

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	PLANT CYTOLOGY, ANATOMY AND MORPHOLOGY			Code	FSTI.MFE.BIOEN.L.FO.1.2020.E-5.1
2.2. Course coordinator	Associate professor Alexandra Zamfir Ph.D				
2.3. Practical activity coordinator	Asistant lecturer Mihai Crăciunaș Ph.D.				
2.4. Year of study ²	I	2.5. Semester ³	1	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	-	2	-	-	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	-	28	-	-	56
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					14
Preparing for the seminar / laboratorires, home assignments, reports, portfolios and essays					14
Tutoring ⁹					10
Examinations ¹⁰					6
3.3. Total number of hours for individual study¹¹ (NOS_{Isem})					69
3.4. Total number of hours in the curriculum (NOAD_{sem})					156
3.5. Total number of hours per semester¹² (NOAD_{sem} + NOS_{Isem})					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	Computer, projector
5.2. Organization and structure of practical activities (lab/sem/pr/other) ¹⁶	Botany laboratory (microscope, photo-video camera, projector, computer, reagents, specific laboratory utensils, fresh and preserved biological material, plates, determiner)

6. Specific competencies¹⁷

Number of credits assigned to the discipline ¹⁸			5	Distribution of credits according to competencies ¹⁹
6.1. Professional competencies	CP1	Definition of basic concepts, theories and methods in Plant Biology to facilitate making the necessary connections in Biology.		1
	CP2	Identifying the procedures, concepts and phenomena that are the basis of the methods used in Botany		1
	CP3	The competence to communicate using the specific language of botany, to explain the organization/structure of plants, plant-environment interactions, adaptations to the environment.		1.5
6.2. Transversal competencies	CT1	The application of efficient and responsible work strategies, of punctuality, seriousness and personal responsibility, based on the principles, norms and values of the code of professional ethics.		0.5
	CT2	The application of effective work techniques in a multidisciplinary team, on various hierarchical levels.		0.5
	CT3	Documentation for professional and personal development, through continuous training and effective adaptation to new scientific discoveries. Progress in the field.		0.5

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

7.1. General objective	<ul style="list-style-type: none"> - Students' knowledge and understanding of the terms, notions, concepts and principles specific to botany with a focus on plant cytology, histology and morphology. - Development of communication skills using the language specific to biological sciences/botany.
7.2. Specific objectives	<ul style="list-style-type: none"> - Developing the ability to explore/investigate the plant world and to use the appropriate means and methods for exploring the living world/plants. - Recognition of different types of plant cells and tissues in microscopic preparations. - Making cytological and histological preparations, observing them under a microscope and making their drawings.

8. Course description

8.1. Lecture ²⁰	Teaching methods ²¹	No. of hours
Lecture 1 The chemical composition of living matter	Interactive lecture, explanation, conversation, problem solving	2
Lecture 2 The plant cell. General characteristics of the eukaryotic cell	Interactive lecture, explanation, conversation, problem solving	2
Lecture 3 Organelles specific to the plant cell	Interactive lecture, explanation, conversation, problem solving	2
Lecture 4 Histology. The meristematic tissues	Interactive lecture, explanation, conversation, problem solving	2
Lecture 5 The protective tissues	Interactive lecture, explanation, conversation, problem solving	2
Lecture 6 The fundamental tissues	Interactive lecture, explanation, conversation, problem solving	2
Lecture 7 The conductive, mechanical, secretory and sensitive tissues	Interactive lecture, explanation, conversation, problem solving	2
Lecture 8 The root - Morphology and structure	Interactive lecture, explanation, conversation, problem solving	2
Lecture 9 The stem - Morphology and structure	Interactive lecture, explanation, conversation, problem solving	2
Lecture 10 The leaf - Morphology and structure	Interactive lecture, explanation, conversation, problem solving	2
Lecture 11 The plant reproduction	Interactive lecture, explanation, conversation, problem solving	2
Lecture 12 The flower - Morphology and structure	Interactive lecture, explanation, conversation, problem solving	2
Lecture 13 The fruit - Morphology and structure	Interactive lecture, explanation, conversation, problem solving	2
Lecture 14 The seed - Morphology and structure	Interactive lecture, explanation, conversation, problem solving	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
Act.1 Microscopic observations. Plant cell, shape, dimensions.	Practical demonstration, exercise, experiment	2
Act.2 The plastids	Practical demonstration, exercise, experiment	2
Act.3 The ergastic inclusions	Practical demonstration, exercise, experiment	2
Act.4 The protective tissues	Practical demonstration, exercise, experiment	2

Act.5 The parenchymas	Practical demonstration, exercise, experiment	2
Act.6 The assimilative tissue	Practical demonstration, exercise, experiment	2
Act.7 The conductive tissue, the mechanical tissue	Practical demonstration, exercise, experiment	2
Act.8 The secretory tissue. The sensitive tissue	Practical demonstration, exercise, experiment	2
Act.9 The root morphology. The primary and secondary structures	Practical demonstration, exercise, experiment	2
Act.10 The stem morphology and anatomy	Practical demonstration, exercise, experiment	2
Act.11 The leaf morphology and anatomy	Practical demonstration, exercise, experiment	2
Act.12 The flower in angiosperms. Types of flowers and inflorescences	Practical demonstration, exercise, experiment	2
Act.13 The fruit. The seed	Practical demonstration, exercise, experiment	2
Act.14 Laboratory colloquium	Practical demonstration, exercise, experiment	2
Total number of hours: seminar/laboratory		28

9. Bibliography

9.1. Recommended references	1. Drăgulescu, C., 2009, <i>Morfologie și sistematică vegetală</i> , Edit. Universității “Lucian Blaga”, Sibiu
	2. Deliu, Cornelia., 2003, <i>Morfologia și anatomia plantelor</i> , Univ. “Babeș-Bolyai”, Cluj-Napoca
9.2. Additional references	1. Andrei, M., Predan, G.M.I., 2003, <i>Practicum de morfologia și anatomia plantelor</i> , Edit. Științelor Agricole, București

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

<p>It is done through periodic contacts with them in order to analyze the problem.</p> <p>The choice of principles and the establishment of scientific and experimental methods suitable for solving problems related to Biology</p> <p>Choosing the appropriate notions and tools from related disciplines to support the appropriate resolution of a given situation for Biology.</p> <p>Realization of working methodologies that allow to go through all the stages necessary for a complete investigation process (realization of measurements/calculations, data processing, interpretation).</p> <p>Critical and constructive evaluation of the research approach specific to the Biology study program.</p>

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 / Colloquium	• Theoretical and practical knowledge (quantity, correctness, accuracy)	Midterm / ongoing assignments ²⁸ :	25 %	75 %	CEF
		Home assignments:	%		
		Other activities ²⁹ :	%		

		Final assessment:	50 %		
11.4b Seminar	<ul style="list-style-type: none"> • Frequency/relevance of contributions or answers 	Proof of contributions, portfolio (scientific papers, syntheses)			
11.4c Laboratory	<ul style="list-style-type: none"> • Knowledge of equipment, methods of using specific instruments and tools; assessment of tools or achievements, processing and interpretation of results 	<ul style="list-style-type: none"> • Oral examination • Written questionnaire • Laboratory notebook, experimental work, scientific papers, etc. • Practical demonstrations 		25 %	CEF
11.4d Project	<ul style="list-style-type: none"> • Quality of achieved project, accuracy of project documentation, rationale and evidence of selected solutions 	<ul style="list-style-type: none"> • Self-assessment, project submission and/or defense • Critical assessment of a project 			
11.5 Minimum performance standard ³⁰ Promotion of the laboratory colloquium Fulfilling the requirements for grade 5					

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: 07 / 09 / 2024

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

	Degree, title, first name, surname	Signature
Course coordinator	Associate professor Alexandra Zamfir Ph.D Asistant lecturer Mihai-Tudor Crăciunaș Ph.D	
Study program coordinator	Assoc. Prof. Ana-Maria Benedek-Sîrbu, PhD	
Director Department	Lecturer Ioan Tăușan Ph.D.	

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 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.