1.	**Field of study**	**Environmental Protection**
2.	Faculty	Faculty of Natural Sciences
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**
Module name	**Environmental physics; atmosphere and oceans with elements of geophysics**
Module code	1OS_23_61
Number of the ECTS credits	3
Language of instruction	
Purpose and description of the content of education	1. Parametry fizyczne warunkujące życie na Ziemi 2. Promieniowanie elektromagnetyczne i oddziaływanie na rośliny 3. Oddziaływanie promieniowania Słońca na atmosferę ziemską, powierzchnię Ziemi oraz organizmy żywe. 4. Bilans energii a modele cieplarniane 5. Transport energii i materii. Dyfuzja. Przepływ laminarny i turbulentny. Modele transportu zanieczyszczeń w wodzie i powietrzu. Smuga gaussowska w powietrzu. 6. Zanieczyszczenie powietrza, wody i gleby, gromadzenie odpadów. 7. Kopalne źródła energii i ich zasoby oraz energetyka jądrowa 8. Atmosfera ziemska - skład, podział, temperatura, ciśnienie. Oddziaływanie promieniowania Słońca na atmosferę ziemską i powierzchnię Ziemi. 9. Zjawiska optyczne zachodzące w atmosferze ziemskiej. 10. Prądy morskie, pływy, fale tsunami 11. Zastosowanie niektórych zaawansowanych metod do określania stanu środowiska. 12. Elementy geofizyki
List of modules that must be completed before starting this module (if necessary)	not applicable

8. Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
K_01	Understands and respects the needs of other persons or social groups, sees the market to be guided by principles of sustainable development, including proper management of environmental resources on a local and global scale, perceives social and ecological problems and responds to them appropriately in their professional life. Applies, implements and develops principles of professional ethics, and is aware of the necessity to continuously improve professional competencies.	1OS_K01 1OS_K03 1OS_K04 1OS_K05	5 4 3 5
U_01	Applies essential measurement and analytical techniques in individual and teamwork used in environmental protection	1OS_U01	4

	environment, interprets observations, measurements and, on their basis, draws correct conclusions supported by the application of statistical methods statistical methods. They are able to plan investigations, carry them out, interpret the results and draw conclusions, combine the knowledge acquired theoretical knowledge and practical skills in their professional work. Recognises existing and potential threats to the environment, identifies resources and regeneration possibilities of nature, interprets environmental policy documents, solves individually or as part of a team fundamental research problems research	1OS_U02 1OS_U04 1OS_U07 1OS_U08	4 3 4 4
W_01	Defines the fundamental problems of environmental hazards on a global, regional and local scale and characterises the basic ways of reducing environmental pollution. Knows the basic techniques and methods for analysing environmental pollution, recognises measurement systems and processes and procedures related to environmental monitoring. They are familiar with the physical, chemical, biological and geological phenomena occurring in nature and understands the relationships and interrelationships between the different disciplines of natural sciences, taking into account their empirical basis, in particular, the relationship between animate and inanimate nature. He knows the history of the Earth, explains its geological, geomorphological, hydrological and climatic conditions, characterises processes in the biosphere defines the levels of organisation of life, biological biodiversity and the interactions between organisms and the environment	1OS_W01 1OS_W02 1OS_W03 1OS_W05 1OS_W06	4 4 4 4 5

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	Formal lecture/ course-related lecture *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
b01	Problem-solving methods	Problem-based lecture *an analysis of a selected scientific or practical problem accompanied by its assessment and an attempt to provide a solution to the issues presented in the lecture as well as the indication of the consequences of the proposed solution*
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d03	Programmed learning methods	Working with another teaching tool *e.g. using websites in any way or according to the rules set by the teacher; or making use of other subject-specific tools*
e01	Practical methods	Laboratory exercise / experiment *[also conducted as fieldwork] a method of practical application of knowledge; implemented in three stages: the recognition of a problem induced by the task content, the formulation of the problem and the attempt to solve it accompanied by the assessment of the effects; the goal is to acquire skills, abilities and habits, and to consolidate the acquired knowledge so that it becomes operational; the laboratory method assumes greater independence of learners than carrying out an experiment*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	lecture	20	exam	U_01, W_01	a01, b01, c07
02	laboratory classes	25	course work	K_01, U_01, W_01	d03, e01

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a04	Preparation for classes	Consulting materials complementary to those indicated in the syllabus *agreeing on materials complementary to those indicated in the syllabus, supporting the implementation of tasks resulting from or necessary for class participation*	Yes
a05	Preparation for classes	Production/preparation of tools, materials or documentation necessary for class participation *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.