challenge, you will learn to design distributed and cloud-based systems, agent technology, distributed and embedded software and data designing methods, and security enhancing technologies.

Career prospects
TU Delft has close ties with industry. During your studies you will have the opportunity to contact companies and build a network. In addition to internships and thesis projects you can also develop contacts with companies via the EEMCS recruitment days or the TU Delft technical career fair. With their specialised education in software technology our graduates have been in high demand for many years. All sizable firms need the skills of software technologists. They need people who are able to design computer systems or give advice on the management of their IT systems. Many graduates of the MSc programme in Computer Science are fulfilling key roles in software development companies (e.g. Exact), consultancy firms (e.g. Capgemini, Atos and KPMG), IT providers (e.g. Getronics and PinkRocade), communications and networking firms (e.g. Novell and Lucent), innovative product companies that use IT (e.g. Philips, ASML and Océ), financial institutions (e.g.ING) and global enterprises whose operations depend on automated administrative and logistics processes (e.g. Ahold). Many software technologists find jobs as consultants, designers, analysts, software architects or software engineers.

Programme specialisations
- Algorithmics
- Computer Graphics and Visualisation
- Cybersecurity
- Embedded Software
- Interactive Intelligence
- Multimedia Computing
- Network architectures and services
- Parallel and Distributed Systems
- Pattern Recognition & Bioinformatics
- Software Engineering
- Web Information Systems
Admission requirements and application procedures

Dutch BSc degree
If you hold a Dutch BSc degree closely related to the Master’s programme, you will be admitted directly. However, if your undergraduate programme is not closely related to the Master’s programme you will be required to take additional courses in what is called a bridging programme. This may be a standard programme or it may be tailored to your specific situation.

To see which master’s programmes are open to you on completion of your bachelor’s degree from a non-technical Dutch university go to www.studychoice.nl If you completed your bachelor’s at a technical university, go to www.doorstroommatrix.nl

Dutch HBO degree
An HBO Bachelor’s degree does not qualify you for direct admission to a TU Delft Master’s programme. You will first need to complete a supplementary programme in order to bring your knowledge to the required level. You can do this during your HBO programme by completing a bridging minor, or by means of a bridging programme after completing your HBO diploma. Entrance requirements for mathematics and English (some exceptions) apply for both the bridging minor and the bridging programme.

See www.hbodoorstroom.tudelft.nl for detailed information. Applications through Studielink: www.tudelft.studielink.nl

International applicants
To be considered for admission to an MSc programme you will need to meet TU Delft’s general admission requirements.

1. A University Bachelor’s degree (or proof that you have nearly completed a Bachelor’s programme) in a main subject closely related to the MSc programme to which you are applying, with good grades on the key courses.
2. A BSc Cumulative Grade Point Average (CGPA) of at least 75% of the scale maximum
3. Proof of English language proficiency. A TOEFL (Test of English as a Foreign Language) with an overall Band score of at least 90 and a minimum score of 21 for each section. Please note that we only accept the TOEFL internet-based test. Or an IELTS (academic version) with an overall Band score of at least 6.5 and a minimum of 6.0 for each section. Or proof that you have passed the University of Cambridge ‘Certificate of Proficiency in English’ with a minimum grade B or the University of Cambridge ‘Certificate in Advanced English’

For international students, the application period starts October 1 and closes at April 1. To start an MSc application, please complete the online application and pay the refundable application fee of € 100. Next, you will receive an email with the link to upload the required documents.

For more information about the application procedure and studying at TU Delft in general, go to www.admissions.tudelft.nl

Introduction week
All international students will be welcomed with the award-winning introduction programme. The introduction consists of a variety of workshops and projects, during which you will get to know other international students, visit the highlights of Delft and learn the ins and outs of the TU Delft campus.

After this very interesting and fun week, you will be introduced to the EEMCS faculty. During the Master Kick Off, you will receive helpful information about the Dutch education system and meet the fellow students from your programme in a variety of social and educational activities.

For further information
Please visit the webpage for all details, complete requirements, deadlines and contact information, please visit: www.ewi.tudelft.nl

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