eit RawMaterials ACADEMY

Co-funded by the European Union

The EIT-Labelled Master's Programmes

LAUNCH YOUR CAREER IN RAW MATERIALS

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Introduction

Our modern lifestyle relies on raw materials. From the iron and steel of our railway infrastructure to the gold and silver in the circuitry of smartphones: raw materials are everywhere. The transition to a climate neutral future requires cobalt for electric vehicles, lithium for rechargeable batteries, silicon for solar panels, and rare earth elements for wind turbines that generate renewable energy.

As the world grows smaller and more hyper-connected, the impact of society on the Earth has never been more visible. It is now clear that we need to shift to a circular economy in order to responsibly use the Earth's finite resources. But what can just one individual do to help? More than you think! Real change requires courage, innovative thinking, and collective action – the same skill set that EIT RawMaterials Academy looks for in prospective students. Are you ready to mine your raw talent, help shape a more circular, green economy, and create sustainable solutions for tomorrow?

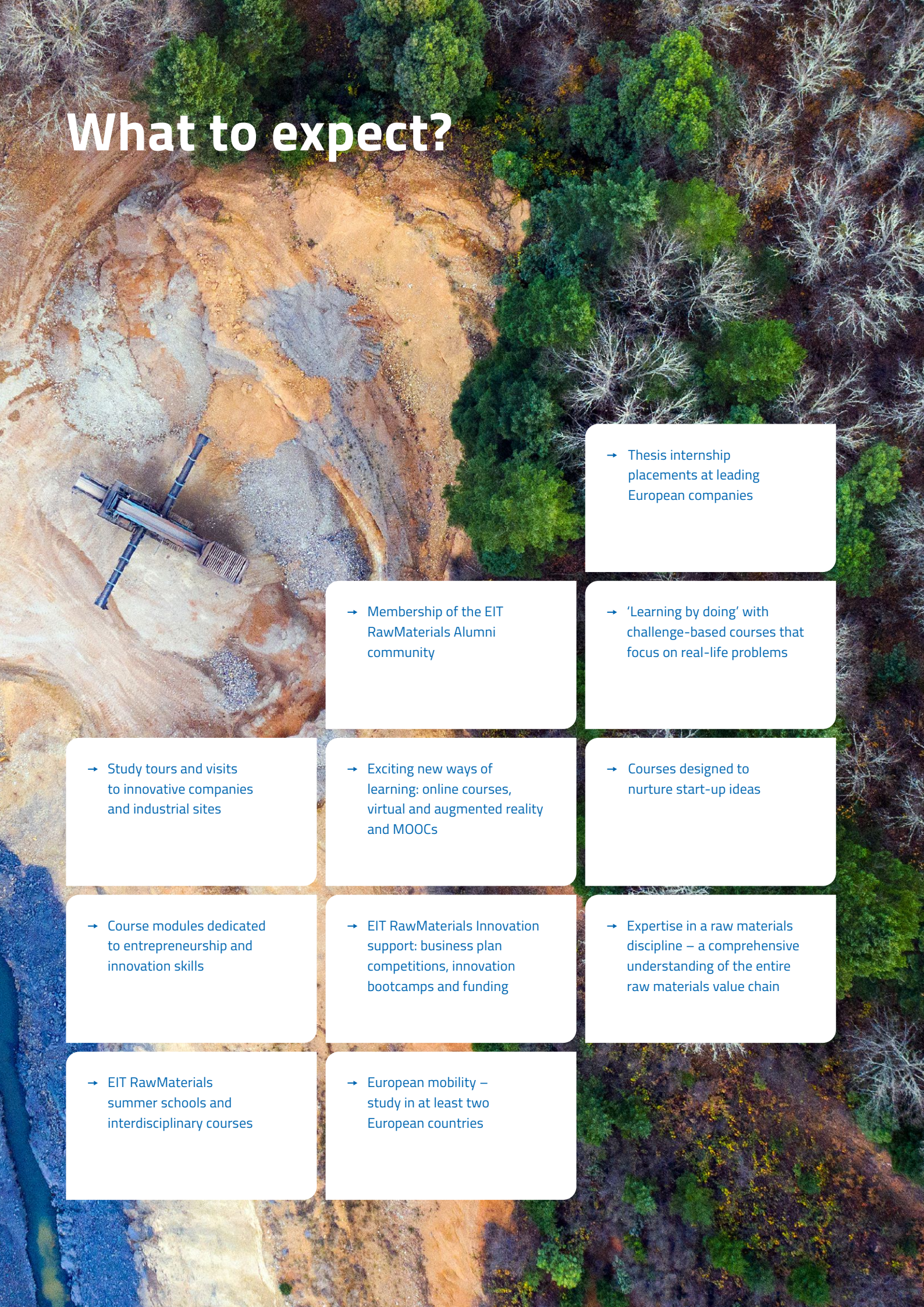
What do we offer students?

EIT RawMaterials Academy offers students a unique opportunity to learn in a dynamic environment, focusing on real-life challenges. Awarded by the EIT (European Institute of Innovation and Technology), a body of the European Union, the EIT Label is a certificate of quality that is granted only to excellent educational programmes at the master's and doctoral level.

As a student of an EIT-Labelled programme from EIT RawMaterials Academy, you'll be part of the largest European raw materials network with more than 300 organisations as partners, including higher education professionals, researchers, and industry experts from over 20 European countries. As an EIT Label student, you will be welcomed into this network and will champion and contribute to the EIT RawMaterials goals of finding new, innovative solutions to secure the sustainable supply of raw materials across the value chain: from exploration, mining and mineral processing to recycling, substitution and a circular economy. EIT RawMaterials aims to equip a new generation of innovators in Europe with the necessary entrepreneurial mind-set for designing and delivering materials solutions. You'll also get the chance to collaborate internationally and develop sustainable solutions to pressing economic, environmental and societal challenges. And long after you graduate, you can stay connected via EIT RawMaterials Alumni.

JOIN AN EIT-LABELLED PROGRAMME AND BECOME A GLOBAL GAME-CHANGER, EQUIPPED WITH THE KNOWLEDGE, SKILLS AND EXPERIENCE EMPLOYERS SEEK.

What to expect?

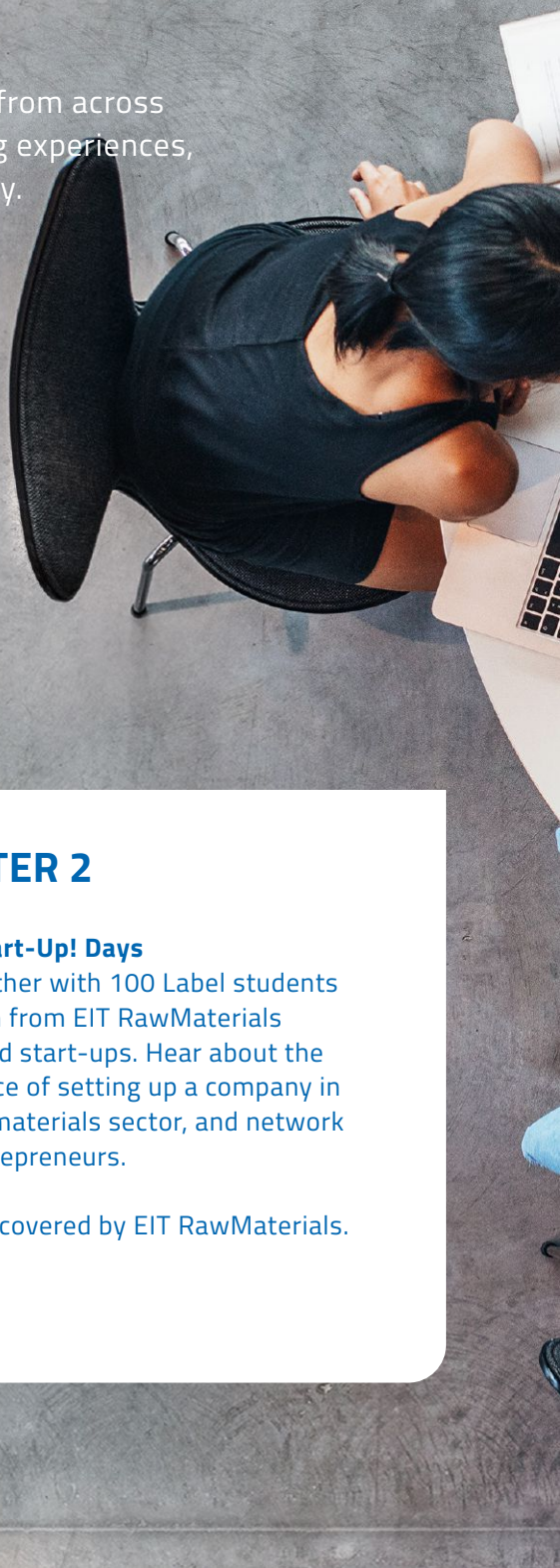


- Thesis internship placements at leading European companies
- Membership of the EIT RawMaterials Alumni community
- 'Learning by doing' with challenge-based courses that focus on real-life problems
- Study tours and visits to innovative companies and industrial sites
- Exciting new ways of learning: online courses, virtual and augmented reality and MOOCs
- Courses designed to nurture start-up ideas
- Course modules dedicated to entrepreneurship and innovation skills
- EIT RawMaterials Innovation support: business plan competitions, innovation bootcamps and funding
- Expertise in a raw materials discipline – a comprehensive understanding of the entire raw materials value chain
- EIT RawMaterials summer schools and interdisciplinary courses
- European mobility – study in at least two European countries

Exclusive activities and support for EIT-Labelled students

Students on EIT-Labelled master's programmes within the EIT RawMaterials Academy receive a range of additional opportunities to boost their innovation and entrepreneurship skills, grow their network in the raw materials sector and gain the experience they need to thrive.

These exclusive events bring together EIT-Labelled students from across the Master School, and form the basis of your shared learning experiences, making you a full member of the EIT RawMaterials community.

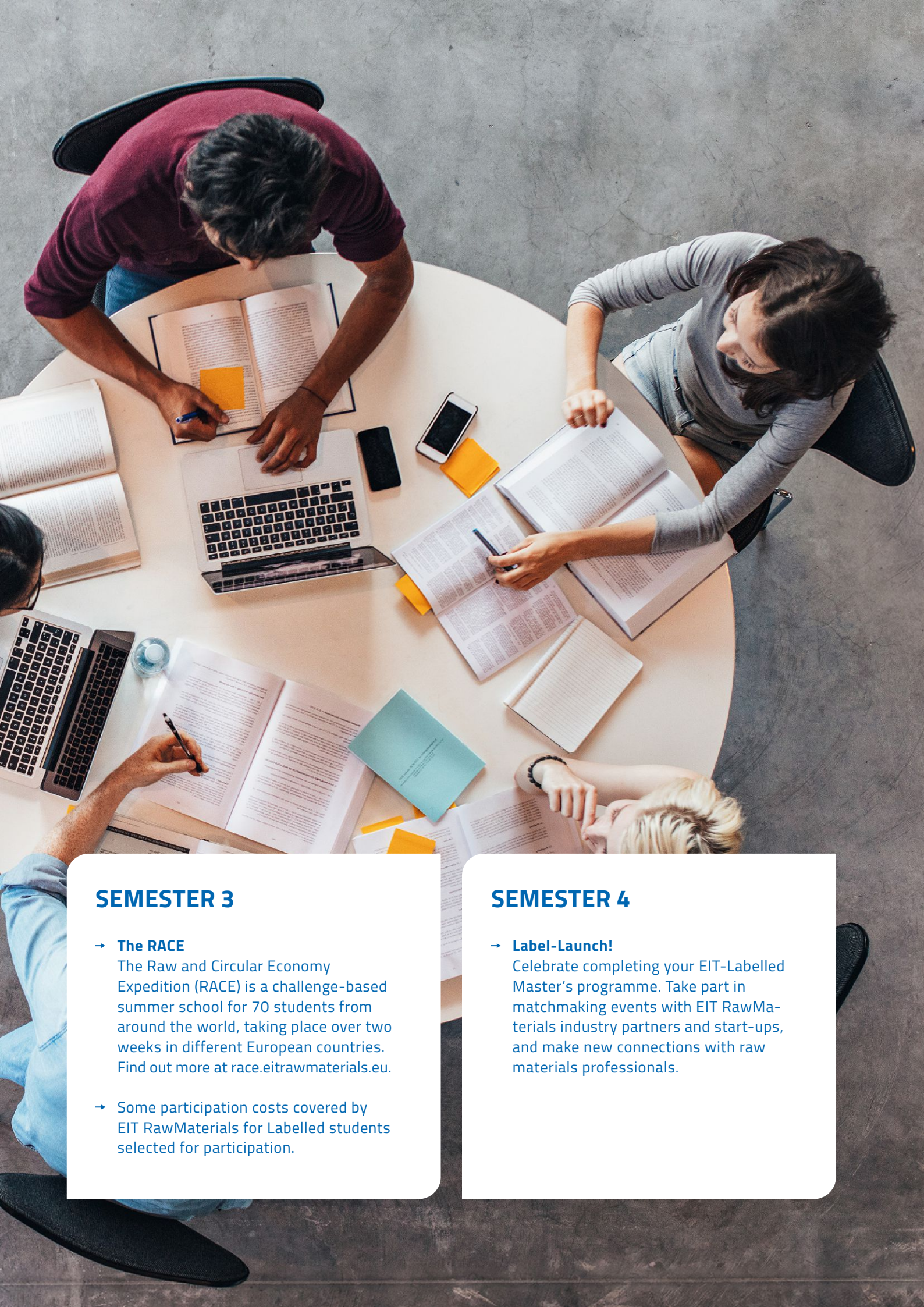


SEMESTER 1

- **Label Induction Days**
  Meet the EIT RawMaterials Academy and learn how to get involved in our community and access the many opportunities on offer. Sign up for EIT RawMaterials Alumni and start growing your network.
- Vote for your representative on the Label Student Board, or stand for election!

SEMESTER 2

- **Label Start-Up! Days**
  Get together with 100 Label students and learn from EIT RawMaterials supported start-ups. Hear about the experience of setting up a company in the raw materials sector, and network with entrepreneurs.
- All costs covered by EIT RawMaterials.



SEMESTER 3

- **The RACE**
  The Raw and Circular Economy Expedition (RACE) is a challenge-based summer school for 70 students from around the world, taking place over two weeks in different European countries. Find out more at race.eitrawmaterials.eu.

- Some participation costs covered by EIT RawMaterials for Labelled students selected for participation.

SEMESTER 4

- **Label-Launch!**
  Celebrate completing your EIT-Labelled Master's programme. Take part in matchmaking events with EIT RawMaterials industry partners and start-ups, and make new connections with raw materials professionals.

Do you have a raw materials business idea?

EIT RawMaterials offers a range of support for individuals and companies with innovative business ideas, including:

Lab2Market

- A three-term entrepreneurship training programme, exclusively for EIT Label students and graduates. Lab2Market will help you come up with a business idea, create a start-up and connect you with investors and customers. Grants are available for selected participants.

EIT Jumpstarter

- One of Europe's top pre-accelerator programmes, to help you develop your business idea and understand what's needed to create a successful start-up.

EIT RawMaterials Accelerator

- A three-stage accelerator programme to help start-ups with a developed product to bring their solution to the market.

Booster Call

- Financial and network access support for start-ups and SMEs in the raw materials sector.

EIT RawMaterials Alumni

From the moment you join an EIT-Labelled Master's programme in the EIT RawMaterials Academy, you are eligible to join EIT RawMaterials Alumni. This organisation provides a great opportunity to connect with the EIT RawMaterials ecosystem and varied EIT RawMaterials activities, such as business idea competitions, start-ups, professional development courses and Master's and PhD programmes.

It is run by and for its members, who can take part in events, and develop their careers through internships and job offers, networking activities and much more, forming a hub for a diverse range of raw materials students, academics and professionals. Furthermore, EIT RawMaterials Alumni provides you with a connection to the wider EIT Alumni community and alumni events around Europe.

Programmes

Nine Master's programmes within the EIT RawMaterials Academy hold the EIT Label. Graduates from all EIT-Labelled programmes are awarded a degree from one or more of the participating universities, with an EIT Label Certificate confirming graduation from an EIT-Labelled programme.

AMIR

Master in Advanced Materials: Innovative Recycling

AMIS

Master in Advanced Materials for Innovation and Sustainability

EMerald

Master in Georesources Engineering (Innovative Education in Geometallurgy and Circular Economy)

MEITIM

Master in Entrepreneurship, Innovation and Technology Integration in Mining

RaVeN

Master in Mining Engineering

SINReM

International Master of Science in Sustainable and Innovative Natural Resource Management

SUMA

Master in Sustainable Materials

TIMREX

Master in Mineral Exploration

AMIR master

Master in Advanced Materials: Innovative Recycling

Awarded the EIT Label in 2018

THE CHALLENGE

Materials are the building blocks of the modern global economy and are instrumental for the transition to a green, circular and carbon-neutral economy. Thirty of these materials have been defined by the EU as critical, meaning that they are both highly important to the EU economy and in dangerously low domestic supply. Accessing the known primary raw material sources has become more challenging, while amounts of industrial waste and end-of-life-products are rapidly increasing. These waste streams contain secondary raw materials, many of which are critical and can be recovered, diversifying supply and delivering usable materials to meet increasing demands. To achieve this, we need skilled professionals with advanced technical knowledge of recycling, an understanding of the full raw materials value chain and the skills required to transform knowledge into solutions and business. The AMIR master's programme was created to fulfil this need by educating future international professionals who will develop new routes for materials recycling.

With the support of the Erasmus+ Programme of the European Union

Double Diploma	Graduates of the AMIR programme will be awarded a single or double Master of Science degree, depending upon their chosen pathway. Graduates will also be awarded the EIT Label Certificate.
Credits	120 ECTS, 24 months
Language of Instruction	English
Starts in	September
Requirements	The programme is aimed at candidates who have a bachelor's degree in Engineering and Environmental Sciences with advanced knowledge in Chemistry (minimum 3 years of study or 180 ECTS credits), or a bachelor's degree in Chemistry, Physical-Chemistry, Materials (or Matter) Sciences. Candidates must also demonstrate English language proficiency.
Tuition fees	Please consult the AMIR website (www.amir-master.com)
Application Period	For more details, please check www.amir-master.com/apply/
Scholarships	For students beginning in September 2024, EIT Label scholarships from EIT RawMaterials of €15,000 per eligible student are available. For information on how EIT Label scholarships will be awarded and who is eligible, please contact the coordinating university directly: amir.master@u-bordeaux.fr. Additional scholarships and grants may be available – visit www.amir-master.com for details. A number of Erasmus Mundus Joint master's degree scholarships are available, covering full tuition fees and living expenses.

"I chose AMIR because I wanted to play a pioneering role in the responsible utilisation of secondary raw materials. The programme has equipped me with skills in several end-of-life options for materials and taught me strategies to incorporate sustainable designs early in material research. The highlight of the programme has been the enjoyable experience of attending various EIT RawMaterials Label events, which enabled me to build a large network of like-minded sustainability experts and helped me to develop life-long friendships while travelling across Europe."

— **HAMZA JAMIL, PAKISTAN (AMIR)**

PARTICIPATING UNIVERSITIES

University of Bordeaux
France
NOVA University Lisbon
Portugal
TU Darmstadt
Germany
University of Liège
Belgium
Technical University of Madrid
Spain
University of Miskolc
Hungary

FOR MORE INFORMATION

AMIR administrative coordinator
Sophie Coudray
University of Bordeaux

amir.master@u-bordeaux.fr
www.amir-master.com

Programme Structure

YEAR 1 of the master's programme takes place at the University of Bordeaux, NOVA University Lisbon or the University of Miskolc. Students learn about general and technical aspects of the raw materials value chain (general chemistry, material science, the lifecycle of materials), as well as about the main learning outcomes expected from an EIT-Labelled programme: sustainability, intellectual transformation, value judgments (ethical, scientific and sustainability challenges), creativity, innovation, leadership and entrepreneurship. In addition, a new module focusing on batteries has been introduced into the programme at Bordeaux, in line with the key trend of electrification in the development of sustainable materials for future mobility.

YEAR 2 takes place at one of the other partner universities, allowing students to gain specialist knowledge in their area of interest. This is followed by an industrial internship and completion of the master thesis.

YEAR 1

MATERIALS RECYCLING AND ENTREPRENEURSHIP

SEMESTER 1 & 2 NOVA University Lisbon	**SEMESTER 1 & 2** University of Bordeaux	**SEMESTER 1 & 2** University of Miskolc
Materials recycling and entrepreneurship	Materials recycling and entrepreneurship	Materials recycling and entrepreneurship

YEAR 2

SPECIALISATION

SEMESTER 3 & 4 TU Darmstadt	**SEMESTER 3 & 4** University of Liège	**SEMESTER 3 & 4** Technical University of Madrid	**SEMESTER 4** Industrial or Academic Partner
Material design for recycling	Metallurgy and metals recycling	Mineral recycling for construction and other sectors	Industrial internship (15 ECTS) master thesis (15 ECTS)

SEE FULL MODULE DETAILS HERE: **WWW.AMIR-MASTER.COM/PROGRAMME/**

Master in Advanced Materials: Innovative Recycling

Awarded the EIT Label in 2018

PROFESSIONAL PROFILES AFTER GRADUATION

Graduates of the AMIR programme will be fully equipped to take on professional roles in the recycling sector:

- → **Process optimisation**
- → **Materials design**
- → **Plant administration**
- → **Project administration**

Furthermore, the skills gained are widely required across sectors, including information and communication technologies, building construction, energy, machinery tools, and mobility. Graduates also obtain the necessary skills and knowledge to set up their own company or work in sales and marketing. Finally, doctoral studies are another possibility, and graduates of the AMIR programme will be fully equipped to enter PhD programmes in the recycling sector to pursue engineering careers or academic research.

ARE YOU A STUDENT WHO IS:

- **Interested in the full value chain of raw materials?**
- **Keen to make a difference in confronting the challenges surrounding waste and contributing to the development of sustainable solutions?**
- **Motivated to spend time working with top companies and research organisations in the recycling sector?**
- **Driven to become an entrepreneur or intrapreneur who makes innovation happen?**

VISIT AMIR-MASTER.EU
TO FIND OUT MORE AND APPLY

Master in Advanced Materials for Innovation and Sustainability

Awarded the EIT Label in 2016

THE CHALLENGE

As global and EU populations and subsequent welfare demands increase, consumption per capita is also on the rise. In the EU especially, consumption has outpaced production, particularly with respect to the more complicated, resource-intensive technologies and products that have become part of daily life. As a result, recycling is of utmost importance to diversify our supply sources and meet society's needs.

AMIS is a master's programme in Advanced Materials for Innovation and Sustainability. The primary objective of the programme is to provide students with an understanding of the full raw materials value chain and a mind-set for innovation and entrepreneurship focusing on sustainability. AMIS tackles this challenge by focusing on three themes – all of which are central themes of EIT RawMaterials:

- Substitution of critical or toxic materials in products for optimised performance
- Material chain optimisation for end-of-life products
- Product and services design for the circular economy

AMIS aims to train T-shaped professionals – experts in a particular raw materials discipline with an overview of the entire raw materials value chain. T-shaped professionals also work closely with industry professionals to explore how innovation and entrepreneurship can strengthen the market uptake of raw materials solutions.

Through the programme, AMIS students will become experts in the field of raw materials, particularly in sustainable functional materials, while gaining a holistic view of the value and process chain.

Double Diploma	**From two of the following:** – Grenoble INP: Master Science et Génie des Matériaux – Aalto University: Master of Science (Technology): Functional Materials for Global Challenges – TU Darmstadt: Master of Science in Materials or Master of Science in Physics or Chemistry – University of Bordeaux: Master Sciences et Technologies, mention CHIMIE, Advanced Hybrid Materials: Composites and Ceramics by Design – University of Liège: Master Sciences Physiques or Master Sciences Chimiques – Riga Technical University : Master Degree of Engineering Science in Materials Science and Nanotechnology – EIT Label Certificate
Credits	120 ECTS, 24 months
Language of Instruction	English
Starts in	September
Requirements	Eligible candidates must have a bachelor's degree in Science, Technology or Engineering (Physics, Chemistry, Materials Science) or its equivalent, as well as an English language certificate.
Tuition fees	EU students 2024: €1,000/year Non-EU students 2024: €8,000/year Check amis-master.eitrawmaterials.eu for up-to-date information.
Application Period	1st round: 2 November 2023 – 26 February 2024
Scholarships	For students beginning in September 2024, EIT Label scholarships from EIT RawMaterials of €15,000 per eligible student are available. For information on how EIT Label scholarships will be awarded and who is eligible, please contact the coordinating university directly: contact@amis-master.eu

"I would call the AMIS programme a launchpad for understanding the full raw materials value chain and developing a mindset for innovation and entrepreneurship. The programme helped me improve my soft skills such as communication, teamwork, and flexibility, as well as nurturing a network and cultural awareness. AMIS helped me to found a start-up company in Finland, and I attended the EIT Jumpstarter 2019 winning second prize."

— **ERFAN KIMIAEI, IRAN (AMIS)**

PARTICIPATING UNIVERSITIES

Aalto University
Finland
University of Bordeaux
France
Technische Universität Darmstadt
Germany
Grenoble INP
France
University of Liège
Belgium
Riga Technical University
Latvia

FOR MORE INFORMATION

Grenoble Institute of Technology
PHELMA International Relations
Parvis Louis Néel

CS 50257
38016 GRENOBLE Cedex 1 France

contact@amis-master.eu
www.amis-master.eitrawmaterials.eu

Programme Structure

AMIS is a two-year programme:

YEAR 1 takes place at Grenoble INP, Aalto University or TU Darmstadt. Once students have chosen their entry university, AMIS provides a general curriculum in Materials Sciences, including mandatory courses in Advanced Functional Materials and Innovation, Business and Entrepreneurship.

YEAR 2 is the specialisation year and takes place at one of the six consortium partner universities. Year 2 includes mandatory courses in Advanced Functional Materials with a specialisation in material interfaces, nanomaterials, ceramics or hybrids, as well as the master thesis, a research and development experience in material science jointly supervised by home university professors and host non-academic partners. Student mobility is an integrated part of the programme, involving study at two of the five consortium partner universities, depending on your chosen speciality. Year 1 and Year 2 must be taken at universities in different countries.

MOBILITY AMIS **YEAR 1** (60 ECTS)

TRACK 1	TRACK 2	TRACK 3
Grenoble INP	Aalto University	TU Darmstadt

Topics:
- Advanced functional materials
- Innovation, business and entrepreneurship
- Project work on business models and commercialisation of technologies
- Non-academic internship

SUMMER SCHOOL: **DEVELOPING SOLUTIONS TO INDUSTRIAL CHALLENGES**

MOBILITY AMIS **YEAR 2** (60 ECTS)

TRACK 1	TRACK 2	TRACK 3
TU Darmstadt Aalto University University of Liège Riga Technical University	TU Darmstadt University of Liège University of Bordeaux Grenoble INP Riga Technical University	Aalto University University of Liège University of Bordeaux Grenoble INP Riga Technical University

Darmstadt	**Aalto**	**Liège**	**Bordeaux**	**Grenoble**	**Riga**
Functional ceramics	Nanomaterials and interfaces	Nanomaterials and modelling	Advanced hybrid materials	Materials and interfaces	Materials Science and Nanotechnology

Topics:
- Advanced functional materials with specialisation
- Practical work on industrial challenges using innovation and entrepreneurship
- Specialised approach to business modelling
- Thesis carried out with university and AMIS partners
- Non-academic internship

Master in Advanced Materials for Innovation and Sustainability

Awarded the EIT Label in 2016

PROFESSIONAL PROFILES AFTER GRADUATION

AMIS alumni skills and knowledge will be highly appreciated by industries in the Materials Science domain or by laboratories, especially in the following sectors: microelectronics, optics, bio-technologies, energy, communication and environment. As a resource engineer, potential career paths include:

Academic career/research: at universities and research institutions, whether teaching students or in managerial positions. Scientists with high commercialisation awareness, knowledge and competence who can effectively communicate the commercial value of their scientific research.
Resource industry: SMEs in chemistry, exploration, green energy, machinery and plant construction, the metal working industry, ceramics, environmental economy (R&D, product development, management, production, marketing and sales). Expert or manager whose actions and decisions influence the innovation output, value creation and performance of the company.
Freelancer and entrepreneur: creating one's own business or becoming a consultant.
Wider society: science journalism, consulting, project development and management, advisor to policy makers, administration, specialist agencies, media, etc.

ARE YOU A STUDENT WHO IS:

- Interested in sparking innovation in the raw materials sector?
- Keen to become entrepreneurial and start your own company?
- Motivated to find real solutions to environmental and societal challenges?
- Interested in hands-on learning in industry and research companies?

VISIT AMIS-MASTER.EITRAWMATERIALS.EU TO FIND OUT MORE AND APPLY

EMERALD
ERASMUS MUNDUS MASTER
IN GEORESOURCES ENGINEERING

Master in Georesources Engineering

(Innovative Education in Geometallurgy and Circular Economy)
Awarded the EIT Label in 2016

THE CHALLENGE

The EMerald master's programme was created to answer the urgent need expressed by the European Union to create a resource-efficient Europe. As the EU recognised the importance of mineral and metal resources in our modern economy, it also realised that the raw materials industries were facing a critical skills shortage.

The EMerald master's programme aims to train a new generation of engineers with an entrepreneurial mind-set and a global vision of the value chain, putting the extraction of mineral and metal resources on a circle that continues by collecting end-of-life products and recovering valuable materials out of urban mines (circular economy). Therefore, the master's course focuses on two aspects:

- → **Bridging the gap between geological exploration and mineral processing by offering innovative education in geometallurgy**
- → **Helping to close the loop in a resource-efficient way by forming professionals who know the processing challenges and the need to meet targets in terms of recyclability**

Multiple Diploma	The consortium will deliver a triple diploma (one from each university where the student attended lectures) and a Diploma Supplement from the coordinating university: – Ingénieur Civil des Mines et Géologue delivered by University of Liège (ULiège) – Master Sciences de la Terre et des Planètes Environnement delivered by University of Lorraine (UL) – Master of Science – Major: Geosciences delivered by Luleå University of Technology (LTU) – Master in Mechanical and Process Engineering delivered by Technische Universität Bergakademie Freiberg (TUBAF) – EIT Label Certificate
Credits	120 ECTS, 24 months
Language of Instruction	English
Starts in	September
Requirement	Eligible candidates must have a bachelor's degree in Engineering with basic knowledge in Geology or a bachelor's degree in Minerals Engineering, Mining Engineering, Chemical Engineering, Geological Engineering, Metallurgical Engineering or a master's degree in Geology. At least 22.5 ECTS in Mathematics at university level are required. Candidates must also demonstrate proficiency in the English language.
Tuition fees	EU students 2023: €4,500/year Non-EU students 2023: €9,000/year For up-to-date fee information, visit www.em-georesources.eu
Application Period	Applications to the Erasmus Mundus Scholarships for both EU and NON-EU students: from Nov 6th 2023 to March 1st 2024 Applications for non-EU students to partial grants or as self-funded students: From Nov 6th 2023 to March 1st 2024 Applications for EU students to partial grants or as self-funded students: from April 30th to June 30th 2024
Scholarships	Erasmus Mundus scholarships are available for the 2024 intake. Applications must be submitted through the EMerald website. For students beginning in September 2024, EIT Label scholarships from EIT RawMaterials of €15,000 per eligible student are available. For information on how EIT Label scholarships will be awarded and who is eligible, please contact the coordinating university directly at emerald@uliege.be.

PARTICIPATING UNIVERSITIES

University of Liège
Belgium
University of Lorraine, ENSG Nancy
France
Luleå University of Technology
Sweden
TU Bergakademie Freiberg
Germany

FOR MORE INFORMATION

EMerald administrative coordinator
Rosalia Fiorentino

Université de Liège
T : +32 4 366 95 27

emerald@uliege.be
www.em-georesources.eu

Programme Structure

EMerald is organised into four semesters and accounts for 120 ECTS or 30 ECTS per semester.

The first year of the programme aims to harmonise students' knowledge and help them find the right balance between resource characterisation and modelling, and processing and management techniques (multidisciplinarity). The thematic courses offered by the two universities (ULiège and UL) are complemented by a strong programme to develop transversal skills. Industry experts and invited scholars bring in key contributions on corporate social responsibility, economics, life cycle analysis and other essential aspects of modern sustainable engineering operations. All courses offer a blend of theoretical lectures and practical work in the labs. Students often work in groups on a real case study, discovering possible processing routes for complex ores and waste materials. The third semester offers students the option to specialise more upstream at LTU (primary resources) or downstream at TUBAF (secondary resources). The final semester can be spent in any of the aforementioned institutions depending on the thesis specialisation. Regardless of the location, the master thesis will be completed in close collaboration with an industrial partner or a research centre that will also host the students for an internship. The full catalogue of courses is available on the EMerald website: www.em-georesources.eu

"Being an EMerald student, studying in renowned universities, and having contact with people from all around the world allowed me to grow professionally and mainly, personally. The programme not only opened my mind to new concepts but taught me how to think about our resources with a new approach. It has also offered me the possibility to work nowadays in an environment where I feel useful in building a sustainable world for the next generations."

— **BARBARA DORNELAS, BRAZIL (EMERALD)**

YEAR 1

HARMONISATION, TEAM BUILDING, EXPERIENCE EUROPE

SEMESTER 1 (30 ECTS)
University of Liège

Select courses for 30 ECTS between:

- Process Mineralogy (5 ECTS)
- Solid Waste and By-Products Processing (5ECTS)
- Geostatistics (5 ECTS)
- Seminars on Economical and Societal Issues
- Mining and Recycling (5 ECTS)
- Mineral Resources (5 ECTS)
- Mineral Processing (5 ECTS)
- Numerical Analysis (5 ECTS)
- Exploitation of Mineral Deposits (5 ECTS)

SEMESTER 2 (30 ECTS)
University of Lorraine

- Advanced Characterisation of Mineral/Water interface (5 ECTS)
- Case Study of Ore Processing (5 ECTS)
- Resources Modelling and Evaluation (5 ECTS)
- Management of Resources (5 ECTS)
- Exploitation of Mineral Raw Materials and Environmental Impact of Mining (2 ECTS)
- Advanced Mineral Processing (8 ECTS)

SUMMER BUSINESS SCHOOL

YEAR 2

CIRCULAR ECONOMY, SPECIALISATION IN PRIMARY OR SECONDARY RESOURCES

SEMESTER 3 (30 ECTS)
Luleå University of Technology
Primary Resources

- Mining Geology (7.5 ECTS)
- Mineral Processing II (7.5 ECTS)
- Geometallurgy (7.5 ECTS)
- Simulation of Mineral Processing (7.5 ECTS)

SEMESTER 3 (30 ECTS)
TU Bergakademie Freiberg
Secondary Resources

- Project- Process Design Mineral Processing/ Recycling (8ECTS)
- Practice of Secondary Raw Materials (4 ECTS)
- Thermodynamics and Heat Transfer (4 ECTS)
- Selective Separation of Strategic Elements (5 ECTS)
- Resource Management (6ECTS)

Elective courses:

- Mineral Liberation Analysis of Mineral Resources (3ECTS)
- Simulation of Sustainable Metallurgical Process (6ECTS)

SEMESTER 4 (30 ECTS)
University of Liège

SEMESTER 4 (30 ECTS)
University of Lorraine

SEMESTER 4 (30 ECTS)
Lulea University of Technology

SEMESTER 4 (30 ECTS)
TU Bergakademie Freiberg

Master thesis

Master in Georesources Engineering

(Innovative Education in Geometallurgy and Circular Economy)
Awarded the EIT Label in 2016

PROFESSIONAL PROFILES AFTER GRADUATION

The knowledge and skills EMerald graduates gain are highly valued in the industry and beyond. Not only are EMerald graduates qualified to work in the fields of mining, building materials (cement, aggregates), non-ferrous metals production and circular economy of metals and mineral chemistry; possible career paths also include working for:

- → Geological surveys
- → Junior exploration companies
- → Investment banks (resources sector)
- → Venture capital (resources sector)
- → EU Commission (raw materials and industry)
- → National/regional governments (mining laws, implementing circular economy, mineral industry)
- → EMerald also prepares you for further study (PhD) in mineral processing, geometallurgy, resources/reserves estimation, process development, mineral industry, etc.

ARE YOU A STUDENT WHO IS:

- Interested in sparking innovation in the raw materials sector?
- Keen to become entrepreneurial and start your own company?
- Interested in bridging the gap between geology and metallurgy?
- Curious to acquire understanding of the whole raw materials value chain?
- Motivated to expand your professional network by studying with at least three European universities?

VISIT EM-GEORESOURCES.EU
TO FIND OUT MORE AND APPLY

MEITIM®

Master in Entrepreneurship, Innovation and Technology Integration in Mining

Awarded the EIT Label in 2022

The dual transition to a digital and carbon-free economy has generated an accelerated demand for new professional profiles in engineering with entrepreneurial mindset and a high degree of proficiency in new technologies. In the mining value chain, from the early stages of prospection to the final delivery of products to customers and through the stages of exploration, extraction, mineral processing, metallurgy and comercialisation, the innovation and technology integration has become the backbone of the industry's development.

Digitalisation, understood as the development of effective and integrated solutions based on new technologies, will reduce costs, improve efficiency, productivity, environmental standards and transform mining processes across the industry. Government and shareholders are putting increasing pressure on the mining sector to meet decarbonisation targets and improve safety at mining sites.Breakthrough innovations rarely happen by chance or luck, but rather are built on a combination of constant work, skills, creativity, years of experience, and structured collaboration.

The real challenge, however, is to build continuous improvement into a company's workstream, and this needs skilled professionals with an advanced technical knowledge in the possibilities of digital ecosystems in mining with technologies like IA, IoT, Automation, Cloud Computing, Data Analytics, Spatial Data Visualisation (AR/VR), etc., complementing a deep understanding of the full raw materials value chain and the skills required to transform knowledge into solutions and business.

Double Diploma	Graduates of the MEITIM programme will be awarded a double Master of Science degree, depending upon their chosen pathway. Graduates will also be awarded the EIT Label Certificate.
Credits	120 ECTS, 24 months
Language of Instruction	English
Starts in	September
Requirements	The programme is aimed at candidates who have a bachelor's degree in Engineering in raw materials sector disciplines (minimum 3 years of study or 180 ECTS credits), preferably in Mining Engineering, Geological Engineering or Metallurgical Engineering. Students holding a bachelor's degree in ICT, Chemistry or Materials Engineering may be accepted depending on the specific content of their studies. Candidates must also demonstrate advanced knowledge in Programming and English language proficiency. Please check the MEITIM website for full details.
Tuition fees	Tuition fees may vary depending on the chosen study track and/or University. Check meitim.eu or for up-to-date information.
Application Period	Please consult meitim.eu for information on application deadlines, requirements, and documentation required.
Scholarships	For students beginning in September 2024, EIT Label scholarships from EIT RawMaterials of €15,000 per eligible student are available. For information on how EIT Label scholarships will be awarded and who is eligible, please contact the coordinating university directly: meitim@eitrawmaterials.eu. Additional scholarships and grants may be available – visit meitim.eu for details.

"If you want to change the World, you must be trained differently. The MEITIM programme has been created to train a new generation of engineers able to innovate, create and develop new opportunities based on the integration and extensive use of the latest advances in new digital technologies. These professionals will contribute to a significant source of competitive advantage and value creation with new business opportunities all along the mining and minerals value chain."

— **JUAN HERRERA, MEITIM PROGRAMME DIRECTOR**

PARTICIPATING UNIVERSITIES

Universidad Politécnica de Madrid (Technical University of Madrid)
Spain
Lappeenranta-Lahti University of Technology
Finland
Wrocław University of Science and Technology
Poland

FOR MORE INFORMATION

MEITIM Programme
Director Juan Herrera
Universidad Politécnica de Madrid
(Technical University of Madrid)
www.meitim.eu/contact/

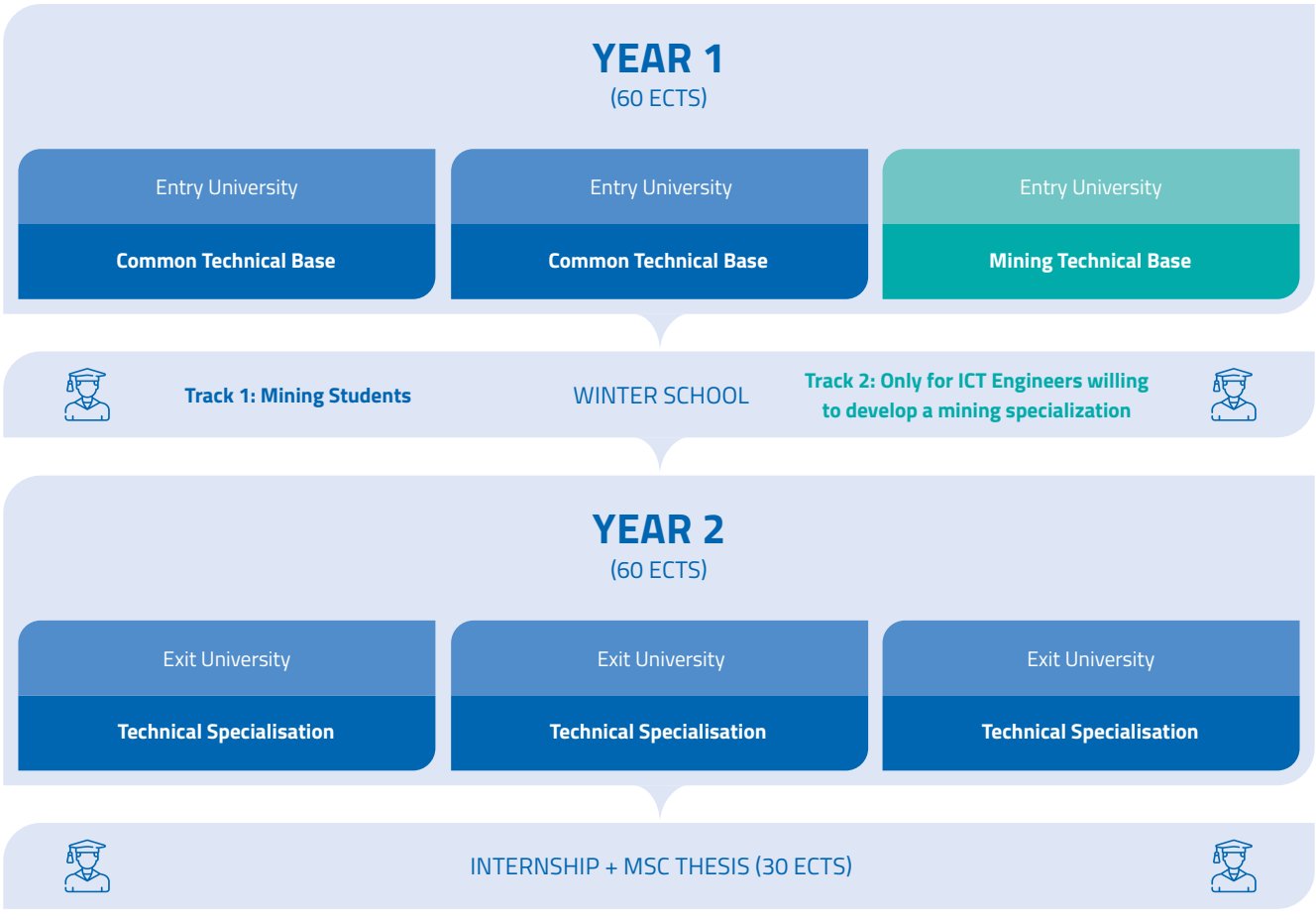
Programme Structure

MEITIM is a two-year programme organised into four semesters and accounts for 120 ECTS or 30 ECTS per semester.

Students study one year at an 'entry' university and one year at an 'exit' university, both of which are partners of EIT RawMaterials and the MEITIM Project. The first year is focused on basic courses and electives that lay the foundation for the chosen technical programme, together with an intense and integrated learning and training in innovation and entrepreneurship (I&E):

- Students are introduced to business and management from the first year.
- During the second semester, a design project is combined with business development exercises to demonstrate how technology can be transformed into a successful business.
- Students are taught how to prepare and present a convincing business plan, and have the option to take elective courses.
- Each of the four semesters has a load of 30 ECTS, meaning 60 ECTS per course.
- Between the first year and the second year, the summer school programme addresses business opportunities within a socially relevant theme.
- Modules will have a subject structure, all of them with the same training methodology and the same evaluation criteria.

The second year offers a specialisation and a graduation project. The graduation project includes an internship at a company or a research institute and culminates in the development of a Master thesis which features a strong innovation and entrepreneurship dimension. The international mobility is guaranteed as at least one course will be carried out at another university different from the entry one, and internship can be done in an international company. Graduates receive degrees from the two universities and the EIT Label certificate awarded by the European Institute of Innovation and Technology (2 diplomas + 1 certificate in total).



Master in Entrepreneurship, Innovation and Technology Integration in Mining

Awarded the EIT Label in 2022

PROFESSIONAL PROFILES AFTER GRADUATION

Graduates of the MEITIM programme will have the training and preparation to participate actively in the transformation and digitalization that the mining sector is undergoing, through a sound knowledge in the latest technologies. Through practical training, student will develop the skills to integrate innovation and new technologies into feasible business solutions for the raw materials value chain.

The MEITIM programme aims to give students the ability to understand technical, business, social and economic aspects and, with this, to stimulate their technological innovation and technologies integration capacities with the vision of creating new opportunities and added valuue.

Graduates of the MEITIM programme will be fully qualified to expand the relationships of professionals in this dynamic and innovative activity sector and to work for:

- Mining and metallurgical companies
- EU bodies
- Investment banks
- Venture capital
- National/regional government agencies
- Engineering and consulting firms
- Freelancer and entrepreneur
- Knowledge institutions, research institutes and think-tanks

ARE YOU A STUDENT WHO IS:

- **Interested in the mineral primary resources value chain?**
- **Passionate about innovation and technology?**
- **Motivated to develop new solutions and open new pathways?**
- **Driven to become an entrepreneur or intrapreneur who makes innovation happen?**
- **Keen to be a participant in the new industrial revolution and transition?**

VISIT MEITIM.EU TO FIND OUT MORE AND APPLY

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 2024 Detailed information on the recruitment process will be posted at ravenmaster.eu in April 2024.
Scholarships	AVSA scholarships of €15,000 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

RaVeN Coordinator
Professor Arkadiusz Kustra
kustra@agh.edu.pl

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

RaVeN Master in Mining Engineering

Awarded the EIT Label in 2022

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

SINReM
INTERNATIONAL MSc

International Master of Science in Sustainable and Innovative Natural Resource Management

Awarded the EIT Label in 2017

THE CHALLENGE

Mineral and metal raw materials are one of the fastest depleting resources on Earth. A steady and sustainable supply of many of these materials is vital for a decarbonising society, renewable energy infrastructure, electric mobility and also consumer products and electronics. The outdated make-take-use-dispose model is no longer valid in a world of finite resources. In order to deal with this challenge, three renown European universities jointly organise the International Master of Science in Sustainable and Innovative Natural Resource Management (SINReM). SINReM trains students to develop sustainable solutions across the entire raw materials value chain. From resource exploration to sustainable extraction processes and the development of more sustainable materials and recycling, students are taught to find new solutions that work towards the achievement of a circular economy.

With the support of the Erasmus+ Programme of the European Union

Joint diploma	Joint diploma of International Master of Science in Sustainable and Innovative Natural Resource Management from Ghent University, TU Freiberg and Uppsala University. – EIT Label Certificate
Credits	120 ECTS, 24 months
Language of Instruction	English
Starts in	September
Requirements	A bachelor's degree (minimum 180 ECTS) in bioscience engineering, chemical engineering, chemistry, environmental sciences and engineering, geology, geophysics, mining engineering, mineralogy, materials sciences, metallurgy or process engineering, or another degree that shows affinity with any aspect of the (minerals and metal) raw materials value chain. This should include the equivalent of at least 10 ECTS in chemistry and 15 ECTS in physics/mathematics. Degrees in natural resources management (forestry, wildlife, bio-conservation, ect.) are not suited for the SINReM programme. Visit www.sinrem.eu for more detailed academic and language requirements.
Tuition fees	European (EEA and Swiss) 2023: €6,000/year All others 2023: €12,000/year Visit www.sinrem.eu for up-to-date fee information.
Application Period	All nationalities for Erasmus Mundus scholarship: 28 February 2024. Non-EEA and non-Swiss for AVSA scholarship or as self-funding student: 28 February 2024. EEA and Swiss for AVSA scholarship or as self-funding student: 31 May 2024. Visit www.sinrem.eu for up-to-date deadline information.
Scholarships	For students enrolling in September 2024, AVSA scholarships of €15,000 from EIT RawMaterials are available. European EIT RawMaterials scholarship holders receive a partial tuition fee waiver down to €2,000 per year. Additionally, a number of Erasmus Mundus full scholarships of up to €49,000 are available, covering full tuition fees and living expenses. Visit www.sinrem.eu for up-to-date scholarship information.

"The SINReM program has allowed me to study at 3 different world-class universities. It has been a great way to combine my studies with travelling. Although we were held back by the pandemic in many ways, I can't think of a better way to have spent the last 2 years (2020-2022)!"

— **MARTHA HENDERSON, CANADA (SINREM)**

PARTICIPATING UNIVERSITIES

Ghent University
Belgium
TU Bergakademie Freiberg
Germany
Uppsala University
Sweden

FOR MORE INFORMATION

sinrem@ugent.be
www.sinrem.eu

Programme Structure

YEAR 1

SEMESTER 1
Ghent University

- Problems and innovations in the process chain of mineral resources at TU Freiberg (4 ECTS)
- Introduction to the circular economy, economics and management of natural resources (4 ECTS)
- Clean technology (5 ECTS)
- Sustainable development and multicriteria decision-making (3 ECTS)
- Rational use of materials (5 ECTS)
- Resource recovery and recycling technologies (5 ECTS)

SEMESTER 2
Uppsala University

- Mineral exploration (10 ECTS)
- Innovation management and entrepreneurship (10 ECTS)
- Elective course (5 ECTS)
- Summer course on Resources chemistry at TU Freiberg (9 ECTS)

HOLISTIC VIEW OF THE VALUE AND PROCESS CHAIN

YEAR 2

ELECTIVE MAJOR

Ghent University

- Circular societies (15 ECTS) OR
- Resource recovery and sustainable materials (15 ECTS)
- Financial and sustainability reporting, financial planning and business valuation (5 ECTS)
- Training in industry (internship) (10 ECTS)
- Master thesis (30 ECTS)

Uppsala University

- Georesource exploration (15 ECTS) OR
- Sustainable entrepreneurship (15 ECTS)
- Financial and sustainability reporting, financial planning and business valuation (5 ECTS)
- Training in industry (internship) (10 ECTS)
- Master thesis (30 ECTS)

TU Freiberg

- Sustainable processes (15 ECTS)
- Financial and sustainability reporting, financial planning and business valuation (5 ECTS)
- Training in industry (internship) (10 ECTS)
- Master thesis (30 ECTS)

DEEP UNDERSTANDING OF ONE SUBJECT AREA

International Master of Science in Sustainable and Innovative Natural Resource Management

Awarded the EIT Label in 2017

PROFESSIONAL PROFILES AFTER GRADUATION

Entrepreneur: SINReM prepares you to start your own business. You will interact with company founders from the raw materials sector, gain the necessary knowledge and skills for innovation management and IPR, learn to develop and analyse business models and plan how to implement research results into application. Industrial partners and the research transfer/ business development departments of the three partner universities are also there to support you.

Work in the Industry: Create a spin-off from an existing company or become a resource engineer in research departments or technological departments of small, medium and large companies worldwide.

ARE YOU A STUDENT WHO IS:

- Interested in exploring how to use engineer technologies to improve the use of finite raw materials?
- Keen to learn how innovation and entrepreneurship competence and skills can position you to contribute both to current industries and create your own start-up?
- Motivated to work closely with industry and research on developing science-based solutions to pressing challenges?

VISIT SINREM.EU
TO FIND OUT MORE AND APPLY

suma
Master Programme on
Sustainable Materials

Master in Sustainable Materials

Awarded the EIT Label in 2016

Sustainable Material Solutions with SUMA

The SUMA is a two-year (120 ECTS) master's programme that provides academic excellence, innovative-driven education, and a sustainability approach in the field of Materials Science and Engineering. It gathers some of the best educational programmes in the field of sustainable materials science and engineering in Europe. Our goal is to educate excellent professionals with the expertise to design and develop more sustainable materials and/or processes to manufacture them, make sustainable choices in materials-selection challenges, and promote the innovation needed to create and tailor new material systems for specific functions. SUMA strongly focuses on circular (eco) design, materials substitution, life cycle engineering and circular economy design, materials processing and recycling, manufacturing and innovation. In this way, we hope to deliver the experts who can provide materials solutions that allow the design of sustainable products and services that ecological and geopolitical challenges in Europe and beyond will require, establishing sustainability and innovation not only as an attitude or cross-sectional tasks but also as fundamental engineering skills.

"As an international student, what I loved most about being able to study in different countries in Europe is being able to interact with lots of students, professors, and people from different walks of life. I loved learning and immersing myself in different cultures and I especially enjoyed working with my colleagues during classes and other EIT events.

— **DENISE PAULINE BERNARDO, PHILIPPINES (SUMA)**

Double Diploma	**Dual Master of Science degree awarded from two of the following universities:** – Leuven, Belgium – Leoben, Austria – Trento, Italy – Grenoble, France – Milan, Italy EIT Label Certificate
Credits	120 ECTS, 24 months
Language of Instruction	English
Starts in	September
Requirements	SUMA is particularly suited for candidates with a Bachelor's degree in materials science and/or engineering or graduates from mechanical engineering, chemical engineering, physics and chemistry who already have had some courses in materials engineering during their bachelor's programme. All candidates are required to have a Bachelor of Science or Bachelor of Engineering or equivalent, as well as proof of English language proficiency. Candidates must meet the admission criteria of the master's degree programmes of both partner institutions of their chosen track. Please refer to the individual entry university websites for information on admission requirements.
Tuition fees	Fees vary based on programme track and country of origin. Visit www.master-suma.eu/study/#paths and choose an entry and exit university for details on each specific track.
Application Period	Application for the SUMA programme is a multi-step process. Applicants should register on the SUMA website: www.master-suma.eu. For information on the application deadlines per track visit https://master-suma.eu/study/#apply
Scholarships	A number of partial scholarships from EIT RawMaterials of €15,000 per eligible student are usually available. This depends on the programme funding per year. Tuition fees are not included in the scholarship. We encourage applicants to search for scholarships through local and international organisations before applying to our master's programme.

PARTICIPATING UNIVERSITIES

KU Leuven
Belgium
Montanuniversität Leoben
Austria
University of Trento
Italy
Grenoble INP
France
University of Milano-Bicocca
Italy

FOR MORE INFORMATION

Department of Materials Engineering – KU Leuven
Kasteelpark Arenberg 44/2450
3000 Leuven, Belgium

SUMA Project Manager:
Mónica Guasca
monica.guasca@kuleuven.be

Programme Structure

The Sustainable Materials (SUMA) master's programmes are two-year programmes embedded in the engineering programmes of the participating universities. There are in total 9 tracks, each of which has been awarded the EIT Label. Each track of the SUMA programme consists of one full year at an entry university, followed by a second year at one of the other participating universities.

Visit master-suma.eu to explore the different SUMA tracks and module options.

SUMA MOBILITY **YEAR 1** (60 ECTS)

TRACK 1 KU Leuven	**TRACK 2** University of Trento (UniTrento)	**TRACK 3** University of Milano-Bicocca (UNIMIB)	**TRACK 4** Montanuniversität (MU) Leoben	**Topics:**
Sustainable Materials Track	Sustainable Materials Track	Materials Development Track	Sustainable Metallurgy Track	→ Materials and processing → Sustainability and recycling → Circular (eco) design and life cycle engineering → Materials substitution and manufacturing

SUMMER SCHOOL ON CIRCULAR ECONOMY

SUMA MOBILITY **YEAR 2** (60 ECTS)

1A → Grenoble INP **1B** → UniTrento **1C** → MU Leoben **1D** → UNIMIB	**2A** → Grenoble INP **2B** → KU Leuven **2C** → MU Leoben	**3A** → KU Leuven	**4A** → KU Leuven	**Topics:** → Innovation, entrepreneurship and leadership (30 ECTS) → Industrial internship (6 ECTS) → Master thesis (24 ECTS)

Master in Sustainable Materials

Awarded the EIT Label in 2016

PROFESSIONAL PROFILES AFTER GRADUATION

The SUMA master's programme aims at training scientists with a solid background in chemistry and physics, with competences for designing and tailoring new material systems for specific functions, and with a specific view to the sustainability of processes and technologies in the field of material development. The main job opportunities are in industries and research centres in Europe, working on the development and production of functional materials for advanced applications and high technology. Graduates can start a career as highly valued future leaders in positions of responsibility in managing advanced material design, production processes and material qualifying protocols in high-tech firms, material diagnostics and analysis in industries and research centres, and material development projects and scientific research projects in the field of material science and technology innovation.

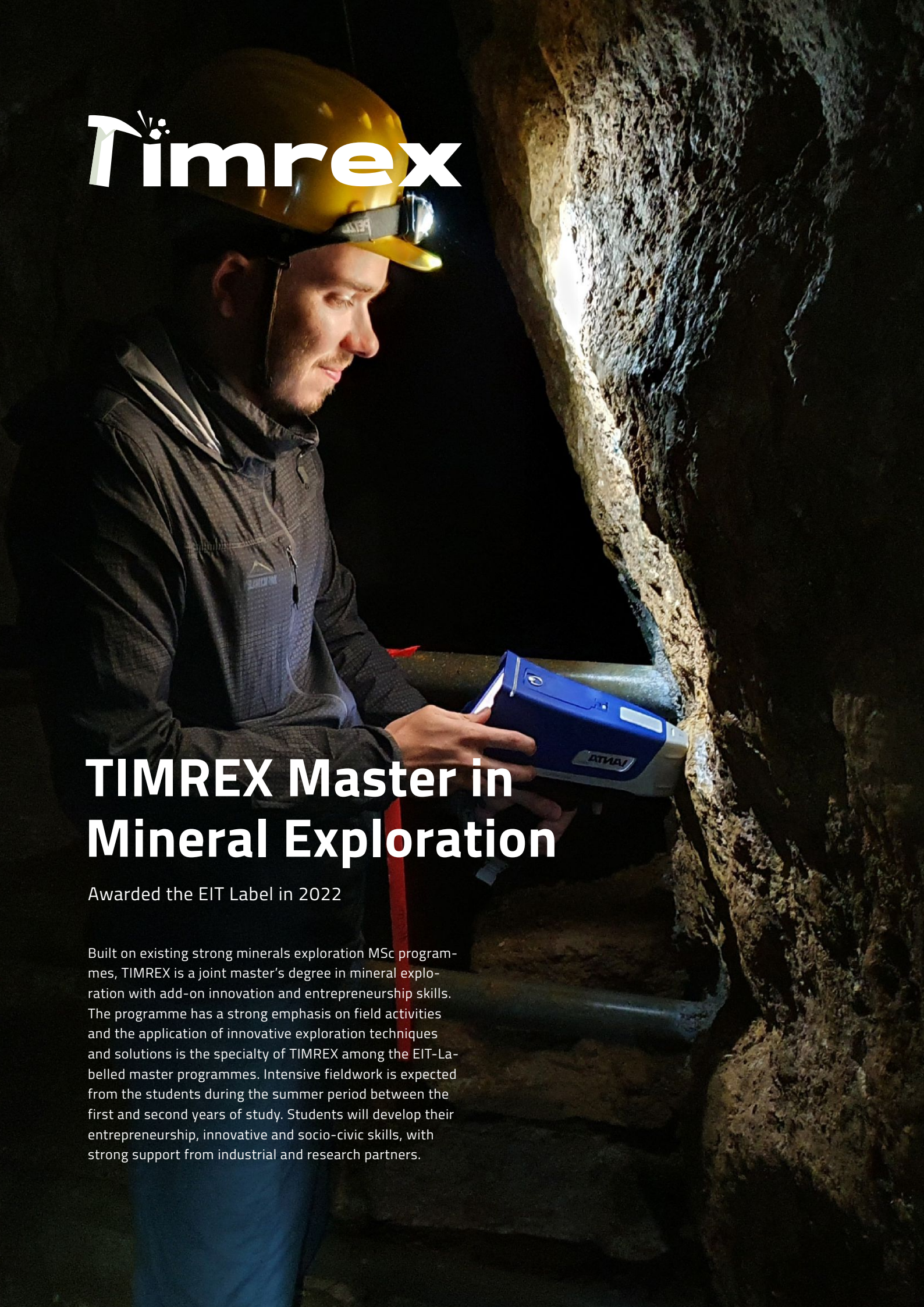
SUSTAINABLE MATERIAL SOLUTIONS WITH SUMA

The SUMA master's programme aims to train tomorrow's resource engineers in collaborative work in a global world, gathering together some of the best educational programmes in the field of sustainable materials engineering in Europe. The goal is to ensure young scientists obtain a solid background in chemistry and physics, with competences for designing and tailoring new material systems for specific functions, and with a specific view to the sustainability of processes and technologies in the field of material development. SUMA puts a particularly strong focus on innovation, entrepreneurship and leadership and takes a holistic approach to the materials paradigm by exploring circular (eco) design, materials substitution, life cycle engineering and circular economy design, materials processing and recycling, manufacturing and innovation.

ARE YOU A STUDENT WHO IS:

- **Interested in earth sciences, mining, materials sciences and engineering?**
- **Motivated to explore the connection between materials technology and its environmental and socio-economic factors?**
- **Keen to become entrepreneurial and start your own company?**
- **Motivated to work closely with industry and research on cutting-edge challenges?**

VISIT MASTER-SUMA.EU
TO FIND OUT MORE AND APPLY



TIMREX Master in Mineral Exploration

Awarded the EIT Label in 2022

Built on existing strong minerals exploration MSc programmes, TIMREX is a joint master's degree in mineral exploration with add-on innovation and entrepreneurship skills. The programme has a strong emphasis on field activities and the application of innovative exploration techniques and solutions is the specialty of TIMREX among the EIT-Labelled master programmes. Intensive fieldwork is expected from the students during the summer period between the first and second years of study. Students will develop their entrepreneurship, innovative and socio-civic skills, with strong support from industrial and research partners.

Double Diploma	Graduates will be awarded a double or single Master of Science degree from University of Miskolc, Wrocław University of Science and Technology, the University of Zagreb and/or Luleå University of Technology (depending on the study pathway chosen by the student). Graduates will also receive the EIT Label Certificate.
Credits	120 ECTS, 24 months
Language of Instruction	English
Starts in	September 2024 / February 2025 depending on year one university chosen
Requirements	Candidates should have a Bachelor's degree with strong earth sciences background (BSc in Geology, Geophysics, Earth Sciences, Earth Sciences Engineering, Geosciences Engineering, Mining Engineering), as well as an English language certificate (advanced knowledge level of English, minimum B2 level, for details please visit www.timrex-master.eu
Tuition fees	Please consult the TIMREX website timrex-master.eu for up-to-date information
Application Period	First round: 15 January – 31 March 2024 Please visit timrex-master.eu for details
Scholarships	For students beginning in September 2024 or February 2025, EIT Label scholarships from EIT RawMaterials of €15,000 per eligible student are available. For information on how EIT Label scholarships will be awarded and who is eligible, please contact the coordinating university directly: timrex@uni-miskolc.hu

"The TIMREX summer school taught me many things starting from the geology of the region to the most innovative exploration techniques. I got a better understanding of igneous ore-forming processes, data interpretation, and visualisation methods. I am very glad that I had an opportunity to participate in this summer school, which gave me a lot of knowledge and brought me together with so many nice people."

— **IRMA BECELYTE**

PARTICIPATING UNIVERSITIES

University of Miskolc
Hungary
University of Zagreb - Faculty of Mining, Geology and Petroleum Engineering (RGNF)
Croatia
Wrocław University of Science and Technology
Poland
Luleå University of Technology
Sweden

FOR MORE INFORMATION

Faculty of Earth and Environmental Science and Engineering, University of Miskolc
Hungary,
H-3515 Miskolc-Egyetemváros
timrex@uni-miskolc.hu

Programme Structure

The TIMREX joint master programme is organised along seven mobility routes between the four academic partners. First year study is offered in parallel by the UM, UNIZG-RGNF and WUST, while the second year offers specialisations along the mobility routes.

Visit timrex-master.eu to explore the details of the 8 route options in the TIMREX study programme.

The cohort starts in 2024 September at UM and UNIZG - RGNF and in 2025 February at WUST. Pathways involving UM, WUST and UNIZG-RGNF offer a double degree.

TIMREX YEAR 1

(APPLIED EARTH SCIENCES AND EXPLORATION)

- **University of Miskolc**
- **University of Zagreb**
- **Wrocław University of Science and Technology**

MOBILITY TIMREX YEAR 2

(SPECIALISATIONS)

- **Luleå University of Technology** (ore mineral exploration)
- **University of Miskolc** (geophysical methods and instrumentation for exploration)
- **University of Zagreb** (prospecting and exploration of non-metallic mineral resources)
- **Wrocław University of Science and Technology** (applied skills in mining geology)

Master in Mineral Exploration

Awarded the EIT Label in 2022

PROFESSIONAL PROFILES AFTER GRADUATION

Earth science specialists will be able to apply innovative mineral exploration methods and techniques in the field and integrate the collected data with comprehensive analytical and laboratory results. Students interested in equipment development or programming will have the opportunity to specialise in these topics, contributing to research groups and start-ups to develop sensors, portable analytical equipment, data processing and visualising software. In addition, students with an entrepreneurial mindset will learn entrepreneurial and socio-civic skills and attitudes suitable to becoming employed by a junior company, or to become a freelance expert – mentored by the industrial and research partners of the consortium.

INNOVATIVE FIELD-BASED MINERAL EXPLORATION SOLUTIONS WITH TIMREX

The objective of the TIMREX master programme is to develop a high-quality education programme in the field of mineral exploration with double-degree routes, structured mobility pathways, mentoring sessions, and strong field-based training. The pillars involved in the education journey comprise 1) strong field work using innovative mineral exploration technologies applied in greenfield and brownfield mineral occurrences, 2) solid theoretical background for completion and management of exploration campaigns, and 3) processing and interpretation of field and laboratory-derived data with specialised software, as well as 4) development of entrepreneurial and socio-civic competences to join or establish junior exploration companies.

ARE YOU A STUDENT WHO IS:

- Keen to develop a career in mineral exploration?
- Motivated to learn about innovative techniques and technologies in the field?
- Interested in spending one semester at a partner university to develop a different specialisation?
- Interested in acquiring entrepreneurship skills and building self-confidence for the market?

VISIT TIMREX-MASTER.EU
TO FIND OUT MORE AND APPLY

Labelled by:

European Institute of Innovation & Technology

A body of the European Union

Supported by:

RawMaterials ACADEMY

Co-funded by the European Union

EIT RawMaterials GmbH
Europaplatz 2
10557 Berlin, Germany
rawmaterialsacademy.eu
academy@eitrawmaterials.eu

@eitrmacademy | EITRawMaterialsAcademy | @EITRMAcademy | EIT RawMaterials Academy | EITRawMaterials

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