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	**Microbiology**				Code	FSTI.MFE.BIOEN.L.FO.6.2020.E-4.2	
2.2. Course coordinator	Lecturer Ph.D.eng. Ramona Cristea						
2.3. Practical activity coordinator	Lecturer Ph.D.eng. Ramona Cristea						
2.4. Year of study[2]	3	2.5. Semester[3]	6	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		2			**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]
24		24			**48**

Allocation of time budget for individual study [8]	**No. hours**
Study based on textbook, lecture notes, bibliography and course notes	12
Additional research: library, specialized electronic platforms and field or on-site investigation and documentation	12
Preparing for the seminar / laboratorires, home assignments, reports, portfolios and essays	28
Tutoring[9]	
Examinations[10]	

3.3. Total number of hours for individual study [11] ***(NOSI$_{sem}$)***	**52**
3.4. Total number of hours in the curriculum (*NOAD$_{sem}$*)	**48**
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]	Biochemistry, Cell Biology
4.2. Competencies	Knowledge of laboratory equipment and glassware

5. Requirements (wherever applicable)

5.1. Lecture organization and structure[15]	video projector, online platforms
5.2. Organization and structure of practical activities (lab/sem/pr/other) [16]	Experimental stands, online platforms

6. Specific competencies[17]

Number of credits assigned to the discipline[18]		4	Distribution of credits according to competencies[19]
6.1. Professional competencies	CP1	Identification of the main notions of organization and functioning of living matter, with the application of specific microbiological techniques in microbiology laboratories or in the field of research	1
	CP2	Knowledge of the peculiarities, ecology, nutrition, structure and function of microorganisms	1
	CP3	Interpretation of specialized scientific information from the perspective of the principles of organization and functioning of the living world	0,5
	CP4	Gaining knowledge about the diversity of physiological processes of microorganisms and their role in natural ecosystems	0,5
6.2. Transversal competencies	CT1	Responsible and efficient accomplishment of the tasks related to the professions in the field with the observance of the principles of professional ethics	0,5
	CT2	Identifying the role of a team and taking over the responsibilities corresponding to the professional and personal profile	0,5

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

7.1. General objective	Knowledge of issues morphology and structure of microorganisms, bacteria, yeasts, molds, increase and multiply, physiology, nutrition, metabolism, taxonomy and position in the world of living organisms, the influence of environmental factors
7.2. Specific objectives	Learning techniques for identifying and characterizing the main groups of microorganisms, with an important role in natural ecosystems, establishing relationships between different groups of microorganisms, their role in medicine, industry, environment, agriculture

8. Course description

8.1. **Lecture**[20]	**Teaching methods**[21]	**No. of hours**
Lecture 1.Introduction, history of microbiology	Lecture, dialogue, physical or online	2
Lecture 2.Viruses, bacteriophages	Lecture, dialogue, physical or online	2
Lecture 3,4.Bacteria	Lecture, dialogue, physical or online	4
Lecture 5.Yeasts	Lecture, dialogue, physical or online	2
Lecture 6.Molds	Lecture, dialogue, physical or online	2
Lecture 7.The chemical composition of the microorganisms	Lecture, dialogue, physical or online	2
Lecture 8.The influence of the environmental factors on microorganisms	Lecture, dialogue, physical or online	2
Lecture 9.Microorganisms nutrition	Lecture, dialogue, physical or online	2
Lecture 10,11. Air and water microbiology	Lecture, dialogue, physical or online	4
Lecture 12. Soil microbiology	Lecture, dialogue, physical or online	2
Total number of lecture hours:		**24**

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**
Act.1.Safety measures in the laboratory of microbiology, layout and equipment of a microbiology laboratory	Lecture	1
Act.2.Methods of sterilization	Experimental, case study	2
Act.3. Culture media	Experimental, case study	2
Act.4.Plating techniques of microorganisms	Experimental, case study	3
Act.5.Cultural examination of microorganisms	Experimental, case study	2
Act.6, 7. Examination the morphological and tinctorial characters of bacteria	Experimental, case study	2
Act.8.Examination the morphological and tinctorial characters of yeasts	Experimental, case study	2
Act.9.Examination the morphological and tinctorial characters of molds	Experimental, case study	2
Act.10. Air microbiology	Experimental, case study	2
Act.11.Water microbiology	Experimental, case study	2

Act.12.Soil microbiology	Experimental, case study	2
Act.13.Laboratory colloquium		2
Total number of hours: seminar/laboratory		24

9. Bibliography

9.1. Recommended references	Oprean Letitia, Iancu Ramona Maria, Ecaterina Lengyel, Microbiologie generală: note de curs, Ed. Universităţii Lucian Blaga Sibiu, ISBN 978-606-12-0659-9, 2014
	Oprean Letitia, Iancu Ramona Maria, Ecaterina Lengyel, Microbiologie generală: îndrumar de laborator, Ed. Universităţii Lucian Blaga Sibiu, ISBN 978-606-12-0660-5, 2014
	Ecaterina Lengyel, Microbiologie, note de curs, ppt
9.2. Additional references	Ecaterina Lengyel, Microbiologie specială, note de curs, 2019

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[26]

It is realized through regular contacts with them in order to analyze the problem. The content of the discipline is in conjunction with the requirements and expectations of professional associations and employers in the field.

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	● Theoretical and practical knowledge (quantity, correctness,accuracy)	Midterm / ongoing assignments[28]:	%	75% (minimum 5)	
		Home assignments:	%		
		Other activities[29]:	%		
		Final assessment:	% (min. 5)		
11.4b Seminar	● Frequency/relevance of contributions or answers	Proof of contributions, portfolio (scientific papers, syntheses)		% (minimum 5)	
11.4c Laboratory	● Knowledge of equipment, methods of using specific instruments and tools; assessment of tools or achievements, processing and interpretation of results	● Written questionnaire ● Oral examination ● Laboratory notebook, experimental work, scientific papers, etc. ● Practical demonstrations		25% (minimum 5)	

11.4d Project	● Quality of achieved project, accuracy of project documentation, rationale and evidence of selected solutions	● Self-assessment, project submission and/or defense ● Critical assessment of a project	% (minimum 5)	
11.5 Minimum performance standard[30] Differentiation of microorganisms and their classification Practical execution of a working protocol				

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: |_0_|_7_| / |_0_|_9_| / |_2_|_0_|_2_|_4_|

Date of approval in the Department: |_1_|_7_| / |_0_|_9_| / |_2_|_0_|_2_|_4_|

	Degree, titlle, first name, surname	**Signature**
Course coordinator	Lecturer eng. Ramona Cristea, PhD	
Study program coordinator	Assoc. Prof. Ana-Maria Benedek-Sîrbu, PhD	
Director Departament	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*

$$\text{Nr.credite} = \text{NOCpSpDCC} + \text{NOApSpDCATOCpSdPCC} + \text{TOApSdPCA} \times 30 \text{ credite}$$

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, 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] *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 videoproiector, 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.*