MASTER CHIMIE

Parcours EUR chimie verte, catalyse et environnement

Composante
Sciences Fondamentales et Appliquées

Langue(s) d'enseignement
Anglais

Présentation

If you like chemistry,

if you are passionate about research,

if you have an open mind and aim for excellence,

come and join the Graduate School EUR INTREE (interfaces for aeronautic energy and environment) and its Master of Chemistry dedicated to research, in the field of interface phenomena between media exhibiting different physico-chemical properties.

Do you know that 85% of industrial processes to produce molecules deal with heterogeneous catalysis which requires an interface between a solid (the catalyst) and a gaseous or liquid medium (the reactant phase) ?

The main research domains concerned with this EUR Master of Chemistry will focus on the development of sustainable and eco-friendly processes for green chemistry, environmental remediation, clean energy production and the understanding of interface phenomena to optimize the catalyzed chemical reactions

The cursus will be organized around four main axes

- Progressive immersion in the two international well known laboratories: Pprime and IC2MP research institutes
- International mobility
- Connections with the socio-economic world,
- Disciplinary openness toward the multidisciplinarity

Nota bene: All courses will be taught in English in this international cursus.

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 the Master of chemistry which ensures the fundamental teachings used within their disciplines (named "CORE" courses). In addition, specific common courses will be delivered by researcher or industrial partners to provide high-level teaching about interfaces.

At the end of the training, our high level graduates will be able to join academia or R&D teams in small or large industrial groups to develop innovation for tomorrow's chemistry to tackle challenges in health, energy, environment without contributing to global warming.

Savoir-faire et compétences

Our graduates will be able

- To combine different disciplines in order to design new sustainable chemical processes
- To innovate to tackle the challenge of tomorrow's chemistry challenges
- To perform bibliographic research, to conduct and manage a research project,
- To implement relevant experiments, to select the appropriate analytical tools and perform the analyzes,
- To manage a team, to know how to communicate, to speak fluent English

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.

Admission

Conditions d'admission

- be a graduate in chemistry or physico-chemical sciences

- F**or French and EU students:** apply on the website e-candidat # from April 15th, 2022 to May 9th, 2022 # https://ecandidat.appli.univ-poitiers.fr/

- For non EU students: apply through CampusFrance before January 2022

https://pastel.diplomatie.gouv.fr/etudesenfrance/

It is important that applicants provide a valid email address that they check daily to be informed of the progress of the selection and the results.

The Selection process for all students is organized in three steps:

M1 application: *Pre-selection:* applicants submit their electronic file to the adequate website according their situation (e-candidat or CampusFrance)

1. A first analysis will be performed using the following criteria : Academic records, Scientific background; Level of English (academic score in transcripts of records or specific test or certification letter from your university or …) , Practical experience (if any).
2. *Interview of shortlisted candidates*. A shortlist determines students that will be interviewed by evaluators. The interview (around 20 minutes) is designed to explore candidates' motivation to study on the EUR-Intree/ chemistry course, their critical thinking skills and understanding of chemistry issues. Interviews can be conducted using video-conference. The *shortlisted candidates will be contacted by e-mail for the interview.*
3. *Final selection:* You will receive one of the following types of decisions to your application:

Admission

This means that you fulfil all of the requirements and have been offered a study place at the University of Poitiers in the Master of Science in EUR-Intree Chemistry's programme.

A letter of admission will be sent to you with instructions for registration.

You usually have 1 week from date the letter is sent to respond. Regardless of whether you accept or reject the offer

it is important for the University to receive your answer. If the University has not received your acceptance by the deadline (which will be provided in the admission letter), the offer will be annulled. Information on how to respond will be stated in the admission offer.

Rejection

This means that you do not fulfil the admission requirements and cannot be offered admission. There is no possible appeal and it is not possible to apply before the next year.

Conditional admission

This means that you do not fulfil all of the requirements but you have been selected as a wait-listed candidates for admission against the vacant seats. According your ranking on the list, you will be inform as soon as a vacant seat is available.

Infos pratiques

En savoir plus

Online application: from Friday April 15th, 2022 to Monday May 9th, 2022

https://ecandidat.appli.univ-poitiers.fr/

Programme

Organisation

According to the **European Credit Transfer System** (ECTS), a two years master's program is worth **120 ECTS** (60 per year, 30 per semester). Each semester must be acquired independently

The first semester (M1 Autumn semester) includes an integration week, core and specific courses as well as an immersive project in labs (2 days per week)

The second semester (M1 Spring semester) consists of thematic courses and seminars and an internship of 3 to 4 months in companies or academic laboratories

The third semester (M2 Autumn semester) is divided into several courses in chemistry and a practicum ((a group project in which 3 GS-students enrolled into 3 different masters will work together to solve a multidisciplinary challenge.

The fourth semester (M2 Spring semester) is dedicated to the internship (Master thesis) of 5 to 6 months in R&D teams of companies or academic laboratories

International mobility will be favored for internships.

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

M1 EUR chimie verte, catalyse et environnement

Semestre 1

	Nature	CM	TD	TP	Crédits
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			
Research project	UE		10h		12 crédits
Soft skills 1 - EUR INTREE	UE				3 crédits
Anglais	EC		22h		
Scientific communication	EC	8h			
Green Chemistry/Chimie verte	UE	28h	8h		6 crédits

Catalysis and eco-efficient processes/Catalyse et écoprocédés	UE	24h	16h		6 crédits
Heterogeneous Catalysis	EC	24h	16h		

Semestre 2

	Nature	CM	TD	TP	Crédits
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	UE				12 crédits
Inorganic Chemistry/Chimie inorganique	UE	18h	14h	14h	6 crédits
Materials analysis/Analyse des Matériaux	UE	10h		16h	6 crédits

M2 EUR chimie verte, catalyse et environnement

Semestre 3

	Nature	CM	TD	TP	Crédits
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
Catalytic nanomaterials/Nanomatériaux catalytiques	UE	28h	28h		6 crédits
Activated chemical processes/Procédés d'activation	UE	12h	10h		3 crédits
Environmental remediation/Remédiation environnementale	UE	14h	10h		3 crédits
Low or zero carbon energy/Energie bas carbone et énergie décarbonée	UE	16h	12h		3 crédits
Quantum modeling of materials and interfaces/Modélisation en chimie quantique de matériaux et interfaces	UE	10h	4h	12h	3 crédits

Semestre 4

	Nature	CM	TD	TP	Crédits
Internship S4	UE				30 crédits

UE = Unité d'enseignement
EC = Élément Constitutif