

4.0 credits	30.0 h + 22.5 h	2q
-------------	-----------------	----

Teacher(s) :	Gaigneaux Eric ; Peeters Daniel ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	Quantum mechanics of atoms and molecules : Introduction to the formalism of quantum mechanics, to atomic and molecular structures, and to the nature of the chemical bond. Spectroscopy : basic principles and study of various main types of spectroscopies in relation to chemistry.
Aims :	Acquiring knowledge on the properties of matter at microscopic level (corpuscules, atoms, molecules) Know-how in physical chemistry : quantification, conceptualisation and modelisation in relation to experiment (spectroscopy) <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 :	Introduction to quantum mechanics (22.5 h) : the equation of Schroedinger and its resolution to particules in potential wells (vox, oscillator, rotator and hydrogen-like atoms). Extension to atoms, hydrogen ion molécules, diatomics and polyatomic molecules. Special attention being paid onto molecular motions and onto to chemical bond. Exercices are organized in computer room to handle these concepts. Spectroscopy (7.5 h) : distinctions between spectroscopy and spectrometry, emission and absorption, rotational, vibrational and libration spectroscopies with special emphasis on the principles, differences and complementarity of IR and Raman vibrational spectroscopies, electron spectroscopy with special attention on the difference between UV-Vis spectroscopy and photoelectron spectroscopy, principles of resonance spectroscopies (ESR and RMN). Exercices are organized with the objectives to acquire the ability to distinguish and handle spectra from different spectroscopies and to retrieve information from them related to the analyse samples.
Other infos :	Precursory courses General Chemistry, Physics and Mathematics Evaluation Written Support Notes and Reference Books
Cycle and year of study :	> Bachelor in Bioengineering
Faculty or entity in charge:	AGRO