Metallurgical Technology

Generated: 15. 11. 2026

Faculty	Faculty of Materials Science and Technology
Type of study	Doctoral
Language of instruction	English
Code of the programme	P0715D270007
Regular period of the study	4 years
Coordinating department	Department of Metallurgical Technologies
Coordinator	prof. Ing. Petr Lichý, Ph.D.

About study programme

The doctoral study branch Metallurgical Technology covers the entire issue of production and processing of liquid and solid materials based on iron and non-ferrous metals, thereby holds a unique position in the structure of disciplines of Czech universities.Workplaces of specialized departments are equipped with modern experimental, instrumental and analytical equipment with which it is possible to solve the challenging tasks of scientific research projects in the field of basic and also of applied research. The Doctoral Degree Programme educates top scientific professionals who will be able to apply their knowledge in the scientific, research, development and also in the production sphere in a highly professional and leader functions in the specific field and also in related fields.

Graduate's employment

Top experts with creative inventions will be able to apply their knowledge in the scientific, research, development, management and production sector in the respective branches as well as in related branches.

Study aims

The main goals of the study in the four-year doctoral study program Metallurgical Technology result from the need to fulfill the relevant profile of the graduate.
The main goal of the study program is to educate graduates with broad theoretical knowledge in the field of metallurgical technology, supplemented by specific practical knowledge and skills from training in laboratories, from practice in industrial enterprises with metallurgical technologies and from internships at foreign universities and research institutes. from scientific research cooperation in international scientific teams.
By completing theoretical and technological subjects according to the individual study plan and preparing a doctoral dissertation under the supervision of a supervisor, the student demonstrates the ability to creatively expand their knowledge of the field, demonstrates the ability of independent creative work in solving challenging technological tasks of industrial practice and demonstrates the ability to cooperate in tasks, both within the university and in international cooperation.
The study program educates top experts who will be able to apply themselves in the scientific, research, development and production spheres in highly professional and leading positions in the field and in related fields.
The doctoral study program Metallurgical Technology is based on the current doctoral study field of the same name accredited at FMMI VŠB-TUO. The study program follows on from the master's study program Metallurgical Engineering, which is offered in three specializations "Modern technologies of metal production", "Foundry technologies" and "Forming of progressive metal materials".

Graduate's knowledge

Graduates receive a wide theoretical knowledge in specialized fields of science of individual departments of faculty that guarantee this field of study. A profound theoretical foundation in the field of metallurgy of production and processing of metals and non-ferrous metals, their casting and forming is complemented by knowledge of production technology and processing of liquid and solid

materials based on iron and non-ferrous metals. The attention is also devoted to the numerical and physical modelling of metallurgical processes. An integral part of the study is orientation on the environmental aspects related with metallurgical production.

Graduate's skills

Graduates can expand the field of knowledge through original research based on the principles of scientific work obtained during the study. They can develop and evaluate theories, concepts and methods of the branch, including the definition of branches or their inclusion in the broader area.

Graduate's general competence

Graduates learn the principles of scientific work as a part of a research team and are able to independently solve a partial problem of basic and applied research, formulate a scientific or technical problem, critically evaluate the results published in the monitored area, search for original solutions and discuss their opinions with the scientific community on the international level and also with the general public.

Professions

- Non-ferrous metal technologist
- Researcher
- Foundry technologist
- Leading technologist
- Rapid prototyping technology engineer
- Metallurgical operation technologist
- Technologist-metallurg
- Forming technology manager
- Materials production technologist

Hard skills

- Assessment of formability of materials
- Optimization of the course of metallurgical processes in steel production and casting
- Knowledge of basic metallurgical factors influencing the formability of sheet metal
- Knowledge of casting technology
- Optimization of refining processes in the production of molten metals using SW ANSYS Fluent
- Orientation in modelling of volume forming processes
- MAGMASoft simulation programme
- Procedures for production of pressure castings
- Knowledge of metallurgical processes in metal production
- Optimization of extract drawing processes
- Simulation of forming processes using PC programmes
- Orientation in properties and use of molding materials
- Design of technological processes of production
- Optimization of the steel casting process using SW ProCAST and QuikCAST
- Knowledge of plasticity
- Evaluation of deformation behaviour of metallic materials
- Knowledge of steel production technology in converters

Study curriculum

- form Full-time (en)