MASTER

Advanced Materials Innovative Recycling

(AMIR)

Program factsheet

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

CONSORTIUM

Six universities:

- France: University of Bordeaux
- Portugal: NOVA University of Lisbon
- Belgium: University of Liege
- Germany: Technical University of Darmstadt
- Spain: Technical University of Madrid
- Hungary: University of Miskolc

Four research and technological organizations:

- France: CEA, the French Alternative Energies and Atomic Energy Commission
- Belgium: CRM Group (Centre de Recherches Métallurgiques)
- Germany: Fraunhofer Society
- Spain: Spanish National Research Council (CSIC)

Three large industries:

- ArcelorMittal, Arkema, Veolia (VERI)

LEVEL

Master of Science in Chemistry (specialization in Advanced Materials Innovative Recycling).

ADMISSION REQUIREMENTS

Candidates must fulfill the following requirements:

- Hold a Bachelor degree in Engineering and Environmental Sciences with advanced knowledge in Chemistry (minimum 3 years of study / 180 ECTS), or a Bachelor degree in Chemistry, Physical-Chemistry, Materials (or Matter) Sciences.

LANGUAGE REQUIREMENTS

This Master program is taught entirely in English. Students must possess a good level (level B2) of English.

PROGRAM DURATION

2 years (120 ECTS).

FEES AND SCHOLARSHIPS

- 2,000€ per year for students from Erasmus+ 'program countries', 4,000€ per year for students from 'partner countries'.

Scholarships:

- EIT-labelled "AVSA" grants of 13,500€ guaranteed to all successful candidates, for both EU and non-EU students.

Program outline

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

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

MOBILITY

Students choose to spend their first year at either the University of Bordeaux, NOVA University Lisbon or the University of Miskolc. Second year options are the Technical University of Darmstadt, the University of Liège or the Technical University of Madrid.

Students indicate their preferences during the application phase and are assigned both first and second year universities on entering the Master program

- Consult the website: www.amir-master.com/program for course content details at each consortium member.

College of Science and Technology

université de BORDEAUX

Program structure

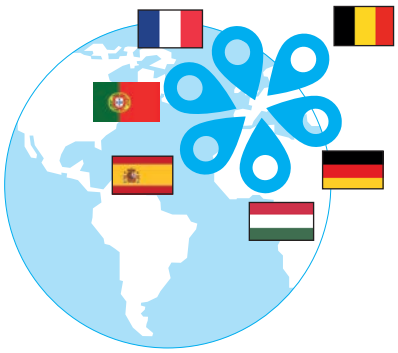
The first year of the Master program takes place at either the University of Bordeaux or NOVA University of Lisbon and includes a module focused on entrepreneurship

Students learn about general and technical aspects of the raw material value chain (general chemistry, material science, lifecycle of materials) as well as about the main outcomes of the European Institute of Innovation and Technology (EIT): sustainability, intellectual transformation, value judgments (ethical, scientific and sustainability challenges), creativity, innovation, leadership and entrepreneurship.

Year 1

Advanced materials & recycling, transversal knowledge (60 ECTS)

- Bordeaux
- Lisbon
- Miskolc



The third semester is dedicated to a specialization in one of the partner universities (see below). This part of the program offers the possibility to follow selected advanced materials classes for various applications (energy, e-mobility - magnets, transport, environments - catalysis, etc.). The specializations are: material design for recycling in Darmstadt, metallurgy and metals recycling in Liege, mineral recycling for construction and other sectors in Madrid.

The program is completed with a three to six months' internship (Master thesis).

Year 2

Disciplinary knowledge: engineering and innovation (60 ECTS)

Specializations:

- Darmstadt: material design for recycling
- Liege: metal recycling
- Madrid: mineral recycling

Bordeaux: intellectual transforming skills for innovation

Industry internship (30 ECTS)

Arkema, Arcelor-Mittal, Veolia or research & technology organizations: CSIC, BRGM, CEA, CRM, Fraunhofer, etc.

Strengths

AMIR graduates are international entrepreneurs and innovators, able to work anywhere in Europe and beyond.

High-level education and research environment.

Practical insights with advanced research labs.

High-quality internships.

Mandatory international and intersectoral mobility.

Supported by the European Institute of Innovation & Technology (EIT) and the International Master program of the Bordeaux "Initiative of Excellence" (IdEx).

→ And after?

- The AMIR program benefits from a strong academic, research and industrial network.
- After graduation, students are prepared to integrate the working environment as professionals in the recycling sector (process optimization, materials design, plant administration, project management, etc.) whether it be in the industrial field or governmental organizations. Possible sectors include: information and communication technologies, building construction, energy, machinery tools, mobility.
- Graduates also obtain the necessary skills and knowledge to set up their own company or work in sales and marketing.
- Finally, further doctoral studies are another possibility and students may apply for Ph.D. programs in Europe, including those offered in the framework of the European Multifunctional Materials Institute (EMMI : www.emmi-materials.eu).

How to apply?

The application procedure may be consulted on the website: www.amir-master.com

Contact

amir.master@u-bordeaux.fr

www.amir-master.com

AMIR master

TECHNISCHE UNIVERSITÄT DARMSTADT · Université de Liège · eit RawMaterials Connecting matters

MISKOLCI EGYETEM UNIVERSITY OF MISKOLC · FCT FACULDADE DE CIÊNCIAS E TECNOLOGIA UNIVERSIDADE NOVA DE LISBOA · POLITÉCNICA "Ingeniamos el futuro" · CAMPUS DE EXCELENCIA INTERNACIONAL

INVESTIR L'AVENIR

Avril 2020 - réalisation : université de Bordeaux