SYLLABUS

Academic year 2025 - 2026

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 (in english)

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 – *number of hours / week*					
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 – *number of hours / week*					
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 study [8]	**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 study[11] ***(NOSI$_{sem}$)***	**44**
3.4. Total number of hours in the curriculum (*NOAD$_{sem}$*)	**56**
3.5. Total number of 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 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. Learning outcomes [17]

Number of credits assigned to the discipline: 4				
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	1.5
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.	1.5
LO 3	The student/graduate defines, explains, and exemplifies	The student/graduate uses, investigates, and critically analyzes the	The student/graduate applies the knowledge learned in other courses	1

	basic and modern experimental techniques in the analysis and characterization of biological systems, records and presents experimental results, and explains the principles of scientific methods.	principles of operation and use of equipment/instruments, techniques/working methods for investigating the functioning of biological systems.	to explain the interactions of organisms with the environment.	

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. Lecture[18]	**Teaching methods**[19]	**No. of hours**
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[20]/ 8.2.b. Laboratory[21]/ 8.2.c. Project[22] / 8.2.d. Other practical activities[23])	**Teaching methods**	**No. of hours**
Sem. 1. Bibliographic research in ecology	Explanation of working methods, material examination, discussion, software applications	2
Sem. 2. Obtaining quantitative ecological data	Explanation of working methods, material examination, discussion, software applications	2
Sem. 3. Obtaining quantitative ecological data	Explanation of working methods, material examination, discussion, software applications	2
Sem. 4. Collection, capture and conservation techniques	Explanation of working methods, material examination, discussion, software applications	2
Sem. 5. Collection, capture and conservation techniques	Explanation of working methods, material examination, discussion, software 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
Total number of hours: seminar/laboratory		**28**

9. Bibliography

9.1. Recommended references	Horl E. 2017, General Ecology, The New Ecological Paradigm, Bloomsbury Academic, 384.
	Botnariuc N., Vădineanu A., 1982, Ecologie, Edit. Didactică şi Pedagogică,, Bucureşti, 438
9.2. Additional references	RIISGARD H. U., 2017, General Ecology, Outline of contemporary ecology for university students, 152.
	SMITH T. M., SMITH, R.L, 2012, Elements of Ecology Elements of Ecology 8th Edition.
	BENEDEK, A.M. (2015) - Ecologie – Aplicații și studii de caz. Editura Universității "Lucian Blaga" din Sibiu.
	BEGON M., TOWNSEND C.R., HARPER J.L. 2006, Ecology: From Individuals to Ecosystems, 4th Edition, Blackwell Publishing.REAL, A., BROWN, J., (eds.), 1991, Foundations of Ecology. Classic Papers with Comentaries, The University of Chicago Press, Chicago-London.
	COX, G., (2001) General Ecology Laboratory Manual, McGraw-Hill Science/Engineering/Math
	SÎRBU, I., BENEDEK, A., (2012) -Ecologie Practică, Ed. Universității "Lucian Blaga", Sibiu

	GOMOIU, M.T., SKOLKA, M., (2001) -Metodologii pentru studii ecologice, Ovidius University Press, Constanța.
	CRAWLEY, M. J. (2012) -The R book. John Wiley & Sons.
	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.
	CHAPIN,.F.S., MATSON, P. A., VITOUSEK, P. (2012), Principles of Terrestrial Ecosystem Ecology, 2nd Edition, Springer
	ZUUR, A., LENO, E. N., & MEESTERS, E. (2009). A Beginner's Guide to R. Springer Science & Business Media.

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 area[24]

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.[25]
11.4a Exam / Coloquium	• Theoretical and practical knowledge (quantity, correctness,accuracy)	Midterm / ongoing assignments[26]:	-	60% (minimum 5)	
		Home assignments:	-		
		Other activities[27]:	-		
		Final assessment:	60%		
11.4b Seminar	• Frequency/relevance of contributions or answers	-		-	
11.4c Laboratory	• Knowledge of equipment, methods of using specific instruments and tools; assessment of tools or achievements, processing and interpretation of results	• Oral examination • Written questionnaire • Laboratory notebook, experimental work, scientific papers, etc. • Practical demonstrations		40% (minimum 5)	
11.4d Project	• Quality of achieved project, accuracy of project documentation, rationale and evidence of selected solutions	-		-	
11.5 Minimum performance standard[28]					

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 / 2025

Date of approval in the Department: 17 / 09 / 2025

	Degree, titlle, 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 alocat 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*

$$\text{Nr.credite} = \text{NOCpSpD} \times \text{CC} + \text{NOApSpD} \times \text{CATOCpSdP} \times \text{CC} + \text{TOApSdP} \times \text{CA} \times 30 \text{ credite}$$

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

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

[14] *Se menționează disciplinele obligatoriu a fi promovate anterior sau echivalente*

[15] *Tablă, videoproiector, 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] *Titluri de capitole și paragrafe*

[19] *Expunere, prelegere, prezentare la tablă a problematicii studiate, utilizare videoproiector, discuții cu studenții (pentru fiecare capitol, dacă este cazul)*

[20] *Discuții, dezbateri, prezentare și/sau analiză de lucrări, rezolvare de exerciții și probleme etc.*

[21] *Demonstrație practică, exercițiu, experiment etc.*

[22] *Studiu de caz, demonstrație, exercițiu, analiza erorilor etc*.

[23] *Alte tipuri de activități practice specifice*

[24] *Legătura cu alte discipline, utilitatea disciplinei pe piața muncii*

[25] *CPE – condiționează participarea la examen; nCPE – nu condiționează participarea la examen; CEF - condiționează evaluarea finală; N/A – nu se aplică*

[26] *Se va preciza numărul de teste și săptămânile în care vor fi susținute.*

[27] *Cercuri științifice, concursuri profesionale etc.*

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