

# Applied Earth Sciences

## MSc Programme



Nearly everything we build and use on the surface of our planet comes from within the Earth. The growing population is putting the Earth under pressure by requesting more energy and resources. Responsible extraction, finding and monitoring of Earth and its resources are therefore needed. An Applied Earth Sciences engineer knows how by focussing on finding, processing, monitoring and utilising natural resources in a manner that is responsible and viable. You will tackle these issues and drive innovation in this field of engineering.

Degree	Master of Science
Starts	September
Type	full-time
Credits	120 ECTS, 24 months
Language	English
Application deadline	1 April: International students 1 July: Dutch degree
Tuition fee	€ 18.750 (non EU) € 2.168 (EU)
Scholarships	<a href="https://www.tudelft.nl/scholarships">scholarships.tudelft.nl</a>

### Programme

How can we heat buildings with geothermal energy? Is it possible to sustainably exploit groundwater? What layers of the earth can be used to store the greenhouse gas CO<sub>2</sub> safely? How do you prevent subsidence? These are questions you will get to work on during the MSc programme in Applied Earth Sciences. The programme integrates fundamental knowledge with applied technology. You learn how to approach issues related to the challenges of energy production, raw materials technology and geo-engineering in an imaginative and resourceful manner. In gaining practical experience to complement your academic

studies, you have the opportunity to work intensively with TU Delft's partners in industry. The programme has six different tracks. Each track has a compulsory core programme, but you can choose your own path for about half of the programme by selecting elective courses and defining the research topic for your final thesis. Our ambition is to enable you to learn how to apply your knowledge from science, technology, engineering, mathematics and geology in order to understand and solve the complex challenges from the Applied Earth Science field. While doing this there are ample opportunities for you to prepare for a career in industry or in science.

FIRST YEAR	SECOND YEAR
TRACK-SPECIFIC COURSES	OPTIONS IN SOME TRACKS: <ul style="list-style-type: none"> <li>• INTERNSHIP</li> <li>• ADDITIONAL THESIS WORK</li> </ul>
SPECIALISATION COURSES	ELECTIVE COURSES
	MSC THESIS

## Specialisations

The programme offers six tracks:

**Applied Geophysics** trains students in all geophysical and related aspects of environmental and engineering investigations, and in the exploration and exploitation of geoenery. This track is part of a joint programme run by TU Delft, ETH Zurich and RWTH Aachen.

**Environmental Engineering** is about air flows, clouds, rainfall, rivers and groundwater. In this track students learn how the presence of man influences life cycles and how technology can help solve environmental and climatological problems.

**Geo-Engineering** will give you essential knowledge and understanding of the Earth's subsurface and insights into its properties and behaviour. This is vital in projects ranging from the drilling of tunnels and the excavation of mines to the construction of foundations for buildings and the maintenance of ports and waterways.

**Geoscience and Remote Sensing** focusses on advanced observation technology to monitor the Earth. This technology can in combination with innovative data processing and modelling techniques provide us with all the information we need to make the right decisions, based on empirical results and their interpretation.

**Geo-Energy Engineering** addresses all aspects of the extraction of underground fluid energy resources (e.g. geothermal energy, oil and natural gas), as well as new ways of exploiting the deep underground (e.g. CO<sub>2</sub> storage).

**European Mining Course** covers all aspects of the life-cycle of mineral resources. Students

learn how to recover minerals and mineral ores from the earth, how these materials can be processed and how useable materials can be recycled from waste. This is a joint programme together with RWTH Aachen and Aalto University

## Graduation examples

- Power Plant Mátra. Research to development of a coal quality concept for the lignite deposits Visonta and Bükkábrány, Hungary (Resource Engineering)
- The Shale Oil Potential of the Posidonia Formation in the Netherlands (Geo-Energy Engineering)
- Seismic deblending by shot repetition (Applied Geophysics)
- The Parallel Seismic detection of defects in pile foundations (Geo-Engineering)
- Spaceborne Remote Sensing for Near Eastern Archaeology: a case study on archaeological sitedetection in Jordan's Black Desert (Geoscience and Remote Sensing)
- Design your own satellites to monitor the world's reservoirs (Environmental Engineering)

## Career prospects

There is currently a great need for well-trained, innovative engineers and scientists with expertise in Earth Science Engineering both in industry and private/public sectors. TU Delft has an excellent reputation in industry, and its graduates are eagerly sought for positions as engineers, geophysicists, geologists, consultants or business analysts. The interdisciplinary nature of the programme in Applied Earth Sciences provides TU Delft graduates with an added advantage. They are renowned for their creativity and their ability to solve complex problems. Often it leads them to work in complex and unpredictable professional environments and to assume leading roles in organisations across the world.



**15<sup>th</sup>/13<sup>th</sup>**  
in QS subject ranking  
Minerals & Mining/  
Environmental Sciences



**6**  
Master Tracks



**110**  
first year students in 2020



**44%**  
international students



**62%**  
male



**38%**  
female

## Career perspective



**95%**  
job in industry



**78%**  
job as engineer