UCL Université catholique de Louvain

LCHM2153

2015-2016

Applied chemical kinetics

3.0 credits	22.5 h + 7.5 h

Teacher(s) :	
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	1. Introduction to chemical engineering and chemical reactors classification 2. Thermodynamic and kinetic analysis of complex systems; experimental techniques 3. Kinetic models applications to the conception of chemical reactors, heterogeneous catalysis and catalytic reactors.
Aims :	The aim of this course is to conduct students to complete their knowledge in the condensed phase kinetics and to use it for various actual cases, like the conception of chemical reactors from the kinetic point of view. *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 :	Content 1. Introduction: elementary chemical engineering, chemical reactors classification 2. Kinetic models applications to the conception of ideal chemical reactors: "batch", tubular reactors in the plug flow regime, perfectly stirred reactors in isothermal conditions; influence of the type of reactor on the products selectivity in complex reactions. 3. Heterogeneous catalysis and catalytic reactors: chemical kinetics of heterogeneous catalytic reactions, kinetic at the catalytic pellet level. 4. Non ideal reactors: causes of the non-ideality, experimental approach of the time distribution, model of the tubular reactor with axial diffusion. 5. Experimental techniques: chromatography, mass spectrometry, spectroscopy, fluorescence, photolysis, shock tubes, flow tubes. 6. Thermodynamic and kinetic approaches of complex systems of dedicated examples: reactions in the atmosphere and in flames, autocatalysis, inhibition, estimate of thermodynamic data and kinetic parameters,..
Other infos :	Prerequisites: Physical chemistry I (CHM 1351) The course could be partly or totally delivered by an invited lecturer.
Faculty or entity in charge:	CHIM

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Master [120] in Chemistry	CHIM2M	3	-	🔍
Master [60] in Chemistry	CHIM2M1	3	-	🔍