

3.0 credits	22.5 h + 22.5 h	2q
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Teacher(s) :	Gaigneaux Eric (coordinator) ; Gonze Xavier ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	Syllabus are available on the middle of the course.
Prerequisites :	<i>The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.</i>
Aims :	<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>
Evaluation methods :	<p>At the written examination, several questions of theory and problems are presented to the students. They demonstrate their knowledge by explaining the corresponding content of the course, and their ability to exploit this knowledge by solving the problems.</p> <p>For the spectroscopy, are more more specifically proposed exercices that require the exploitation of the features of a spectrum in order to infer the characteristics of the sample that has generated it (and vice versa : prediction of a spectrum from the sample characteristics). Recognition of a spectroscopic technique used to generate a given spectrum is also a pillar of the evaluation.</p> <p>Typically the global note is established on a basis of 30 points, coming for 20 of them from the evaluation of the knowledge of the student on the quantum mechanics part, and 10 of them on the spectroscopy part, and then reduced to 20 points.</p>
Teaching methods :	Magistral classes and exercices sessions.
Content :	<p>Introduction to quantum mechanics (14,5h + 14,5h): Experimental and theoretical bases. Resolution of Schrödinger equation for simple cases, with one particle (potential well, harmonic oscillator, rigid rotator, hydrogenoid atoms). Approximate treatment: polyelectronic atoms, H<sub>2</sub><sup>+</sup> molecular ion, diatomic molecules. Molecular dynamics and chemical bonding notions.</p> <p>Basis of spectroscopy (8h + 8h): Distinctions between spectroscopy and spectrometry, spectroscopies of absorption vs emission. Basis of spectroscopies : rotation, vibration, libration, rotational and vibrational Raman, UVVis, XPS, resonance techniques (mostly EPR).</p>
Bibliography :	<p>-- Notes de cours (syllabus) disponibles sur le moodle.</p> <p>-- Notes de cours (syllabus) disponibles sur le moodle.</p> <p>Le cours ne fait appel à aucun support particulier qui serait payant et jugé obligatoire. Les ouvrages payants qui seraient éventuellement recommandés le sont à titre facultatif.</p>
Other infos :	
Faculty or entity in charge:	AGRO

<b>Programmes / formations proposant cette unité d'enseignement (UE)</b>				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Bachelor in Bioengineering	<a href="#">BIR1BA</a>	3	<a href="#">LBIR1211</a> and <a href="#">LBIR1221</a>	