COURSE SYLLABUS

Academic year 2025 - 2026

1. Programme Information

1.1. Higher education institution	**"Lucian Blaga" University of Sibiu**
1.2. Faculty	Faculty of Sciences
1.3. Department	Environmental Sciences, Physics, Physical Education and Sport
1.4. Field of study	Biology
1.5. Level of studies[1]	Bachelor
1.6. Programme of study/qualification	Biology (in English)

2. Course Information

2.1. Name of course	**Metabolic biochemistry**			Cod	FSTI.MFE.BIOEN.L.SA.4.1010.C-5.9		
2.2. Course coordinator	Lect. Adina FRUM, Ph.D.						
2.3. Seminar/laboratory coordinator	Lidia VIRCHEA, Ph.D.c.						
2.4. Year of study[2]	II	**2.5.** Semester[3]		3	**2.6.** Evaluation form[4]		C
2.7. Course type [5]		A	**2.8.** The formative category of the course [6]				S

3. Total estimated time

3.1. Course Extension within the Curriculum – Number of Hours per Week					
3.1.a. Lecture	3.1.b. Seminar	3.1.c. Laboratory	3.1.d. Project	3.1.e. Other	Total
1		1			**2**
3.2. Course Extension within the Curriculum – Total Number of Hours within the Curriculum					
3.2.a. Lecture	3.2.b. Seminar	3.2.c. Laboratory	3.2.d. Project	3.2.e. Other	Total[7]
14		14			**28**

Time Distribution for Individual Study[8]	**Hours**
Learning by using course materials, references and personal notes	50
Additional learning by using library facilities, electronic databases and on-site information	9
Preparing seminars / laboratories, homework, portfolios and essays	30
Tutorial activities[9]	5
Exams[10]	3
3.3. Total Individual Study Hours[11] ***(NOSI$_{sem}$)***	**97**
3.4. Total Hours in the Curriculum (*NOAD$_{sem}$*)	**28**
3.5. Total Hours per Semester[12] **(*NOAD$_{sem}$ + NOSI$_{sem}$)***	**125**
3.6. No. of Hours / ECTS	**25**
3.7. Number of credits[13]	**5**

4. Prerequisites (if needed)

4.1. Courses that must be successfully completed first (from the curriculum)[14]	-
4.2. Competencies	-

5. Conditions (where applicable)

5.1. For course/lectures[15]	– Video logistic support. – During the courses, students will turn off their mobile phones or set themselves to silent mode. – Recording the course, making phone calls or texting during the course is not tolerated. It is not tolerated to leave the classroom for the purpose of making/answering phone calls during the course.
5.2. For practical activities (lab/sem/pr/app) [16]	– Preparation of the theoretical support for each laboratory. – Compliance with the rules of labor protection and conduct in a chemistry laboratory. Use of specific equipment (e.g. lab coat). – Students should know the laboratory theme and the working methods for the analysis that are to be carried out every session. – During the lab, students will turn off their mobile phones or set them to silent mode. It is not tolerated to record activity in the laboratory, making phone calls/texts during the laboratory. – Participation in all laboratory work - is a condition for participation in the laboratory exam.

6. Learning results[17]

Number of credits assigned to the discipline: 5				
Learning Outcomes				Distribution of credits on learning outcomes
Crt. no.	Knowledge	Skills	Responsibility and autonomy	
LR 1	The student/graduate describes, defines, and discusses fundamental principles in the field of biology, as well as interdisciplinary aspects	The student/graduate applies working methods using modern instruments/equipment and classical laboratory techniques to perform, design experiments, record and analyze appropriately the results obtained.	The student/graduate uses their own knowledge and experience to develop the scientific community and society in general by participating in professional and/or community activities	5

7. Course objectives (resulted from developed competencies)

7.1. Main course objective	Biochemistry aims to study the chemical components of living matter, as well as the study of carbohydrate, lipid, protein metabolisms
7.2. Specific course objectives	Acquiring general notions about metabolism, specific terminology Correct use of specialized terms Knowledge of the main metabolic pathways in the human body Highlighting the metabolic interrelationships in the body.

8. Content

8.1. Courses[17]		Teaching methods[18]	Hours
Course 1	Introduction to metabolism	Interactive presentation of the material according to the analytical program, using multimedia means, powerpoint presentations, didactic films. Debate. Discussions.	1
Course 2-3	Energy metabolism		2
Course 4	Introduction to carbohydrate metabolism (digestion, absorption, transport)		1
Course 5	Glycolysis		1
Course 6	Gluconeogenesis		1
Course 7	Glycogenogenesis Glycogenolysis		1
Course 8	Digestion, absorption, transport of lipids in the body		1
Course 9-10	Fatty acid metabolism (biosynthesis, beta-oxidation)		2
Course 11	Digestion, absorption, transport of proteins/amino acids		1
Course 12	Catabolism of nitrogenous functions of amino acids		1
Course 13	Ureogenesis Glutamine metabolism		1
Course 14	Metabolism of non-protein nitrogenous compounds		1
		Total course hours:	**14**

8.2. Practical Activities

8.2.b. Laboratory		Teaching methods[19]	No. of hours
Lab 1-2	Labour protection rules Biochemical analysis of blood	Individual or demonstration experiment. Interactive discussions	2
Lab 3-4	Calcium dosage		2
Lab 5-6	Iron dosage		2
Lab 7-8	Chlorine dosage		2
Laboratory 9-10	Total protein dosage		2
Laboratory 11-12	Urine test		2
Laboratory 13-14	Laboratory examination		2
		Total laboratory hours	14

9. Bibliography

9.1. Recommended bibliographic references	Gligor F., Totan M., Introduction to Biochemical Analysis, "Lucian" University Publishing House Blaga" in Sibiu, 2015.
	Emine Ercikan Abali, Susan D. Cline, David S. Franklin, Susan M. Viselli – Lippincott Illustrated Reviews: Biochemistry, 8th Ed., Wolters Kluwer, 2022
9.2. Additional bibliographic references	

10. Conjunction of the discipline's content with the expectations of the epistemic community, professional associations and significant employers of the specific study program [20]

The content of the discipline has an impact on the capacity for an inter- and transdisciplinary global approach to the environment, of living organisms. The content of the course is harmonized with the requirements of employers in the fields of Biology and related fields.

11. Evaluation

Activity Type	11.1 Evaluation Criteria	11.2 Evaluation Methods		11.3 Percentage in the Final Grade	Obs.[21]
11.4a Exam / Colloquy	• Theoretical and practical knowledge acquired (quantity, correctness, accuracy)	Tests during the semester[22]:	%	75% (minimum 5)	CPE
		Homework:	%		
		Other activities[23]:	%		
		Final evaluation:	75 % (min. 5)		
11.4c Laboratory	• Knowledge of the equipment, how to use specific tools; evaluation of tools, processing and interpretation of results	• Written questionnaire • Oral response • Laboratory notebook, experimental works, reports, etc. Practical demonstration		25% (minimum 5)	CEF
11.5 Minimum Performance Standard[24] Achieving 50% of the total constituent shares of the final grade, provided that each share is achieved 50%, individually.					

The Course Syllabus will encompass components adapted to persons with special educational needs (SEN – people with disabilities and people with high potential), depending on their type and degree, at the level of all curricular elements (skills, objectives, contents, teaching methods, alternative assessment), in order to ensure fair opportunities in the academic training of all students, paying close attention to individual learning needs.

Completion date: |_1_|_0_| / |_0_|_9_| / |_2_|_0_|_2_|_5_|

Date of approval in the Department: |_1_|_7_| / |_0_|_9_| / |_2_|_0_|_2_|_5_|

	Academic Rank, Title, First Name, Last Name	Signature
Course Teacher	Lecturer Adina Frum, Ph.D.	
Study Program Coordinator	Assoc. Prof. Ana-Maria Benedek-Sîrbu, PhD	
Head of Department	Lecturer Ioan Tăușan, Ph.D.	

[1] *Bachelor's / Master's degree*
[2] *1-4 for bachelor's degree, 1-2 for master's degree*
[3] *1-8 for bachelor's degree, 1-3 for master's degree*
[4] *Exam, colloquium or VP A/R – from the curriculum*
[5] *Discipline regime: O=Compulsory discipline; A=Optional subject; U=Optional*
[6] *Training category: S = Specialty; F = Fundamental; C = Complementary; I=Fully assisted; P=Partially assisted; N=Unassisted*
[7] *Equal to 14 weeks x number of hours from point 3.1 (similar to 3.2.a.b.c.)*
[8] *The following lines refer to individual study; the total is completed at point 3.37.*
[9] *Between 7 and 14 hours*
[10] *Between 2 and 6 hours*
[11] *The sum of the values from the previous lines, which refer to individual study.*
[12] *The sum (3.5.) between the number of hours of direct teaching activity (NOAD) and the number of hours of individual study (NOSI) must be equal to the number of credits assigned to the discipline (point 3.7) x no. hours per credit (3.6.)*
[13] *The credit number is computed according to the following formula, being rounded to whole neighbouring values (either by subtraction or addition*

$$No.credits = \frac{NOCpSpD \times C_C + NOApSpD \times C_A}{TOCpSdP \times C_C + TOApSdP \times C_A} \times 30\ credits$$

Where:

- NOCpSpD = Number of lecture hours / week / discipline for which the credits are calculated
- NOApSpD = Number of application hours (sem./lab./pro.) / week / discipline for which the credits are calculated
- TOCpSdP = Total number of course hours / week in the Curriculum
- TOApSdP = Total number of application hours (sem./lab./pro.) / week in the Curriculum
- C_C/C_A = Course coefficients / applications calculated according to the table

Coefficients	**Course**	**Applications (S/L/P)**
Bachelor	2	1
Master	2,5	1,5
Bachelor - foreign language	2,5	1,25

[14] *The courses that should have been previously completed or equivalent will be mentioned*
[15] *Board, video projector, flipchart, specific teaching materials, online platforms, etc.*
[16] *Computing technology, software packages, experimental stands, online platforms, etc.*
[17] *Chapter and paragraph titles*
[18] *Presentation, lecture, presentation on the board of the studied issues, use of a video projector, discussions with students (for each chapter, if applicable)*
[19] *Practical demonstration, exercise, experiment*
[20] *The link with other disciplines, the usefulness of the discipline on the labor market*
[21] *CPE – Conditions Exam Participation; nCPE – Does Not Condition Exam Participation; CEF - Conditions Final Evaluation; N/A – not applicable*
[22] *The number of tests and the weeks in which they will be taken will be specified*
[23] *Scientific circles, professional competitions, etc.*
[24] *The minimum performance standard from the competence grid of the study program, if applicable, is customized to the specifics of the discipline.*