

## SYLLABUS

Academic year 2024 - 2025

### 1. Program data

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. Cycle of studies <sup>1</sup>	License
1.6. Specialization	Biology

### 2. Discipline data

2.1. Name of the discipline	ANIMAL PHYSIOLOGY	Cod	FSTI.MFE.BIOEN.L.FO.4. 2020.E-3.1
2.2. Course Activities Holder	Dr. Brînza Ion		
2.3. Holder of practical activities	Dr. Brînza Ion		
2.4. Year of study <sup>2</sup>	2	2.5. Semester <sup>3</sup>	4
		2.6. Type of assessment <sup>4</sup>	Examination
2.7. Discipline regime <sup>5</sup>	O	2.8. Formative category of the discipline <sup>6</sup>	S

### 3. Total estimated time

3.1. Extension of the subject in the curriculum – number of hours per week				
3.1.a.Course	3.1.b. Seminar	3.1.c. Laboratory	3.1.d. Project	Total
2		2		<b>4</b>
3.2. Extension of the subject in the curriculum – Total hours in the curriculum				
3.2.a.Course	3.2.b. Seminar	3.2.c. Laboratory	3.2.d. Project	Total <sup>7</sup>
28		28		<b>56</b>
<b>Distribution of the time fund for individual study<sup>8</sup></b>				<b>No. of hours</b>
Study by textbook, course material, bibliography and notes				6
Additional documentation in the library, on specialized electronic platforms and in the field				4
Preparation of seminars/laboratories, assignments, papers, portfolios and essays				3
Tutoring <sup>9</sup>				2
Examination <sup>10</sup>				4
<b>3.3. Total hours allocated to individual study<sup>11</sup> (NOSI<sub>sem</sub>)</b>				<b>19</b>
<b>3.4. Total hours of the Curriculum (NOAD<sub>sem</sub>)</b>				<b>56</b>
<b>3.5. Total hours per semester<sup>12</sup> (NOAD<sub>sem</sub> + NOSI<sub>sem</sub>)</b>				<b>75</b>
<b>3.6. No. of hours / ECTS</b>				<b>25</b>
<b>3.7. Number of credits<sup>13</sup></b>				<b>3</b>

#### 4. Preconditions (where applicable)

4.1. Subjects required to be previously passed (by curriculum) <sup>14</sup>	Animal Biology, Systematics of Invertebrates, Biology of Vertebrates, Human Anatomy and Hygiene, Biochemistry.
4.2. Skills	

#### 5. Conditions (where applicable)

5.1. Course Conduct <sup>15</sup>	Classroom, equipped with laptop/desktop, video projector.
5.2. Carrying out practical activities (lab/sem/pr/aplic) <sup>16</sup>	Laboratory equipped with optical microscopes, slides and slides, biological material to be analyzed.

#### 6. Specific skills gained<sup>17</sup>

Number of credits allocated to the discipline <sup>18</sup>			3	Distribution of appropriations by competence <sup>19</sup>
<b>6.1. Professional skills</b>	CP1	basic general knowledge for understanding the fundamental aspects specific to physiology		0,3
	CP2	knowledge and appropriate use of specialized notions and terms		0,3
	CP3	definition / nomination of concepts, terms, relationships, processes		0,3
	CP4	explaining and interpreting the theoretical and practical processes and ideas of the discipline		0,3
	CP5	generalization, customization, integration of some domains		0,3
	CP6	Ability to analyze and synthesize		0,3
<b>6.2. Skills Transverse</b>	CT1	ability to collaborate with specialists from other fields		0,3
	CT2	manifestation of positive and responsible attitudes towards the scientific field		0,3
	CT3	participation in one's own professional development involvement in scientific activities related to the discipline		0,3

#### 7. Objectives of the discipline (resulting from the grid of specific skills accumulated)

7.1. General objective	Understanding the notions related to animal physiology, the physiological processes that take place in healthy organisms under optimal conditions and stress.
7.2. Specific objectives	Study of the metabolic mechanisms on the basis of which they tolerate and resist the minimum and maximum variations of environmental factors.

#### 8. Content

8.1. Course <sup>20</sup>	Teaching methods <sup>21</sup>	No. of hours
Course 1 Physiology and characteristics of biological systems	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms	2

	(Google Classroom, Google Meet, Zoom, etc.).	
Course 2 Bioelectrical activity. Membrane potentials. Excitability and conductivity	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	2
Course 3 Physiology of Muscles	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	2
Course 4 Physiology of Analyzers (I). General aspects. Physiology of the tactile analyzer. Physiology of the kinesthetic analyzer	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	2
Course 5 Physiology of Analyzers (II). Physiology of the auditory analyzer. Vestibular analyzer physiology. Physiology of the visual analyzer	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	2
Course 6 Physiology of Analyzers (III). Physiology of the taste analyzer. Physiology of the olfactory analyzer	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	2
Course 7 Physiology of the Nervous System (I)	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	2
Course 8 Physiology of the Nervous System (II)	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities	2



	carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	
Course 9 Physiology of the Nervous System (III)	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	2
Course 10 Physiology of the endocrine system	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	2
Course 11 Physiology of the Digestive System	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	2
Course 12 Physiology of the respiratory system	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	2
Course 13 Physiology of the circulatory system	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	2
Course 14 Physiology of the excretory system	Video projector-assisted lecture; Systematic exposure; Didactic demonstration, debate and problematization; Interactive dialogue with students; Activities carried out on e-learning platforms (Google Classroom, Google Meet, Zoom, etc.).	2
<b>Total course hours:</b>		<b>28</b>

8.2. Practical activities (8.2.a. Seminar <sup>22</sup> / 8.2.b. Laboratory <sup>23</sup> / 8.2.c. Project <sup>24</sup> )	Teaching methods	No. of hours
Act.1 Laboratory instruments and equipment	Practical demonstration	2
Act.2 Cell Physiology (I)	Practical demonstration	2
Act.3 Cell Physiology (II)	Practical demonstration	2
Act.4 Physiology of Analyzers (I)	Practical demonstration	2
Act.5 Physiology of Analyzers (II)	Practical demonstration	2
Act.6 Physiology of the nervous system (I)	Activities on the simulator	2
Act.7 Physiology of the nervous system (II)	Activities on the simulator	2
Act.8 Physiology of the endocrine system	Activities on the simulator	2
Act.9 Digestive physiology	Activities on the simulator	2
Act.10 Physiology of the metabolism system	Activities on the simulator	2
Act.11 Physiology of the respiratory system	Activities on the simulator	2
Act.12 Physiology of the circulatory system	Activities on the simulator	2
Act.13 Physiology of the excretory system	Activities on the simulator	2
Act.14 Presentation of the portfolio		2
<b>Total seminar/laboratory hours</b>		<b>28</b>

## 9. Bibliography

9.1. Recommended bibliographic references	1. Hrițcu L, Hefco L., 2007, Elements of animal and human physiology. Relationship Functions, PIM Publishing House, Iași
	3. Despopoulos A., Silbernagl S., 2017, Human Physiology. Color Atlas. Callisto
	2. Hritcu L. 2011, Neurophysiology – The Role of Neurotransmitters and Nervous Areas in the Modulation of Cognitive and Immune Processes, "Alexandru Ioan Cuza" University Publishing House of Iași
	3. Tausan, I. 2020, Animal Physiology (course support – electronic)
	4. Ardelean, G., Roșioru, C., 1996, <i>Integration and coordination of the animal organism</i> , Univ. Publishing House, Baia Mare
	5. Guyton & Hal, 2019, Treatise on Human Physiology, Calisto
	6. Beets Gordon J., Desaix P., Johnson E., et al., 2022, Anatomy and Physiology 2e, Rice University, Houston, Texas 77005
	7. Babeș A., 2016 – Animal physiology – Course notes (electronic support)
	8. Elaine N. Marieb_ Suzanne M. Keller, 2020, Essentials of Human Anatomy & Physiology, 13th edition-Pearson
	10. Walter F. Boron, Emile L. Boulpaep, 2017, Medical Physiology-Elsevier
	9. Ceașescu, I., 1981, <i>Ecophysiology of Animals</i> , Ed. Did. and Ped., Bucharest
	10. Filimon, M.N. 2010, Animal and Human Ecophysiology, Mirton Publishing House, Timișoara
	11. Zamfir A., 2001, <i>Notions of Animal Physiology and Ecophysiology</i> , Alma Mater Publishing House in Sibiu
12. Ognean, L., N. Dojană, Corina Roșioru, 2000, <i>Animal Physiology</i> , vol. I, University Press Publishing House, Cluj-Napoca	
13. Pante, Gherghel, 2000, <i>Physiology with Behavioral Elements</i> , House of Science Books, Cluj	

	14. Roșioru, C., Sevcencu, C., Gherghel, P., 1995, Practical Papers of Animal Physiology, University of Cluj
	15. Elaine N. Marieb, Suzanne M. Keller, 2020, Essentials of Human Anatomy & Physiology, 13th edition-Pearson
9.2. Additional bibliographic references	1. Scanlon V., Sanders T. 2007 Essentials of anatomy and physiology, F. A. Davis Company
	2. Douglas J. Eder, John W. Bertram, Shari Lewis Kaminsky, 2004, Laboratory Atlas of Anatomy and Physiology-McGraw-Hill Higher Education
	3. Fowler S. Roush R. Wise J., 2013, Concept of biology, OpenStax
	4. Eric P. Widmaier, Hershel Raff, Kevin T. Strang, Eric Widmaier - MP, Vander et al's, 2003, Human Physiology -McGraw-Hill Science_Engineering_Math
	5. Willmer P., Stone G. Johnston I., 2004, Environmental Physiology of Animals 2nd Edition Oxford University Press

**10. Corroborating the contents of the discipline with the expectations of the representatives of the epistemic community, professional associations and employers representative of the field related to the program<sup>25</sup>**

It is done through periodic contacts with them in order to analyze the problem.

**11. Assessment**

Activity Type	11.1 Evaluation criteria	11.2 Evaluation methods		11.3 Weight of the final grade	Obs. <sup>26</sup>
11.4a Exam / Colloquium	<ul style="list-style-type: none"> <li>Theoretical and practical knowledge acquired (quantity, correctness, accuracy)</li> </ul>	Tests along the way <sup>27</sup> :	%	75% (minimum 5)	
		Homework:	%		
		Other activities <sup>28</sup> :	%		
		Final evaluation:	% (min. 5)		
11.4b Seminar	<ul style="list-style-type: none"> <li>Frequency/relevance of interventions or responses</li> </ul>	Record of interventions, portfolio of works (reports, scientific syntheses)		% (minimum 5)	
11.4c Laboratory	<ul style="list-style-type: none"> <li>Knowledge of the equipment, how to use specific tools; evaluation of tools or achievements, processing and interpretation of results</li> </ul>	<ul style="list-style-type: none"> <li>Experimental papers, reports, etc.</li> <li>Practical demonstration</li> </ul>		25% (minimum 5)	
11.4d Project	<ul style="list-style-type: none"> <li>The quality of the project carried out, the correctness of the project documentation, the justification of the chosen solutions</li> </ul>	<ul style="list-style-type: none"> <li>Self-assessment, presentation and/or support of the project</li> <li>Critical evaluation of a project</li> </ul>		% (minimum 5)	
11.5 Minimum Performance Standard <sup>29</sup>					
Acquiring the basic notions of each chapter studied, mandatory passing the exams along the way and the laboratory exam.					

*The subject sheet includes components adapted to people with SEN (people with disabilities and people with high potential), depending on their type and degree, at the level of all curricular elements (competences, objectives, contents, teaching methods, alternative assessment), in order to ensure fair opportunities in the academic preparation of all students, paying close attention to individual learning needs.*

Date of completion:    |\_07\_| / |\_09\_| / |\_2024\_|

Date of approval in the Department:                   |\_17\_| / |\_09\_| / |\_2024\_|

	Teaching degree, title, first name, last name	Signature
<b>Discipline holder</b>	Ion Brînza, PhD	
<b>Responsible Degree program</b>	Assoc. Prof. Ana-Maria Benedek-Sîrbu, PhD	
<b>Department Director</b>	Lecturer Ioan Tăușan, Ph.D.	

<sup>1</sup> Bachelor's/Master's degree

<sup>2</sup> 1-4 for bachelor's degree, 1-2 for master's degree

<sup>3</sup> 1-8 for bachelor's degree, 1-3 for master's degree

<sup>4</sup> Exam, colloquium or VP A/R – from the curriculum

<sup>5</sup> Discipline regime: O=Compulsory discipline; A=Optional subject; U=Optional

<sup>6</sup> Training category: S = Specialty; F=Fundamental; C=Complementary; I=Fully assisted; P=Partially assisted; N=Unassisted

<sup>7</sup> It is equal to 14 weeks x the number of hours in point 3.1 (similar for 3.2.a.b.c.)

<sup>8</sup> The lines below refer to individual study; the total is completed in point 3.37.

<sup>9</sup> Between 7 and 14 hours

<sup>10</sup> Between 2 and 6 hours

<sup>11</sup> The sum of the values on the previous lines, which refer to the individual study.

<sup>12</sup> 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 allocated to the discipline (point 3.7) x the number of hours per credit (3.6.)

<sup>13</sup> The credit number is calculated according to the following formula and rounded to whole neighboring values (either by decreasing or increasing

$$\text{No.credits} = \text{NOCpSpD} \times \text{CC} + \text{NOApSpD} \times \text{CATOCpSdP} \times \text{CC} + \text{TOApSdP} \times \text{CA} \times 30 \text{ credits}$$

Where:

- NOCpSpD = Number of hours of course/week/discipline for which credits are calculated
- NOApSpD = Number of Application Hours (Week/Lab/Pro.) /week/discipline for which credits are calculated
- TOCpSdP = Total number of course hours/week in the plan
- TOApSdP = Total number of application hours (week/lab/pro.) /week of plan
- CC/CA = 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

<sup>14</sup> It mentions the subjects that must be previously passed or equivalent

<sup>15</sup> Whiteboard, video projector, flipchart, specific teaching materials, online platforms, etc.

<sup>16</sup> Computer technology, software packages, experimental stands, online platforms, etc.

<sup>17</sup> Competencies in the Grids related to the description of the study program, adapted to the specificity of the discipline

<sup>18</sup> From the curriculum

<sup>19</sup> The credits allocated to the discipline are distributed by professional and transversal competences depending on the specificity of the discipline

<sup>20</sup> Chapter and paragraph titles

<sup>21</sup> Exposition, lecture, presentation of the studied issues on the board, use of the video projector, discussions with the students (for each chapter, if applicable)

<sup>22</sup> Discussions, debates, presentation and/or analysis of papers, resolution of exercises and problems

<sup>23</sup> Practical demonstration, exercise, experiment

<sup>24</sup> Case study, demonstration, exercise, error analysis, etc.

<sup>25</sup> The connection with other disciplines, the usefulness of the discipline on the labor market

<sup>26</sup> CPE – conditions participation in the exam; nCPE – does not condition participation in the exam; CEF - conditions the final evaluation; N/A – not applicable

<sup>27</sup> The number of tests and the weeks in which they will be taken will be specified.

<sup>28</sup> Scientific circles, professional competitions, etc.

<sup>29</sup> The minimum performance standard from the competence grid of the study program is customized to the specificity of the discipline, if applicable.