COURSE DESCRIPTION

Ethics in environmental research

Academic year 2026-2027

1. Programme-related data

1.1. Higher Education Institution	Babeș-Bolyai University of Cluj-Napoca
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	Environmental Engineering
1.7. Form of education	Full-time

2. Course-related data

2.1. Course title	Ethics and methodology of scientific research			Course code	**NME4412**
2.2. Course coordinator					
2.3. Seminar coordinator	CS III Dr. Lucrina Ştefănescu				
2.4. Year of study	1	2.5. Semester	2	2.6. Type of assessment	Viva voce
2.7. Course status	Compulsory			2.8. Course type	Core subject

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

3.1. Number of hours per week	**1**	of which: 3.2. course	**0**	3.3. seminar/ laboratory/ project	**1**
3.4. Total of hours in the curriculum	14	of which: 3.5. course	0	3.6. seminar/ laboratory	**14**
Time allocation for individual study (IS) and self-taught activities (ST)					**hours**
Learning from textbooks, course materials, bibliography, and notes (IS)					10
Additional research in the library, on subject-specific electronic platforms, and on-site					18
Preparing seminars/ laboratories/ projects, assignments, reports, portfolios, and essays					10
Tutoring (professional guidance)					2
Examinations					2
Other activities					2
3.7. Total hours of individual study (IS) and self-taught activities (ST)				**84**	
3.8. Total hours per semester				**98**	
3.9. Number of credits				**4**	

4. Prerequisites (where applicable)

4.1. curriculum-related	Basics of environmental ethics and research methodology
4.2 skills-related	use of computer software and specialized literature platforms

5. Specific conditions (where applicable)

5.1. course-related	-
5.2. seminar/laboratory-related	Necessity of digital projector and computer (laptop)

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

[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.

Professional competencies	
Competency code	**Competency**
PC5	Interact professionally in research and professional environments: Show consideration to others as well as collegiality. Listen, give and receive feedback and respond perceptively to others, also involving staff supervision and leadership in a professional setting.
PC12	Perform scientific research: Gain, correct or improve knowledge about phenomena by using scientific methods and techniques, based on empirical or measurable observations.
Transversal competencies	
Competency code	**Competency**
TC1	Think analytically: Produce thoughts using logic and reasoning in order to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
TC3	Report on environmental issues: Compile environmental reports and communicate on issues. Inform the public or any interested parties in a given context on relevant recent developments in the environment, forecasts on the future of the environment, and any problems and possible solutions.

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 PC5 PC7 PC10 PC11 PC12 PC1 PC2 PC3	1. The student/graduate describes the stages of the scientific research process and of carrying out an applied research project in the field of environmental engineering	1. The student/graduate actively participates in research and professional practice processes, documenting activities and results. The student/graduate applies integrated theoretical and practical knowledge in solving complex environmental problems. The student/graduate formulates research questions, applies appropriate methodologies and draws well-founded conclusions.
PC5 PC12 PC1 PC2	2. The student/graduate identifies and describes the ethical and methodological principles of scientific research, including academic and professional integrity standards.	2. The student/graduate applies appropriate ethical norms and research methodologies in professional and scientific activity. The student/graduate formulates research questions, selects appropriate methods and presents results in accordance with scientific standards.

7. Subject-specific learning outcomes

Knowledge and comprehension
1. The student/graduate takes responsibility for activities carried out in practice and research. The student/graduate autonomously manages complex research tasks. The student/graduate demonstrates the capacity for continuous learning and scientific integrity.
2. The student/graduate takes responsibility for professional and academic integrity. The student/graduate autonomously carries out documentation and research activities, respecting ethical norms.
Specific academic skills

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.

1. The student/graduate takes responsibility for activities carried out in practice and research. The student/graduate autonomously manages complex research tasks. The student/graduate demonstrates the capacity for continuous learning and scientific integrity.
2. The student/graduate takes responsibility for professional and academic integrity. The student/graduate autonomously carries out documentation and research activities, respecting ethical norms.

8. Contents

8.1. Course	**Teaching and learning methods**	**Remarks**[3]
Bibliography		
8.2. Seminar/ laboratory	**Teaching and learning methods**	**Remarks**
1. Introduction. Ethics in society and in science.	Presentation. Debates and discussions	Student interaction
2. Ethical norms and values included in the scientific process	Lecture, discussions, group exercises, scenario, and discussions	Student interaction
3. Violations of ethical principles in science	Lecture, discussions, group exercises	Student interaction
4. Ethical principles in environmental studies	Lecture, discussions, group exercises, case studies, scenarios	Student interaction
5. Scientific research and methodology: Objectives stages	Group exercises	Student interaction
6. Guidance for the writing and publication of scientific works	Group exercises	Student interaction
7. Individual project – instructions and exercise	Written project and presentation by each student	Seminar examination

Bibliography

1. Aldo L. (1990). Means and Ends in Wildlife Management. Environmental Ethics 12:329-32.
2. Bairagi V., Munot M.V. (2019). Research methodology : a practical and scientific approach. CRC Press, Taylor & Francis Group.
3. Cyranoski D. (2019). The CRISPR-baby scandal: what's next for human gene-editing. Nature, 566, 440–442.
4. D'Angelo J.G. (2018). Ethics in Science, Ethical Misconduct in Scientific Research. Second Edition, Alfred University, Taylor & Francis Group, NY.
5. de Saille S. (2015). Innovating innovation policy: The emergence of 'responsible research and innovation'. Journal of Responsible Innovation, 2(2), 152–168.
6. Einstein A., (1933). Prefață la Where is science going? Max Planck, George Alen et Unwin Ltd., London.
7. Gray N. J., Campbell L. M. (2009). Science, policy advocacy, and marine protected areas. Conservation Biology, 23(2), 460–468. https://doi.org/10.1111/j.1523-1739.2008.01093.x
8. Guterman L. (2004). "Slippery Science, 15 Years after the Exxon Valdez Oil Spill, Researchers Debate Its Lingering Effects with $100-million on the Line," Chronicle of Higher Education, September 24 (last accessed at http://chronicle.com/weekly/v51/i05/05a01201.htm).
9. Karl T.R., Arguez A., Huang B., Lawrimore J.H., McMahon J.R., Menne M.J., Peterson T.C., Vose R.S., Huai-Min Zhang H-M., (2015). Possible artifacts of data biases in the recent global surface warming hiatus. Science 348(6242): 1469-1472, DOI: 10.1126/science.aaa5632.
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11. Medvecky F., Leach J., (2019). An Ethics of Science Communication, Palgrave Macmillan, London.
12. Mukherjee S.P., (2020). A Guide to Research Methodology. An Overview of Research Problems, Tasks and Methods, Taylor & Francis Group.
13. UKCEN, C.E.N. (2018). Ethical frameworks: The four principles. From http://www.ukcen.net/ethical_issues/ethical_frameworks/the_four_principles_of_biomedical_ethics
14. Unger S. H. (1994). Controlling Technology: Ethics and the Responsible Engineer, second edition. New York: John Wiley & Sons, Inc., 194–198.
15. Universitatea Babeș-Bolyai, 2020. Codex Norme de Etică Universitară, disponibil la https://www.ubbcluj.ro/ro/despre/organizare/files/Comisia-de-etica-Codex-norme-etica-universitara.pdf

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

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			
9.5. Seminar/ laboratory	The active participation of the students during the seminar	Score	10 %
	The correctness of the project, accuracy of the presentation, correctness of the responses.	Writing of a project and presentation (10 minutes/student)	90 %
9.6 Minimum standard for passing			
... • Successful passing of the exam is conditioned by the final grade that has to be at least 5. • Minimum 80% presence at seminar/lab activities.			

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

	○	Sustainable Development Generic Label						
1 FĂRĂ SĂRĂCIE	2 FOAMETE „ZERO"	3 SĂNĂTATE ȘI BUNĂSTARE	4 EDUCAȚIE DE CALITATE	5 EGALITATE DE GEN	6 APĂ CURATĂ ȘI SANITAȚIE	7 ENERGIE CURATĂ ȘI LA PREȚURI ACCESIBILE	8 MUNCĂ DECENTĂ ȘI CREȘTERE ECONOMICĂ	9 INDUSTRIE, INOVAȚIE ȘI INFRASTRUCTURĂ
○	○	○	○	○	○	○	○	○
10 INEGALITĂȚI REDUSE	11 ORAȘE ȘI COMUNITĂȚI DURABILE	12 CONSUM ȘI PRODUCȚIE RESPONSABILE	13 ACȚIUNE CLIMATICĂ	14 VIAȚA ACVATICĂ	15 VIAȚA TERESTRĂ	16 PACE, JUSTIȚIE ȘI INSTITUȚII EFICIENTE	17 PARTENERIATE PENTRU REALIZAREA OBIECTIVELOR	No label applies
○	○	○	○	○	○	○	○	○

Date of entry:
...21.04.2026

Signature of course coordinator

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Signature of seminar coordinator

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Date of approval in the department:
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Signature of the head of department

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[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.

[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."*