

# MASTER Advanced Materials for Innovation and Sustainability (AMIS)

## Program factsheet

### CONSORTIUM

#### Five universities:

- › France: Grenoble INP, University of Bordeaux
- › Finland: Aalto University
- › Germany: T.U. Darmstadt
- › Belgium: University of Liège

#### Industrial Partners:

- › Luxembourg: ArcelorMittal
- › France: CEA
- › Germany: Fraunhofer

### LEVEL

Master of Science in Chemistry.

### PROGRAM DURATION

2 years (120 ECTS).

### ADMISSION REQUIREMENTS

#### Candidates must fulfill the following requirements:

- › Applicants should hold a Bachelor's degree in Science/Technology or Engineering (Physics, Chemistry, Materials Science) or its equivalent within the year of application.

### LANGUAGE REQUIREMENTS

**This Master program is taught entirely in English.** Students whose native language is not English must pass the TOEFL or IELTS exams.

IELTS :

- › Overall Band Score: 6.5
  - › Writing Band Score: 5.5
- TOEFL:
- › Total score: 92 (IBT), 580 (PBT)
  - › Writing score: 22 (IBT), 4.0 (PBT)

### FEES AND SCHOLARSHIPS

- › European students: 1,000 euros/year
- › International students: 8,000 euros/year
- › Costs include institutional tuition fees, insurance and participation in teaching activities (lab courses, MSc research project etc.)
- › Students applying for scholarships: mid-February
- › Other students (self-funded): mid-May

## Strengths



Develop expertise in the field of innovative and sustainable advanced materials.



Meet, study and work with relevant academic and non-academic contacts in the innovation and entrepreneurship ecosystem.



Gain a holistic view on value and process chains.



Acquire transferable skills through modern teaching methods. These transferable skills include: entrepreneurship, negotiation techniques, intellectual property, problem solving, working cooperatively and creatively, co-designing, and life cycle approaches.

## Program outline



Funded by EIT RawMaterials since 2015 and labelled by the EIT (European Institute of Innovation and Technology) since 2016, AMIS is a Master program in Advanced Materials for Innovation and Sustainability which explores the theme of "Substitution of critical or toxic materials in products for optimized performance". It also covers the topics of "Material chain optimization for end-of-life products" and "Product and services design for the circular economy" - all of which are central themes of the AMIS.

The primary focus of the AMIS program is metal and mineral raw materials. Bio-based and polymer materials are studied in view of their substitution potential. Other materials are also analyzed in the context of multimaterial product recycling.

In addition, the AMIS program includes a solid package of courses and project work in innovation and entrepreneurship.

## Program structure

*Mobility is integrated within the two-year program, during which students study at two of the consortium partner universities. Upon completion of the program, graduates are awarded 120 ECTS and a double degree delivered by two of the five partner institutions where they studied.*

*Students begin the Master program at Grenoble INP, Aalto University or T.U. Darmstadt. In their second year, students specialize in another partner university:*

- › To attend the specialization year offered at the University of Bordeaux, prospective students must attend the first year at either Aalto University or the Technical University of Darmstadt.

### Year 2 specializations are the following:

- › University of Bordeaux: Advanced Hybrid Materials: Composites and Ceramics by Design
- › T.U. Darmstadt: Functional Ceramics: Processing, Characterization and Properties
- › Aalto University: Nanomaterials and interfaces: Advanced Characterization and Modeling
- › University of Liège: Nanomaterials and Modeling
- › Grenoble INP: Materials Interfaces: Surfaces, Films & Coatings

### Master 1: Basic level competencies.

#### Mandatory courses in:

- › Fundamentals of materials science
- › Applied materials
- › Modelling tools and materials
- › Innovation, business and entrepreneurship.

#### Joint collaboration courses with AMIS partners:

- › Inno project I: business model development and the commercialization process of new technologies.
- › Summer camp: a week intensive course working in teams on industry case studies to create and produce new ideas, innovative technologies, improved products or services.
- › Internship: work experience in a company or research organization to develop a solution-focused approach by translating innovations into feasible business solutions and commercializing new technologies.

### Master 2: Specialization year.

#### Mandatory courses in:

- › Advanced functional materials with a specialization in material interfaces, nanomaterials, ceramics or hybrids.

#### Joint collaboration course with AMIS partners:

- › Practical work on various industrial projects integrated with innovation and entrepreneurship contents.
- › Inno project II: a specialized approach on business model development and commercialization process of new technologies.

#### Master thesis:

- › A research and development experience in material science jointly supervised by the home university professors and the host partners. The results of the Master thesis will be defended during a presentation. Certain subjects may lead to setting up a business or a spin-off.

## How to apply

- › Applications may be completed online:  
[www.amis-master.eitrawmaterials.eu](http://www.amis-master.eitrawmaterials.eu)

## → And after?

As a resource engineer, students may continue in the following fields:

#### Freelance and entrepreneurship:

- › Create a business or become a consultant

#### Resource industry:

- › SMEs in chemistry, exploration, green energy, machinery and plant construction, metal working industry, ceramics, environmental economy (R&D, product development, management, production, marketing and sales)

#### Research:

- › Universities, research institutions, lecturer or managerial position
- › Circular economy
- › Production, analytics, management, marketing and sales

#### And also:

- › Science journalism, consulting, project development and management, advisor to policy makers, administration, specialist agencies and media.

## Contacts

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STARTS **TODAY**