

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							
2.2 Course coordinator	Bădăraş Alexandru Sabin, Associate Professor, PhD						
2.3 Seminar coordinator	Bădăraş Alexandru Sabin, Associate Professor, PhD						
2.4. Year of study	1	2.5 Semester	1	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	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					15
Additional documentation (in libraries, on electronic platforms, field documentation)					15
Preparation for seminars/labs, homework, papers, portfolios and essays					15
Tutorship					10
Evaluations					10
Other activities:					5
3.7 Total individual study hours	70				
3.8 Total hours per semester	126				
3.9 Number of ECTS credits	5				

4. Prerequisites (if necessary)

4.1. curriculum	
4.2. competencies	

5. Conditions (if necessary)

5.1. for the course	Room equipped with video projector, laptop, electronic board	
5.2. for the seminar /lab activities	Room equipped with computers, video projector, electronic board and other tools	

6. Specific competencies acquired

Professional competencies	acquisition of terminology regarding the approach and knowledge of the environment • knowledge of the content, meaning and problems of the environment • the study and analytical and synthetic knowledge of environmental problems at the local, regional and global level • identification and assessment of the state of the environment, balances and imbalances in the environment • the importance of the environment in the context of sustainable development • studying the relationships between the environmental components • knowledge of the typology and dynamics of the environment • knowledge of general aspects regarding anthropogenic impacts on the environment and human perception of them, etc.
Transversal competencies	• Integrated knowledge of environmental problems and deepening of operational methods, principles and paradigms in environmental knowledge • Formation of the skills of interpretation and analysis of environmental problems • Stimulation of critical thinking and teamwork • Training the skills necessary for multidisciplinary cooperation, communication and the building of partnership relationships based on the application of acquired knowledge and the development of transdisciplinary scientific reasoning

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

7.1 General objective of the discipline	• Knowledge of the operative terminology in the field of Environmental Science • Knowledge of the structure, functionality, dynamics and evolution of the environment • Knowing the relational aspects existing in the environment (man-environment relationship) • Systemic approach to the environment • Knowledge of the main environmental issues in the context of sustainable development • Creating the skills to notice the important aspects and to integrate them in environmental studies
7.2 Specific objective of the discipline	• Knowledge of the general characteristics of environmental components • Acquiring knowledge regarding the general methods of knowledge of the environment • Addressing topical environmental issues • Knowledge of global, regional and local environmental issues • Knowing the places and types of documentation, as well as the sources of documentation • Acquiring the necessary knowledge to prepare and write an environmental report

8. Content		
8.1 Course	Teaching methods	Remarks
1. ENVIRONMENTAL SCIENCE - CONTENT AND SCIENTIFIC SIGNIFICANCE. THE ENVIRONMENT: DEFINITIONS AND ACCEPTANCES - Environmental science: scientific content and meaning, points of view on the importance of environmental science, the objectives of environmental science, Confusions and divergences generated by the approach to the environment, the environment: definitions and meanings (environment, environment, ambient, landscape , geosystem, geographic environment, living environment, etc.), life-environment relationship (Gaia hypothesis), approach directions of the environment, thematic documentary (ex. Home)	Lecture	
2. THE CONCEPTUAL BASIS OF ENVIRONMENTAL SCIENCE - the way of approaching the knowledge of the environment, human-environment relations and their forms of manifestation (environmentalism, anthropocentrism, technocentrism, ecocentrism, human exceptionalism, institutionalism, etc.)	Lecture	
3. THE PRINCIPLES, PARADIGMS AND CONCEPTS USED IN KNOWLEDGE OF THE ENVIRONMENT - regionally, relevance, interrelationship, coevolution, synergism, environmental quality, supporting capacity, stress, transition, trend of evolution, uncertainty, perception and behavior, hazards, impacts and effects, stability, fragility , degradation etc.	Lecture	
4. METHODS USED IN ENVIRONMENTAL SCIENCE - analysis, synthesis, dialectic, cartography, modeling, comparative, inductive, deductive, etc.	Lecture	
5. THE PROBLEM OF RELATIONSHIPS IN THE ENVIRONMENT - the concept of relationship, the nature, types and functions of relationships in the environment, types of relationships between the components of the environment, relational effects (examples)	Lecture	
6. THE ENVIRONMENT AS A SYSTEM. STRUCTURE OF THE ENVIRONMENT AND STRUCTURAL MODELS - the structuralist-systemic approach (system, structure), features of the environmental system, structural models of the environment (vertical-structural model, horizontal differentiation, synthetic structural model)	Lecture	
7. DYNAMICS AND FUNCTIONING OF THE ENVIRONMENT - the laws that control the dynamics of the environment, the approach to dynamics (temporal, spatial), the functioning of	Lecture	

the environment, stability and instability/dysfunction/imbalance in the environment	Lecture	
8. DEVELOPMENT (GENERAL ASPECTS) – sustainable development and sustainable use, the definition and evolution of the concept, the indicators of sustainable development, the premises of sustainable development, the implementation of sustainable development, the efficiency and evaluation of the process of implementing sustainable development (ppt course support)	Lecture	
9. WASTE AND ENVIRONMENTAL QUALITY - definitions, product life cycle, waste classification, waste and toxic waste, household waste and hazardous waste, the impact and effects of waste on the environment, waste management (general aspects: collection, transport, storage, composting, incineration/waste disposal)	Lecture	
10. INTERVENTION AND PRESSURE ON THE ENVIRONMENT – impact and effects on the environment; causality of environmental problems; general classification of impacts; assessment of pressures on the environment; examples (population growth, anthropogenic impact on vegetation, anthropogenic impact on fauna, anthropogenic impact on soils, examples, etc.); - visiting and analyzing the peri-urban area of Cluj-Napoca	Lecture	
11. EXTREME EVENTS IN THE ENVIRONMENT – general aspects: terminology regarding extreme natural events and their possible effects (hazards, risks, catastrophes), the human response to hazard or risk, the importance of extreme events (examples)	Lecture	
12. ENVIRONMENTAL PROBLEMS AT INTERNATIONAL, REGIONAL AND LOCAL LEVEL - cross-border agenda: conservation and pollution, global environmental problems - general aspects (depletion of the ozone layer, climate change, reduction of biodiversity, deforestation/deforestation, desertification), the impact and effects of policies environmental on a global, regional and local scale;	Lecture	
13. ACTORS INVOLVED IN THE MANAGEMENT OF ENVIRONMENTAL PROBLEMS - the state and global institutions; non-state actors: science, commerce and global civil society (NGOs, environmental activism, environmental lobbying, environmental ethics)	Lecture	
14. PERCEPTION AND HUMAN BEHAVIOR IN THE ENVIRONMENT. ENVIRONMENTAL INFORMATION - the factors that determine the perception of the environment, the real		

environment and the perceived environment, the relationship environment - perception - representation - human behavior, environmental information - definition and classification, environmental data-information-knowledge, public access to environmental information (legislation specific) 15. THE ENVIRONMENT AND SOCIAL, ECONOMIC AND CULTURAL PROBLEMS - poverty as "the worst form of pollution" (case study), the causes of poverty and hunger, the environmental implications and consequences of poverty, hunger and conflicts, environmental degradation and quality of life degradation (course with ppt support)	Lecture	
Bibliography: 1. Corpade, C., Muntean, O.L., (2005), Abordări tematice și integrate în cunoașterea mediului, Suport de curs și seminar, Facultatea de Geografie – Facultatea de Știința Mediului, Universitatea „Babeș-Bolyai”, Cluj-Napoca. 2. Demangeot, J., (1990), Les milieux “naturels” du Globe, Masson, Paris-Milan-Barcelona-Mexico. 3. Goudie, A., (1983), Environmental Change, Clarendon Press, Oxford. 4. Goudie, A., (1993), The Human Impact on the Natural Environment, (Fourth Edition), Blackwell, Oxford (U.K.)-Cambridge (U.S.A.). 5. Gregory, K.J., Walling, D.E., (editors), (1987), Human Activity and Environmental Processes, John Wiley & Sons, Chicester-New York-Brisbane-Toronto-Singapore. 6. Kaplan, D.R., (2019), Răzburarea geografiei, Ed. Litera, București. 7. Lovelock, J.E., Margulis, L., Fester, R., (editors), (1989), Global Ecology, Academic Press Inc., Boston-San Diego-New York-London-Sydney. 8. Imbroane, Al., (2012 și 2018), Sisteme informatice geografice (GIS), Vol. 1 și 2, PUC, Cluj-Napoca. 9. Ioja C., Niță M.R., Vânău G., Onose D., Gavrilidis A., Hossu A., (2015), Managementul conflictelor de mediu, Ed. Universității din București. București. 10. Ioja, Cr., (2013), Metode de evaluare și cercetare a stării mediului, Editura Etnologică, București. 11. Mac, I., (1996), The Assessment of the Critical Environmental Situations at Microscalar Levels (Microregions, Local Areas), 28th International Geographical Congress, Hague. 12. Mac, I., (2000), Geografie generală, Ed. Europontic, Cluj-Napoca. 13. Mac, I., (2001), (Coord.), Știința mediului: Educație și cercetare la Facultatea de Geografie, Universitatea „Babeș-Bolyai”, Ed. Europontic, Cluj-Napoca. 14. Mac, I., (2003), Știința mediului, Ed. Europontic, Cluj-Napoca. 15. Mac, I., (2008), Geografie normativă, Ed. PUC, Cluj-Napoca. 16. Marshall, T., (2022), Prizonierii geografiei, Ed. Litera, București. 17. Muntean, O.L., (2004), Impactul antropic asupra mediului înconjurător în Culoarul Târnavei Mari (sectorul Vânători-Micăsasa). Studiu de evaluare și planificare a mediului înconjurător, Ed. Casa Cărții de Știință, Cluj-Napoca. 18. Muntean, O.L., (2005), Evaluarea impactului antropic asupra mediului, Ed. Casa Cărții de Știință, Cluj-Napoca. 19. Muntean, O.L., Baci, C., Petrescu-Mag, Mălina, (2013), Dezvoltarea durabilă – Obiectiv al proiectelor cu finanțare europeană, Ed. EIKON, Cluj-Napoca. 20. Niță, M. R., (2016), Infrastructuri verzi – o abordare geografică, Ed. Etnologică, București. 21. Pătroescu, M., Ioja, C., Rozyłowicz, L., Vânău, G.O., Niță, M.R., Ioja, A., Pătroescu-Klotz, I., (2012), Evaluarea integrată a calității mediului în spații rezidențiale, Ed. Academiei Române. București. 22. Porteous, A., (2000), Dictionary of Environmental Science and Technology, J. Wiley and Sons Ltd, Chicester. 23. Rojanschi, VL., Bran, Florina., (1997, 2003), Protecția și ingineria mediului, Ed. Economică, București. 24. Rojanschi, VL., Bran, Florina., (2002), Politici și strategii de mediu, Ed. Economică, București. 25. Vădineanu, A., (1998), Dezvoltarea durabilă. Vol. I. Teorie și practică, Ed. Univ. din București. 26. Vallega, A., (1995), La regione, sistema territoriale sostenibile, Mursia, Milano. 27. Westman, W., E., (1985), Ecology, Impact Assessment and Environmental Planning, J. Wiley & Sons, New York-Chichester-Brisbane-Toronto-Singapore. 28. ***, (1998), Environmental science: Earth as a living planet. 2nd. edn. D. B. Botkin and Ed. A. Keller, Wiley, Chichester.		

29. ***, (2003), Environmental Science. Systems and solutions, 3rd. Edn. M.L McKinney and R.M. Schoch, Jones and Bartlett Publishing, Canada.
30. ***, (2007), Environmental Science: Principles, Connections and Solutions, [Miller](#), London.
31. ***, (2021), www.unep.org
32. ***, (2018), www.sgg.gov – SNDDR – Orizont 2030
33. ***, (2023), <https://www.esri.ro/ro-ro/home>
- ***, (2023), <https://www.mdipa.ro/pages/urbanism>http://www.amazon.com/Environmental-Science-Principles-Connections-Solutions/dp/0495383376/ref=sr_1_1?ie=UTF8&qid=1257864803&sr=1-1-spell

8.2 Seminar / laboratory	Teaching methods	Remarks
Presentation of the locations where the bibliographic sources are found; Documentation at the library: how we search for information, how we store information: on cards and on the computer	Lecture	
Terminological terms and notions used in environmental sciences (surrounding environment, ambient, environment, geographical environment, physical environment, ambient, landscape, living environment	Lecture	
Structural models of the environment – analysis of the classic structural model; analysis of the systemic structuralist model; ecological model analysis; analysis of the perceptual-behavioral mode	Group interview, Brainstorming, Argumentation	
Analysis of the features and characteristics of sets of environmental components - abiotic, biotic, anthropogenic component	Group interview, Brainstorming, Argumentation	
Material, energetic and informational cycles: their importance in the functioning of the environment (dynamics of the atmosphere)	Group interview, Brainstorming, Argumentation	
Material, energy and informational cycles: their importance in the functioning of the environment (dynamics of the hydrosphere - water cycles, ocean currents, the El Nino phenomenon, anthropogenically induced changes, dynamics of the biosphere - biotic components, exemplifying the impact of human activities on the biotic component.	Group interview, Brainstorming, Argumentation	
Material, energy and informational cycles: their importance in the functioning of the environment.	Group interview, Brainstorming, Argumentation	
Stratospheric ozone – importance, formation and destruction mechanisms; the mechanism of the destruction of the stratospheric ozone layer in the polar area; Examples of relationships in the environment - the greenhouse effect and climate change.	Group interview, Brainstorming, Argumentation, Exercise method	
The issue and importance of sustainable development (examples and case studies) - (thematic reports of students).	Group interview, Brainstorming, Argumentation	
Existing imbalances in the environment: natural risk phenomena; natural and anthropogenic hazards; solutions to reduce imbalances in the environment (thematic video documentaries).	Group interview, Brainstorming, Argumentation, Exercise method	

.Global environmental problems – desertification, acid rain, deforestation; numerical growth of the population; overexploitation of resources, waste, etc. Local environmental problems (visiting humanized territories in the vicinity of Cluj-Napoca, etc.)	Group interview, Brainstorming, Argumentation Group interview, Brainstorming, Argumentation	
Management of environmental problems and environmental activism (general aspects): concepts, mechanisms, tools, standards, NGOs, environmental activism, environmental lobbying; documentary films (Home, An Inconvenient Truth, The Great Global Warming Swindle, etc.)	Group interview, Brainstorming, Argumentation	
Bibliography: 1. Bailey, G.R., (1996), Ecosystem Geography, Springer, New York-Toronto-Berlin. 2. Blaikie, P., Brookfield, H., (1991), Land Degradation and Society, Routledge, London and New York. 3. Bryant, E.A., (1991), Natural Hazards, Cambridge University Press, Cambridge-New York-Port Chester-Melbourne-Sydney. 4. Sonnenfeld, J., (1972), Man, Space and Environmental concepts in Contemporary Human Geography, Oxford University Press, London-Toronto. 5. Tivy, J., O'Hare, Gr., (1993), Human Impact on the Ecosystem, Oliver and Boyd, Edinburgh-New York. 6. Ungureanu, Irina, Rosu, Al., (1977), Geografia mediului înconjurător, Edit. Didactică și Pedagogică, București. 7. Ungureanu, Irina, (2005), Geografia mediului înconjurător, Edit. Univ. din Iași. 8. Wamsley, D.J., (1987), Human Geography- Behavioural Approaches, Longman Scientific And Technical, London. 9. ***, (1994), Global Change Perception, edited by Bianchi Elisa, Geo and Clio, Milan. 10. ***, (1984), Ecodevelopment-Concepts, Projects, Strategies, Pergamon Press, Oxford-New York-Toronto-Sydney-Frankfurt. 11. www.mmediu.ro 12. http://www.anpm.ro/ 13. http://www.eea.europa.eu/ro 14. www.unep.org 15. http://www.youtube.com/user/homeproject & http://www.homethemovie.org/ 16. http://www.epa.gov/ 17. https://sites.google.com/site/ambientum2012/ (suport de curs & glosar de termeni) și MTeams/UBB 18. https://www.mdlpa.ro/pages/politicaurbanaro2035 19. https://www.arcgis.com/ https://land.copernicus.eu/local/urban-atlas		

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 content of the discipline is in accordance with the curriculum of the mentioned academic specializations; • From the analysis of the opinions expressed by employers regarding the preferential attributes of the specialist training, a high degree of appreciation of their professionalism resulted; • The course structure and content provide accurate, comprehensive, useful and effective information for learners.
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10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course	Knowledge of theoretical, methodological and practical aspects specific	Final written examination	75% (minimum)

	to Environmental Science (course support) ✓ Cunoașterea terminologiei și conceptelor specifice (glosarul de termeni de referință atașat cursului)		
10.5 Seminar/lab activities	Making thematic reports and participating in the field application (October- November, current year) Understanding and relational interpretation of environmental terms and issues	Colloquy	25% (maximum)
10.6 Minimum performance standards			
• Knowledge of the concept of the environment and the relationships between society and the environment • Knowing the structure of the environment (as a system) and the relationships between its components • Knowledge of specialized terminology and the concept of sustainable development • Identification and knowledge of environmental problems at the local, regional and global level			

Date

Signature of course coordinator

Signature of seminar coordinator

4th of December 2024




Date of approval

Signature of the head of department

4th of December 2024