

COURSE DESCRIPTION

Climate changes and their impact on environment and society

Academic year 2025-2026

1. Programme-related data

1.1. Higher Education Institution	"Babeş-Bolyai" University, Cluj-Napoca
1.2. Faculty	Faculty of Geography
1.3. Doctoral School	Doctoral School of Geography
1.4. Field of study	Geography
1.5. Level of study	Doctoral

2. Course-related data

2.1. Course title	Climate changes and their impact on environment and society			Course code	DG1109
2.2. Course coordinator	CS I dr. Cheval Sorin/ Prof. univ. dr. Croitoru Adina-Eliza				
2.3. Seminar coordinator	CS I dr. Cheval Sorin/ Prof. univ. dr. Croitoru Adina-Eliza				
2.4. Year of study	I	2.5. Semester	I	2.6. Type of assessment	Exam
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	3	of which: 3.2. course	2	3.3. seminar/ laboratory/ project	1
3.4. Total of hours in the curriculum	36	of which: 3.5. course	24	3.6. seminar/ laboratory	12
Time allocation for individual study (IS) and self-taught activities (ST)					hours
Learning from textbooks, course materials, bibliography, and notes (IS)					50
Additional research in the library, on subject-specific electronic platforms, and on-site					50
Preparing seminars/ laboratories/ projects, assignments, reports, portfolios, and essays (greater than or equal to the total number of hours specified in the course calendar for evaluation tasks)					40
Tutoring (professional guidance)					10
Examinations					4
Other activities: two-way communication with the course coordinator					10
3.7. Total hours of individual study (IS) and self-taught activities (ST)				164	
3.8. Total hours per semester				200	
3.9. Number of credits				8	

4. Prerequisites (where applicable)

4.1. curriculum-related	-
4.2. skills-related	-

5. Specific conditions (where applicable)

5.1. course-related	Laptop, video projector, Internet access
5.2. seminar/laboratory-related	Laptop, video projector, Internet access

6. Subject-specific learning outcomes

Knowledge
1. Collection, processing, analysis, validation, and interpretation of meteorological and environmental data relevant to the study of climate change and its impacts.
2. Application of specific methodologies for analyzing climate variability and identifying climate change at different temporal scales.
3. Preparation of reports and conducting research specific to the field of climate change, including the identification of causes, interrelationships among environmental elements, and resulting impacts
4. Identification and evaluation of societal adaptation tools and measures to reduce the effects of climate change, using both structural and non-structural approaches.
Skills
1. Ability to collect, process, validate, and interpret meteorological and environmental datasets in order to assess climate variability and climate change impacts.
2. Capacity to apply specialized methodologies for identifying climate change signals at different temporal scales and to conduct scientific investigations into causes, interactions, and consequences.
3. Ability to prepare professional reports and effectively communicate research findings to diverse stakeholders, supporting adaptation strategies and mitigation measures through clear dissemination of climate impact information.
Responsibility and autonomy
1. Demonstrating responsibility in handling, analyzing, and interpreting meteorological and environmental data, ensuring scientific integrity and accuracy in climate change research.
2. Ability to autonomously design and conduct climate change studies, identify key drivers and impacts, and propose scientifically grounded adaptation and mitigation solutions.
3. Assuming responsibility for communicating climate change findings clearly to different users and stakeholders, supporting informed decision-making and societal resilience to climate-related risks.

7. Contents

7.1. Course	Teaching and learning methods	Remarks¹
Climate variability and climate change – theoretical foundations and current challenges for the geographical environment	Lecture, discussions	
Geological history and the perspective of climate change at global and regional scales	Lecture, discussions	
Climate variability and climate change in Romania and their impact on the environment	Lecture, discussions	
Extreme phenomena associated with climate change	Lecture, discussions	
Impact of climate change on the natural environment	Lecture, discussions	
Impact of climate change on the human (anthropic) environment	Lecture, discussions	
Climate change management: adaptation, resilience, European and national policies	Lecture, discussions	

¹ For example, organisational aspects, recommendations for students, specific aspects relating to the course/seminar, such as inviting experts in the field, etc.

Climate variability and climate change – theoretical foundations and current challenges for the geographical environment	Lecture, discussions	
Bibliography		
<ul style="list-style-type: none"> National Research Council 2020. Climate Change: Evidence and Causes: Update 2020. Washington, DC: The National Academies Press. Letcher TM 2021. Climate Change Observed Impacts on Planet Earth. Elsevier, 3rd edition, 848 pag, ISBN: 9780128215753. Strandsbjerg Tristan Pedersen, J., Duarte Santos, F., van Vuuren, D., Gupta, J., Encarnação Coelho, R., Aparício, B. A., & Swart, R. (2021). An assessment of the performance of scenarios against historical global emissions for IPCC reports. Global Environmental Change, 66, [102199]. https://doi.org/10.1016/j.gloenvcha.2020.102199. USGCRP, 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 470 pp., doi: 10.7930/J0J964J6. 		
7.2. Seminar/ laboratory	Teaching and learning methods	Remarks
Extreme phenomena associated with climate change - applications	Discussions, presentations	
Climate scenarios - applications	Discussions, presentations	
Introduction to climate modelling - applications	Discussions, presentations	
The impact of climate variability and change on socio-economic systems - applications	Discussions, presentations	
Bibliography		
<p>-National Research Council 2020. Climate Change: Evidence and Causes: Update 2020. Washington, DC: The National Academies Press.</p> <p>-Letcher TM 2021. Climate Change Observed Impacts on Planet Earth. Elsevier, 3rd edition, 848 pag, ISBN: 9780128215753.</p> <p>-Strandsbjerg Tristan Pedersen, J., Duarte Santos, F., van Vuuren, D., Gupta, J., Encarnação Coelho, R., Aparício, B. A., & Swart, R. (2021). An assessment of the performance of scenarios against historical global emissions for IPCC reports. Global Environmental Change, 66, [102199]. https://doi.org/10.1016/j.gloenvcha.2020.102199.</p> <p>-USGCRP, 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 470 pp., doi: 10.7930/J0J964J6.</p>		

8. Evaluation

Type of activity	8.1 Evaluation criteria ²	8.2 Evaluation methods ³	8.3 Percentage in the final grade
8.4. Course	Knowledge and understanding key concepts, theories, and frameworks. Clarity, structure, and critical thinking.	Oral exam	60%
8.5. Seminar/ laboratory	Home Assignments	Home assignments	40%

² 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.

³ Both final evaluation methods and ongoing evaluation strategies should be established.

	Active in-class participation during seminars	In-class activity	
8.6 Minimum standard for passing			
Appropriate scientific language			
Knowledge of the main characteristics of the methodology used in the analysis of climate change and its environmental impacts			
Proper completion of practical project assignments			

9. SDG labels (Sustainable Development Goals)⁴

	<input type="radio"/>	Sustainable Development Generic Label						
								
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
								No label applies
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					

Date of entry:

Signature of course coordinator

Signature of seminar coordinator

CS I dr. Cheval Sorin/ Prof. univ. dr.

CS I dr. Cheval Sorin/ Prof. univ. dr.

Croitoru Adina-Eliza

Croitoru Adina-Eliza

Date of approval in the department:

Signature of the head of department

Prof. univ. dr. Holobăcă Iulian Horia

⁴ 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."