

Brochure

How to choose your study

BSc Computer Science & Engineering



Brochure 1—How to choose your study

In this brochure you will find information on how to choose the right programme.

For more information about the Matching & Selection procedure we recommend to check the Selection [webpage](#).

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Why study CSE @TU Delft?

As a computer science engineer, you design and develop software to process large amounts of data efficiently and to enable users to utilise intelligent digital systems in an intuitive way. You develop software in such a way that it can be maintained and tested. Computer science engineers work on software for web applications, mobile apps, route planners, robots, healthcare systems, financial services and much more. Computer science engineers are not only concerned with programming, they also need to ensure that code is efficient and secure, learn how users interact with a system and design software that can be deployed in a responsible manner.

Studying Computer Science and Engineering at the TU Delft means that you will learn to tackle and solve problems at an analytical level from an engineering perspective. You will try and find the answer by applying theory to so-called 'why' questions. You will look for answers to questions such as: "why has this been done this way?" or "is there a better way of doing it?" or "can I demonstrate that my current method is the optimal way?" As a research university TU Delft focuses on **answering 'why' questions** and requires you to plan and organize your study independently. Although all computer science programmes at research universities in the Netherlands share considerable overlap in courses, they can differ in their educational philosophy or engineering approach. **The Bachelor Computer Science and Engineering programme at TU Delft combines the scientific foundations of engineering with group assignments and extensive project work.**



What typifies a TU Delft student?

The study programme is designed with a certain academic attitude in mind. TU Delft students can be characterized as analytical engineers with a critical mind-set. We aim to educate open-minded team players who are curious problems solvers and independent, pro-active learners.

The CSE programme at TU Delft is intense and requires students to spend about 40 hours a week on their studies. This includes 12 hours of lectures, 10 hours of lab courses and projects and 18 hours of self-study on average. Emphasis is placed on independent study and personal responsibility. This means that you need to plan well and prepare properly for lectures and practical sessions. Although lecturers and teaching assistants are there to guide you in the learning process, you will spend most of your time studying individually or with fellow students. Self-discipline, responsibility and team skills are thus essential, as it is your own responsibility to stay up to date with the material and look for help if things turn out different than expected.

Curriculum Bachelor Computer Science and Engineering

The first year entails more practically oriented *Software* courses where you will work in project groups and learn to program in, for instance, Java. More abstract courses like *Mathematics* and *Models* will teach you more about reasoning, structures, vectors and matrices and in the *Data* courses you will learn more about programming, websites and databases. The [curriculum](#) of the first year at TU Delft entails quite a bit of mathematics. For this reason, it is important that you like math. **This is the right programme for you if you like to puzzle, want to learn more than just programming and are keen to solve problems in an analytical way.**

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Year 1	Software Object Oriented Programming	Mathematics Calculus	Mathematics Linear Algebra	Mathematics Probability Theory & Statistics
	Models Reasoning & Logic	Software OOP Project	Models Algorithms & Data Structures	Software Software Quality & Testing
	Systems Computer Organisation	Data Web & Database Technology	Data Information & Data Management	Systems Computer Networks

The second year contains compulsory courses and allows you to choose between three so-called variants of 15 ECTS each, entitled Multimedia, Systems or Data. At the end of year two, you will work in a small team with fellow students on a large software project, where you will develop software for an external stakeholder. In your final year, you can broaden or deepen your knowledge with a minor or go on exchange, choose three electives and finish the programme with a research project. It is not possible to do an internship as part of the bachelor.

Admission and Tracks

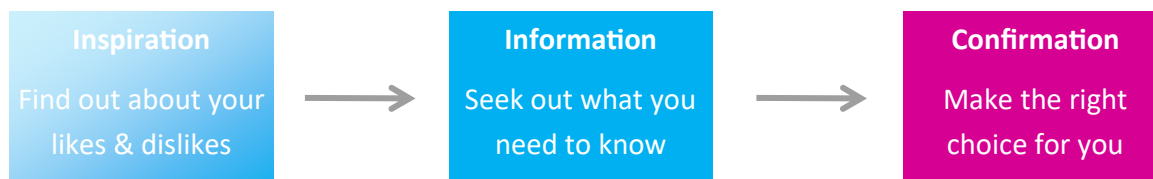
Students with a VWO diploma including mathematics B are admissible to the bachelor programme. For international students we recommend to check the [Admission page](#) or get in touch with contactcentre-esa@tudelft.nl. TU Delft offer two tracks: the *Bilingual track (Dutch-English)* and the *English track*. Student have to be proficient in Dutch *and* English to enrol in the Bilingual track. Students with a foreign diploma are only admissible for the English track, unless they can show a Dutch language proficiency certificate. You can find more information about the language requirements [here](#). The English track is fully taught in English.

What is the difference between studying at a research university or at HBO?

Whereas research universities teach students the underlying principles of programming languages, [universities of applied sciences \(HBO\)](#) have a more practical orientation and are more focused on learning and applying a range of commonly used programming languages. In other words, universities of applied sciences focus more on **answering ‘how’ questions**. Students who want to build, are practically oriented and prefer more guidelines and structure are recommended to consider studying at HBO. Today’s ICT job market has a high demand for graduates from both types of universities. **It is important to choose the university and the programme that best meets your interests and learning needs.**

Choosing the right programme in 3 steps

Choosing the right study programme can be a challenging process. The following three steps can help you:



Step 1 Inspiration

The first step is all about finding out what makes you tick. Ask your parent(s), guardian(s) or friends for help. They can ask you questions and help in structuring information, while you create an overview. Start by asking questions related to what you like to do and are excited to learn more about. Write your answers down, as reading back later can help you, and make your answers as specific as possible. Instead of stating that you like to solve problems, make it more concrete: “I like to solve puzzles by making use of mathematics” or “I want to be an expert in data analytics” or “I want to help students with learning for their exams with a mobile application”.

Remember to also ask yourself questions about matters that you do *not* like as well, as this helps focus your search. Think about what makes you procrastinate or which courses you did *not* like at all. Also take practical limits into account, such as the admission requirements, your budget, the language of the programme and whether you can travel to campus or need to move house. Starting with your practical limits and the things you do *not* like, will help you in framing your search boundaries. From there work towards what you do like in order to establish which study programmes are most suitable for you.

Step 2 Information

After having decided what inspires you, it is important to gather more information. You can find information online, however attending a campus tour, visiting the university open days or signing up for student-for-a-day will provide you with a chance to [experience](#) everything first-hand and obtain an inside perspective. Come prepared by asking yourself what you already know and what you still want to find out to ensure that you obtain the information you need. We recommend checking out several universities and programmes to help you fine-tune your choice. What sets them apart and what is important to you when making your final choice? Answering questions like these can help you in narrowing down your choices.

Step 3 Confirmation

The inspiration and information phase will help you in taking your last step, confirming which programme is most suitable for you by creating a top 3. You can make a decision by listening to what really matters to you and where you feel most at home. Remember that all studies will incorporate things that you do *not* like, the right motivation and the right environment and people around you, will keep you going at times like this.

Matching & Selection Procedure

Computer Science and Engineering has a fixed capacity, capped at 550 new students each year. Please check the [admission requirements](#) and [application procedure](#) for more information. Make sure to apply through the Dutch national application system Studielink before the 15th of January in order to participate in the Matching & Selection procedure. Please note that it takes time to obtain a login for Studielink, to collect the required documents and to complete your application. Start in time as all deadlines are fixed.

How to prepare for the Matching & Selection

For the selection procedure you will be tested on 3 selection criteria: Mathematics, Systematic Reasoning & Logical Thinking and Algorithmic & Computational Thinking. Some elements you can prepare for and some elements not. You can find the specifics for each element below:

Mathematics

You can prepare for this element by following the free [online pre-university calculus course](#) (select the audit track) and by reading the **syllabus** and **formula sheet**, which is published in the Matching & Selection Brochure. The syllabus will give you a better insight into what is expected from you in this test. You should be able to apply techniques and formulas from memory, except for the formulas on the formula sheet. Please remember that you will need to do all calculations by yourself as a calculator is not allowed.

Systematic Reasoning & Logical Thinking

You can prepare for this element by studying chapter 2 of the textbook Delftse Foundations of Computation. You can skip all the sections starred (*) in the contents of the book, as explained in chapter 1. This book can be downloaded for free from the TU Delft Open Textbook repository. At TU Delft we train our students to become analytical engineers and curious problem-solvers. Although you will find exercises in the book, you will not find any official answers, nor do we provide any more than those already included in the book.



S. Hugtenburg & N. Yorke-Smith (2022) *Delftse Foundations of Computation 2nd Edition* Retrieved from [Delftse Foundations of Computation 2nd Edition](#)

Algorithmic & Computational Thinking

You will be tested on your potential to solve puzzles, process-oriented thinking skills and your ability to come up with efficient solutions to real-world computational problems. You *cannot* prepare for the Algorithmic & Computational Thinking as this is an aptitude test.

Matching

The matching part of the procedure consists of the starting surveys, Online Student Experience and the Teamwork Assignment. These activities are not graded, but are mandatory to complete. You do not have to prepare for the matching activities.