Syllabus

Course Title

Communication and Interaction in the Field of Climate Services

General Information

General description of the required education/training, outlining the main objectives and explaining the necessity of the education/training at the organizational/country/regional level

The course ***"Communication and Interaction in the Field of Climate Services"*** is part of the professional cycle of disciplines for master's training within the *"Climate Services"* program.
The main objective of the course is to develop students' skills in communication strategies in the field of climate services for different users.
Climate change communication aims to educate and mobilize audiences to take action in response to the climate crisis.
Climate communication should take place at the level of values and emotions. Climate communications should focus more on effective engagement with people who have not yet been adequately reached by climate communication efforts but who are critically important for broad public involvement. Climate communications should support the transition from concern to action, where a high level of climate risk perception is transformed into pro-climate individual and collective actions.
The timely provision of useful products through a direct and accessible user interface can reduce national risks. A challenge for climate services is the analysis of their potential market and bridging the gap between information providers and potential users. The task of climate services is to transform climate-related data into customized products, provide advice on best practices, and develop and evaluate solutions that may be beneficial for society.

Audience

The main target audience of the course and any secondary audience, if it may influence decisions regarding the structure or content of the course

Expected level of knowledge and skills of the main audience (current or minimally required), as well as other factors (for example, cultural characteristics, level of technical training, access to the Internet) that should be considered when planning the course, as they may affect the choice of teaching methods, materials, and approaches to interaction with the audience

The main target audience consists of master's students of higher education institutions in Ukraine pursuing education in the field of climate services.
The course may also be used for educational and outreach purposes to engage a broad audience without a background in natural sciences.
Level of knowledge and skills of the main audience*:*
Current level of knowledge:
The audience should possess basic knowledge in the natural sciences, particularly in atmospheric physics, climatology, and ecology.
The audience should also have minimal knowledge of sociology, political science, and psychology.
Cultural characteristics:

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Education on climate change should be aimed at developing a climate culture among all segments of the population, emphasizing the importance of considering socio-cultural dynamics in different regions for the development of effective and culturally appropriate strategies and policies to address climate change risks.

Level of technical preparation:

Course participants should possess computer skills, be able to use the Internet, and work with various interactive platforms.

English language proficiency:

An intermediate level of English proficiency (B1 or higher) is recommended for working with literature sources and global databases.

Information accessibility:

The presentation and delivery of course materials предусматривают conditions under which people, regardless of their functional impairments or communication abilities, have access to information in various formats and through technologies that take into account their needs and capabilities.

Internet access:

The course provides diverse forms of material presentation for use in both online and offline modes.

Competencies

Training needs at the individual or organization/country/regional level, as well as a description of how these needs were identified and recognized as relevant.

Competencies targeted by the training.

Navigate legal, ethical, and communication challenges in global climate governance.

C5. Ensure continuous and effective communication with end users/stakeholders to identify and select the best solutions for the economy and society as a whole.

Learning outcomes and performance criteria

Learning outcomes and performance criteria formulated with regard to the knowledge and skills to be acquired during the training process.

Performance criteria:

- Prioritize the provision of climatological information according to its social, political, and economic significance.
- Adapt climate communication for broad and diverse audiences.

Learning outcomes:

LO1. Select from available climate products those that are suitable for explaining climate impacts on sectors of economic activity, as well as on key social and geopolitical issues, while communicating uncertainties and risks in the provision of climate information. (SCSC)

Course Content

Provide a content outline that corresponds to the learning objectives and outcomes. This may be a course outline as it will be presented to students, but not necessarily a complete curriculum.

Include a general list of all topics that you consider necessary to cover. If you believe it would help clarify the scope, indicate what will NOT be covered.

Module 1. Assessment of Climate Products for Analyzing Climate Impacts on Sectors
Topic 1 – Channels, means, and methods of communication.
Topic 2 – Citizen science in climate research.
Topic 3 – Civic movement in Ukraine. The impact of war on the interaction between the climate civic movement and public authorities in Ukraine.
Topic 4 – Climate consequences and risks.
Topic 5 – Climate products.
Module 2. Effective Delivery of Climate Services
Topic 6 – Climate communication. Climate services.
Topic 7 – Visualization of climate data.

Learning Solutions and Methods of Implementation

List the learning solutions (teaching methods) that will be used and explain why they were chosen. For example: classroom learning, online learning, blended learning, workplace learning, online resources for self-study, coaching or mentoring, etc.

Learning Solutions:
Formal learning. The course is designed to ensure that participants achieve predefined learning outcomes and acquire specific skills and competencies.

It takes into account the basic level of skills proficiency and allows learners to choose their learning pace in a distance-learning format.

Teaching Methods
For this course, distance learning (asynchronous mode) is proposed, allowing the use of online technologies. Distance learning makes the educational process more flexible and accessible, which is especially important given the current security situation in Ukraine. This format provides the opportunity to study at a convenient place and time.
Elements of online learning involve direct interaction between the instructor and course participants, or among participants themselves during classes – consultations, seminars, etc. may be conducted in a live online format. Online tools also make it possible to reach a significantly larger audience, which is directly related to the specifics of the course aimed at advocacy and awareness-raising in the field of climate education among the population.
The use of modern technologies, such as automated assessment and feedback systems, as well as broad access to literature databases, helps improve the quality of the educational process.

Learning Strategies

Consider which learning strategies you will use. Provide justification for why you intend to apply them, including reasons why they will help participants achieve the planned learning outcomes.

Combine different learning strategies to create a diverse learning environment that accommodates different learning styles of participants. This will increase the effectiveness of learning and help achieve the planned learning outcomes. This section does not require a detailed description of specific activities.

1. *Traditional lecture-based teaching method.*
2. *Discussion strategy* focused on the exchange of opinions (proposals) among course participants. Conducted online. Asynchronous voice discussions are proposed, allowing extended reflection on problematic issues or situations.
3. *Elaboration strategies* – aimed at establishing connections between what the learner already knows and what they are trying to learn. Integrating new knowledge with existing knowledge into an organized whole promotes faster recall of information and improves understanding of the material.
4. *Project-based learning.* Used for practical assignments.
5. *Motivation strategy.* Development of reflection on current achievements and motivation toward future prospects, etc.

Learning activities

Describe the main learning activities that will be included, such as lectures, readings, case studies, discussions, exercises, practical assignments, simulations, role-playing games, etc.
Also describe the roles of instructors and students during these activities.

The course consists of lectures and practical classes – contact hours, which make up 40% of the total course hours, and independent work of participants – 60% of the total course hours.

The course includes 2 modules, each module comprising 12 academic hours, while independent work accounts for 18 hours.

Main learning activities:

1. *Lectures.* The course consists of 2 lectures containing a number of related topics.
   - Module 1. Lecture 1 introduces the concepts of scientific communication, civic movement, climate products, and climate risks.
   - Module 2. Lecture 2 explains the principles of climate communication and the effective delivery of climate data.

The role of the instructor is the transfer of knowledge and the development of competencies.
Presentation of current climate change issues in an engaging and interesting form.
Stimulation of students' creative and self-educational activities.
Motivation of learners through understanding the importance of their role and real contribution to addressing climate change issues, both personally and in educational outreach work for the wider public.

2. *Practical assignment. Project work.*

Practical work allows course participants to apply acquired knowledge in real conditions, contributing to a deeper understanding of the material. In addition, practical classes develop skills that are difficult to acquire through lectures or reading alone. The assignments involve creating questionnaires and projects for different sectors of the economy and social groups regarding the provision of climate services. The role of the instructor is to clearly formulate the objective, the list of tools and methods for project development, and audience proposals.

Practical assignment 1. Working with questionnaires.
Assignment content: Development of a questionnaire for a selected economic sector.
Purpose of the assignment: Establishing effective communication between climate service providers and their users.
Practical assignment 2. Assessment of climate products.

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Assignment content: Develop a list of necessary climate products to address a specific environmental problem in your city (region).
Purpose of the assignment: Transition from general climate data to applied tools that will help the city minimize damage from a specific environmental threat.
Practical assignment 3. Designing a climate product for a local community.
Assignment content: Develop a concept for a new climate service aimed at different users within the community.
Purpose of the assignment: Learn to create a concept of climate products tailored to the needs of specific stakeholders within the community.

3. *Independent work of course participants.* Provides for systematic work on mastering course materials throughout the learning process. It is aimed at developing abilities, activating learning activities, continuous acquisition of knowledge, self-assessment, and self-organization.

Assessment of Learning

Describe the assessment plan for participants before, during, and/or after the course, including tests, exercises, activities, and projects that will be assessed. Indicate whether self-assessment or peer assessment will be used. Explain how the assessment is linked to the learning outcomes.

For the assessment of participants' knowledge in the course, a modular form of control is used. The course contains 2 modules.

1. *Testing.* The purpose is to consolidate the knowledge acquired by participants during the course, ensure maximum objectivity of assessment, and reduce the time required for processing results. The role of the instructor is to organize the process of monitoring participants' performance. Tests are conducted in a distance format using the e-learning platform. Theoretical tests consist of 20 questions. Assessment system: answers are complete and correct – 90–100%; answers are correct but not complete – 75–89%; answers are not always correct and complete – 60–74%; answers are incorrect or absent – 0–59%. The maximum score for each test is 10 points.
2. *Practical assignment.* The maximum score for each assignment is 20 points. Answers are complete and correct – 90–100%; answers are correct but not complete – 75–89%; answers are not always correct and complete – 60–74%; answers are incorrect or absent – 0–59%.

The course grade is calculated as the arithmetic sum of points for completing all course tasks (accumulated total score).

Storyboard of Learning (Learning Storyboard)

Use this to create a visual scenario of your blended learning activity

Acquisition.

Through reading literature and scientific articles on the course topic, listening to lectures, and viewing presentations and videos. As a result, participants acquire new concepts, terminology, and the methodology of the course subject. Acquisition should be reflective, as participants align newly acquired knowledge with their existing knowledge.

Discussion.

Learning Resources and Tools

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List the available resources you will use for different types of learning activities and recommend to students.

Describe the technologies that will be used to implement the learning solutions, including learning technologies and operational equipment (hardware, software, collaborative tools).

Learning Resources

1. Недострелова Л. В. Вплив кліматичних змін на галузі економіки України. Частина ІІІ. Конспект лекцій. Одеса, 2021. 112 с. http://eprints.library.odeku.edu.ua/id/eprint/7925
2. Демиденко А. Посібник з оцінки кліматичних ризиків міста. Deutsche Gesellschaft für Internationale Zusammenarbeit. 2024. 34 с. https://ukrainian-climate-office.org/wp-content/uploads/2025/09/Посібник-з-оцінки-кліматичних-ризиків-міста-UA-08.10.20252.pdf
3. Зміна клімату: причини, наслідки та рішення для протидії. Бібліографічний список. / упоряд. Т. В. Квітко. Київ, 2023. 11 с. https://lukl.kyiv.ua/wp-content/uploads/2022/07/Бібліографічний-список-.pdf
4. Зміни у співпраці громадського кліматичного руху та органів влади щодо протидії зміні клімату у 2023 році / Химович О. СОЦІОІНФОРМ. Київ: представництво Фонду ім. Г. Бьолля в Україні, 2024. 60 с. https://ua.boell.org/sites/default/files/2024-04/climatereport_2024_2024-4-9_final.pdf
5. Кліматичний компас громад: від викликів до можливостей / авт. Д. Попфалуші / за ред. А. Зозулі, М. Рябики. Львів: Плато, 2024. 25 с. https://plato.lviv.ua/wp-content/uploads/2024/12/kompas.pdf
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9. Gooding, L., Pateman, R. M., & West, S. E. (2024). Citizen science and its potential for aiding low carbon energy transitions. Energy Research & Social Science, 117:103702. https://doi.org/10.1016/j.erss.2024.103702
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11. F Asmi , M A Anwar , R Zhou , D Wang , A Sajjad. (2019). Social aspects of 'climate change communication'in the 21st century: a bibliometric view. *Journal of Environmental Planning and Management*, 62(14), 2393 – 2417. https://doi.org/10.1080/09640568.2018.1541171
12. Fagundes, V., Fernandes, R., Santos, C., Tavares, T. (2017). Visualization of Climate Data from User Perspective: Evaluating User Experience in Graphical User Interfaces and Immersive Interfaces. In: Yamamoto, S. (eds) Human Interface and the Management of Information: Information, Knowledge and Interaction Design. HIMI 2017. Lecture Notes in Computer Science, 10273. Springer, Cham. https://doi.org/10.1007/978-3-319-58521-5_4
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16. Terrado, M., L. Calvo, D. Bojovic, and I. Christel. (2022). Current Practice in Climate Service Visualization: Taking the Pulse of the Providers' Community. *Bull. Amer. Meteor. Soc.*, 103, E828–E837, https://doi.org/10.1175/BAMS-D-21-0194.1.
17. https://climateoutreach.org/what-is-public-engagement/
18. https://ecoaction.org.ua/
19. https://greentransform.org.ua/zmina-klimatu-ta-meshkantsi-ukrayiny-osoblyvosti-gromadskoyi-dumky-ta-komunikatsiyi/
20. https://climateinstitute.edhec.edu/data-visualisations

Technical tools / software for implementing learning solutions: Moodle, MS Office.