

SYLLABUS

1. Information regarding the programme

1.1 Higher education institution	Babeş-Bolyai University of Cluj-Napoca
1.2 Faculty	Environmental Science and Engineering
1.3 Department	Environmental Analysis and Assessment
1.4 Field of study	Environmental Engineering
1.5 Study cycle	Bachelor
1.6 Study programme / Qualification	Environmental Engineering

2. Information regarding the discipline

2.1 Name of the discipline	NLR3022 Environmental management systems						
2.2 Course coordinator	Lecturer dr. Vlad Măcicăşan						
2.3 Seminar coordinator	Lecturer dr. Vlad Măcicăşan						
2.4. Year of study	IV	2.5 Semester	8	2.6. Type of evaluation	Exam	2.7 Type of discipline	Mandatory

3. Total estimated time (hours/semester of didactic activities)

3.1 Hours per week	4	Of which: 3.2 course	2	3.3 seminar/laboratory	2
3.4 Total hours in the curriculum	56	Of which: 3.5 course	28	3.6 seminar/laboratory	28
Time allotment:					hours
Learning using manual, course support, bibliography, course notes					10
Additional documentation (in libraries, on electronic platforms, field documentation)					10
Preparation for seminars/labs, homework, papers, portfolios and essays					8
Tutorship					8
Evaluations					2
Other activities:					4
3.7 Total individual study hours	42				
3.8 Total hours per semester	98				
3.9 Number of ECTS credits	4				

4. Prerequisites (if necessary)

4.1. curriculum	-
4.2. competencies	-

5. Conditions (if necessary)

5.1. for the course	- Active and interactive learning conditions, classroom equipped with a video projector and whiteboard; - Teaching materials: system standards, PowerPoint presentations.
5.2. for the seminar /lab activities	- Practical and applied learning conditions, classroom equipped with PCs, a video projector, and a whiteboard; - Students will actively participate in the seminar and develop thematic projects under the teacher's guidance.

6. Specific competencies acquired

Professional competencies	• Understanding the main reasons for implementing and operating Environmental Management Systems (EMS); • Understanding the main features and requirements of the ISO 14001 and EMAS standards, including key differences between them; • The importance of certifying environmental management systems; • Understanding how environmental management systems can be used to improve economic and environmental performance and enhance competitiveness; • Using management systems to facilitate compliance with legal provisions; • Understanding the benefits of EMS in enhancing public image and relationships with authorities; • Understanding how to create an internal culture of process optimization and minimization of environmental aspects and risks; • Understanding the role of audits in the continuous improvement of environmental performance; • Understanding the main elements of conducting environmental audits; • Identifying how to design and plan an effective audit process; • Understanding and applying different types of audits and the benefits of their implementation; • Understanding the responsibilities and competencies of auditing organizations. Students will acquire theoretical and practical skills in planning, organizing, implementing, maintaining, verifying, and continuously improving environmental management systems. The course aims to ensure that, upon completion, students grasp general and specific concepts, develop a unified understanding of the field, and appreciate the domain's real dimensions and significance.
Transversal competencies	• Teamwork skills; • Use of information and communication technology; • Problem-solving and decision-making; • Apply strategies for efficient and responsible work, punctuality, seriousness, and personal accountability.

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	The course aims to provide students with the fundamental knowledge and skills to design, implement, maintain, and continuously improve environmental management systems within socio-economic organizations.
7.2 Specific objective of the discipline	1. Knowledge and Understanding - Identifying terms, relationships, and processes, as well as recognizing connections within the field of Environmental Management Systems (EMS); - Correct use of specialized terminology in the EMS field; - Awareness of the importance of introducing EMS in organizations, including its principles, core concepts, process-based managerial approach, main EMS models, and elements related to EMS auditing and certification; - Ability to synthesize and correctly interpret information. 2. Explanation and Interpretation - Generalizing, specifying, and integrating specific domains; - Establishing connections between enterprise management and the environmental impacts resulting from activities;

	- Diagnostic analysis and evaluation of enterprises/businesses; - Analytical and synthetic decision-making capabilities through the application of acquired knowledge. 3. Instrumental and Practical Skills - Designing an EMS; - Conducting an environmental audit; - Identifying environmental aspects; - Applying course-acquired knowledge in practice; - Research skills and creativity in the field; - Ability to develop the necessary documentation for an EMS. 4. Attitudinal - Participation in scientific activities related to the studied discipline; - Ability to collaborate with specialists from other fields.
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8. Content

8.1 Course	Teaching methods	Remarks
Management Basics (I) – Introduction, definitions, the evolution of management, typologies.	Lecture, heuristic conversation, problematization	2 hours
Management Basics (II) – Scientific management, roles, functions, and fundamental management principles.	Lecture, argumentation, interactive discussions	2 hours
Management Basics (III) – The leader and the managerial team, management styles, leadership, and management.	Lecture, brainstorming, interactive discussions	2 hours
Quality Management – Concepts, terminology, evolution; quality management principles; ISO 9001 standard.	Lecture, argumentation, interactive discussions	2 hours
Environmental Management – Theoretical aspects of environmental management; guidelines on principles, systems, and application techniques.	Lecture, argumentation, interactive discussions	2 hours
Implementation of Environmental Management Systems – Application and operation; evaluation of EMS implementation.	Lecture, brainstorming, interactive discussions	4 hours
Planning and Leadership – The continuous improvement cycle; environmental policy.	Lecture, argumentation, interactive discussions	2 hours
EMS Documentation – Documents, data, and records; document control.	Lecture, brainstorming, interactive discussions	2 hours
Objective-Setting Process in Environmental Management – Environmental objectives and targets, environmental management programs.	Lecture, brainstorming, argumentation	2 hours
Implementation and Operation of Environmental Management Systems – Organizational structure and responsibility; training, awareness; operational control; internal and external communication.	Lecture, brainstorming, interactive discussions	2 hours
Auditing Environmental Management Systems – Determining activities and areas subject to environmental audits; scheduling internal and/or external audits; forming the internal audit team; contracting external audits; conducting environmental audits.	Lecture, argumentation, interactive discussions	2 hours
Integration of Management Systems – Integrated approach to management systems in line with ISO 9001 and ISO 14001 standards.	Lecture, argumentation, interactive discussions	2 hours
The Community Eco-Management and Audit Scheme (EMAS) – Overview and application of EMAS.	Lecture, heuristic conversation, problematization	2 hours
Bibliography: 1. Blokdyk, G., (2020), <i>Environmental Audit - A Complete Guide</i> , 5STARCook, 304 p. 2. Ciobotaru, V., Socolescu, A.M., (2006), <i>Priorități ale Managementului de mediu</i> , Ed. Meteor Press.		

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8.2 Seminar / laboratory	Teaching methods	Remarks
History of environmental management; environmental management strategies.	Presentation, interactive discussions, exercises, combined methods	2 hours
Cleaner production: the new strategy in environmental management.	Presentation, interactive discussions, exercises, combined methods	2 hours
Environmental management systems: basic concepts, typology, objectives, benefits, standardization; integration of management systems.	Presentation, interactive discussions, exercises, combined methods	4 hours
Standardization in environmental management systems – ISO 14001 and EMAS standards.	Presentation, interactive discussions, exercises, combined methods	2 hours
ISO 14001:2015 standard: objectives, basic principles, PDCA methodology, EMS structure.	Presentation, interactive discussions, exercises, combined methods	4 hours
Interpreting the requirements of EN ISO 14001:2015; developing the Environmental Policy.	Presentation, interactive discussions, exercises, combined methods	2 hours
Implementing ISO 14001 EMS (I): identifying environmental aspects; identifying legal and other environmental requirements; community consultation.	Presentation, interactive discussions, exercises, combined methods	2 hours
Implementing ISO 14001 EMS (II): setting objectives, targets, and environmental management programs.	Presentation, interactive discussions, exercises, combined methods	2 hours
Implementing ISO 14001 EMS (III): training, awareness, and competence; operational control and compliance evaluation.	Presentation, interactive discussions, exercises, combined methods	2 hours
EMS auditing according to ISO 14001.	Presentation, interactive discussions, exercises, combined methods	2 hours
Case study (I).	Presentation, interactive discussions, exercises, combined methods	2 hours
Case study (II).	Presentation, interactive discussions, exercises, combined	2 hours

	methods	
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9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

- The topics covered aim to familiarize students with environmental management systems, providing them with knowledge and skills for analyzing and interpreting organizational realities and the socio-economic environment. Additionally, the course develops competencies in systematizing information, drafting, and applying the documentation required for implementing EMS. Students will also acquire consultancy skills, which are highly valued by employers.
- The course content aligns with what is taught in other universities in the country and abroad.
- The course content and structure are tailored to meet student's needs and the requirements of employers in the environmental protection field.
- Employer feedback regarding the preferred attributes of trained specialists indicates a high level of appreciation for their professionalism.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course	- Knowledge and understanding of the concepts, processes, and procedures in the field of environmental management systems and auditing; - Correct use of specialized terminology in a real-world and applied context.	- Written exam	70%
10.5 Seminar/lab activities	- Knowledge and understanding of the stages and procedures of EMS;	- Applied activities/practical work/project, etc. - Scientific activities within a thematic environmental	30%

	- Ability to explain and interpret environmental aspects at the level of a site/economic operator; - Complete and accurate resolution of environmental requirements in a real organizational context.	project.	
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10.6 Minimum performance standards

- Acquisition of specific knowledge from the course at both general and detailed levels;
- The student understands the main concepts, processes, and procedures, recognizes them, and defines them correctly;
- Correct use of specialized terminology and familiarity with the glossary of terms attached to the course;
- Active participation in practical work and the study visit to the site;
- Ability to draft and present a project in accordance with the course framework.

Date

04.12.2024

Signature of course coordinator

Signature of seminar coordinator

Date of approval

Signature of the head of department