

DISCIPLINE: Biochemistry (Specialization: Horticulture, Ist Year of study, IInd Semester)

Credit value (ECTS): 4

Course category: mandatory

Course holder: PATRAS Antoanela

Discipline objectives (course and practical works)

During the course, students must acquire knowledges regarding the main classes of biochemical compounds, their repartition and importance, their physical and chemical properties.

The practical works aim to familiarize the students with the biochemical techniques in laboratories and with the operating principles of specific devices, as well as the correct use of the analytical methods for the main compounds.

Contents (syllabus)

Course (chapters/subchapters)
1. Introduction to Biochemistry
2. Fundamental bioconstituents: bioelements and biomolecules
3. Carbohydrates Monosaccharides. Structure, isomers, examples, properties. Oligosaccharides. Classification. Examples. Properties. Polysaccharides.
4. Lipids General information. Structure. Classification Lipid precursors. Fatty acids. Simple lipids Complex lipids
5. Proteic compounds General information. Classification. Amino acids Peptides Proteins
6. Vitamins (hydrosolubles, liposolubles)
7. Enzymes. General information. Characteristics. Mechanism of action. Classification
8. Phytohormones Generalities. Classification. Examples.
9. Nucleic acids Components of nucleic acids Nucleotides: structure, properties
10. Secondary biomolecules. General information. Examples. Importance.
11. Metabolism - fundamentals

Practical works
1. General information concerning the biochemical analysis. Determination of dry weight and moisture.
2. Determination of ash content
3. Identification of monosaccharides
4. Disaccharides – analyse of chemical reducing character. Sucrose hydrolysis.
5. Qualitative analyse of polysaccharides
6. Determination of reducing carbohydrates
7. Lipids. Soxhlet extraction
8. Hanus index of lipids
9. Qualitative and quantitative analysis of amino acids
10. Proteins identification by colour reactions
11. Reversible and irreversible denaturation of proteins
12. C vitamin qualitative and quantitative analysis
13. Analysis of enzymatic activity
14. Organic acids from plants. Determination of acidity. Final laboratory evaluation

Bibliography

Patraş, A. – Biochimie, Editura PIM, Iaşi, 2020

Savu, M., Afusoe, I., Nechita Patraş, A., Trofin, A., Marcu I. – Biochimie vegetală, lucrări practice, USAMV Iaşi, 2000

Lupea, A. X. – Biochimie, Fundamente, Ed. Academiei Române, 2007

Neamţu, G., Cîmpeanu, Gh., Socaciu C. – Biochimie vegetală vol. 1 şi 2, Ed. did. şi ped. 1995,

Segal R. – Biochimie, Editura Alma, Galaţi, 2000

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Course	Exam	60%
	Course presence	10%
Practical works	Test, practical and theoretical activity	30%

Contact

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