PEE 3A MAJOR in ENVIRONMENT, ENERGY AND PROCESS ENGINEERING

ENVIRONMENT, ENERGY AND PROCESS ENGINEERING (P2E)

http://p2e.mines.inpl-nancy.fr/

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The department

A strong link between processes, energy and the environment
In the decades to come, the production and rational use of energy and materials will change the industrial landscape to satisfy economic and environmental demands. Our societies must be able to produce or to process substitute fuels (more available, more economically profitable and environmentally friendly, like hydrogen, biomass, charcoal, etc.), as well as fissionable fuels for the nuclear industry. In the same way, industrial processes and energy conversion installations must adapt to using new raw materials and new energy vectors and limit their impact on the environment. To these new demands one can add those of the market, which are expressed both in terms of product cost and quality. Optimizing the current processes, developing new technologies and new industrial processes are thus solutions that can not be ignored for responding to energy and environmental constraints.

The I2E program (Energy and Process Engineering)
The I2E major provides a general methodology for understanding these challenges, by:
• the analysis, study and understanding of basic processes (single and multiphase transport/ transfer phenomena, turbulence, combustion, kinetics, etc.):
• the calculation of industrial units and the corresponding material and energy flows:
• the techno-economic analysis of one or an ensemble of production units and the associated optimization methods:
• knowledge about the energy and environmental markets.
The ultimate objective lies in optimizing these industrial production units.

The professional fields the Department prepares students for
The purpose of the program is to allow new engineers, owing to their in-depth scientific and technical knowledge and their methodological skills, to deal with current problems in the engineering fields of industrial systems, as well as the production and rational use of energy, such as:

• Processing hydrocarbons (gas, oil) and coal, the production of energy from biomass, hydrogen production (oil tankers, gas and electricity producers),

• The production and processing of fissionable fuels (nuclear),

• Energy production and waste treatment (boilers, incinerators),

• Energy consuming processes (metallurgy, glass industry, petrochemistry).

Moreover, the program develops a strong awareness of the environmental problems and sustainable development, and offers courses in the fields related to these areas.