LMAPR2118
2010-2011

Fluid-fluid separations

5.0 credits	30.0 h + 30.0 h	2q

Teacher(s) :	Mignon Denis ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	- Diffusion theory. Fick's law and Stefan's law. Convective and molecular transfer coefficients. Analogy between heat and mass transfer. - Continuous and batch distillation of binary and multi-component mixtures. Graphical (McCabe and Thiele) and numerical sizing methods. Simplified ("shortcut") and rigorous methods. Trayed column design (equipment, efficiency and capacity). - Absorption of one or more components into a liquid, with of without a chemical reaction. Stripping. Packed column hydrodynamics. Different types of packing and absorbers. - Liquid-liquid extraction. Single stage and multiple stages, with or without reflux. Extractor types and selection criteria. Supercritical extraction. - Solid-liquid extraction basics (the principles and equipment). - Using the ASPEN + process simulator for each of the above techniques.
Aims :	Gain a practical knowledge of the operating principles, as well as of the selection, sizing and equipment choice methods applicable to unit operations for fluid/fluid separation. *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Content :	Study of the fluid/fluid separation techniques : gas absorption into liquids, stripping, distillation, liquid/liquid and solid/liquid extraction. For each of these techniques, the following elements will be presented : equilibrium between phases of interest; sizing methods; industrial applications and equipment. The theoretical considerations will be illustrated by practical work sessions relying on the use of the process simulation software ASPEN+.
Other infos :	Nil
Cycle and year of study :	> Master [120] in Chemical and Materials Engineering
Faculty or entity in charge:	FYKI