COURSE DESCRIPTION

Risk assessment and management of hazardous chemical substances

*Aca*demic year 2026-2027

1. Programme-related data

1.1. Higher Education Institution	Babeș-Bolyai University
1.2. Faculty	Faculty of Environmental Science and Engineering
1.3. Department	Environmental Analysis and Engineering
1.4. Field	Environmental Engineering
1.5. Level of study	Master
1.6. Degree programme / Qualification	Sustainable Development and Environmental Management
1.7. Form of education	Environmental Engineering

2. Course-related data

2.1. Course title	**Risk assessment and management of hazardous chemical substances**			Course code	**NME4311**
2.2. Course coordinator		Assoc. Prof. PhD Habil. Delia Maria Gligor			
2.3. Seminar coordinator		Assoc. Prof. PhD Habil. Delia Maria Gligor			
2.4. Year of study	1	2.5. Semester	1	2.6. Type of assessment	Exam
2.7. Course status		Obligatoriu		2.8. Course type	DF

3. Total estimated time (hours per semester of teaching activities)

3.1. Number of hours per week	**4**	of which: 3.2. course	**2**	3.3. seminar/ laboratory/ project	**2**
3.4. Total of hours in the curriculum	56	of which: 3.5. course	28	3.6. seminar/ laboratory	**28**
Time allocation for individual study (IS) and self-taught activities (ST)					**hours**
Learning from textbooks, course materials, bibliography, and notes (IS)					39
Additional research in the library, on subject-specific electronic platforms, and on-site					18
Preparing seminars/ laboratories/ projects, assignments, reports, portfolios, and essays					25
Tutoring (professional guidance)					4
Examinations					4
Other activities					4
3.7. Total hours of individual study (IS) and self-taught activities (ST)				**94**	
3.8. Total hours per semester				**150**	
3.9. Number of credits				**6**	

4. Prerequisites (where applicable)

4.1. curriculum-related	
4.2 skills-related	

5. Specific conditions (where applicable)

5.1. course-related	Students are not allowed to be late or use their mobile phones during the course.
5.2. seminar/laboratory-related	Students are not allowed to be late or use their mobile phones during the seminar. Projects will be delivered not later than the last week of the semester.

6.1. Competencies resulting from the completion of the degree programme *(as referred to in the curriculum)*[1]

Professional competencies	
Competency code	**Competency**
PC1	Advise on chemical use reduction
PC4	Investigate pollution
PC6	Ensure compliance with environmental legislation
Transversal competencies	
Competency code	**Competency**
TC1	Think analytically
TC2	Work in teams
TC3	Report on environmental issues

6.2. Learning outcomes relevant to the degree programme (as referred to in the curriculum)[2]

Learning outcomes targeted by the subject		
Competency code	**Knowledge and comprehension**	**Specific academic skills**
PC4, PC6, TC1, TC3	1. The student/graduate identifies and describes the principles and methods of air, water and soil quality management, including pollution, depollution and waste recovery processes.	1. The student/graduate applies methods for the assessment, monitoring and management of environmental quality factors.
PC1, TC1, TC3	2. The student/graduate identifies and describes the principles of assessment and management of risks associated with hazardous chemical substances present in the environment, as well as their impact on population health and ecosystems.	2. The student/graduate applies methods for assessing the risks of hazardous chemical substances.
PC6, TC1, TC2, TC3	3. The student/graduate identifies and describes the principles of sustainable development, organisational environmental policies and mechanisms for promoting sustainability.	3. The student/graduate applies sustainable development principles in organisational and environmental contexts.

7. Subject-specific learning outcomes

Knowledge and comprehension
1. Acquiring knowledge regarding the assessment and control of risks of hazardous chemicals, the REACH convention on the use of substances and preparations.
2. Acquiring knowledge regarding the classification, labeling and packaging of substances and mixtures.
3. Acquiring knowledge regarding the assessment and control of risks of existing substances.
Specific academic skills
1. Ability to apply the criteria for classification, labeling and packaging of substances and mixtures.
2. Ability to interpret safety data sheets.

[1] The professional and/or transversal skills targeted by the subject for which the course description is prepared will be copied from the curriculum of the degree programme. For each competency, the complete entry, including the competency code, will be copied with the exact wording that appears in the curriculum, without any changes. If no competency is copied from either of the two categories, the row corresponding to that category is deleted from the table.

[2] The learning outcomes relevant for the degree programme and targeted by the subject for which the course description is prepared will be listed. The entries, copied without any changes from the Curriculum by subject type (Core Subject/Specialisation Subject/Complementary Subject), are listed under the corresponding competency.

8. Contents

8.1. Course	**Teaching and learning methods**	**Remarks**[3]
8.1.1. Regulations of the European Parliament and of the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH). General issues.	• Interactive exposure • Explanation • Conversation • Didactic demonstration	4 hours
8.1.2. Registration of substances. Data sharing and avoidance of unnecessary testing	• Interactive exposure • Explanation • Conversation • Didactic demonstration	4 hours
8.1.3. Information in the supply chain. Downstream users	• Interactive exposure • Explanation • Conversation • Didactic demonstration	4 hours
8.1.4. Evaluation and authorization	• Interactive exposure • Explanation • Conversation • Didactic demonstration	4 hours
8.1.5. Restrictions of the manufacturing, placing on the market and use of certain hazardous substances and preparations	• Interactive exposure • Explanation • Conversation • Didactic demonstration	4 hours
8.1.6. Fees and charges. Classification and labeling inventory	• Interactive exposure • Explanation • Conversation • Didactic demonstration	4 hours
8.1.7. Risk assessment on human health and environment due to using of hazardous chemical substances	• Interactive exposure • Explanation • Conversation • Didactic demonstration	4 hours
Bibliography 1. Course support. 2. Legislation: REACH rule, laws and government decisions regarding hazardous chemical substances. - Full title: Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 Dec. 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency. - EU's REACH chemicals law begins life in Helsinki - Reach chemicals legislation. 3. B. Martel, *Chemical Risk Analysis,. A Practical Handbook*, Butterworth-Heinemann, 2004. 4. P. Carson, C. Mumford, *Hazardous Chemicals Handbook, Second edition*, Butterworth-Heinemann, 2002. 5. Nicholas P. Cheremisinoff, *Handbook of Hazardous Chemical Properties*, Butterworth-Heinemann, 2000.		

[3] For example, organisational aspects, recommendations for students, specific aspects relating to the course/seminar, such as inviting experts in the field, etc.

8.2. Seminar/ laboratory	Teaching and learning methods	Remarks
8.2.1. Determination of toxicity risk for some hazardous chemical substances	• Interactive exposure • Explanation • Conversation	4 hours
8.2.2. Technical security report according to REACH agreement	• Interactive exposure • Explanation • Conversation	4 hours
8.2.3. Preliminary REACH registration	• Interactive exposure • Explanation • Conversation	4 hours
8.2.4. REACH consulting	• Interactive exposure • Explanation • Conversation	4 hours
8.2.5. Elaboration and advancement of registration file	• Interactive exposure • Explanation • Conversation	4 hours
8.2.6. SIEF Management	• Interactive exposure • Explanation • Conversation	4 hours
8.2.7. Organization of necessary rules and analyses for REACH registration	• Interactive exposure • Explanation • Conversation	4 hours
Bibliography 1. Legislation: REACH rule, laws and government decisions regarding hazardous chemical substances. 2. B. Martel, *Chemical Risk Analysis. A Practical Handbook*, Butterworth-Heinemann, 2004.		

9. Evaluation

Type of activity	9.1 Evaluation criteria[4]	9.2 Evaluation methods[5]	9.3 Percentage in the final grade
9.4. Course	• The correctness and completeness of the accumulated knowledge.	Written exam (in the regular session)	80 %
9.5. Seminar/ laboratory	• A technical security report for a hazardous chemical substance	Evaluation of the project (documentation and demonstration)	20 %
9.6 Minimum standard for passing			
Each student has to prove that (s)he acquired an acceptable level of knowledge and understanding, that (s)he is capable of stating these knowledge in a coherent form. Successful passing of the exam is conditioned by the final grade that has to be at least 5.			

[4] The evaluation criteria must directly reflect the learning outcomes targeted at the level of the degree programme respectively at the level of the subject. More specifically, the learning outcomes set out in the expected learning outcomes are assessed.

[5] Both final evaluation methods and ongoing evaluation strategies should be established.

10. SDG labels (Sustainable Development Goals)[6]

	⦿	Sustainable Development Generic Label

								
○	○	○	○	○	○	○	○	○
								No label applies
○	○	○	○	○	○	○	○	○

Date of entry:
20.04.2026

Signature of course coordinator
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Signature of seminar coordinator
.....

Date of approval in the department:
...

Signature of the head of department
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[6] Select a single label which, according to the *Implementation of SDG labels in the academic process*, best matches the subject. If the subject addresses sustainable development in a generic manner (i.e. by presenting/introducing the general framework of sustainable development, etc.), then the Sustainable Development generic label may be applied. If none of the labels describe the subject, select the last option: *"No label applies."*