eit RawMaterials ACADEMY

Co-funded by the European Union

The EIT-Labelled Master's Programmes

LAUNCH YOUR CAREER IN RAW MATERIALS

Raw Materials Value Chain | RaVeN

RaVeN Master in Mining Engineering

Awarded the EIT Label in 2022

Today's Europe needs a skilled workforce for the raw materials industry, which forms the basis for the development of innovative technologies and industries of the future. The large imbalance between raw material acquisition and consumption that exists in Europe requires a greater commitment to securing supply chains. Such a strategy demands the acquisition of a skilled, entrepreneurial workforce with an awareness of sustainable activities between technology, economics, society and the environment.
The RaVeN EIT-Labelled master's programme in Mining Engineering responds to this challenge by offering an innovative education programme which offers a comprehensive approach to resources with an emphasis on a holistic value chain and on closing the gap between the supply of, and demand for, raw materials. The objective will be pursued along an active learning path involving students and looking for unconventional solutions that can get us closer to a more self-contained (natural resource re-circulating) and, therefore, more sustainable economy. The three cooperating university partners, representing a broad geographical and cultural spectrum, collaborating with the two sides of the Knowledge Triangle, contribute a combination of expertise and highly entrepreneurial mindsets to the programme.

Double Diploma	Graduates of the RaVeN programme will be awarded diplomas from AGH University of Science and Technology and TU Bergakademie Freiberg. Students will obtain the degree: 1) at AGH UST - magister inżynier; 2) at TUBAF - Master of Science. Graduates will also be awarded the EIT Label Certificate.
Credits	120 ECTS, 24 months
Language of Instruction	English
Starts in	October
Requirements	Eligible candidates must hold a Bachelor's degree in Geology, Mining Engineering, Mineral Processing, Environmental Engineering, Mechanical Engineering, Metallurgy or similar, as well as proof of English language proficiency. Students holding a bachelor's degree from outside of the core field of engineering can be selected by the decision of the Program Council. The admission criteria are available at ravenmaster.eu
Tuition fees	AGH - No tuition fees apply. A registration fee of 100 PLN will apply to all students. TUBAF – a semester fee of 300€/semester applies for applicants who already hold a master's degree
Application Period	June-September 2023 Detailed information on the recruitment process will be posted at ravenmaster.eu in March 2023.
Scholarships	AVSA scholarships of €13,500 from EIT RawMaterials are available. Information on how EIT Label scholarships are awarded and how to receive them will be made available at ravenproject.eu. For those students who will not be funded by AVSA, national ministerial scholarships can be provided. Additionally, the best students can be awarded academic scholarships for the highest academic achievements. Please refer to the ravenmaster.eu website for information on available scholarships.

The RaVeN programme bridges the gap in the European raw materials sector's workforce, in the training of skilled, entrepreneurial professionals with an awareness of sustainable activities between technology, economics, society and the environment. I firmly believe that this programme will meet the growing demands of future employers by producing graduates who are entrepreneurial, creative and think out-of-the-box.

— **JOANNA KULCZYCKA PHD, ASSOCIATE PROFESSOR, AGH**

PARTICIPATING UNIVERSITIES

AGH University of Science and Technology
Poland
TU Bergakademie Freiberg
Germany
Technical University of Košice
Slovakia

FOR MORE INFORMATION

Faculty of Civil Engineering and Resources Management, AGH University of Science and Technology
Al. Mickiewicza 30, budynek A4,
Kraków, Poland

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Programme Structure

The RaVeN is a new two-year Mining Engineering MSc. degree scheme.

YEAR 1

SEMESTER 1 (31 ECTS)
AGH UST

- Business training and general trends in the raw materials value chain
- Sustainable exploration of deposits and modern geological technologies for their identification
- The challenges of mining activities in the world
- New trends in mining technologies and mineral processing
- Problems in post mining areas - water management, reclamation, revitalisation
- Energy efficiency - sustainable sources of energy under renewables requirements
- Modern and innovative machines and mining methods used in raw materials excavation
- Economics and Managerial Finance in raw materials
- Statistical tools and data exploration for digitalisation
- Social effectiveness in raw materials management
- Social aspects of sustainable development
- Environmental engineering
- Structures and organisational aspects of lean production
- Business models for sustainable markets
- Sustainable effectiveness of processes in circular economy

SEMESTER 2 (29 ECTS)
AGH UST

- Innovative processes for circular economy in the non-ferrous metals industry
- Modern technologies in Mineral Processing
- Metallurgical industry development
- Materials science and engineering innovation
- Innovation management and entrepreneurship
- Summer school
- Lean production in advanced material development
- The quality management of production processes Eco designing products for circular economy
- Reporting on the SDGs
- English – B2 level

YEAR 2

SEMESTER 3 (33 ECTS)
TUBAF

- Hydrogeology for GW-Management
- Radioactivity
- Reclamation
- Environmental geotechnics
- Management and finance of mining operations along the life cycle
- Licensing, stakeholder involvement and expectations management
- Project and contract management

SEMESTER 2 (29 ECTS)
AGH UST

- Industrial practices
- Master thesis
- Seminars
- Data reporting spreadsheets with SQL queries
- Business management and economic efficiency

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STUDY PROGRAMME

The strength of the RaVeN programme is its innovative approach to teaching through an active learning path by integrating academia, industry and research along the raw materials value chain through the involvement of non-academic experts, mobility exchanges, industry and start-ups. Visit ravenproject.eu to explore the full RaVeN study programme.

PROFESSIONAL PROFILES AFTER GRADUATION

The RaVeN master's degree programme will prepare students with the hard and soft skills needed to understand and solve complex problems related to the entire raw materials value chain. The training and knowledge offered by the programme will offer an advantage for future professionals in the sector, as it focuses on key steps of the value chain that are lacking in the current education portfolio in Europe. The programme is designed to prepare students with up-to-date specialised practical knowledge on the sustainable exploitation of raw materials throughout the value chain: sourcing, processing, use, recycling, and back to sourcing. In addition, the RaVeN MSc fosters creativity, innovation and entrepreneurship, preparing graduates to implement innovative solutions at their workplaces, or to start and run their businesses successfully. Through the programme, students will become technical experts in the field of raw materials, being aware of sustainability,and gaining a holistic view of the value chain and processes. Graduates' skills and knowledge will be highly valued in the mining and processing, metallurgy, energy, automotive and logistics sectors.

RAW MATERIALS VALUE CHAIN SOLUTIONS WITH RAVEN

The curriculum is designed to equip participants with expertise in sustainable extraction, processing and end-use of raw materials. The comprehensive approach of combining academic and expert knowledge will translate into awareness of, and concern for, the raw materials value chain sector in Europe. The process of knowledge acquisition will be carried out with close co-operation with a broad spectrum of stakeholders - including SMEs and large corporations. In addition, the study programme will lead participants towards "circular thinking", bridging of the raw materials gap with zero-waste policies that will be discussed during academic lectures as well as meetings with the industry.

ARE YOU A STUDENT WHO IS:

- **Wanting to contribute to securing raw materials supply?**
- **Keen to gain expertise over the entire raw materials value chain?**
- **Motivated to acquire entrepreneurship skills and start your own business?**
- **Willing to support and contribute to the design of products and services for the circular economy?**

VISIT RAVENMASTER.EU TO FIND OUT MORE AND APPLY

Labelled by:

European Institute of Innovation & Technology

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RawMaterials ACADEMY

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