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Master's degree

**Advanced Mineral Resources Development (AMRD)**

TU Bergakademie Freiberg • Freiberg

### Overview

**Degree**
International Master of Science in Advanced Mineral Resources Development (AMRD)

**In cooperation with**
Montanuniversität Leoben, Austria National Mining University, Dnipro, Ukraine China University of Mining and Technology, Beijing, China Amirkabir University of Technology, Tehran, Iran Superior Técnico of the Universidade de Lisboa, Lisbon, Portugal GMIT, Ulaanbaatar, Mongolia St. Petersburg Mining University, St. Petersburg, Russia Technical University of Madrid, Spain

**Teaching language**
- English

**Languages**
Courses are held in English.

**Programme duration**
4 semesters

**Beginning**
Winter semester

**More information on beginning of studies**
October at MU Leoben (Austria)

**Application deadline**
31 January

Information on how to apply: https://tu-freiberg.de/en/international/advanced-mineral-resources-development

**Tuition fees per semester in EUR**
Yes

**Additional information on tuition fees**
Fees at Montanuniversität Leoben, Austria
Tuition fee for non-EU citizens: 727 EUR
No tuition fee for EU citizens and students from AMRD partner universities

TU Bergakademie Freiberg, Germany: no tuition fee

Third semester (depends on the partner universities), see: http://tu-freiberg.de/international/amrd

**Combined Master’s degree / PhD programme**
No

**Joint degree / double degree programme**
Yes

**Description/content**
The earth’s crust is one of the most important resource bases of modern society. The growing
population of the earth and increasing worldwide industrialisation will cause a steadily rising need for raw materials and subsoil for the unforeseeable future. The demands of the raw material industry and earthworks, were summarised to fulfil the needs of technically-competent executives, and the academic course “Advanced Mineral Resources Development” was created. It prepares students optimally for their future duties in this area. This joint degree programme realises the international orientation of study. This joint degree programme includes the following universities: Montanuniversität Leoben, Austria; the Technical University Bergakademie Freiberg; the China University of Mining and Technology in Beijing; the Amirkabir University of Technology in Tehran, Iran; the National Mining University in Dnipro, Ukraine; GMIT in Ulaanbaatar, Mongolia; St. Petersburg Mining University in Russia; the Technical University of Madrid, Spain, and the Universidade de Lisboa in Lisbon, Portugal. The direct linking of the apprenticeship with the innovative research of the university supports this and paves the way for graduates’ professional start and career in demanding leadership positions.

Activity fields worldwide are planning, organisation, management and supervision of deposits, search and exploration, environmental friendliness, safe and economic production and mining of raw materials as well as transportation and distribution. Questions of drainage, economic efficiency analyses, environmental compatibility check, reclamation of landscapes after mining, security-technical and juridical settings of tasks and disposal/dumping of waste are included. The study programme combines natural, engineering and business sciences, environment law, and general management of georesources. It contains the following basic courses in mining, remediation and geoscience (lectures, seminars, and practical training):

- Computer Application in Mining
- Deposit Modelling
- Numerical Methods of Deposit Modelling
- Lab in Mining Engineering
- Reclamation
- Mine Water: Hydrogeology and Modelling
- Brownfield Revitalisation
- Radioactivity
- Geotechnology: Underground Mining, Open Cast Mining, Underground Construction
- Geomechanics
- Mineral Processing
- Longwall Mining
- Safety Engineering in Mine

Basic courses are offered in management, economy, and finance:

- Feasibility Study for a Mineral Resources Project
- Seminar in Mining Engineering & Mineral Economics
- Technical and Economical Assessment of Mining and Post Mining Areas.

Depending on their interests, students will be offered the opportunity to take courses in the German Language, English Language, biotechnology in mining, mining within the legal framework of Austria and the European Union, licensing, stakeholder involvement and expectation management, coal mine backfilling techniques, coal fire control and other courses.

The main part of the last semester is the Master’s thesis with a defence in a final colloquium. The study objective is the acquirement of the degree Master of Science.

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**Course Details**

**Course organisation**

First Semester

The courses take place at the Montanuniversität Leoben (lectures, seminars, and practical training):

- Mineral Economics
- Feasibility Study for a Mineral Resources Project
- Computer Application in Mining
- Deposit Modelling
- Numerical Methods of Deposit Modelling
- Seminar in Mining Engineering & Mineral Economics
- Lab in Mining Engineering
- English Language
Second Semester
The courses take place at the TU Bergakademie Freiberg (lectures, seminars, and practical training):

- Reclamation
- Mine Water: Hydrogeology and Modelling
- Brownfield Revitalisation
- Radioactivity

Third Semester
The courses take place either at the National Mining University Dnipro (lectures, seminars, and practical training):

- Geotechnology: Underground Mining, Open Cast Mining, Underground Construction
- Geomechanics
- Mineral Processing
- Technical and Economical Assessment of Mining and Post Mining Areas

or at the China University of Mining and Technology, Beijing (lectures, seminars, and practical training):

- Longwall Mining
- Ground Control and Rock Mechanics for Underground Mining
- Mineral Processing
- Safety Engineering in Mine (or Mine Ventilation)

or at the Amirkabir University of Technology Tehran

- Numerical Methods in Geomechanics
- Advanced Rock Mechanics
- Fundamentals of Design Analysis of Underground Openings
- Continuum and Discontinuum Mechanics

or at Instituto Superior Técnico of the Universidade de Lisboa

- Mine Exploitation
- Open Pit Mining and Quarrying
- Soil and Rock Dynamics
- Mineral and Solid Waste Processing
- Geophysics/Geostatistics/Safety and Environment

or at St. Petersburg Mining University

- OSH Management Systems
- Occupational Health
- Environmental Protection
- Mine Ventilation

or at GMIT

- Mine Exploitation
- Open Pit Mining and Quarrying
- Soil and Rock Dynamics
- Mineral and Solid Waste Processing

or at Technical University of Madrid

- Mine Exploitation
- Open Pit Mining and Quarrying
- Underground mining

Fourth Semester
The last semester is dedicated to the Master's thesis with a defence in a final colloquium.

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<th>Types of assessment</th>
<th>Courses, lectures, presentations and training will be graded using the European credit point</th>
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system. Exams may be oral or written. Prerequisites for some examinations are home assignments, reports, and presentations by the students. A total of 120 ECTS points is required, of which 30 ECTS points are awarded for the Master’s thesis. This consists of the written thesis and a public defence (presentation and discussion).

International elements

- Courses are led with foreign partners

Integrated internships

Internships are parts of the lectures. They also can be carried out on an individual basis.

Course-specific, integrated German language courses

Yes

Course-specific, integrated English language courses

Yes

Costs / Funding

Tuition fees per semester in EUR

Yes

Additional information on tuition fees

Fees at Montanuniversität Leoben, Austria
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TU Bergakademie Freiberg, Germany: no tuition fee

Third semester (depends on the partner universities), see:http://tu-freiberg.de/international/amrd

Semester contribution

Montanuniversität Leoben, Austria Student union fee (obligatory for all four semesters): 19.20 EUR per semester TU Bergakademie Freiberg: 94 EUR per semester For the partner universities, see the website: http://tu-freiberg.de/international/amrd

Costs of living

550 to 750 EUR per month, depending on individual lifestyle rent and utilities: 170 to 320 EUR

Funding opportunities within the university

Yes

Description of the above-mentioned funding opportunities within the university

1. Deutschlandstipendium: The “Deutschlandstipendium” is a national scholarship programme that supports above-average students with excellent grades. Social commitment, a willingness to take responsibility and special social, family or personal circumstances will also be taken into account (six months, 300 EUR per month). 2. Grants awarded to exceptionally committed students (three to four months, 300 EUR per month) 3. Study completion grant (three months, 300 EUR per month)

Requirements / Registration

Academic admission requirements

Bachelor’s degree (at least seven semesters) in mining engineering, geoengineering, applied geoscience, or a related field
Language requirements

Applicants must provide proof of sufficient English proficiency: Test of English as a Foreign Language TOEFL or International English Language Test System IELTS. For details, see our website. This test can be waived if an applicant obtained a Bachelor’s degree in a country where English is the official language or English is the applicant’s mother tongue.

Application deadline

31 January

Information on how to apply: https://tu-freiberg.de/en/international/advanced-mineral-resources-development

Submit application to

TU Bergakademie Freiberg
Zulassungsbüro
Akademiestraße 6
09596 Freiberg
Germany

Services

Possibility of finding part-time employment

It is possible to find part-time employment on campus, e.g., as a student assistant or in the canteen.

Accommodation

Different kinds of accommodations are available on campus and in the city of Freiberg, from single flats to shared flats. Prices vary from 170 EUR to 320 EUR, including utilities. In the dormitory, each student has her/his own room, but usually the bathroom and the kitchen have to be shared with other flatmates. Living in a dormitory is usually the first choice for new international students. There is a good chance that you will get a place in a dormitory if you apply early. The International Office supports international students in finding accommodation. https://tu-freiberg.de/en/international/accommodation

TU Bergakademie Freiberg

Technische Universität Bergakademie Freiberg (TU BAF) was founded in 1765. It is one of the world’s oldest technical higher education institutions, with an outstanding international reputation for its education and research following the principle of perpetual innovation.

TU BAF is known for its famous graduates, such as polymath Alexander von Humboldt, who studied in Freiberg, and for the discovery of the two chemical elements: Germanium (C. Winkler, 1885) and Indium (F. Reich, Th. Richter 1863).

TU BAF is the "University of Resources". With its four core themes – geosciences, materials, energy, and environment – TU BAF has a distinct profile addressing the specific issues of our modern industrial society. Teaching and research reflect a practical orientation responding to the demands of industry. Thanks to its financial backing, including private sources, TU BAF is one of the ten best research-focused universities in Germany. This guarantees a high level of education in the fields of science, engineering, and economics.

In nationwide rankings, TU BAF regularly receives top rankings due to its outstanding conditions for studying and its intensive mentoring programmes.

The university’s own underground teaching mine, open to visitors, serves as a natural laboratory and allows for "hands-on" exploration of the subterranean world of Freiberg and its mining history, which dates back to the 14th century.

About 30% of the university’s 4,000 students are international students. The campus offers numerous advantages typical of a small university. Short distances on campus and face-to-face contact between students and professors are major benefits.

The university is structured into six faculties, and it has several research centres, such as the Interdisciplinary Environmental Research
Centre (IÖZ), the Scientific Diving Centre (SDC), and the Mine Water Research Centre. The Helmholtz Institute Freiberg for Resource Technology, which was founded by TU BAF and the Helmholtz-Zentrum Dresden-Rossendorf, researches innovative ways to explore high-tech metals like gallium, indium, germanium or rare-earth elements.

The university and student initiatives offer a large variety of cultural events and leisure activities, including over 50 different types of sports activities at the university sports centre.

University location

Freiberg is located in the centre of the state of Saxony in the picturesque Erzgebirge Mountains, 40 km south-west of Dresden and 240 km south of Berlin.

Freiberg is more than 850 years old, and it was founded after the discovery of silver ore in 1168. Today, Freiberg has around 40,000 inhabitants. The medieval heart of the town, which is almost completely intact, is very attractive. It features the Upper Market Square with its late Gothic patrician houses and the Freiberg Cathedral at the Lower Market Square with its famous Silbermann organ and golden portal. Along with the world's oldest town theatre, a modern multiplex cinema, and nightclubs, more than a hundred restaurants, cafés, and pubs invite you to take a break and enjoy life.

There are sports facilities, a modern open-air and indoor swimming pool, and a park which surrounds the town centre like a green belt. Since 2008, the "Terra Mineralia" mineral collection has functioned as a centre of attraction for tourists, students, and inhabitants of Freiberg. The mineral collection, one of the largest collections in the world, is shown in the "Freudenstein", a refurbished castle in the town centre.

The nearby Saxon Switzerland National Park and the Erzgebirge Mountains are beautiful places for a wide variety of outdoor activities, including hiking and climbing in the summer and skiing in the winter. Dresden, Leipzig, and Berlin are easily accessible by train and offer plenty of social, cultural, and recreational alternatives.

Contact

TU Bergakademie Freiberg
Institute for Mining and Special Foundation Engineering
Akademiestraße 6
09599 Freiberg

international@tu-freiberg.de

Course website: https://tu-freiberg.de/en/international/advanced-mineral-resources-development

http://facebook.com/bergakademie

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