



RawMaterials
ACADEMY

AMIR

Master in Advanced Materials: Innovative Recycling

Awarded the EIT Label in 2018



This activity has received funding from the European Institute of Innovation and Technology (EIT), a body of the European Union, under the Horizon 2020, the EU Framework Programme for Research and Innovation

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Diploma	<p>Graduates of the AMIR programme will be awarded a single or double Master of Science degree, depending upon their chosen pathway.</p> <p>Graduates will also be awarded the EIT Label Certificate.</p>
Credits	120 ECTS, 24 months
Language of Instruction	English
Starts in	September
Requirements	The programme is aimed at candidates who have a Bachelor degree in Engineering and Environmental Sciences with advanced knowledge in Chemistry (minimum 3 years of study or 180 ECTS credits), or a Bachelor degree in Chemistry, Physical-Chemistry, Materials (or Matter) Sciences. Candidates must also demonstrate English language proficiency.
Fees	Please consult the AMIR website (www.amir-master.com/fees-and-scholarships)
Application Period	Check www.amir-master.com for details
Scholarships	<p>For students beginning in September 2019, EIT-Label scholarships from EIT RawMaterials of up to €9,000 per eligible student are available with additional financial support for student involvement in conferences, summer schools and other events. For information on how EIT-Label scholarships will be awarded and who is eligible, please contact the coordinating university directly: amir-master@eitrawmaterials.eu.</p> <p>Additional scholarships and grants may be available – visit www.amir-master.com for details.</p>

“I chose AMIR because I want to help change the unsustainable lifestyle that causes high environmental impacts, without compromising economic stability. When I finish the Master, I want to find a job in an R&D department of an important company, able to produce important changes.”

Ricardo, Spain

Participating Universities

University of Bordeaux
France

NOVA University Lisbon
Portugal

TU Darmstadt
Germany

University of Liège
Belgium

Polytechnic University of Madrid
Spain

University of Miskolc
Hungary

The Challenge

Materials are the building blocks of the modern global economy and are instrumental for the transition to a green, circular economy which emits less CO₂. Twenty-seven of these materials of these materials have been defined by the EU as critical, meaning that they combine high importance to the EU economy with a high risk associated with their supply. Accessing the known primary raw material sources has become more challenging, while the 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 contributing to meeting increasing materials demands.

To strengthen raw material supply for a growing global population with increasing welfare, increasing recycling rates can contribute. For this to happen, 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, are in demand. The AMIR Master programme was created to fulfil this need by educating future international professionals who will develop new routes for materials recycling.

AMIR: Master in Advanced Materials: Innovative Recycling

The AMIR Master programme focuses on the raw material value chain, with particular emphasis on recycling. The two main objectives of the programme are:

- To educate students to become highly-skilled European professionals with expertise in various types of materials. This expertise will enable them to develop, on a large and ambitious scale, new methods for materials recycling. In addition, the AMIR programme includes classes on transversal skills such as innovation, ethics, intellectual property, life cycle assessment, sustainability and advanced research strategies.
- To develop a deep entrepreneurship mindset among students with the help and expertise of associated businesses, incubators and innovation services as well as a large panel of industries.

AMIR students benefit from a high-level education and research environment including access to advanced research laboratories. High-quality internships, together with mandatory international and intersectoral mobility, ensure that students gain the practical experience and skills necessary to make a difference as a recycling professional.

The curriculum of AMIR was designed with the strategic goal of producing T-shaped professionals and entrepreneurs for the raw materials sector with:

- solid knowledge of the properties and processing of various types of materials (metals, minerals ceramics, polymers), based on multidisciplinary training by physicists, chemists, process engineers, and others.
- in-depth proficiency in recycling, material chain optimisation for end-of-life products, and design of products and services for the circular economy.
- an entrepreneurial mindset, formed with the help and expertise of partners from industry and Research and Technology Organisations (RTOs), as well as associated business and incubators.
- essential transferable skills for researchers such as intellectual property, research ethics and scientific communication.

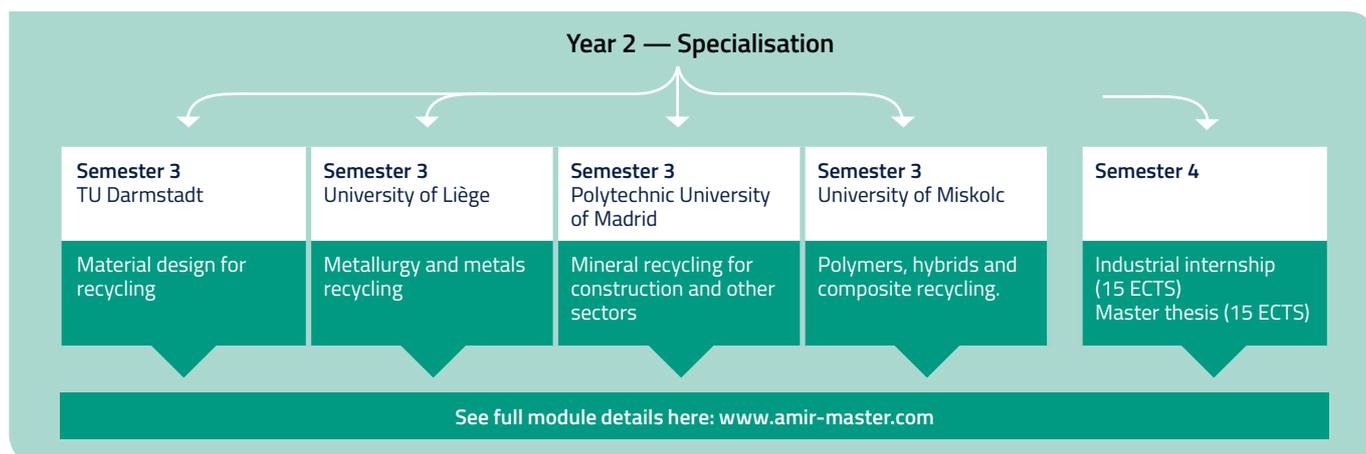
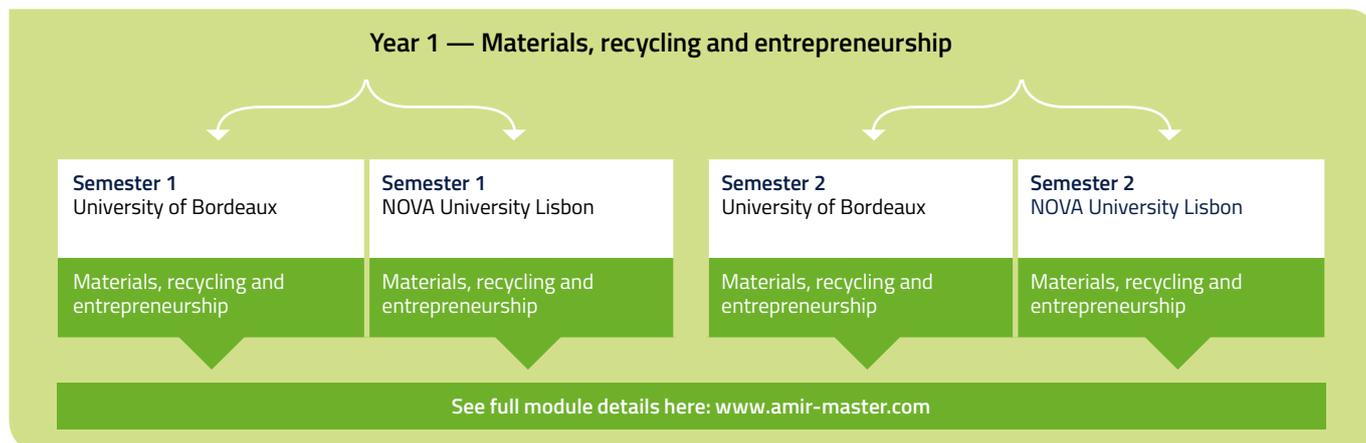
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Programme structure

The first year of the Master programme takes place at the University of Bordeaux or NOVA University Lisbon. 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.

The second year takes place at one of the 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.



Innovation and Entrepreneurship Training

As an EIT-Labelled programme, the AMIR Master integrates high-level training on entrepreneurship and innovation into its curriculum, giving students the skills that they need to become game-changers in the recycling sector.

- During year 1, the Leading Innovation and Entrepreneurship module focuses on market/customer orientation and cooperation with stakeholders. You will learn to develop and apply Customer/User focus thinking as well as how to identify and cooperate with stakeholders. The objective is to train the entrepreneurs of tomorrow, able to create innovative projects, understand problems, detect needs and devise solutions.
- The University of Bordeaux works closely with the incubator 'IRA' and with the technology transfer organisation 'AST'. These are open to AMIR students and interact closely with the university's laboratories, in which all AMIR students spend 8 weeks during internships.
- Industrial seminars allow AMIR students to learn directly from some of the most important industries in the sector. For example, the French Alternative Energies and Atomic Energy Commission; ArcelorMittal, the world's largest steel producer and one of the main actors in metal recycling; and Veolia, a world leader in water, waste and energy management.
- Industry internships give AMIR students up to six months of experience with an industrial or research partner, gaining extensive real-life experience in research or industry. Partners include Arkema, ArcelorMittal, Veolia and Fraunhofer, ensuring that students gain the top-level experience necessary for success in finding employment or becoming an entrepreneur on completion of their studies.

Professional profiles after graduation

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 to contribute to the development of sustainable solutions to these challenges?
- 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?

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.

For more information:

AMIR administrative coordinator
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University of Bordeaux

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www.amir-master.com

EIT RawMaterials is able to offer students a unique opportunity to learn in a dynamic environment, focusing on real-life challenges.

EIT RawMaterials is initiated and funded 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 awarded only to excellent educational programmes at the Master and Doctoral level.

As a student of an EIT RawMaterials Labelled programme, you'll be part of the largest European raw materials partnership – with more than 120 core and associate partners and 180 project partners from over 22 European countries coming from higher education, research institutions and industry. As an EIT Label student, you will have the opportunity to become part of this committed partnership as well as champion and contribute to the EIT RawMaterials objective of finding new, innovative solutions to secure the sustainable supply of raw materials across the value chain – from exploration, mining and extraction, to mineral processing, recycling and developing circular economy strategies.

EIT RawMaterials aims to raise a new generation of innovators in Europe equipped with the necessary entrepreneurial mindset for designing and delivering solutions. You'll also get the chance to collaborate internationally to develop creative and sustainable solutions to pressing resource and societal challenges.

In short, it's a great opportunity to become a global game-changer, obtain the knowledge, skills and experience employers are seeking out in future graduates, and become part of the RawMaterials Academy Label student community.

EIT RawMaterials Labelled programmes offer you



Thesis internship placements at leading European companies

The knowledge to become an expert in a particular raw materials discipline, coupled with an overview of the entire raw materials value chain

European mobility – study in at least two European countries

Innovative ‘learning-by-doing’, challenge-based courses which focus on real-life problems

Membership of the EIT Label Alumni Community

Courses designed to nurture start-up ideas at accelerators and incubators

Study tours and site visits to companies and industrial sites

New ways of learning – online courses, virtual and augmented reality and MOOCs

Course modules dedicated to entrepreneurship and innovation skills and competences

EIT RawMaterials Innovation support: business plan competitions, innovation bootcamps, seed funding

EIT RawMaterials summer schools and interdisciplinary courses

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