


3.00 credits

30.0 h + 20.0 h

Q1

Teacher(s)	Ghislain Michel (compensates Soumillion Patrice) ;Soumillion Patrice ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	It is recommended that the student master the basic notions of organic and general chemistry, as developed in first-year courses in the faculty of science or faculty of bioengineering.
Main themes	<p>Introduction to basic molecules of biochemistry</p> <ol style="list-style-type: none"> 1. Amino acids and proteins 2. Carbohydrates 3. Lipids and biological membranes 4. Nucleic acids <p>Function of bio molecules</p> <ol style="list-style-type: none"> 1. Structure of proteins 2. Enzymes <p>Notions of molecular biochemistry</p> <ol style="list-style-type: none"> 1. Replication of DNA 2. Transcription of DNA into RNA 3. Nucleic acid-protein complexes 4. Biosynthesis of proteins <p>The practical work illustrates the properties of the main classes of biomolecules studied in the theoretical course and initiates students to a certain number of techniques used currently in biochemistry.</p>
Learning outcomes	
Evaluation methods	Written exam in session (80% of the final grade), quiz and practical work reports (20% of the final grade).
Teaching methods	Lectures and practical work in the classroom
Content	<p>This first biochemistry course will aim at presenting the structure and chemical properties of the main molecular protagonists of the living world.</p> <p>The different chapters will be devoted to the detailed description of the major classes of biomolecules (amino acids, nucleotides, lipids, carbohydrates, proteins, enzymes).</p> <p>The way in which small molecules are assembled into larger structures (polymers) will also be discussed.</p> <p>The chemical origin of the main types of covalent and non-covalent interactions between biomolecules will allow a good understanding of the modes of biosynthesis and molecular recognition which are at the heart of the organization and functioning of living organisms.</p> <p>The behavior of enzymes, the main workers of life, will also be introduced, by describing the catalytic properties and the modes of regulation of these properties.</p> <p>The course will also provide a first descriptive introduction to the three major processes that are at the heart of the functioning of any living cell, namely replication, transcription and translation.</p> <p>This introduction will then serve as a basis for presenting the basics of modern molecular biology and recombinant DNA technologies that allow us to manipulate DNA in a surgical manner today.</p> <p>Five half-day practical sessions are also organized to familiarize the student with the experimental manipulation of the main classes of biomolecules (sugars, lipids, proteins, enzymes).</p>
Bibliography	<ul style="list-style-type: none"> • Principles of Biochemistry de Lehninger • Biochemistry de Voet et Voet <p>(éditions récentes)</p>
Faculty or entity in charge	CHIM

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Minor in Scientific Culture	MINCULTS	3		
Bachelor in Biology	BIOL1BA	3		