Course Plan

Biophysic

Dr. Malika MERZOUGUI

Syllabus

Course name	
University : University of M'sila	**Academic Year :** 2023/2024
Faculty : Sciences	**Level:** 2St year
Department: Common Trunk Natural and Life Sciences	**Semester :** First
Getting to know the educational material	
Education unit : Decouverte	**Subject:** Biophysics
Credit : 5	**Coefficient :** 3
Weekly hourly volume : 04h30min	**Course (hours per week):** 01h30min
Directed work (hours per week): 01h30min	**Practical work (hours per week):** 01h30min
Course director	
First and last name: Malika MERZOUGUI	
E-mail: merzougui.malika@univ-msila.dz	
Telephone number:0667160935	

Description of the educational course

Prerequisites: The chimie of liquid solutions

The general objective of the educational course: Know the composition, statics, dynamics, and different properties of living matter.

Learning objectives (skills to be achieved):

1. Understand the different characteristics of solutions and electrolyte solutions.
2. Know the biological applications of the movement of matter through membranes (diffusion phenomenon, Donnan equilibrium, and cryoscopic lowering).
3. Know the flow of fluids and surface energies.

Course content

Chapter I : generality of solutions

Chapter II : Phenomenos of Diffusion

Chapter III : Study of solid-liquid interfaces

Chapter VI : Study of solid-gas interfaces

Chapter IV : hemodynamic

The expected time distribution of the course program
Chapter I (3 Weeks) 1. Definition of solution 2. Classification of solutions Concentration of solutions 3. Definition of electrolytic solution 4. Conductivity mechanism in ionic solutions
Chapter II (6 Weeks) 1. Diffusion of solute un liquid phase 2. Experimental demonstration of the phenomenon 3. Fick's Law 4. Diffusion and biology: transmembrane transport 5. Application : Artifical Kideny 6. Donnan equilibrium 7. Osmosis phenomenon
Chapter III (3Weeks) 1. Electrochemical double layer theory 2. Solid-liquid interface ion exchange 3. Biological application
Chapter VI (3Weeks) 1. Highlighting the liquid-gas interfaces (surface tension) 2. biological measurement and application
Chapter IV (3Weeks) 1. Study of viscosity (definition, measurement and biological application) 2. Study of the sementation (definition, measurement and biological application
Reference
1. Aurengo, A. y Petitclerc, T. (2015). Biofísica: Madrid, Spain: McGraw-Hill España. 2. Smedley, S. I. (2012). The interpretation of ionic conductivity in liquids. Springer Science & Business Media. 3. Jove Science Education Database. General Chemistry. Solutions and Concentrations. Jove, Cambridge, MA, (2024).

<table>
<tr><th colspan="4">Evaluation method</th></tr>
<tr><td>Percentage evaluation</td><td>Note</td><td colspan="2">Relative weight of evaluation</td></tr>
<tr><td>Exam</td><td>20/20</td><td>Course weight</td><td>66 %</td></tr>
<tr><td>Interrogation</td><td>10</td><td rowspan="3">Weight of directed and applied work</td><td rowspan="3">34 %</td></tr>
<tr><td>Participate in the section</td><td>05</td></tr>
<tr><td>Presence/absence</td><td>05</td></tr>
<tr><td colspan="4">For subjects taught in the form of courses and directed/practical work, or whose evaluation is like examination and continuous monitoring, the subject average is measured by the weighting of the course and directed work:
Course Note*0.66 + Directed Work Note *0.34= Course rate</td></tr>
</table>