

Parcours EUR Sciences de la matière

ECTS
120 crédits

Durée
2 ans

Composante
Sciences Fondamentales
et Appliquées

Langue(s) d'enseignement
Anglais

Présentation



The **Material Sciences - EUR Master** is one of the EUR INTREE master programs. The EUR INTREE (interfaces for aeronautic energy and environment) is a Graduate School (GS) dedicated to teaching, via research, in the field of interface phenomena between media of different physico-chemical properties. With the Materials Science master program, you will acquire a **strong and interdisciplinary background in solid state physics and materials science**.

The INTREE Graduate School, which is supported by the existing Masters programs, will allow students to be immersed in both research and industry environments. InTREE constitutes a profound transformation in comparison to what is offered by the present educational system. These high-level courses (Master and Ph.D.), limited to twenty or so students per year, will favor learning-by-research, placing students at the heart of the laboratories. They are organized around four main axes in order to prepare students for the professions of tomorrow:

- Progressive immersion in the laboratories,
- International mobility
- Connections with the socio-economic world,

- disciplinary openness toward the multidisciplinary
- The Pprime and IC2MP institutes are at the heart of the IntREE-GS.

Objectifs

The students in the *IntREE* graduate school will acquire a solid background in various topics, ranging from fundamental to applied sciences. The GS-program is designed to include hands-on laboratory experiences during the two years of Master to strengthen the student's capability to learn actively, think independently, and work in team. The students will also be exposed to the latest developments in industrial R&D through courses given by industrial partners and internships.

The IntREE students will be enrolled into appropriate Master which ensure the fundamental teachings used within their disciplines (named "CORE" courses). In addition specific common courses will be delivered by researcher or industrial partners.

In addition to their diploma/degree, the students will receive the GS-IntREE label certification attesting to the excellence of research-based training in the area of « Interfaces ».

Les + de la formation

1. In addition to their diploma/degree, students will receive the EUR label certification which attests to the excellence of research-based training in the field.
2. Immersion in state-funded or private laboratories in the field.
3. All internships are paid positions (of about 600€/month) and additional scholarships will be delivered to promote the international mobility (travel expenses ...).
4. The incoming international mobility of highly ranked students is also encouraged by grants limited to 4000€ per project (travel expenses, welcome box, and scholarship).
5. International reputation in aeronautic, transport, energy and environment.
6. Individualized follow-up to students and the learning through lectures, tutorials, laboratory classes, workshops.

Organisation

Stages

Stage : Obligatoire

Durée du stage : M1 S110 weeks (3days/week), M1 S2 3-5 months, M2 S4 4-6 months

Stage à l'étranger : Possible

Admission

Conditions d'admission

- For **French and EU students:** Applications on the # [monmaster.gouv.fr](https://www.monmaster.gouv.fr) website
- For **non EU students:** apply through # **CampusFrance** website

Et après

Insertion professionnelle

Academic or industrial research, Engineering in Material sciences...

Infos pratiques

Lieu(x)

Futuroscope

En savoir plus

Applications on the [monmaster.gouv.fr](https://www.monmaster.gouv.fr) website (access to the site from January 29, 2024)

<https://www.monmaster.gouv.fr>

For non EU students: apply through CampusFrance

<https://www.campusfrance.org/fr>

Learn more about Poitiers Graduate School EUR INTREE

<https://eur-intree.univ-poitiers.fr/master-program/>

Programme

Mode full (title / type / CM / TD / TP / credits)

M1 EUR Sciences de la matière

Semestre 1

	Nature	CM	TD	TP	Crédits
Mécanique Quantique EUR	UE				6 crédits
Mécanique quantique	EC	16h	7h		
Diffusion par un potentiel	EC	6h	2h		
Introduction à la physique de l'état solide	EC	7h			
Physique Statistique, anisotropie et symétries	UE				6 crédits
Physique Statistique	EC	18h	12h		
Anisotropie et symétries dans les cristaux	EC	12h			
Common courses 1 EUR INTREE	UE	32h			3 crédits
Interaction rayonnement-matière	EC	8h			
Interaction électrons-matière	EC	8h			
Surface chemistry	EC	8h			
Outils numériques - programmation 1	EC	8h			
Soft skills 1 - EUR INTREE	UE				3 crédits
Anglais	EC		22h		
Scientific communication	EC	8h			
Research project	UE		10h		9 crédits
Défauts en physique de l'état solide	UE				3 crédits
Introduction à la physique de l'état solide	EC	7h			
Défauts ponctuels, diffusion	EC	4h	2h		
Dislocations, plasticité	EC	4h	2h		
Germination - croissance	EC	4h	2h		

Semestre 2

	Nature	CM	TD	TP	Crédits
Structure de bandes et propriétés électroniques	UE	26h	16h		6 crédits
Physique atomique, élasticité et dislocations	UE				6 crédits
Physique atomique et spectroscopie	EC	18h	8h		
Elasticité et dislocations	EC	8h	6h		
Common courses 2 EUR INTREE	UE	32h			3 crédits
Electrical phenomena at interfaces	EC	8h			

Surfaces topography and its effect on interactions with fluids and solids	EC	8h			
Surface and interface design for heterogeneous catalysis	EC	8h			
Spectroscopy at interfaces	EC	8h			
Soft skills 2 - EUR INTREE	UE	8h	12h		3 crédits
Management	EC		12h		
Environmental impact	EC	8h			
Internship S2 - EUR INTREE	UE				12 crédits

M2 EUR Sciences de la matière

Semestre 3

	Nature	CM	TD	TP	Crédits
Simulations atomistiques et interactions ions-matière	UE				6 crédits
Simulation atomistique	EC	20h			
Interactions ions-matière	EC	12h		6h	
Plasticité, interfaces et métallurgie des poudres	UE				6 crédits
Plasticité	EC	16h			
Elasticité et interfaces	EC	6h	5h		
Métallurgie des poudres	EC	13h	3h		
Physique des surfaces, Microscopie électronique en transmission	UE				6 crédits
Surfaces - croissance cristalline	EC	6h			
Surfaces à l'échelle atomique et microscopie à effet tunnel	EC	12h			
Microscopie électronique en transmission	EC	16h		6h	
Common courses 3 EUR INTREE	UE	32h			3 crédits
Modélisation moléculaire	EC	8h			
Introduction to rheology	EC	8h			
Contact réseaux poreux	EC	8h			
Outils numériques - Programmation 2	EC	8h			
Soft skills 3 - EUR INTREE	UE	8h	22h		3 crédits
Anglais	EC		22h		
Soft skills 3	EC	8h			
Practicum	UE		10h		6 crédits
Practicum - EC	EC		10h		

Semestre 4

	Nature	CM	TD	TP	Crédits
Internship S4	UE				30 crédits

UE = Unité d'enseignement

EC = Élément Constitutif