

Parcours Erasmus Mundus Sustainable Catalysis (SUCAT)

ECTS
120 crédits

Durée
2 ans

Composante
Sciences Fondamentales
et Appliquées

Langue(s) d'enseignement
Anglais

Présentation

<https://www.master-sucat.eu/>

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The SuCat project is based on **catalysis and sustainable chemistry**. The main objective is to provide **expertise and knowledge on all declinations of catalysis (homogeneous, heterogeneous and enzymatic) and sustainable chemistry**. The three partners are well known in each of these domains. **University Rovira i Virgili (Spain) is specialised in homogeneous catalysis, University of Aveiro (Portugal) in biotechnologies and University of Poitiers (France) in heterogeneous catalysis.**

In high education level, there are many master degrees dedicated to one declination of catalysis, but there is no master degree that gathers knowledge on homogeneous, heterogeneous and enzymatic catalysis, to the best of our knowledge. Chemical industries are widely interested in recruiting persons who will have a multidisciplinary background.

Non academic partners are interested in this master (SOLVAY, ARD, L'OREAL, CLARIANT, RAIZ, IFPEN, ADISSEO, Aquitaine Chimie Durable, ...) and will offer leading technical expertise particularly relevant as to enable

students to gain practical application in professional contexts, thus ensuring excellent employment prospects.

At the end of this master degree, **students will be trained to be recruited by chemical companies** using catalysis all around the world with a large panel of expertise and cultural approaches.

Objectifs

The aim of SuCat is to train and form high level graduates in the field of catalysis (homogeneous, heterogeneous and biocatalysis) and sustainable chemistry. Catalysis is the most interdisciplinary and overarching technology in the chemical industry. Catalysis is involved in many industrial applications (energy, fine chemicals, materials...) and in the environmental protection (recycling of waste and reduction of greenhouse gases). Catalysis is of high interest in the chemical industry and helps to define sustainable catalytic processes. Catalysis is directly associated to sustainable chemistry and will help to develop **green and sustainable future dependent on breakthrough discoveries in this field. These considerations reveal the strong need for bringing together the scattered knowledge of catalysis over several specialities:**

- **Homogeneous catalysis**
- **Heterogeneous catalysis**

- **Biocatalysis**

Savoir-faire et compétences

- The alumni will have a broad spectrum of employers based on their double expertise in catalysis (two declinations) and in life cycle assessment,
- The alumni will be trained in skills that the employers require and need,

Les + de la formation

- The need for highly qualified personnel having skills and expertise in more than one declination of catalysis and sustainability is of prime interest.
- The purpose of SuCat is to provide to students knowledge and skills on catalysis in all its aspects as well as in Life Cycle Assessment. Practical experiences in two declinations of catalysis will be performed through a 6 months internship and 6 months of master thesis giving to students the skills to work in catalytic field in industry or academia. This master gathering partners from Europe, Brazil and Canada will help to coordinate catalysis in all these countries in order to graduate students in this field.
- The respective universities are supported by industrial partners (L'OREAL, CLARIANT, SOLVAY, ADISSEO, RAIZ...) and/or clusters that will prepare the students for the real labour market through a combination of industrial plant visits, internship and seminars.
- This formation will allow students to enter directly in the "work life" or start a PhD in catalysis field.

Formation internationale : Doubles diplômes, diplômes conjoints, Erasmus Mundus

Dimension internationale

The mobility plan ensures several opportunities to students from the same or different Master cohorts to meet and exchange. The students will have the opportunity to know well each other and to create a real group.

The welcome weeks are specifically planned to build a group within the same cohort and exchange experience, thought as beneficial in terms of networking and transferable skills purposes.

The first semester will be held in Poitiers. In the meanwhile, guest lecturers from University Rovira i Virgili, University of Aveiro as well as from affiliated partners will come to Poitiers or give their courses by video-conference.

Students of the SuCat master will do an internship of 6 months in one of the consortium or affiliated partners that will be on a different field of catalysis than the specialization chosen for the second year. They will be encouraged to move in order to discover another country and culture.

In the second year of the master, students will choose a specialization and will move to the University of Aveiro for biocatalysis, University Rovira i Virgili for homogeneous catalysis and University of Poitiers for heterogeneous catalysis. The main aim is that they will have 30 ECTS credits from at least two partners in order to get a double degree diploma.

Organisation

Stages

Stage : Obligatoire

Stage à l'étranger : Obligatoire

Admission

Conditions d'admission

Bachelor degree in chemistry or equivalent

Capacité maximum

20 students

Infos pratiques

Autres contacts

emjmd.sucats@univ-poitiers.fr

Établissement(s) partenaire(s)

University Rovira i Virgili

<https://www.urv.cat/en/>

University of Aveiro

<https://www.ua.pt/>

Lieu(x)

Poitiers-Campus

En savoir plus

SuCat Master

<https://www.master-sucats.eu/>

Programme

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

M1 Parcours Erasmus Mundus Sustainable Catalysis (SUCAT)

Semestre 1

	Nature	CM	TD	TP	Crédits
Green Chemistry/Chimie verte	UE	28h	8h		6 crédits
Homogeneous catalysis	UE	15h	25h		5 crédits
Microbial and enzymatic catalysis	UE	15h	25h		5 crédits
Life cycle assessment	UE				3 crédits
Heterogeneous catalysis and eco-efficient processes	UE	24h	16h		5 crédits
Heterogeneous Catalysis	EC	24h	16h		
Analytical tools	BLOC				6 crédits
Chromatographie-I	UE		24h	15h	3 crédits
Techniques spectroscopiques-I	UE	6h	24h		3 crédits

Semestre 2

	Nature	CM	TD	TP	Crédits
S2 Internship	UE				30 crédits

M2 Parcours Erasmus Mundus Sustainable Catalysis (SUCAT)

Semestre 3

	Nature	CM	TD	TP	Crédits
Catalytic nanomaterials/Nanomatériaux catalytiques	UE	28h	28h		6 crédits
Solid-state analyses / Analyses spécifiques des solides	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
Quantum modeling of materials and interfaces/Modélisation en chimie quantique de matériaux et interfaces	UE	10h	4h	12h	3 crédits
Low or zero carbon energy/Energie bas carbone et énergie décarbonée	UE	16h	12h		3 crédits
Company management and bibliography on heterogeneous catalysis	UE				6 crédits

Semestre 4

	Nature	CM	TD	TP	Crédits
Master Thesis	UE				30 crédits

UE = Unité d'enseignement

EC = Élément Constitutif