

Biochemistry (1st Year of study, 2nd Semester)

Credit value (ECTS) 4

Course category

Domain (Imposed)

Course holder:

Prof. PhD Lucia Carmen TRINĂ

Discipline objectives (course and practical works)

The course aims to explaining for knowledge and understanding the concepts, theories on the structure and role of the main chemical constituents of the living world (carbohydrates, lipids, proteins, vitamins, enzymes).

In practical work the objectives are to familiarize students with the methods of identification and dosing of biochemical compounds in living organisms, their proper use in professional communication, developing interest in training a specialist with real knowledge in addressing the biochemical aspects of living matter and developing the ability to work individually and as a team.

Contents (syllabus)

| Course (chapters/subchapters) |
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| The object and importance of the study of biochemistry. Chemical composition of living matter: bioelements and biomolecules. The role and functions of water and mineral salts in living organisms. |
| Carbohydrates: chemical structure, properties, functions. |
| Carbohydrates: classification, distribution in nature, main representatives. |
| Lipids: fatty acids, chemical structure, properties. |
| Lipids: alcohols in lipid structure, chemical structure, properties. Simple lipids. Complex lipids. |
| Amino acids: structure, properties, classification. |
| Proteins: the origin and role of proteins in living organisms, peptides, proteins. |
| Vitamins: the biological role of vitamins. Vitamin deficiencies and antivitamin factors. Fat-soluble and water-soluble vitamins. |
| Enzymes: the structure of enzymes. Specificity. The mechanism of action of enzymes. |

| Practicum |
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| Norms of work safety technique in the Biochemistry laboratory. Glassware and laboratory apparatus. |
| Determination of moisture, dry matter and ash for plant samples. |
| Carbohydrates. Characteristic identification reactions. |

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| Methods for differentiating ketosis from aldoses. |
| Dosage of reducing sugars. |
| Identification of polyglucides. |
| Colorimetric determination of reducing carbohydrates. Reaction with potassium ferricyanide |
| Lipids. Quantitative determination of fats by the Soxhlet method. |
| Determination of the peroxide index for lipids. |
| Sörensen method for the identification of amino acids |
| Identification reactions for proteins. |
| Precipitation reactions for proteins. |
| Determination of Vitamin C by iodometric method. |
| Final laboratory test |

References

1. Lehninger Al, Nelson D.L, Cox M.M., Principles of Biochemistry, Worth Publ, NY, 1993
2. Elliott W.H., Elliott D.C: Biochemistry and Molecular Biology, Oxford University Press New York, USA, 2006.

Evaluation

| Evaluation form | Evaluation Methods | Percentage of the final grade |
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| Exam | Oral examination | 60% |
| Appreciation of the activity during the semester | Oral assessment during the semester, verification tests and final laboratory colloquium. | 40% |

Contact

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