

# CSE

## Bachelor / Computer Science and Engineering

Using social media to localise disasters, making friendly care-robots and recognising objects in images. In the Computer Science and Engineering (CSE) degree programme at TU Delft, you will learn the theory and practice of developing software and processing data for the intelligent systems of today and the future.

### Admission requirements

VWO N&T, N&G/E&M/C&M with Math B  
Non Dutch: see website

### Language

English

### Numerus Fixus - selectieprocedure

Yes. 500 Intake of first-year students in 2020-2021

### Binding Study Advice

Percentage of students who get a positive BSA  
**65%**

### Average study week

**Total: 40 hours**

Lectures: 12 hours

Group work: 10 hours

Self-study: 18 hours

## What does the programme look like?

The programme consists of a mixture of lectures, practical assignments, group projects and considerable amount of self-study. Each quarter in the first year consists of three courses: a fundamental course, a more applied course and a more practical course. You will learn how to analyse and design computer systems and their underlying algorithms. You will also study the subject of computability theory, addressing questions such as: what is computing, what can computers do and what can they not do, and how can you describe machines in a mathematical way? Artificial intelligence, computer graphics, data mining and image processing are also part of the programme.

Furthermore, you will learn about the underlying principles of programming languages, data structures, software quality, how to model complex systems and how users interact with such systems. You will learn to solve problems systematically. In addition, you will regularly collaborate with other students on projects.

**10%**

Academic Skills

**10%**

Computer Systems

**15%**

Mathematics

**20%**

Data Science

**20%**

Fundamental Computer Science

**25%**

Software Engineering

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## What will you learn?

In the first year, you will take a compulsory combination of courses. This is divided into approximately 40% fundamental computer science, 35% mathematics and 25% computer science skills.

The courses include among others:

- Object-Oriented Programming: You will learn the basics of programming. At the end of this course, you will be able to develop various applications.
- Computer Organisation: You will learn how the individual components of a computer form a working machine. This course teaches you the low-level mechanisms involved in making hardware and software work together.
- Calculus: Many concepts from computer science heavily lean on mathematics. In calculus we build on Mathematics B, but the pace is much faster and the level much more in-depth. Together with other mathematics courses, calculus provides the mathematical foundations a computer scientist requires.

In the third quarter, you will work together on a project, for example to develop an application to help illiterate people.

The second year consists of compulsory courses and electives. You can choose from



three variant blocks, each comprising three courses. Within the variants, you can learn how to automatically recognise license plate numbers, how to program for embedded systems or how to process and analyse large amounts of data in the cloud. As part of the curriculum, you will work in a small team with fellow students on a large software project, developing software for a company to tackle a socially or economically relevant issue. Examples of such projects include programming a drone that can independently survey a commercial greenhouse or developing a scheduling application for a hospital. You will start your third year with a minor, which is aimed at broadening your knowledge or preparing you for a Master's programme. It is also possible to do the minor at a different university in the Netherlands or abroad. The degree programme will be completed with the Research Project. This project is carried out individually at TU Delft and involves research into a subject related to computer science. For example, this could involve implementing a new algorithm and the necessary experimental tools to evaluate it against existing alternatives. Are you interested? Join information events like open days, online trial studying or student for a day.

87%

of the bachelor graduates  
start a master's programme



500

CSE first year students  
in 2020-2021



35%

mathematics in  
the first year



What competencies does a student of  
Computer Science and Engineering need  
to have?

- Affinity with mathematics
- Highly motivated
- Perseverance
- Ability to think abstractly

Which Master's programmes are possible  
after completing this Bachelor's?

- Computer Science
- Data Science and Technology
  - Software Technology
  - Artificial Intelligence Technology
- Embedded Systems

What can you do after completing this  
programme?

- Critically analyse and tackle problems in complex environments
- Collaborate in teams and with end users
- Design and develop robust, highquality software
- Quantify how good an algorithmic problem solution is