

# Bachelor / Applied Earth Sciences

The Earth is our home, shared with millions of other living species. In order to make it a safe and sustainable living environment, we need to understand how the Earth and its climate are changing due to natural processes and human interactions. How can we monitor processes at or below the surface? How can we responsibly extract energy and other resources? And how can we model and predict atmospheric and climate dynamics? Our professors and students are challenged to find technical solutions to enable for example the energy transition, like using the Earth's geothermal energy to heat our buildings, or seasonally store wind and solar energy in the subsurface so we can use this in winter.

At Applied Earth Sciences you will study the part of the Earth system that interacts

strongly with our living environment, namely the upper crust from a few kilometres depth up to the lower atmosphere. The programme offers you a unique combination of engineering and geology and challenges you in the areas of mathematics, chemistry and physics.

## What does the programme look like?

Applied Earth Sciences is an English taught programme, and the only degree in the Netherlands that combines geology, engineering and technology. During the programme you will obtain knowledge about the processes that shape the subsurface of our planet. You will also learn to apply that knowledge to tackle challenges related to the availability of resources, responsible extraction of resources, energy transition and climate change adaptation, among many others. Additionally, you will be introduced to the use of satellites to monitor phenomena such as pollution, subsidence caused by the extraction of gas, water or salt, or changes to the Earth's surface due to earthquakes. The programme contains courses in geology and geophysics, teaching you about the processes that shape the Earth.



In order to provide you with the required engineering and technological skills you will take courses in physics, chemistry and mathematics. During the bachelor programme you will not only attend lectures but also excursions, field work assignments, laboratory classes, and tutorials. In this way, you apply your theoretical knowledge and learn what the subjects taught during lectures are about in the real world, both in the Netherlands and abroad. As an Applied Earth Sciences student, you will develop critical thinking skills and learn to be an entrepreneurial engineer with the ability to anticipate the future.

## Admission requirements

VWO, with Physics, Mathematics B, Chemistry

## Language

English

## No selection process

## Average study week (40 hours)

Lectures: 12 hours

Self-study: 19 hours

Projects and laboratory classes: 9 hours

“Ever since I can remember I’ve had a huge fascination with how the Earth and its different processes work. I thought studying Applied Earth Sciences would be the best way to dive into that curiosity”

Ulrich van Staden, from South Africa  
1st year student, 2021-2022

## What will you learn?

### First year

During the first year you will attain a good foundation in mathematics, physics and chemistry. You will learn about geology and the context of Applied Earth Sciences. In the course 'Grand Challenges' you will be introduced to the global challenges for which technical solutions need to be developed. Different topics, ranging from global climate change and heat flow, to remote sensing and the tilt of the church in Delft, are included in the form of assignments.

### Second year

In the second year you will continue to develop your technical and geological knowledge and increasingly learn to apply this knowledge. Towards the end of the academic year, you will travel together with your fellow students and professors to the south of France, where you will carry out fieldwork in small groups, and create a geological map of a designated area.

### Third year

During the first half of your third year you will follow a freely selected minor. The minor enables you to broaden your perspective by taking courses outside your specialist field, or to further specialise in a field of your choice. The second half of the



third academic year is spent on finalizing your BSc degree programme. You will do this by taking several courses where knowledge and expertise obtained earlier in the programme are integrated in order to solve real problems. Additionally, you will be working on your final bachelor assignment. In which you will perform research in a topic of your interest.

Due to the small scale of the programme, students and professors know each other on a personal level, which creates a good atmosphere and short lines in case of any questions. Because of its unique character, the programme and its professors are internationally well known. During your studies, you will have numerous opportunities to get into contact with companies and organisations. This will allow you to build an international network of professionals.

75

first year students



35%

international students  
20+ nationalities among  
students



35%

female



65%

male



100%

of AES students go abroad  
as part of their programme



95%

finds an appropriate job  
within 6 months



## What is the profile of an AES student?

- able to work independently
- interested in the Earth and responsible use of resources
- good at physics and mathematics
- a can-do mentality, and like to apply your knowledge in the real world

## What skills will you obtain?

You learn to

- think critically and independently to solve complex problems
- devise, calculate and research the technical potential of geotechnical solutions
- assess uncertainties and exercise judgement in complex situations with limited information
- work in a multidisciplinary and multicultural team
- develop specialist knowledge pertaining to subsurface engineering

## Job prospects

Due to the challenges caused by climate change, the need for graduates of Applied Earth Sciences is bigger than ever. To monitor and predict what is happening, but also to develop technical solutions for a more sustainable use of the Earth's resources. Graduates are eagerly sought for positions as engineers, geophysicists, geologists, consultants or business analysts, and take on leading roles in organisations across the world.

25%

Applied Earth  
Sciences

25%

Geology

25%

Physics and  
Chemistry

25%

Mathematics



More information?  
Check the programme website.

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