

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	Laboratory techniques			Code	FSTI.MFE.BIOEN.L. SA.5.1010.C-5.10
2.2. Course coordinator	Eng. PhD. Alexandra Maranciuc				
2.3. Practical activity coordinator	Eng. PhD. Alexandra Maranciuc				
2.4. Year of study ²	3	2.5. Semester ³	1	2.6. Type of assessment ⁴	C
2.7. Type of discipline ⁵	A	2.8. Formative category of the discipline ⁶	S		

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
1		1			2
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
14		14			28
Allocation of time budget for individual study⁸					No. hours
Study based on textbook, lecture notes, bibliography and course notes					25
Additional research: library, specialized electronic platforms and field or on-site investigation and documentation					25
Preparing for the seminar / laboratorires, home assignments, reports, portfolios and essays					25
Tutoring ⁹					22
Examinations ¹⁰					4
3.3. Total number of hours for individual study¹¹ (NOSI_{sem})					97
3.4. Total number of hours in the curriculum (NOAD_{sem})					28
3.5. Total number of hours per semester¹² (NOAD_{sem} + NOSI_{sem})					125
3.6. No of hours / ECTS					25
3.7. Number of credits¹³					5

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	Videoprojector or electronic board
5.2. Organization and structure of practical activities (lab/sem/pr/other) ¹⁶	Spectrophotometer, LC-MS and GS-MS apparatus, pipettes, reagents, laboratory

6. Specific competencies¹⁷

		Number of credits assigned to the discipline ¹⁸	Distribution of credits according to competencies ¹⁹
6.1. Professional competencies	CP1	Ability to recognize and correctly use laboratory equipment and instruments.	1
	CP2	The ability to understand and reproduce the terms and principles of techniques used in specialized laboratories. Correct use of specialist terms.	1
	CP3	The ability to communicate using the specific language and to explain the principles of the various methods.	1
	CP4	The ability to apply various techniques and interpret the results.	1
6.2. Transversal competencies	CT1	Demonstrating correct and responsible attitudes towards the concerns of specialists in the field.	0.5
	CT2	Participation in work/research groups, development of original, professional ideas.	0.25
	CT3	The ability to work in a team.	0.25

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

7.1. General objective	Acquiring knowledge and practical skills related to the main techniques used in specialized laboratories
7.2. Specific objectives	To know the laboratory equipment. To know the safety measures that must be observed when working in the laboratory. To explain the basic principles of the laboratory techniques learned.

8. Course description

8.1. Lecture ²⁰	Teaching methods ²¹	No. of hours
Lecture 1 Biosafety in the laboratory	Lecture, explanation, conversation, dialog	2
Lecture 2 Chromatography – the principles of the method, classifications, applications	Lecture, explanation, conversation.	2
Lecture 3 Spectrophotometry	Lecture, explanation, conversation.	2
Lecture 4 Spectrophotometry – applications in medical and related fields	Lecture, explanation, conversation.	2

Lecture 5 Polymerization	Lecture, explanation, conversation.	2
Lecture 6 Modern techniques for laboratory	Lecture, explanation, conversation, dialog	2
Lecture 7 Final evaluation - exam	Evaluation	2
Total number of lecture hours:		14

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 Good laboratory work practices, equipment and protective equipment	Explanation of working methods, experiment, exercise	2
Act.2 Concentrations and dilutions	Explanation of working methods, experiment, exercise	2
Act.3 Chromatography – GC-MS and LC-MS equipment	Explanation of working methods, experiment, exercise	2
Act.4 Spectrophotometry – technique and work plan	Explanation of working methods, experiment, exercise	2
Act.5 Concentration determination using standard curve	Explanation of working methods, experiment, exercise	2
Act.6 Polymerization – practical activity	Explanation of working methods, experiment, exercise	2
Act.7 Final practical Evaluation	Evaluation	2
Total number of hours: seminar/laboratory		14

9. Bibliography

9.1. Recommended references	GHERGARIU, S., POP A., KADAR, L., SPANU, M., 1999, Manual de laborator clinic veterinar, Ed. All, Bucuresti.
	ADAMS, R.L.P., 1990, Laboratory Techniques in Biochemistry and Molecular Biology. Vol.8 - Amsterdam ; London ; New York : Elsevier.
	BELC P., 1990, Cum interpretam o analiza de laborator - Bucuresti : Editura Medicala, 1990.
9.2. Additional references	EBERHARD, Carolyn; ARMS, Karen; CAMP, S. Pamela, 1979, Laboratory Manual to Accompany Biology - New York : Holt, Rinehart and Winston.
	MADER, Sylvia S., 1988, Laboratory Manual Human Biology - Dubuque : WCB.

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

<ul style="list-style-type: none"> • The contents addressed cover fundamental and applied topics of the discipline that ensure familiarization of students with the specific issues of the discipline; • The discipline's curriculum is designed in such a way as to facilitate the formation of professional skills (specific to the profession, provided in the RNCIS documents) and transversal skills; • The contents addressed include current topics (locally, nationally, internationally) that are the subject of interest and/or debates/research carried out by professional associations and/or employers. • The subject contents and teaching strategies were selected as a result of the collaboration of teaching staff with other teaching staff from universities in the country and/or abroad, as a result of collaboration with potential employers.
--

11. Evaluare

Type of activity	11.1 Assessment criteria	11.2 Assessment methods		11.3 Percentage of the final grade	Notes. ²⁷
11.4a Lecture/Exam	• Acquired theoretical and practical knowledge (quantity, correctness, accuracy)	Other activities ²⁸ :	10 %	60% (minimum 5)	
		Final assessment:	50 % (min. 5)		
11.4c Laboratory	• Knowledge of equipment, methods of using specific instruments and tools; assessment of tools or achievements, processing and interpretation of results	Laboratory notebook, experimental work, scientific papers, etc	10%	40 % (minimum 5)	
		Evaluation	30% (min. 5)		
11.5 Minimum performance standard ²⁹ Knowledge of the basic notions in the field, the ability to explain the operating principles of the presented techniques, the ability to perform an experiment according to the standards.					

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: 11 / 09 / 2024

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

	Degree, title, first name, surname	Signature
Course coordinator	Eng. PhD. Alexandra Maranciuc	
Study program coordinator	Assoc. Prof. PhD. Ana-Maria Benedek-Sîrbu	
Director Departament	Lecturer PhD. Ioan Tăușan	

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, 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 Cercuri științifice, concursuri profesionale etc.

²⁹ Se particularizează la specificul disciplinei standardul minim de performanță din grila de competențe a programului de studii, dacă este cazul.