

SYLLABUS

Academic year 2024 - 2025

1. Details about the program

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. Study cycle ¹	BACHELOR
1.6. Specialization	BIOLOGY

2. Details about the course

2.1. Course name	General Ecology		Code	FSTI.MFE.BIOEN.L.FO.2.2110.E-4.4	
2.2. Course coordinator	Lecturer Ioan Tăușan PhD				
2.3. Practical activity coordinator	Lecturer Ioan Tăușan PhD				
2.4. Year of study ²	1	2.5. Semester ³	2	2.6. Type of assessment ⁴	E
2.7. Type of discipline ⁵	O	2.8. Formative category of the discipline ⁶	F		

3. Estimated total time

3.1. Proportion of the discipline within the curriculum – <i>number of hours / week</i>					
3.1.a.Lecture	3.1.b. Seminar	3.1.c. Laboratory	3.1.d. Project	3.1.e Other	Total
2	1	1			4
3.2. Proportion of the discipline within the curriculum – <i>number of hours / week</i>					
3.2.a.Lecture	3.2.b. Seminar	3.2.c. Laboratory	3.2.d. Project	3.2.e Other	Total ⁷
28	14	14			56
Allocation of time budget for individual study⁸					No. hours
Study based on textbook, lecture notes, bibliography and course notes					14
Additional research: library, specialized electronic platforms and field or on-site investigation and documentation					8
Preparing for the seminar / laboratorires, home assignments, reports, portfolios and essays					12
Tutoring ⁹					7
Examinations ¹⁰					3
3.3. Total number of hours for individual study¹¹ ($NOS_{I_{sem}}$)					44
3.4. Total number of hours in the curriculum ($NOAD_{sem}$)					56
3.5. Total number of hours per semester¹² ($NOAD_{sem} + NOS_{I_{sem}}$)					100
3.6. No of hours / ECTS					25
3.7. Number of credits¹³					4

4. Prerequisites (if applicable)

4.1. Prerequisite courses for enrollment to this subject (from the curriculum) ¹⁴	
4.2. Competencies	

5. Requirements (wherever applicable)

5.1. Lecture organization and structure ¹⁵	Video Projector
5.2. Organization and structure of practical activities (lab/sem/pr/other) ¹⁶	

6. Specific competencies¹⁷

		Number of credits assigned to the discipline ¹⁸	Distribution of credits according to competencies ¹⁹
6.1. Professional competencies	CP1	The ability to understand and reproduce the concepts, terms and principles of ecology.	1
	CP2	Knowing and understanding the structures and processes of ecological systems	1
	CP3 CP4	The ability to use methods, techniques and investigative tools specific to ecological studies	1
6.2. Transversal competencies	CT1	Developing the capacity for critical-constructive reflection on one's own level of professional training in relation to the standards of the profession.	0,33
	CT2	Documentation in Romanian and at least one foreign language, for professional and personal development, through continuous training and effective adaptation to new scientific discoveries.	0,33
	CT3	Identifying the role in a team and the ability to collaborate with specialists from other fields	0,33

7. Course objectives (reflected by the framework of specific competencies)

7.1. General objective	Presentation of concepts, fundamental laws and basic knowledge in ecology.
7.2. Specific objectives	Students' knowledge of the general theory of systems, concepts of environment, biotope, biocenosis, ecosystem, biosphere and ecosphere. Understanding laws and principles in ecology. Foundation of knowledge on the structures and processes of ecological systems. Developing students' ability to use methods, techniques and investigative tools specific to ecology. Development of the capacity for analysis, synthesis and systemic approach. Developing communication skills using specific language and concepts.

8. Course description

8.1. Lecture²⁰	Teaching methods²¹	No. of hours
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Course 1 Ecology as a science - definitions, history, branches of ecology	Interactive lecture, explanation, conversation, problematisation	2
Course 2 General theory of systems	Interactive lecture, explanation, conversation, problematisation	2
Course 3 The concept of environment – definition, structural plans of the environment, environmental factors and components, the concept of biotope	Interactive lecture, explanation, conversation, problematisation	2
Course 4 Concepts, laws and principles in ecology: - Living environment unit; - Biotic forms; - Trophic levels, chains and trophic networks; - Limiting factors, ecological valence; - Hierarchies in nature; organizational hierarchy; - Principles of ecological processes; - Other laws and principles (Thienemann, Gause, Tischler, etc.)	Interactive lecture, explanation, conversation, problematisation	2
Course 5 Biosphere / Ecosphere - Definition, composition, limits; - Dynamics of chemical substances; Biogeochemical cycles	Interactive lecture, explanation, conversation, problematisation	2
Course 6 Biosphere / Ecosphere - Emergence and evolution; - Biogeographical and ecological regionalization.	Interactive lecture, explanation, conversation, problematisation	2
Course 7 Ecosystems - Definition and structure; - Biotope - physical and geographical factors; climatic factors; chemical factors; interaction of factors; biotope filter.	Interactive lecture, explanation, conversation, problematisation	2
Course 8 Ecosystems Biocoenosis - structure and biocenotic order; complex interspecific relationships; trophic structure; ecological niche;	Interactive lecture, explanation, conversation, problematisation	2
Course 9 Ecosystems Ecosystem functions - bio-productivity; the flow of matter and energy	Interactive lecture, explanation, conversation, problematisation	2
Course 10 Populations The concepts of species and population;	Interactive lecture, explanation, conversation, problematisation	2
Course 11 Populations - The place of the population in the organizational hierarchy; - Population structure.	Interactive lecture, explanation, conversation, problematisation	2
Course 12 The perspective of ecological thinking - Evolution of interpretation models; - Inter and multidisciplinary relations;	Interactive lecture, explanation, conversation, problematisation	2
Course 13 Environmental degradation - Human impact - biosphere; - Definition of basic concepts (degradation, protection);	Interactive lecture, explanation, conversation, problematisation	2
Course 14 Environmental degradation - Ways of ecosystem degradation; - Major environmental problems	Interactive lecture, explanation, conversation, problematisation	2
Total number of lecture hours:		28

8.2. Practical activities (8.2.a. Seminar ²² / 8.2.b. Laboratory ²³ / 8.2.c. Project ²⁴ / 8.2.d. Other practical activities ²⁵)	Teaching methods	No. of hours
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Sem. 1. Bibliographic research in ecology	Explanation of working methods, material examination, discussion, soft-ware applications	2
Sem. 2. Obtaining quantitative ecological data	Explanation of working methods, material examination, discussion, soft-ware applications	2
Sem. 3. Obtaining quantitative ecological data	Explanation of working methods, material examination, discussion, soft-ware applications	2
Sem. 4. Collection, capture and conservation techniques	Explanation of working methods, material examination, discussion, soft-ware applications	2
Sem. 5. Collection, capture and conservation techniques	Explanation of working methods, material examination, discussion, soft-ware applications	2
Sem. 6. Introduction to R	Explanation of working methods, material examination, discussion, soft-ware applications	2
Lab. 1. Introduction to R – applications	Explanation of working methods, material examination, discussion, soft-ware applications	2
Lab. 2. Quantitative ecological parameters	Explanation of working methods, material examination, discussion, soft-ware applications	2
Lab. 3. Quantitative ecological parameters – applications in R	Explanation of working methods, material examination, discussion, soft-ware applications	2
Lab. 4. The method of surfaces and volumes	Explanation of working methods, material examination, discussion, soft-ware applications	2
Lab.5. Method of surfaces and volumes – applications in R	Explanation of working methods, material examination, discussion, soft-ware applications	2
Lab. 6 Field Application	Explanation of working methods, material examination, discussion, soft-ware applications	2
Lab. 7 Processing and analysis of data obtained in the field	Explanation of working methods, material examination, discussion, soft-ware applications	2
Sem 7. Laboratory colloquium	Explanation of working methods, material examination, discussion, soft-ware applications	2

9. Bibliography

9.1. Recommended references	<p>Horl E. 2017, General Ecology, The New Ecological Paradigm, Bloomsbury Academic, 384.</p> <p>Botnariuc N., Vădineanu A., 1982, Ecologie, Edit. Didactică și Pedagogică,, București, 438</p>
9.2. Additional references	<p>RIISGARD H. U., 2017, General Ecology, Outline of contemporary ecology for university students, 152.</p> <p>SMITH T. M., SMITH, R.L, 2012, Elements of Ecology Elements of Ecology 8th Edition.</p> <p>BENEDEK, A.M. (2015) - Ecologie – Aplicații și studii de caz. Editura Universității "Lucian Blaga" din Sibiu.</p> <p>BEGON M., TOWNSEND C.R., HARPER J.L. 2006, Ecology: From Individuals to Ecosystems, 4th Edition, Blackwell Publishing.</p> <p>REAL, A., BROWN, J., (eds.), 1991, Foundations of Ecology. Classic Papers with Comentaries, The University of Chicago Press, Chicago-London.</p> <p>COX, G., (2001) General Ecology Laboratory Manual, McGraw-Hill Science/Engineering/Math</p> <p>SÎRBU, I., BENEDEK, A., (2012) -Ecologie Practică, Ed. Universității "Lucian Blaga", Sibiu</p> <p>GOMOIU, M.T., SKOLKA, M., (2001) -Metodologii pentru studii ecologice, Ovidius University Press, Constanța.</p> <p>CRAWLEY, M. J. (2012) -The R book. John Wiley & Sons.</p> <p>GOLLEY, F.B. 1996, A History of the Ecosystem Concept in Ecology: More than the Sum of the Parts. Yale University Press, Newhaven and London.</p> <p>CHAPIN, F.S., MATSON, P. A., VITOUSEK, P. (2012), Principles of Terrestrial Ecosystem Ecology, 2nd Edition, Springer</p> <p>ZUUR, A., LENO, E. N., & MEESTERS, E. (2009). A Beginner's Guide to R. Springer Science & Business Media.</p>

10. Correlating the course description with the expectations and requirements of representatives of the epistemic community, professional associations and significant employers and stakeholders related to the study program and the specific area²⁶

The professional competences obtained by the students through the course hours and practical applications and the elaboration of the homework for this discipline, are in accordance with the requirements of the professional associates in the field of ecology.

11. Evaluare

Type of activity	11.1 Assessment criteria	11.2 Assessment methods		11.3 Percentage of the final grade	Notes. ²⁷
11.4a Exam / Coloquium	<ul style="list-style-type: none"> Theoretical and practical knowledge (quantity, correctness, accuracy) 	Midterm / ongoing assignments ²⁸ :	-	60% (minimum 5)	
		Home assignments:	-		
		Other activities ²⁹ :	-		
		Final assessment:	60%		
11.4b Seminar	<ul style="list-style-type: none"> Frequency/relevance of contributions or answers 	-		-	
11.4c Laboratory	<ul style="list-style-type: none"> Knowledge of equipment, methods of using specific instruments and tools; 	<ul style="list-style-type: none"> Oral examination Written questionnaire 		40% (minimum 5)	



	assessment of tools or achievements, processing and interpretation of results	<ul style="list-style-type: none">Laboratory notebook, experimental work, scientific papers, etc.Practical demonstrations		
11.4d Project	<ul style="list-style-type: none">Quality of achieved project, accuracy of project documentation, rationale and evidence of selected solutions	-	-	
11.5 Minimum performance standard ³⁰				

The course description includes components adapted to SEN (Special Educational Needs) persons, according to their type and degree, at all curricular elements and dimensions (competencies, objectives, course description, teaching methods, alternative assessment), in view of providing and ensuring equitable and fair opportunities to academic education for all students, with special attention to special educational needs.

Date of submission: 09 / 09 / 2024

Date of approval in the Department: 17 / 09 / 2024

	Degree, title, first name, surname	Signature
Course coordinator	Lecturer Ioan Tăușan PhD	
Study program coordinator	Assoc. prof. Ana-Maria Benedek-Sîrbu, PhD	
Director Department	Lecturer Ioan Tăușan PhD	

¹ Licență / Master

² 1-4 pentru licență, 1-2 pentru master

³ 1-8 pentru licență, 1-3 pentru master

⁴ Examen, colocviu sau VP A/R – din planul de învățământ

⁵ Regim disciplină: O=Disciplină obligatorie; A=Disciplină opțională; U=Facultativă

⁶ Categoria formativă: S=Specialitate; F=Fundamentală; C=Complementară; I=Asistată integral; P=Asistată parțial; N=Neasistată

⁷ Este egal cu 14 săptămâni x numărul de ore de la punctul 3.1 (similar pentru 3.2.a.b.c.d.e.)

⁸ Liniile de mai jos se referă la studiul individual; totalul se completează la punctul 3.37.

⁹ Între 7 și 14 ore

¹⁰ Între 2 și 6 ore

¹¹ Suma valorilor de pe liniile anterioare, care se referă la studiul individual.

¹² Suma (3.5.) dintre numărul de ore de activitate didactică directă (NOAD) și numărul de ore de studiu individual (NOSI) trebuie să fie egală cu numărul de credite alocate disciplinei (punctul 3.7) x nr. ore pe credit (3.6.)

¹³ Numărul de credit se calculează după formula următoare și se rotunjește la valori vecine întregi (fie prin micșorare fie prin majorare)

$$\text{Nr. credite} = \frac{\text{NOCpSpD} \times C_C + \text{NOApSpD} \times C_A}{\text{TOCpSdP} \times C_C + \text{TOApSdP} \times C_A} \times 30 \text{ credite}$$

Unde:

- NOCpSpD = Număr ore curs/săptămână/disciplina pentru care se calculează creditele
- NOApSpD = Număr ore aplicații (sem./lab./pro.)/săptămână/disciplina pentru care se calculează creditele
- TOCpSdP = Număr total ore curs/săptămână din plan
- TOApSdP = Număr total ore aplicații (sem./lab./pro.)/săptămână din plan
- C_C/C_A = Coeficienți curs/aplicații calculate conform tabelului

Coeficienți	Curs	Aplicații (S/L/P)
Licență	2	1
Master	2,5	1,5
Licență lb. străină	2,5	1,25

¹⁴ Se menționează disciplinele obligatoriu a fi promovate anterior sau echivalente

¹⁵ Tablă, videoprojector, flipchart, materiale didactice specifice, platforme on-line etc.

¹⁶ Tehnică de calcul, pachete software, standuri experimentale, platforme on-line etc.

¹⁷ Competențele din Grilele aferente descrierii programului de studii, adaptate la specificul disciplinei

¹⁸ Din planul de învățământ

¹⁹ Creditele alocate disciplinei se distribuie pe competențe profesionale și transversale în funcție de specificul disciplinei

²⁰ Titluri de capitole și paragrafe

²¹ Expunere, prelegere, prezentare la tablă a problematicii studiate, utilizare videoprojector, discuții cu studenții (pentru fiecare capitol, dacă este cazul)

²² Discuții, dezbateri, prezentare și/sau analiză de lucrări, rezolvare de exerciții și probleme etc.

²³ Demonstrație practică, exercițiu, experiment etc.

²⁴ Studiu de caz, demonstrație, exercițiu, analiza erorilor etc.

²⁵ Alte tipuri de activități practice specifice

²⁶ Legătura cu alte discipline, utilitatea disciplinei pe piața muncii

²⁷ CPE – condiționează participarea la examen; nCPE – nu condiționează participarea la examen; CEF - condiționează evaluarea finală; N/A – nu se aplică

²⁸ Se va preciza numărul de teste și săptămânile în care vor fi susținute.

²⁹ Cercuri științifice, concursuri profesionale etc.

³⁰ Se particularizează la specificul disciplinei standardul minim de performanță din grila de competențe a programului de studii, dacă este cazul.