OCCUPATIONS AND CAREERS

Material Development and Quality Assurance

Research Institutions
e.g. Universities

Development Activities
e.g. Entrepreneur and Consultant

Engineer
e.g. in the Iron- and Steelmaking Industry, Foundry Industry, Metal Forming Industry

Management, Production Control and Monitoring
e.g. Technical Sales and Distribution

ENROL NOW

Register online via our portal.
The deadline for enrolment for the summer semester is 15.04. of the current year.

tu-freiberg.de/en/study

WE ARE ONLINE

- bergakademie
- tu_bergakademie_freiberg
- TUBergakademie

ADMISION REQUIREMENTS

- Bachelor degree (at least 6 semesters) in the field of metallurgy, materials technology or another related discipline
- English language proficiency (TOEFL at least 90 internet based test, IELTS at least 6.5 or equivalent language certificate

PROFESSIONAL ADVICE

Faculty of Materials Science and Technology
Dr. Dirk Renker
Gustav-Zeuner-Str. 5
09599 Freiberg
03731 39-2443
dirk.renker@tu-freiberg.de

SACHSEN
Diese Maßnahme wird mitfinanziert durch Steuermittel auf der Grundlage des vom Sächsischen Landtag beschlossenen Haushaltes.

As of July 2026

TU BERGAKADEMIE FREIBERG
TUBAF
Die Ressourcenuniversität.
Seit 1765.

MASTER
METALLIC MATERIALS TECHNOLOGY



FACULTY
OF MATERIALS SCIENCE AND TECHNOLOGY

1 STUDY
4 SPECIALISATIONS

FACTS

4 Semester
Standard Period of Study

English
Course Language

Summer Semester
Start of Studies

Master of Science (M. Sc.)
Degree

YOUR PROFILE

- Passion for new technologies and materials
- Interest in natural sciences and engineering
- Enjoy creative solutions and experimentation

Companies are on the lookout for innovative materials and technologies, e.g. to make products lighter, more cost-efficient, more ecological or even more intelligent. Hardly any industry can do that without engineers in materials technology.

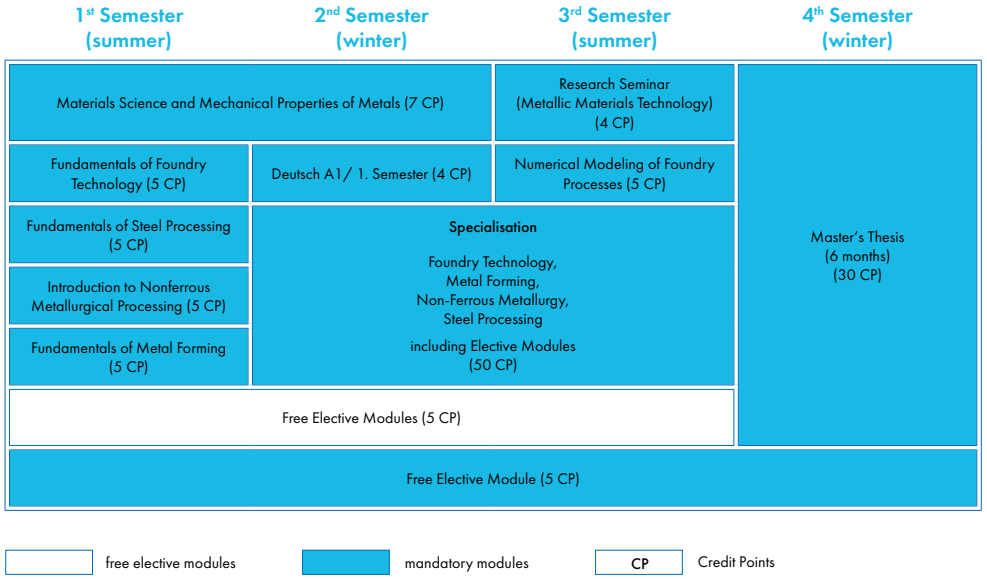
STUDY CONCEPT

On the basis of a Bachelor's degree in the field of an engineering degree programme with a focus on materials science or materials technology, the successful completion of the Master's degree programme is intended to provide further specific knowledge in the field of materials processing, especially foundry technology and forming technology, or in the field of steel production and non-ferrous metallurgy, whereby business management knowledge and practical professional skills are to be combined at the university level.

The students should be enabled to independently expand and implement existing knowledge through a scientific approach.

A 12-week industrial internship is required for this degree programme. It is recommended to complete or partially complete the internship before the degree programme. However, missing internship periods can also be completed during the degree programme, e.g. during the lecture-free periods until the topic of the Master's thesis is issued. The internship can be completed in different companies (materials tech nology, materials science, metallurgy or related fields). The certificates must show which activities have been carried out.

PROGRAMME STRUCTURE



CHOOSE 1 OF 4 SPECIALISATIONS

Foundry Technology
The main focus is on the basics of moulding materials and binders and the most important mould making and core making processes as well as the most important aspects of metallurgy of ferrous and non-ferrous casting materials, melting furnaces and melt treatment and analysis processes. In addition, the students get an overview of the modern production processes in foundries, design of foundry areas, post-treatment of castings and quality management.

Metal Forming
This specialization focuses the production technology of metallic semi-finished products by forming technologies. The lectures cover all technology stages along the production path from solidified pre-product to semi-finished product, their special features and their influences on the final properties of the product to be manufactured. Fundamentals of forming technology as well as technological process chains and their numerical simulation including their interaction with material behaviour are presented in detail.

Non-ferrous Metallurgy
The specialisation will offer a fundamental and applied understanding with regard to the primary production of base non-ferrous metals like copper, nickel, aluminium, tin, lead and zinc from primary and secondary resources and valuable metals. High temperature, hydrometallurgical and electrochemical processes are analyzed from an application, modelling and experimental point of view. Specific focus is given on recycling process.

Steel Processing
The specialisation focuses on basic concepts as well as on emerging trends in iron based materials engineering and production. It covers the study of iron and steelmaking, primary and secondary metallurgy, casting, **cleannes** of crude steel, optimising processing routes, materials properties and structures, as well as evaluation of final products. Global trends such as decarbonization, increasing energy efficiency, circular economy are key issues within this specialization.