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Advisory Panel.

Registration opens on October 1st 2013 and closes on May 31st 2014.
The target is a group of 10 students. Program starts on September 8th 2014.
Candidature will be processed within one month after receipt during this candidature opening period.

imp-turbulence@ec-lille.fr

Turbulence

An International Master's Programme in France

(Entirely taught in English)

imp-turbulence@ec-lille.fr ***http://imp-turbulence.ec-lille.fr/***

The **International Master's Programme in Turbulence** is jointly offered in English by Ecole Centrale de Lille (http://www.ec-lille.fr), Ecole Nationale Supérieure de Mécanique et d'Aérotechnique de Poitiers (http://www.ensma.fr) and Ecole Nationale Supérieure d'Ingénieurs de Poitiers (http://www.esip.univ-poitiers.fr).

It consists of three semesters of courses followed by a thesis project. Upon completion of the programme students are awarded the Master of Science (MSc) degree. Two semesters take place in Lille at Ecole Centrale, one semester in Poitiers, shared by ENSI Poitiers and ENSMA. This allows the students to experience two scientific and cultural environments. The last semester is devoted to the Master thesis (in English and funded) which can be carried out within or outside France at a variety of collaborating industry and university environments, including Lille & Poitiers. Funded internships are possible between semesters 2 and 3 (summer holidays) on a voluntary basis in Lille or Poitiers or elsewhere.

The programme deals in depth with modern **computational** and **experimental** approaches to **turbulent flows**. The International Master's Programme in Turbulence is taught entirely in **English**. Courses on French language and culture are also given to the foreign students in order to help them benefit fully from their stay in France.

The program is tightly linked to ongoing research on turbulence and related topics in the two research laboratories associated to it:

Laboratoire de Mécanique de Lille **http://lml.univ-lille1.fr**

Fédération de recherche PPRIME **http://primme.labo.univ-poitiers.fr**

Programme Outline

The complete programme covers **four semesters of studies**, starting in the fall. One semester of fulltime studies equals 20 credit units (ECTS). The programme includes 94 ECTS of courses and a Master's thesis of 26 ECTS. The Master's Programme will begin in September of year 1 and end in September of year 2. The overall goal of the formal courses is to prepare the student to step into almost any industrial or research environment with sufficient knowledge (computational and experimental) to be able to contribute almost immediately.

Courses:

Students are **required to complete compulsory recommended and elective courses** in each semester. Compulsory courses are *Turbulence theory*, *Experimental Turbulence*, *Turbulence modeling*. Almost all of them include laboratories, either computer or experiment. A special practice is done on industrial fluid mechanics codes. Electives can be chosen from a great variety of offerings in areas such as combustion, multiphase flow, turbomachinery, acoustics, heat transfer...

Semester 1	Semester 2	Semester 3
Compulsory		
Turbulence Theory	Turbulence Theory	Turbulence Modelling
Experimental turbulence	Experimental turbulence	Compressible turbulence
Computational Fluid Mechanics	Experimental Labs	Signal Processing labs
CFD Labs	Maths for Turbulence	Experimental Labs
Recommended		
Fluid Mechanics	French culture	Advanced signal processing
Mathematics		French culture
French Course		
Electives (3/ semester)		
	Turbulent boundary layer	Aero-acoustics
	LES & DNS	Stability & chaos
	Turbulence & Turbomachinery	Optimization & control
	Lagrangian turbulence	Turbulent heat transfer
		Turbulent combustion & mixing
Semester 4		
Master Thesis		

"In all respects, I believe this to be an outstanding program which I support with enthusiasm."

Alexander J. Smits, Princeton University