

3.0 credits

22.5 h + 7.5 h

Teacher(s) :	
Language :	Anglais
Place of the course	Louvain-la-Neuve
Main themes :	After a recall of the fundamentals of chemical kinetics in the gas phase and of the energy and mass transfer phenomena, the course deals with the theory and reaction mechanisms in the combustion and atmospheric chemistry.
Aims :	The goal of this course is to allow students to complete their knowledge of the gas phase kinetics and to put into practice various actual cases. <i>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".</i>
Content :	<p>1. Kinetics of chemical processes in the gas phase (linear and branched chain, autocatalytic, inhibited reactions)</p> <ul style="list-style-type: none"> - tropospheric and stratospheric chemical reactions - chemical reactions at low, at moderate and at high temperatures - chemical reactions involved in combustion phenomena <p>2. Reaction mechanisms:</p> <p>Formation and destruction of ozone in the atmosphere, pollution effects from NO_x, SO_x, CO, chlorinated derivatives, freons, etc</p> <p>Combustion of hydrogen, of carbon, of carbon monoxide, of alkanes, of alkenes, of alkynes, formation of pollutants: NO_x, soot, CO, Polycyclic aromatic hydrocarbons (PAH). Inhibition processes. Energy resources.</p> <p>Combustion phenomena: premixed and diffusion flames, equivalence ratios and excess of air, laminar and turbulent regimes, engines types, gas and oil boilers, fires, chemiluminescence and chemionisation phenomena. Adiabatic temperature calculations, Hugoniot diagrams, explosions: subsonic (flames) and supersonic (detonations)</p>
Other infos :	<p>Background: Physical chemistry (I and II) (CHM 1351, CHM 2150)</p> <p>The course could be partly or totally delivered by an invited lecturer.</p>
Cycle and year of study :	> Master [120] in Chemistry
Faculty or entity in charge:	CHIM