



# INTERNATIONAL SEMESTER

**MATERIALS AND SURFACE TREATMENTS ENGINEERING** at the University of Limoges, FRANCE

Through exclusive training in Surface Coating and Treatments, you will master conventional and innovative processes so that you may adapt the properties of the surface of materials and parts optimally to their utilization, while respecting the environment.

**Desired skills:** Strategic industrial sectors such as automobile, aeronautics and aerospace, electronics, medical, energy, metallurgy and surface treatment or the environment.

This international semester takes place in Ester Technopole, a unique place in Europe for ceramic materials.

## TRAINING INSTITUTIONS

- ENSIL-ENSCI (National Higher Engineering College)
- The Faculty of Sciences and Technologies

## RESEARCH LABORATORY

**SPCTS** (Sciences of Ceramics and Surface Treatments Processes), laboratory internationally recognized for Ceramics and Surface Treatments Processes



Parc ESTER Technopole, a unique place in Europe for Ceramic Materials

## OPENING DOORS TO THE WORLD...

It is indispensable today for students to be open to other cultures, other ways of living and working.



### LIMOGES

Nearly in the center of France, 160 000 inhabitants

**By plane:** one hour from Paris, one hour and a half from London

**By train or by car 3 hours from:** Paris, Toulouse, Bordeaux, Atlantic ocean...

## MORE ABOUT THE INTERNATIONAL SEMESTER...

**WHO IS CONCERNED?** International students on their various curricula part of european (ERASMUS) and international exchange programmes.

**WHEN DOES THE PROGRAM TAKE PLACE?** Spring semester, 1st February-31st May (15 weeks of classes)

**ENGLISH IS THE COMMON LANGUAGE USED IN EVERY COURSE**

**THREE MAIN PURPOSES DEFINE THE PROGRAM CONTENT (30 ECTS)**

- Acquire and develop key skills and knowledge in the field of Materials and Surface Treatments
- Acquire a practical experience regarding high-tech deposition processes and characterization methods thanks to practical works and a personal technical project suggested by industrial partners and then refined with the teaching team
- Live an international experience, initiation to french language and culture

# TRAINING DETAILS

20h a week + technical project

ECTS

GENERAL TOPICS	Initiation to French language and discovery of French culture Surface engineering and applications: overview Industrial ecology Metallurgy and corrosion Project Management/Test plan management		6
SURFACE TREATMENT	Wet surface treatments	Introduction Surface preparation Anodizing Electroplating, Electroless plating Plating design regarding product functionalities	2,5
	Dry surface treatments	Physical Vapour Deposition (PVD) Chemical Vapour Deposition (CVD/PECVD) Thermal spraying	3,5
	Special process management		
	Practical work		3
Lectures by professionals and visits of surface treatment plants			
COATING PROPERTIES AND CHARACTERIZATION	Film properties	Thermal properties Mechanical properties Optoelectronic properties	2,5
	Surface, microstructural and chemical characterization	Electron Microscopy Diffraction Vibrational spectroscopy Surface characterization	3,5
	Practical work		3
TECHNICAL PROJECT			6

## INTERNATIONAL STUDENTS OFFICE

Supports international students with: accommodation, administrative formalities (opening a bank account...), transports, health insurance plans, discovering Limoges and its region

Mrs Frédérique LUNEAU: frederique.luneau@unilim.fr

Mrs Isabelle VIEVILLE: isabelle.vieville@unilim.fr

TO GET MORE INFORMATION

[www.ensil-ensci.unilim.fr](http://www.ensil-ensci.unilim.fr)  
[www.unilim.fr](http://www.unilim.fr)

CONTACT

Mr Pascal Tristant: pascal.tristant@unilim.fr

Mrs Christelle Dublanche-Tixier: christelle.tixier@unilim.fr