Deutscher Akademischer Austauschdienst
German Academic Exchange Service

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Master's degree **2**

Advanced Materials Analysis • TU Bergakademie Freiberg • Freiberg 2

Master's degree

Advanced Materials Analysis

TU Bergakademie Freiberg • Freiberg

Overview

Degree	Master of Science
Teaching language	• English
Languages	Courses are given in English (100%).
Full-time / part-time	• full-time
Programme duration	4 semesters
Beginning	Winter semester
Application deadline	15 April Applicants from India can submit the APS (Academic Evaluation Centre) later and do not have to submit it at the time of application. The proof must be submitted with the enrolment at the latest.
Tuition fees per semester in EUR	None
Combined Master's degree / PhD programme	No
Joint degree / double degree programme	No
Description/content	At TU Bergakademie Freiberg, we bring together experienced researchers and lecturers from different scientific communities to offer our graduate students the education needed for a successful career in industry and research institutions dealing with modern materials science. Development of advanced materials of all types requires the use (and combination) of various instrumental analysis techniques for materials characterisation that is a precondition for a correct description of the structure-property relations and targeted tailoring of materials properties in the production process. The course of study Advanced Materials Analysis provides profound insight into important techniques for analysis of solid materials like advanced steels, materials for electronics, shape memory alloys and energy materials by using microscopic, spectroscopic and diffraction methods. Graduates will be well-prepared to pursue their successful careers in different materials-related industrial fields, particularly in research and development. Thereby, the strongly methodological character of the study course will open the door to a quite versatile range of industrial fields, from

metallurgy to the semiconductor industry. In addition, they can pursue a career with academic research centres.

Course Details

Course organisation	A minimum of four semesters (two years) is required to complete the programme. This MSc programme starts in the winter semester (the academic year consists of two semesters). The language in all courses is English. The study course consists of compulsory as well as two types of elective modules. The compulsory modules include solid-state physics, spectroscopy, and topics related to microstructural analysis (microscopy, diffraction) as well as courses on coatings technology and functional nanomaterials. A speciality is the module “Materials Research with Free-Electron X-ray Lasers”, which takes place at the European XFEL in Hamburg. This module introduces cutting-edge materials analysis techniques by employing laser-like x-rays. One part of the elective modules is chosen individually by the students to complement their knowledge from the Bachelor’s degree. Other elective modules can be chosen freely from a list. The last semester is reserved for the Master's thesis.
A Diploma supplement will be issued	Yes
Course-specific, integrated German language courses	Yes
Course-specific, integrated English language courses	No

Costs / Funding

Tuition fees per semester in EUR	None
Semester contribution	94 EUR
Costs of living	760 EUR to 885 EUR per month, depending on individual lifestyle; rent and utilities: 200 EUR to 320 EUR
Funding opportunities within the university	Yes
Description of the above-mentioned funding opportunities within the university	Deutschlandstipendium: 1. 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	**Candidate Profile** The Master's programme Advanced Materials Analysis (AMA) is open for students to upgrade their knowledge in materials science, engineering science, or in the fields of natural science specialised in physics or chemistry. The AMA programme is designed to attract students from different fields of science and engineering to emulate an interdisciplinary environment and enable teamwork between scientists and engineers. The candidates should be interested in the behaviour and analysis of solid material down to the atomic level combining the natural scientist's and engineer's points of view. Minimum Conditions of Admission A Bachelor's degree (at least six semesters) or an equivalent degree in the field of Engineering Science with a major in Materials Science or the field of Natural Science with a major in Physics or Chemistry which should include subjects related to solid-state physics or solid-state chemistry. Please note: Applicants with a degree in "Mechanical Engineering" who have not taken any of the listed majors during their studies will generally not be admitted for professional reasons.
Language requirements	TOEFL with at least 90 points (Internet-based), IELTS score 6.5 or equivalent tests
Application deadline	15 April Applicants from India can submit the APS (Academic Evaluation Centre) later and do not have to submit it at the time of application. The proof must be submitted with the enrolment at the latest.
Submit application to	Application Portal of TU Bergakademie Freiberg

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 200 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://blogs.hrz.tu-freiberg.de/iuz/accommodation/
Support for international students and doctoral candidates	• Welcome event

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

TU BAF is known for its famous alumni, such as the polymath Alexander von Humboldt, who studied in Freiberg, and for the discovery of 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 distinctive profile that addresses the specific issues of our modern industrial society. Teaching and research reflect a practical orientation in responding to the real needs of industry. Thanks to its financial backing, including funding from private sources, TU BAF is one of the top 10 best research-oriented universities in Germany. This guarantees a high level of education in the fields of natural sciences, engineering and economics.

Thanks to its excellent study conditions and intensive mentoring programmes, TU BAF achieves top positions in national rankings.

The university's underground teaching and research mine is open to visitors and serves as a natural laboratory. The mine allows for "hands-on" exploration of the subterranean world of Freiberg, with its extensive mining history dating back to the 14th century.

About 40% of the university's 4,000 students are international. As a small university, the campus offers numerous advantages. Short distances on campus and personal contact between students and professors are major benefits.

The university is divided into six faculties and 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 (HZDR), researches new and innovative ways to explore high-tech metals such as gallium, indium, germanium, and rare earths.

The university and student initiatives offer a wide range of cultural events and leisure activities as well as more than 50 different types of sports activities at the university sports centre.

University location

Location on Openstreetmap.org

Freiberg is located in the centre of the state of Saxony in the picturesque Erzgebirge Mountains, 40 km southwest of Dresden and 240 km south of Berlin. Freiberg is more than 850 years old and 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: 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, 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 mineral collection "Terra Mineralia" functions 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 refurbished castle "Freudenstein" 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

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