SYLLABUS

1. Information regarding the programme

1.1 Higher education institution	**Babeş-Bolyai University of Cluj-Napoca / Technical University of Cluj-Napoca**
1.2 Faculty	**Faculty of Environmental Science and Engineering / Faculty of Materials and Environmental Engineering**
1.3 Department	**Department of Environmental Analysis and Engineering**
1.4 Field of study	**Risk Assessment and Environmental Security**
1.5 Study cycle	**Master**
1.6 Study programme / Qualification	**Sustainable Development and Environmental Management**

2. Information regarding the discipline

2.1 Name of the discipline		**INTEGRATED ENVIRONMENTAL MANAGEMENT SYSTEMS NME8111**					
2.2 Course coordinator		**Associate professor PhD Radu Mihăiescu**					
2.3 Seminar coordinator		**Associate professor PhD Radu Mihăiescu**					
2.4. Year of study	**1**	2.5 Semester	**2**	2.6. Type of evaluation	**E**	2.7 Type of discipline	**Compulsory**

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

3.1 Hours per week	3	Of which: 3.2 course	2	3.3 seminar/laboratory	1
3.4 Total hours in the curriculum	42	Of which: 3.5 course	28	3.6 seminar/laboratory	14
Time allotment:					hours
Learning using manual, course support, bibliography, course notes					35
Additional documentation (in libraries, on electronic platforms, field documentation)					45
Preparation for seminars/labs, homework, papers, portfolios and essays					47
Tutorship					15
Evaluations					16
Other activities:					-

3.7 Total individual study hours	158
3.8 Total hours per semester	200
3.9 Number of ECTS credits	6

4. Prerequisites (if necessary)

4.1. curriculum	Environmental Impact Assessment
4.2. competencies	

5. Conditions (if necessary)

5.1. for the course	
5.2. for the seminar /lab activities	

6. Specific competencies acquired

Professional competencies	• Understanding the main reasons for the implementation and operation of environmental management systems (EMS) and quality assurance (QA), understanding the main features of ISO 14001 and EMAS, including key differences between these. • Importance of integrated environmental management certification. • Understanding how EMS and QA can be used to improve economic and environmental performance, and improving competitiveness. • Understand the use of EMS in facilitating legal requirements enforcement, EMS accredited benefits increased regulatory confidence. • Understanding how to create an internal culture process optimization and waste minimization. • Understand the importance of audits in continuous performance and quality improvement. • Understand the main elements in environmental audits. • Implementing of design and planning of an effective audit process. • Understanding and application of different types of environmental audit. • Understand the functions and competence of environmental audit organizations. • Students will acquire theoretical and practical skills for the organization, maintenance, improvement and continuous verification of environmental management systems
Transversal competencies	• teamwork skills, • use information and communication technology, • problem solving and decision making, • strategies for effective and responsible work, punctuality, reliability and personal responsibility

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

7.1 General objective of the discipline	The course aims to provide students basic knowledge and skills necessary to design, implement, control and continuous improvement of environmental management of socio-economic organizations.
7.2 Specific objective of the discipline	**1. Knowledge and understanding** - Identification of terms, relationships, processes, perception of relationships and connections within the scope of the EMS; - Correct use of terms; - Awareness of EMS introduction; The principles and basic concepts; Process-based management approach; Main models; Items related to auditing and certification. - Ability to synthesize and interpret the information. **2. Explanation and interpretation** - Generalization, customizing, integrating specific areas; - Making connections between company management and environmental impacts resulting from the activity; - Capacity due diligence and evaluation of enterprise / business - Ability to analyze and synthesize the decision making process by applying acquired knowledge**.** **3. Instrumental applicative** - EMS design; - Developing an environmental audit - Identification of environmental aspects;

	- Ability to put into practice the knowledge acquired in the course; - Research skills, creativity in the field; - Ability to design EMS documentation **4. Attitudinal** - Engaging in scientific activities - Ability to work with specialists in other fields.

8. Content

8.1 Course	Teaching methods	Remarks
1. Types of mechanisms for environmental management. Environmental policy. Legislative framework. Standards**.**	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	
2. Environmental management. Environmental protection history. Regulations for environmental management (EMAS II, ISO 14001). Other regulations.	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	
3. Integration of management systems.	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	
4. Synergy quality management system with other management systems.	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	
5. Implementation of environmental management system. Application and operation of EMS. Evaluation of EMS implementation and its results**.**	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	
6. Environmental management systems design. Structural plan of the project, the content of an EMS project. Basic rules of project management. Roles of the project, the project team. Timing of the project	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	
7. Planning and management. Cycle of continuous improvement. Environmental Policy	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	
8. Planning: the process of establishing environmental management objectives. Environmental analysis. Environmental aspects:	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion,	

identification and evaluation. Environmental objectives, environmental management programs. Legal and other requirements.	Conversation OBSERVATION: Case studies; Combined methods	
9. EMS documentation. Records. Control of documents.	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	
10. Implementation and operation of environmental management systems. Organizational structure and responsibility. Training, awareness. Operational control. Internal communication. External communication.	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	
11. Emergency preparedness and response capacity.	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	
12. Environmental management systems auditing. Integrating environmental auditing in environmental management systems.	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	
13. Monitoring and regularly reviewing of environmental management. Identification of environmental aspects as to be monitored. Identification (determining) the specific environmental regulations. Assessment of environmental compliance with environmental regulations specific monitored. EMS correction based on monitoring data.	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	
14. Organization and supervision of the environmental audit. Setting activities and areas to be audited environment. Timing for Internal Audit and / or externally. Training internal audit team. External audit contract. Environmental audit oversight**.**	COMMUNICATION: Interactive exposure, Explanation TRAINING: Interactive discussion, Conversation OBSERVATION: Case studies; Combined methods	

Bibliography

1. Ciobotaru, Virginia, Socolescu, Ana Maria - Priorităţi ale Managementului de mediu- Ed. Meteor Press, 2006
2. Johnson, C., Hunt, D. – Environmental Management Systems – Berkshire, McGraw-Hill Book Company, 1995
3. Mihăiescu, R. – Sisteme de Management de Mediu – suport de curs, 2015
4. North, K. – Environmental Business Management – Geneva, International Labour Organization, 1997
5. Rojanschi, V., Bran, Florina – Politici şi strategii de mediu – Editura Economică, Bucureşti, 2002
6. Rojanschi, V., Bran, Florina –Evaluarea impactului ecologic şi auditul de mediu- Ed. ASE, 2004, http://www.biblioteca.ase.ro/catalog/rezultate.php?c=2&q=&st=s&tp1=1&tp2=1&tp3=1&tp4=1&tp5=1&tp6=1
7. Rojanschi, V., Bran, Florina - Politici ecologice- Ed. ASE 1997, http://www.biblioteca.ase.ro/catalog/rezultate.php?c=2&q=&st=s&tp1=1&tp2=1&tp3=1&tp4=1&tp5=1&tp6

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8. Rojanschi, V., Bran, Florina - Abordări economice în protecţia mediului -Ed. ASE, Bucureşti, 2003http://www.biblioteca.ase.ro/catalog/rezultate.php?c=2&q=&st=s&tp1=1&tp2=1&tp3=1&tp4=1&tp5=1&tp6=1
9. Rojanschi, V., Bran, Florina – Elemente de economia şi managementul mediului- Ed Economică, 2004http://www.biblioteca.ase.ro/catalog/rezultate.php?c=2&q=&st=s&tp1=1&tp2=1&tp3=1&tp4=1&tp5=1&tp6=1

8.2 Seminar / laboratory	Teaching methods	Remarks
1. The commented study of regulations on environmental management; EMAS	• Interactive exposure • Brainstorming	
2. The commented study of regulations on environmental management, ISO 14001	• Interactive exposure • Brainstorming	
3. Requirements for EMS	• Interactive exposure • Explanation • Brainstorming	
4. Integration of management systems. Synergy quality management system and other management systems	• Thematic analysis • Brainstorming	
5. Analysis of the concept of continuous improvement of environmental management system	• Thematic analysis • Brainstorming	
6. Project management for the implementation of environmental management systems reports on the actions needed to implement an EMS in different organizations (essays presentation)	• Lab assignment • thematic analysis	
7. Environmental policy design (essays presentation)	• Thematic analysis • Brainstorming	
8. Visit to a company with EMAS implemented.	• Explanation	
9. Design implementation of environmental management system, tasks, milestones action (practical exercise)	• Thematic analysis • Brainstorming	
10. Environmental analysis. Identification of environmental aspects. Eco-map - project	• Thematic analysis • Brainstorming	
11. Developing eco balance. Use of environmental indicators in developing eco balance.	• Thematic analysis • Brainstorming	
12. Environmental audit, criteria making environmental audits	• Thematic analysis • Brainstorming	
13. Presentation and dissemination of results. Analysis of projects carried	• Lab assignment • thematic analysis	

Bibliography

1. Asociaţia de Standardizare din România – SR ISO 14050: 1999 - Management de mediu. Vocabular – Bucureşti, ASRO, 1999;
2. Asociaţia de Standardizare din România – SR ISO 14001: 1997- Sisteme de management de mediu. Specificaţii şi ghid de utilizare – Bucureşti, ASRO, 1997;
3. Asociaţia de Standardizare din România – SR ISO 14004: 1998 - Sisteme de management de mediu. Ghid privind principiile, sistemele şi tehnicile de aplicare – Bucureşti, ASRO, 1997;
4. Asociaţia de Standardizare din România – SR EN ISO 14020:2002 - Etichete şi declaraţii de mediu. Principii generale Bucureşti, ASRO, 2002;
5. Asociaţia de Standardizare din România –SR EN ISO 14021:2003 - Etichete şi declaraţii de mediu. Declaraţii de mediu pe proprie răspundere. (Eco-etichetare de tipul II) - Bucureşti, ASRO, 2003;
6. Asociaţia de Standardizare din România –SR EN ISO 14024:2001 - Etichete şi declaraţii de mediu. Eco-etichetare de tipul I. Principii şi proceduri- Bucureşti, ASRO, 1999;
7. Asociaţia de Standardizare din România – SR EN ISO 14031:2001- Management de mediu.

Evaluarea performanţei de mediu. Ghid - Bucureşti, ASRO, 1999.

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

Topics covered are intended to make students aware of the thematic environmental management systems and quality assurance, providing them with a foundation of knowledge and skills useful in analyzing and interpreting organizational realities and socio-economic environment and the development of skills systematization of information, the preparation and implementation of necessary documentation and SAC EMS implementation. Also students will acquire the ability to carry out consultancy skills valued by employers representative for the program.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course	• The correctness and completeness of the accumulated knowledge.	Written exam (in the regular session)	75%
10.5 Seminar/lab activities	• An environmental project developed	Evaluation of the project (documentation and demonstration)	25%
10.6 Minimum performance standards			
Each student has to prove that (s)he acquired an acceptable level of knowledge and understanding of the key concepts; that (s)he correctly recognizes and defines them. That (s)he is capable of stating these concepts in a coherent form, that (s)he has the ability to establish certain connections and to use the knowledge in solving different problems. • To prepare and support a final essay under the framework content. • Successful passing of the exam is conditioned by the final grade that has to be at least 5.			

Date	Signature of course coordinator	Signature of seminar coordinator
20.04.2017	Associate professor PhD Radu Mihăiescu	Associate professor PhD Radu Mihăiescu

Date of approval Signature of the head of department