Beyond conventional approaches

In the coming decades, oil and natural gas will remain important sources of energy and raw material for the petrochemical industry. We will also see exciting new developments in renewable sources, like geothermal energy. As the conventional and most easily accessible hydrocarbon reservoirs are depleted to meet demand, it will become increasingly necessary to turn to new hydrocarbon and unconventional sources, such as heavy oil, tar sands, shale oil, gas and natural gas hydrates. Detailed geological understanding, innovative solutions and technologically complex methods are required to exploit these sources efficiently. The same knowledge is needed to extract geothermal energy from deep hot water reservoirs and natural gas or CO2 from underground storage. Understanding the geology of the subsurface, predicting its properties and knowing how to extract hydrocarbons and other energy resources from it, forms the basis of the Petroleum Engineering and Geosciences track.

Programme
This programme is a unique combination of geology engineering and petroleum engineering taught in the classroom and the field.

Students develop hands on engineering skills through practical exercises and project based learning and learn how Earth works as a system. Reservoir geology is investigated, with an emphasis on understanding processes that lead to the development of complex subsurface reservoirs and the accumulation of hydrocarbons. Upon completion of the programme, students possess a solid understanding of the mathematical, physical and chemical foundations of production engineering and the optimization of reservoir management.

The first year consists of a variety of geological and petroleum engineering courses and field excursions. The second year starts with a six week Field Development Project module that enables students to apply the knowledge acquired during the first year. In a setting similar to that of an oil company, students use real data to make a field development plan (FDP) for an actual oil field. The second year is also devoted to a nine month graduation thesis focused on challenging research, engineering or design problem. About 10% of the remaining credits are free electives, allowing students customization of their individual study programme.
The PE&G programme includes a common core of nearly 20 ECTS each, and a nine-month thesis project (45 ECTS). Career prospects

The Petroleum Engineering and Geosciences specialisation is aimed at students who want to focus on engineering or geology. Students will learn how to identify optimal drilling sites and develop well-planning strategies to extract gas, oil and geothermal energy most efficiently.

The petroleum engineering and geosciences track offers a unique combination of geology and highly technical petroleum engineering skills. It provides students with a solid knowledge of how Earth functions and gives them the tools, skills and knowledge to help secure energy to meet the needs of society. While we focus on hydrocarbons, the same knowledge is required for geothermal energy, CO2 storage and many groundwater aspects.

Students have the opportunity to work with people from different cultural and technical backgrounds. Our MSc track prepares students for many different opportunities, in industry and research. During their studies, students have the opportunity to work with people from different cultural and technical backgrounds. This experience broadens their worldview and prepares them for an international career.

"Professionals in Petroleum Engineering and Geosciences cope with two exciting challenges: First, we have only limited and indirect information on the underground resources we exploit; we have to deal with a level of uncertainty perhaps unique in engineering. Second, engineering and geology are not just two bodies of knowledge, but two ways of processing knowledge; both are essential to exploiting underground resources. Our program trains students to handle both these challenges by integrating both disciplines in coursework and applications while acknowledging and quantifying the uncertainties involved."

"Our MSc track provides a unique combination of geology and highly technical petroleum engineering skills. It provides students with a solid knowledge of how Earth functions and gives them the tools, skills and knowledge to help secure energy to meet the needs of society. While we focus on hydrocarbons, the same knowledge is required for geothermal energy, CO2 storage and many groundwater aspects. Our MSc track prepares students for many different opportunities, in industry and research. During their studies, students have the opportunity to work with people from different cultural and technical backgrounds. This experience broadens their worldview and prepares them for an international career."
Admission requirements and application procedure

Dutch BSc degree
In most cases, if you hold a BSc degree and the Master’s programme is closely related to your Bachelor’s programme, you will be admitted directly into the programme. However, if the Master’s programme does not follow directly from your undergraduate 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 Dutch university, go to www.doorstroommatrix.nl.

Application goes through Studielink: www.tudelft.studielink.nl

Dutch HBO degree
An HBO Bachelor’s degree does not qualify you for direct admission to a TU Delft Master’s degree programme. To start a Master’s degree 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 securing 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.

Application goes through Studielink: www.tudelft.studielink.nl

International applicants
To be considered for admission to a MSc Programme you’ll 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 for 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 in Advanced English’ or the University of Cambridge ‘Certificate of Proficiency in English’ with a minimum grade B.

For international students, the application period starts on 1 October and closes on 1 April. To apply for an MSc programme, please complete the online application and pay the refundable application fee of €100. You will then receive an email containing a link to upload the required documents.

For more information about the application procedure and studying at TU Delft in general, visit 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 familiarise yourself with the TU Delft campus. After this fun and interesting, you will be introduced to the faculty. You will receive helpful information about the Dutch education system and meet fellow students.

February 2018

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

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