Geo-Resource Engineering is about extracting and processing the Earth’s mineral treasures. At its heart is a system-based approach to design technology for the sustainable development, management and conservation of mineral resources. With a growing world population, the demand for metals and minerals is increasing. But awareness of environmental issues is growing too and the world expects resources to be extracted in a responsible manner. It will be up to the geo-resource engineer of the future to operate successfully in this challenging environment.

Programme
Geo-Resource Engineering covers every aspect of the lifecycle of mineral resources. It is a master track designed to provide a solid understanding of the global mining industry and takes in the entire mining value chain, from exploration to marketable end product. The track offers a state-of-the-art technical basis in resource modelling, mine design and economic evaluation. Apart from engineering, other topics include business economics, ethics and environmental engineering.

Unique to the course are a clearly defined and structured programme for management of Health, Safety and Environment and the development of specific soft skills required for leadership. Students will be provided with the tools, insight and creative space to identify, prioritise and control risks associated with mining projects in all phases of the life cycle of a mine.

Programme specialisations
The Master’s track Geo-Resource Engineering offers a choice from a range of electives in the following three main focus areas:
- In Mining Engineering the focus is on developing skills to optimize mine design and operation, including programming and modelling.
- Geo-Engineering is geared toward developing an understanding of the impact of mining on soils and rocks, and vice versa, with courses on geomechanics and geohydrology.
- Environmental Engineering focuses on developing an understanding of the interface between mining and the environment, including impacts assessments and mitigation techniques.

Track
Geo-Resource Engineering

Extracting and processing the Earth’s treasures

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<tr>
<th>Diploma</th>
<th>Master of Science Applied Earth Sciences Track: Resource Engineering</th>
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<tbody>
<tr>
<td>Credits</td>
<td>120 ECTS, 24 months</td>
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<tr>
<td>Starts in</td>
<td>September</td>
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<tr>
<td>Language of instruction</td>
<td>English</td>
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<tr>
<td>% International students</td>
<td>58%</td>
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Examples of graduation projects
- Daan van Berkel (2014) gave an insight in the mass balance and reserve reconciliation of salt caverns in the Hengelo brine field.
- Roman Hijman (2014) identified potential for the Hisarna iron-making process: a simplified assessment of European iron resources.
- Hilaire Diarra (2014) designed a treatment system for the underground effluent at Loulo Gold Mine (Mali, West Africa).

Career prospects
Given the growing worldwide demand for professionals in Mining and Minerals Engineering and Management, graduates of this programme can be assured of having promising career opportunities. After completing your degree, you will be qualified to work for mining companies, companies engaged in minerals and metals processing technology, the mining and minerals business, companies working on ore deposits and integrated production, market leaders in efficient dredging and mining, aggregates companies, government agencies, engineering and consulting, firms, banks, global oil services, knowledge institutions, research institutes and think-tanks.
The different focus areas within the Geo-Resource Engineering curriculum offer students a unique opportunity to understand and evaluate the entire value chain of mineral extraction, from project definition through physical extraction, mineral processing and mine closure rehabilitation and remediation. By means of practical examples, the courses demonstrate the complexity and multi-disciplinary nature of mineral resource extraction and give a broad societal perspective by emphasising the need for natural resources in modern society. The goal is to train future leaders in the industry and as a result, the programme combines management, legal, safety and operational aspects as well as core engineering skills. Successful completion of the programme prepares students for employment in many facets of a multinational industry.

As an alternative to the in-house TU Delft master’s programme, it is also possible to opt for a more international programme. TU Delft, Aalto University and RWTH Aachen offer a 2-year joint master EMMEP programme. Its main focus is on underground mining. You develop multi-cultural awareness and practical and social skills. Opting for this programme means you will be joining fellow-students at 2 or 3 universities for 1 or 3 semesters in Finland and Germany.

EMMEP offers two options:
- Mining Engineering (EMC) is about how to find and quantify minerals as well as how to recover them from the ground in a sustainable and economically viable way. You will also learn about the mineralogical aspects of resources and the latest mining methods for underground, surface and deep-sea mining. Special attention is paid to automation and equipment maintenance, project planning and financial analysis.
- Mineral and Recycling Process Engineering (EMREC ) consists of a combination of study and research leading to an outstanding qualification in mineral and recycling process engineering.

More information: www.emmep.org
Admission requirements and application procedures

Dutch BSc degree
If you hold a Dutch BSc degree closely related to the Master’s programme, you will be admitted directly. However, if your undergraduate programme is not closely related to the Master’s 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 at a Dutch university, go to www.doorstroommatrix.nl. Applications 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 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 completing your HBO diploma.

Entrance requirements for Mathematics and English (some exceptions) apply to both the bridging minor and the bridging programme.

See www hbodoorstroom tudelft nl for detailed information. Applications through Studielink: www.tudelft.studielink.nl.

International applicants
To be considered for admission to EMMEP you will 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 to 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 (academic version; not applicable to students from partner universities).
   - 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 of Proficiency in English’ or the University of Cambridge ‘Certificate in Advanced English’ with a minimum grade B.

4. Two reference letters in English (not applicable to students from partner universities):
   - one letter from a professor or an assistant professor from the faculty from which you graduated, and
   - one letter from your employer, if you already have work experience.

5. A curriculum vitae.

6. A letter of motivation of a maximum of 2,000 words.

The Geo-Resource Engineering application period opens on 1 October and closes on 1 April. To start your MSc application, please complete the online application and pay the application fee of €100. This fee will be refundable if you are admitted to study at TU Delft. You will then receive an email with a link to upload the required documents.

For more information about the application procedure and studying at TU Delft in general, go to www.admissions.tudelft.nl.

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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