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 Sports
1.4. Field of study	Biology
1.5. Level of study [1]	Bachelor
1.6. Programme of study	Biology (in english)

2. Details about the course

2.1. Name of course	Animal cytology with notions of cell biology		Code	FSTI.MFE.BIOEN.L.FO.1.2020.E-5.4	
2.2. Course coordinator	Lector univ. dr. Ioana Boeraș				
2.3. Seminar / laboratory coordinator	Lector univ. dr. Ioana Boeraș				
2.4. Year of study[2]	1	**2.5.** Semester[3]	1	**2.6.** Evaluation form [4]	E
2.7. Course type [5]	O	**2.8.** The formative category of the course [6]			S

3. Estimated total 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
2		2			**4**
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]
28		28			**56**

Time Distribution for Individual Study [8]	**Hours**
Learning by using course materials, references and personal notes	10
Additional learning by using library facilities, electronic databases and on-site information	8
Preparing seminars / laboratories, homework, portfolios and essays	10
Tutorial activities [9]	14
Exams[10]	2

3.3. Total Individual Study Hours [11] ***(NOSI$_{sem}$)***	**44**
3.4. Total Hours in the Curriculum (*NOAD$_{sem}$*)	**56**
3.5. Total Hours per Semester [12] **(*NOAD$_{sem}$* + *NOSI$_{sem}$*)**	**100**
3.6. No. of hours / ECTS	**25**
3.7. Number of credits[13]	**4**

4. Prerequisites (if needed)

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

5. Conditions (wherever applicable)

5.1. For course/lectures [15]	- Videoprojector - Students need to sign up with Google Classroom using their ULBS e-mail
5.2. For practical activities (lab/sem/pr/other) [16]	- Videoprojector - Blackboard - Students need to sign up with Google Classroom using their ULBS e-mail

6. Learning outcomes [17]

Number of credits assigned to the discipline:				
Learning outcomes				Credit allocation based on learning outcomes
No.	Knowledge	Aptitudes	Responsibility and autonomy	
LO 1	The student/graduate describes, defines, and discusses fundamental principles in the field of biology, as well as interdisciplinary aspects (e.g., evolutionism, general ecology, plant physiology, animal physiology).	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	2
LO 2	The student/graduate correctly uses and explains the specific terminology used in the field of Biology, the main concepts and laws, the characteristics of biological systems from the perspective of the principles of organization and functioning of living matter.	The student/graduate defines, describes, discusses/presents the major concepts in the field of Biology.	The student/graduate demonstrates responsibility and autonomy in the use of scientific knowledge in the field of Biology, by conducting research, developing or improving concepts, theories, operational methods or biotechnological products, making ethical and professional decisions within the scientific process.	2

7. Course objectives (resulted from developed competencies)

7.1. Main course objective	The study of cellular structures, biochemical and phisiological processes that underlie life.

7.2. Specific course objectives	O1. To identify cellular organelles and to distinguish a plant cell from an animal cell based on the differences in structure O2. To define the functions of cellular organelles and to explain how structure determines function O3. To emphasize the universal character of the cellular system O4. To demonstrate the role of cellular structures in molecular mechanisms of heredity O5. To identify the cellular metabolic processes required to generate energy for the survival of living oranisms.

8. Course description

8.1. Lecture[18]		**Teaching methods** [19]	**Hours**
Lecture 1	The cell – the basic unit of life	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 2	Macromolecules: sugars, lipids, proteins, nucleic acids	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 3	The nucleus – stucture and function	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 4	Nuclear chromatin, DNA, ARN, genes and chromosomes	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 5	Protein synthesis	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 6	Cell compartimentalization and transport between compartments.	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 7	Endoplasmic reticulum and the Golgi apparatus	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 8	Phisiological function of cellular organelles – lysosomes and intracellular digestion	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 9	Plasma membrane and transport acrros the membrane	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 10	Extracellular matrix, the cytoscheleton and extensions of the cell	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 11	Cell signaling and the cell cycle	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 12	Cell division	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 13	Metabolism: mitochondria and cellular respiration	Oral pressentation, demonstration on the blackboard, discussions with the students	2
Lecture 14	Metabolism: the choloroplast and photosynthesis	Oral pressentation, demonstration on the blackboard, discussions with the students	2
		Total lecture hours:	**28**

8.2. Practical activities

8.2.b. Laborator		**Teaching methods** [20]	**Hours**
Laboratory 1	Study methods in cell biology: optical microscope,	Practical demonstration, exercise, experiment	2
Laboratory 2	Observation of different cell types unde the microscope: yeast	Practical demonstration, exercise, experiment	2
Laboratory 3	Protein structure, protein denaturation with acids	Experiment	2
Laboratory 4	Observation of different cell types unde the microscope: animal cells	Practical demonstration, exercise, experiment	2
Laboratory 5	Observation of different cell types unde the microscope: comparison of animal and plant cells	Practical demonstration, exercise, experiment	2
Laboratory 6	Observation of different cell types unde the microscope: yeast and bacteria	Practical demonstration, exercise, experiment	2
Laboratory 7	Diffusion and osmosis. Observing turgescent and plasmolyzed plant cell	Practical demonstration, exercise, experiment	2
Laboratory 8	Laboratory techniques, molar concentrations, making solutiuons and dilutions		2
Laboratory 9	Cell counting using a hemocytometer: determining the number of eritrocytes in a mililiter of blood	Practical demonstration, exercise, experiment	2
Laboratory 10	Laboratory techniques: cell staining	Practical demonstration, exercise, experiment	2
Laboratory 11	Differentiation of lymphocytes by May Grunwald – Giemsa staining	Practical demonstration, exercise, experiment	2
Laboratory 12	Study methods in cell biology: fluorescence microscopy	Practical demonstration, exercise, experiment	2
Laboratory 13	Study methods in cell biology: electron microscopy	Practical demonstration, exercise, experiment	2
Laboratory 14	Final recap and oral evaluation	Exercise	2
		Total laboratory hours	28

9. Bibliography

9.1. Recommended references	Cain ML, Reece JB, Urry LA, Wasserman SA, Minorsky PV, 2016, Campbel biology 11th edition, Pearson.
	Alberts B, Johnson A, Lewis J, 2014, Moleculoar biology of the cell 6th edition, W. W. Norton & Company
9.2. Additional 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 [21]

Periodic interaction with the concerned organizations in order to correlate the course professional competencies and objectives with what is required in the work force.

11. Evaluation

Activity Type	11.1 Evaluation Criteria	11.2 Evaluation Methods		11.3 Percentage in the Final Grade	Notes.[22]
11.4a Exam / Coloquium	• Theoretical and practical knowledge acquired (quantity, correctness, accuracy)	Tests during the semester[23]:	%	70% (minimum 5)	
		Homework:	%		
		Other activities[24]:	%		
		Final evaluation:	70% (min. 5)		
11.4b Seminar	• Frequency/relevance of participation or responses	Evidence of participation, portfolio of papers (reports, scientific summaries)		% (minimum 5)	
11.4c Laboratory	• Knowledge of the equipment, how to use specific tools; evaluation of tools, processing and interpretation of results	• Oral response • Written questionnaire • Laboratory notebook, experimental works, reports, etc. • Practical demonstration		30% (minimum 5)	
11.4d Project	• The quality of the project, the correctness of the project documentation, the appropriate justification of the chosen solutions	• Self-evaluation, project presentation • Critical evaluation of a project		% (minimum 5)	
11.5 Minimum performance standard[25]					

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.

Filling Date: |_1_|_1_| / |_0_|_9_| / |_2_|_0_|_2_|_5_|

Department Acceptance Date: |_1_|_7_| / |_0_|_9_| / |_2_|_0_|_2_|_5_|

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

[1] *Bachelor / Master*
[2] *1-4 for bachelor, 1-2 for master*
[3] *1-8 for bachelor, 1-4 for master*
[4] *Exam, colloquium or VP A/R - from the curriculum*
[5] *Course type: R = Compulsory course; E = Elective course; O = Optional course*
[6] *Formative 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 3.7.*
[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] *The learning outcomes will be stated in accordance with the specific standards of the ARACIS expert commissions (https://www.aracis.ro/ghiduri/)*
[18] *Chapter and paragraph titles*
[19] *Exposition, lecture, board presentation of the studied topic, use of video projector, discussions with students (for each chapter, if applicable)*
[20] *Practical demonstration, exercise, experiment*
[21] *The relationship with other disciplines, the usefulness of the discipline on the labour market*
[22] *CPE – Conditions Exam Participation; nCPE – Does Not Condition Exam Participation; CEF - Conditions Final Evaluation; N/A – not applicable*
[23] *The number of tests and the weeks in which they will be taken will be specified*
[24] *Scientific circles, professional competitions, etc.*
[25] *The minimum performance standard in the competence grid of the study program is customized to the specifics of the discipline, if applicable*