

5.00 credits

30.0 h + 30.0 h

Q2

Teacher(s)	Page Melissa ;
Language :	English > French-friendly
Place of the course	Louvain-la-Neuve
Prerequisites	<p>It is recommended to have acquired the knowledge and skills developed in the teaching units:</p> <p><a href="#">LCHM1111</a> Chimie générale  <a href="#">LCHM1141</a> Chimie organique  <a href="#">LCHM1271</a> Eléments de biochimie</p>
Main themes	<p>Main themes to cover :</p> <ol style="list-style-type: none"> <li>1. Introduction to metabolism</li> <li>2. Bioenergetics</li> <li>3. Biochemical transport phenomenon</li> </ol> <p>Main metabolic ways :</p> <ol style="list-style-type: none"> <li>1. Glycolysis and hexose catabolism</li> <li>2. Metabolism of glycogen and glyconeogenesis</li> <li>3. Oxidation of fatty acids and biosynthesis of lipids</li> <li>4. Krebs cycle</li> <li>5. Electron transport, oxidative phosphorylation</li> <li>6. Metabolism of amino acids, nucleotides and linked molecules.</li> </ol> <p>Main ways of regulation.</p> <p>The exercises are divided into two complementary parts :</p> <p>One, followed in the case of CHIM BAC, consists of practical work on a specific question in biochemistry.</p> <p>The other, for all, consists of preparing, presenting and discussing, in groups, a question linked to a biochemical problem, but voluntarily carrying onto other disciplines of life sciences.</p>
Learning outcomes	<p><b>At the end of this learning unit, the student is able to :</b></p> <p>The objective of the theoretical course is to examine the general aspects of glucides, lipids, amino acids and nucleotides metabolism, as well as their regulation.</p> <p>The course must allow the acquisition and mastering of several types of competences :</p> <p>General knowledge of metabolism and its regulation modes ;</p> <p>Comprehension of reactional mechanisms, representation of main metabolic ways, as well as their main regulations ;</p> <p><sup>1</sup> Integration of metabolism in the physiology context of cells and organisms, mainly animal.</p> <p>The goal of exercises is :</p> <p>Deepening, by practical exercises, basic notions seen in the theoretical course ;</p> <p>By the realization of a personal interdisciplinary work, based on a problem-situation, integrating the understanding of metabolic biochemistry in the context of life sciences.</p>
Evaluation methods	<p><b>For all students (chemists, biologists and veterinarians), evaluation includes :</b></p> <ol style="list-style-type: none"> <li>1. A written exam that will take place during the June exam session. The exam can include questions requiring precise / short answers, theoretical developments or problem solving. Exam questions are presented in both French and English. Answers in either language are equally accepted and there is no preference for one language over the other.</li> <li>2. Group work, which can include a group presentation. The evaluation for the group will take place during the normal class hours. Group work can be prepared in French or English.</li> </ol> <p><b>For chemistry and biology students evaluation includes :</b></p> <ol style="list-style-type: none"> <li>3. A lab report following the participation and completion of laboratory sessions. The evaluation will take place during the normal term. The lab report can also be prepared in French or English.</li> </ol>

Teaching methods	<p>The skills targeted by the course will be developed using lectures.</p> <p>Laboratory sessions are for chemistry and biology students, and not for students in veterinary science.</p> <p>Group projects are mandatory for all.</p>
Content	<p>Bioenergetic principles;</p> <p>Carbohydrate metabolism (glycolysis, fermentation, phosphogluconate pathway, gluconeogenesis and glycogenogenesis);</p> <p>Krebs cycle and glyoxylate;</p> <p>Respiratory chain and oxidative phosphorylation;</p> <p>Photosynthesis;</p> <p>Oxidation and biosynthesis of lipids;</p> <p>Urea cycle;</p> <p>Synthesis and degradation of amino acids and other important nitrogen compounds;</p> <p>Nucleotide metabolism.</p> <p>Instruction will take place in English. Practical work will take place in French.</p>
Inline resources	<p>Slideshows are available via the moodle platform based on current literature and the two textbooks listed (these are not required by the students)</p>
Bibliography	<ul style="list-style-type: none"> <li>• Lehninger Principles of biochemistry 7th edition</li> <li>• Voet &amp; Voet Biochemistry 4th Edition</li> </ul> <p>Le cours ne fait appel à aucun support particulier qui serait payant et jugé obligatoire. Les manuels ci-dessus sont recommandés (mais pas obligatoires) sur une base facultative pour un apprentissage plus approfondi</p>
Faculty or entity in charge	CHIM

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor in Chemistry	CHIM1BA	5		