

Metallurgical Engineering

An international Master's Program at the Technical
University of Leoben: Status May 2025

Versetz' Berge

Leoben



- ◆ Second largest city in Styria (25.000 inhabitants).
- ◆ Montanuniversitaet Leoben (Technical University of Leoben): **180 years of success!**
- ◆ Leoben and steel: voestalpine's long-product division is located in Leoben – Donawitz.
- ◆ Leoben-Vienna: 1 ½ hrs drive.
- ◆ Leoben-Venice and Leoben-Munich: 3 hrs. drive.



<https://www.leoben.at> and <https://magazine.primetals.com>





CAMPUS



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|-----|--------------------------------------|---|---|
| A 1 | Main Building, Franz-Josef-Straße 18 | B | Peter Tunner Building, Peter Tunner-Straße 5 |
| 2 | Rittinger Building | C | Petroleum Engineering, Parkstraße 27 |
| 3 | Chemistry Building | D | Technology Transfer Centre, Peter Tunner-Straße 25 |
| 4 | Environmental Protection Building | E | Raw Materials and Materials Centre, Erzherzog Johann-Straße 3 |
| 5 | Metallurgy Building | F | Materials Innovation Centre, Roseggerstraße 12 |
| 6 | Workshops | G | Polymer Engineering Centre, Otto Glöckel-Straße 2 |
| 7 | Archduke Johann Building | H | Academy Montanuniversität Leoben, Peter Tunner-Straße 15 |
| | | I | Raw Materials Innovation Centre, Roseggerstraße 11a |
| | | J | Parkstrasse 31, Parkstrasse 31 |
| | | K | Study Centre, Peter Tunner-Straße 23 |

Introduction



- **Academic system in Leoben and for most Austrian Universities:**
 - Bachelor degree programs (210 ECTS = 7 semesters), hereof 6 (180 ECTS) semesters with courses and 1 semester for internship in companies.
 - Master degree programs (120 ECTS), hereof 3 semesters of courses (90 ECTS) and 1 semester for master thesis.
- **Master programs in Leoben (26):**
 - **Advanced Ressources:** Advanced Mineral Resources Development, International Master of Science (EN), Applied Geosciences (EN), Applied and Exploration Geophysics, International Master of Science (EN), Building Materials and Ceramics, International Master of Science (EN), Energy Engineering, Geoenergy Engineering (EN), Industrial Management and Business Administration (DE, EN), Petroleum Engineering, International Study Program (EN), Petroleum Engineering, Joint International Master Program (EN), Mining and Tunnelling (EN), Raw Materials Engineering (EN), Sustainable Mineral and Metal Processing Engineering, EM Joint Master (EN)
 - **Sustainable Processes:** Digital Civil Engineering Science, DiCES (EN), Industrial Data Science (EN), Industrial Logistics, Mechanical Engineering, Metallurgy (DE, EN), Recycling, Safety and Disaster Management (EN), Sustainable Materials, International Master (EN), Environmental and Climate Protection Technology
 - **Smart Materials:** Advanced Materials Science and Engineering, AMASE (EN), Polymer Engineering and Science, Materials Science
 - **Responsible Consumption and Production:** Circular Engineering (EN), Responsible Consumption and Production, EURECA-PRO (EN)

Introduction



- **New English Master „Metallurgical Engineering“ – why?**
 - The Technical University of Leoben provides an excellent academic education in „Metallurgy“.
 - So far established: Bachelor in **Metallurgy and Metal Recycling** (German) and Master in **„Metallurgy“** (Required: B2 in German and English).
 - **Starting in 2025, The Technical University of Leoben will provide a new international study program in „METALLURGICAL ENGINEERING“.**
 - Degree with the title MSc, “Master of Science”.
 - Access from technical or natural science bachelor's degrees with as few conditions as possible or, ideally, no conditions of equivalence.
- **Admission Process**

Structure METALLURGICAL ENGINEERING



- English Master „Metallurgical Engineering“:
 - 1st and 2nd semester: **“Boarding”**: Basics of physical chemistry, ferrous and non-ferrous metallurgy, physical metallurgy, metal processing, numerical simulation, industrial economics in 7 core modules (35 ECTS). A module typically consists of a lecture part and an interactive practical part (lab, exercises, seminars).

Core modules	KSt	ECTS	empf. Sem.
Fundamentals of Physical Chemistry and Thermodynamics	3,5	5	1
Basics of Ferrous Metallurgy	4,0	5	1
Metallurgical Processing and Recycling Technologies	4,0	5	1
Fundamentals of Physical Metallurgy	4,0	5	1
Basics of Metal Processing	4,0	5	1
Accounting	4,0	5	1
Metallurgical Research Project	3,5	5	2
Principles of Numerical Simulation	4,0	5	1
Science and Responsibility	3,5	5	4
Summe	34,5	45	



Structure METALLURGICAL ENGINEERING



English Master „Metallurgical Engineering“:

- **2nd and 3rd semester:**
- **Select 2 “specialized modules” from:**
- Sustainability and Recycling of Metals
- Metallurgical Process Technology
- Manufacturing Technology for Metals
- Materials Technology for Metallic Materials



Profilmodul	KSt	ECTS	empf. Sem.
Modulgruppe Sustainability and Recycling in Metallurgy			
Sustainable Iron- and Steelmaking	4,0	5	2
Sustainable Metallurgy	4,0	5	3
Emerging Process Technologies and Specific Process Engineering	4,0	5	2
Modulgruppe Metallurgical Process Technology			
Cleaness and Secondary Metallurgy for Advanced Steel Grades	3,0	5	2
Casting Processes for Steel	4,0	5	2
Computational Thermodynamics	4,0	5	3
Modulgruppe Manufacturing Technology for Metals			
Rapid Solidification and Additive Manufacturing	4,0	5	2
Metallurgical Fundamentals of Metal Processing	4,0	5	3
Casting Design - Simulation and Experiment	4,0	5	3
Modulgruppe Materials Technology for Metallic Materials			
Metallurgical Characterization	4,0	5	2
High-alloyed steels: Production and material technology	4,0	5	3
Materials technology and production of modern high-performance steels	4,0	5	3

Structure METALLURGICAL ENGINEERING



■ English Master „Metallurgical Engineering“:

- 2nd semester: Metallurgical Research Project.
- 3rd Semester: Science and Responsibility.
- 4th semester: Master's thesis (30 ECTS).
- Free selection of 20 ECTS from a list of “profile modules”.

Kernmodul	KSt	ECTS	empf. Sem.
Fundamentals of Physical Chemistry and Thermodynamics	3,5	5	1
Basics of Ferrous Metallurgy	4,0	5	1
Metallurgical Processing and Recycling Technologies	4,0	5	1
Fundamentals of Physical Metallurgy	4,0	5	1
Basics of Metal Processing	4,0	5	1
Accounting	4,0	5	1
Metallurgical Research Project	3,5	5	2
Principles of Numerical Simulation	4,0	5	1
Science and Responsibility	3,5	5	4
Summe	34,5	45	



Profilmodule			
Business Administration	3,0	5	2
Numerical Techniques in Metal Forming	4,0	5	2
Modul Metallurgy in Extreme Environments	4,0	5	3
Practical Skills in Metallurgical Process Simulation	4,0	5	2
Advanced Multiphase Modelling	4,0	5	3
Phase Equilibria and Microstructure Simulation in Metallurgical Engineering	4,0	5	2
Metallic Materials II	5,0	5	2
Corrosion and Corrosion Protection	4,0	5	3
Summe		50	

Structure METALLURGICAL ENGINEERING



◆ Interested?

- ◆ For students from third countries and the EU:



- ◆ For students from Austria



See you in Leoben!

Metallurgical Engineering provides specialized, high-quality professional training, which qualifies graduates both for further qualification in a relevant doctoral program and for a wide range of careers, particularly in the steel and non-ferrous metal industry, the foundry industry, the metal processing industry, metallurgical plant engineering, and the supply industry. The skills acquired include the management and design of complex production, research, and development processes, including new strategic approaches, sustainability, responsibility, ethics and scientific practice.