COURSE SYLLABUS

Academic year 2025 - 2026

1. Programme Information

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. Level of study [1]	Bachelor
1.6. Programme of study	Biology (in english)

2. Details about the course

2.1. Name of course	General Chemistry		Code	FSTI.MFE.BIOEN.L.CO.1.1110.C-4.5	
2.2. Course coordinator	Associate Prof. PhD. Totan Maria				
2.3. Seminar / laboratory coordinator	Associate Prof. PhD. Totan Maria				
2.4. Year of study[2]	1	2.5. Semester[3]	1	2.6. Evaluation form [4]	C
2.7. Course type [5]	O	2.8. The formative category of the course [6]			F

3. Estimated total time

3.1. Course Extension within the Curriculum – Number of Hours per Week					
3.1.a.Lecture	3.1.b. Seminar	3.1.c. Laboratory	3.1.d. Project	3.1.e Other	Total
1	1	1	-	-	**3**
3.2. Course Extension within the Curriculum – Total Number of Hours within the Curriculum					
3.2.a.Lecture	3.2.b. Seminar	3.2.c. Laboratory	3.2.d. Project	3.2.e Other	Total[7]
14	14	14	-	-	**42**

Time Distribution for Individual Study [8]	**Hours**
Learning by using course materials, references and personal notes	22
Additional learning by using library facilities, electronic databases and on-site information	5
Preparing seminars / laboratories, homework, portfolios and essays	20
Tutorial activities [9]	7
Exams[10]	4

3.3. Total Individual Study Hours [11] ***(NOSI$_{sem}$)***	**58**
3.4. Total Hours in the Curriculum (*NOAD$_{sem}$*)	**42**
3.5. Total 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 needed)

4.1. Courses that must be successfully completed first (from the curriculum) [14]	• not necessary
4.2. Competencies	• Explanation and interpretation of concepts, theories, models and notions of general chemistry (inorganic and organic). • Interpretation of results obtained in chemical analyses in the field of general chemistry (inorganic and organic). • Appropriate use of measuring equipment that allows the necessary evaluations to be made in the case of a concrete application in the field of chemistry/chemical analysis.

5. Conditions (wherever applicable)

5.1. For course/lectures [15]	• Blackboard, video projector, flipchart, specific teaching materials, online platforms, etc. • During the courses, students will turn off their mobile phones/ • will set them to silent mode. • Recording the course, making phone calls or texting during the course is not tolerated. • Leaving the classroom for the purpose of making/retrieving phone calls during the course is not tolerated. • Passing the laboratory exam is a condition for taking the course exam
5.2. For practical activities (lab/sem/pr/other) [16]	• Preparation of the theme/project of each laboratory. • Compliance with labor protection rules and conduct in a chemical laboratory. Use of specific equipment (e.g. gown). • Students' knowledge of the seminar/laboratory topic and the way of working for the work to be performed. • During the lab, students will turn off their cell phones or set them to silent mode. • Recording and making phone calls/sms during the lab is not tolerated. • Presence is mandatory. Participation in all laboratory work - is a condition for participation in the laboratory exam.

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 analyzes, evaluates, and applies concepts, theories, and methods from other fields the field of Biology.	The student/graduate achieves transdisciplinary integration of knowledge in order to evaluate the support capacity of biological systems for socio-economic systems	The student/graduate demonstrates initiative and self-control, capacity for anticipation and prospective evaluation, courage and perseverance in achieving the objectives	4

7. Course objectives (resulted from developed competencies)

7.1. Main course objective	Acquisition of basic knowledge in the field of chemistry, relevant to the study of biological processes.
7.2. Specific course objectives	• General Chemistry aims to provide theoretical and practical training for biology students in the field of chemical compounds.

	• Developing cognitive capacity, creative thinking, knowledge transfer capacity, experimental investigation capacity in the field of Chemistry • Knowledge of fundamental chemistry issues based on understanding cause-structure-effect relationships (properties). • Identification of the main classes of chemical substances and their structures. • Acquiring fundamental knowledge regarding the principles underlying chemical transformations that occur in the human body • Ability to correlate acquired notions with chemical processes that occur in living organisms • Highlighting the role of general chemistry knowledge in understanding the specialized disciplines necessary for professional training.

8. Course description

8.1. Lecture[18]		**Teaching methods** [19]	**Hours**
Lecture 1	Structure of the atom. Atomic orbitals. Electronic configurations. Periodic table of chemical elements.	Interactive presentation of the material according to the analytical program, using multimedia tools, powerpoint presentations, didactic films. Debate. Discussions.	1
Lecture 2	Chemical bond. Ionic bond. Covalent bond. Physical interactions.		1
Lecture 3	Metals and nonmetals. General properties and combinations.		1
Lecture 4	Solubility. Concentrations.		1
Lecture 5	Acids, bases, pH.		1
Lecture 6	Chemical equilibrium.		1
Lecture 7	The structure of organic compounds.		1
Lecture 8	Hybridization of atoms in organic compounds.		1
Lecture 9	Classification of organic compounds. Isomerism.		1
Lecture 10	Hydrocarbons.		1
Lecture 11	Functional derivatives – with simple functions.		1
Lecture 12	Functional derivatives – with simple functions.		1
Lecture 13	Functional derivatives – with mixed functions.		1
Lecture 14	Functional derivatives – with mixed functions.		1
		Total lecture hours:	**14**

8.2. **Practical activities**

8.2.a. Seminar		**Teaching methods** [20]	**Hours**
Seminar 1	Electronic configurations. Electropositive and electronegative character. Examples and exercises.	Interactive discussions. Applications.	2
Seminar 2	Ionic, polar and nonpolar compounds. Examples with practical importance.		2
Seminar 3	Examples of reactions in inorganic compounds		2
Seminar 4	Applications of solution concentrations and pH calculation.		2
Seminar 5	Applications of chemical equilibrium.		2
Seminar 6	Isomerism of organic compounds – practical applications.		2
Seminar 7	Reactions of organic compounds with applications in biology.		2
		Total seminar hours	14

8.2.b. Laborator		**Teaching methods [21]**	**Hours**
Laboratory 1	Training on labor protection and fire protection. General presentation of laboratory work. Presentation of laboratory glassware and equipment.		2
Laboratory 2	Fundamental quantities used in chemistry. Measurements in the chemistry laboratory.		2
Laboratory 3	Concentration of solutions. Preparations of solutions of known concentrations (percentage, molar, normal). Titration.		2
Laboratory 4	Determination of pH of aqueous solutions.		2
Laboratory 5	Methods of separation and purification of substances: decantation, centrifugation, filtration, recrystallization.		2
Laboratory 6	Methods of separation and purification of substances: sublimation, distillation.		2
Laboratory 7	Practical laboratory colloquium		2
		Total laboratory hours	14

9. Bibliography

9.1. Recommended references	Totan M. -Lecture notes 2025
	Bibliography available at the library or online.
9.2. Additional references	

10. Conjunction of the discipline's content with the expectations of the epistemic community, professional associations and significant employers of the specific study program [22]

The course is based on specialized literature in the field of organic and inorganic chemistry.
The scientific content of the discipline responds from the point of view of existing occupations on the labor market by training specialists capable of:
• responsibly executing the professional tasks assigned to them by respecting work protocols;
• developing new methods and techniques;
• correctly interpreting the results obtained in correlation with the phenomenon or parameters monitored;
• working in a team and managing a project;
• coping with work situations with unforeseen situations, and adapting to change;
• demonstrating lifelong learning capacity and commitment to learning and professional development.

11. Evaluation

Activity Type	11.1 Evaluation Criteria	11.2 Evaluation Methods		11.3 Percentage in the Final Grade	Notes.[23]
11.4a Exam / Coloquium	• Theoretical and practical knowledge acquired (quantity, correctness, accuracy)	Tests during the semester [24]:	%	75% (minimum 5)	CPE
		Homework:	%		
		Other activities[25]:	%		
		Final evaluation:	50% (min. 5)		

11.4b Seminar	• Frequency/relevance of participation or responses	Evidence of participation, portfolio of papers (reports, scientific summaries)	% (minimum 5)	
11.4c Laboratory	• Knowledge of the equipment, how to use specific tools; evaluation of tools, processing and interpretation of results	• Oral response • Written questionnaire • Laboratory notebook, experimental works, reports, etc. • Practical demonstration	25% (minimum 5)	CEF
11.4d Project	• The quality of the project, the correctness of the project documentation, the appropriate justification of the chosen solutions	• Self-evaluation, project presentation • Critical evaluation of a project	% (minimum 5)	
11.5 Minimum performance standard[26] **Achieving 50% of the total constituent weights of the final grade, provided that each test/exam is completed in proportion to 50% (Minimum Grade 5). Complete the laboratory work (100% presence).**				

The Course Syllabus will encompass components adapted to persons with special educational needs (SEN – people with disabilities and people with high potential), depending on their type and degree, at the level of all curricular elements (skills, objectives, contents, teaching methods, alternative assessment), in order to ensure fair opportunities in the academic training of all students, paying close attention to individual learning needs.

Filling Date: |_1_|_1_| / |_0_|_9_| / |_2_|_0_|_2_|_5_|

Department Acceptance Date: |_1_|_7_| / |_0_|_9_| / |_2_|_0_|_2_|_5_|

	Academic Rank, Title, First Name, Last Name	Signature
Course Teacher	Associate professor PhD chem. Maria TOTAN	
Study Program Coordinator	Assoc. Prof. Ana-Maria Benedek-Sîrbu, PhD	
Head of Department	Lecturer Ioan Tăușan, PhD	

[1] *Bachelor / Master*
[2] *1-4 for bachelor, 1-2 for master*
[3] *1-8 for bachelor, 1-4 for master*
[4] *Exam, colloquium or VP A/R - from the curriculum*
[5] *Course type: R = Compulsory course; E = Elective course; O = Optional course*
[6] *Formative category: S = Specialty; F = Fundamental; C = Complementary; I = Fully assisted; P = Partially assisted; N = Unassisted*
[7] *Equal to 14 weeks x number of hours from point 3.1 (similar to 3.2.a.b.c.)*
[8] *The following lines refer to individual study; the total is completed at point 3.7.*
[9] *Between 7 and 14 hours*
[10] *Between 2 and 6 hours*
[11] *The sum of the values from the previous lines, which refer to individual study.*
[12] *The sum (3.5.) between the number of hours of direct teaching activity (NOAD) and the number of hours of individual study (NOSI) must be equal to the number of credits assigned to the discipline (point 3.7) x no. hours per credit (3.6.)*
[13] *The credit number is computed according to the following formula, being rounded to whole neighbouring values (either by subtraction or addition*

$$No.credits = \frac{NOCpSpD \times C_C + NOApSpD \times C_A}{TOCpSdP \times C_C + TOApSdP \times C_A} \times 30\ credits$$

Where:

- NOCpSpD = Number of lecture hours / week / discipline for which the credits are calculated
- NOApSpD = Number of application hours (sem./lab./pro.) / week / discipline for which the credits are calculated
- TOCpSdP = Total number of course hours / week in the Curriculum
- TOApSdP = Total number of application hours (sem./lab./pro.) / week in the Curriculum
- C_C/C_A = Course coefficients / applications calculated according to the table

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

[14] *The courses that should have been previously completed or equivalent will be mentioned*
[15] *Board, video projector, flipchart, specific teaching materials, online platforms, etc.*
[16] *Computing technology, software packages, experimental stands, online platforms, etc.*
[17] *The learning outcomes will be stated in accordance with the specific standards of the ARACIS expert commissions (https://www.aracis.ro/ghiduri/)*
[18] *Chapter and paragraph titles*
[19] *Exposition, lecture, board presentation of the studied topic, use of video projector, discussions with students (for each chapter, if applicable)*
[20] *Discussions, debates, presentations and/or analyses of papers, solving exercises and problems*
[21] *Practical demonstration, exercise, experiment*
[22] *The relationship with other disciplines, the usefulness of the discipline on the labour market*
[23] *CPE – Conditions Exam Participation; nCPE – Does Not Condition Exam Participation; CEF - Conditions Final Evaluation; N/A – not applicable*
[24] *The number of tests and the weeks in which they will be taken will be specified*
[25] *Scientific circles, professional competitions, etc.*
[26] *The minimum performance standard in the competence grid of the study program is customized to the specifics of the discipline, if applicable*