



UNIwersYTET
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W POZNANIU

Bioclimatology

Educational subject description sheet

Basic information

Study programme Environmental Protection		Didactic cycle 2024/25	
Speciality -			Subject code 01EVPS.21N.12938.24
Organizational unit Faculty of Biology			Lecture languages English
Study level Second-cycle programme			Course type Obligatory
Study form Full-time			Block Subjects not assigned
Education profile General academic			
Subject coordinator	Bogdan Chojnicki		
Lecturer	Bogdan Chojnicki		
Period Semester 1	Activities and hours • Lecture: 15, Exam • Classes: 15, Graded credit	Number of ECTS points 3	

Goals

Code	Goal
C1	Explain and define terminology and methods of introduced in the course.
C2	Introduce to basic concept of energy flux and matter circulation in the environment (soil-plant-atmosphere system).
C3	Introduce to methods and field techniques of the estimation of heat and mass exchange between the ecosystems and the atmosphere.
C4	Learn the application of calculation methods for climate-ecosystem interactions estimations.
C5	Analyze the climate-ecosystems processes by using of heat and mass balance estimation methods.
C6	Learn the understanding and interpretation of meteorological processes impact on the ecosystems.
C7	Learn the communications and cooperation skills within the working group.

Entry requirements

Basic knowledge about the plants, ecosystems, atmosphere as well as basic math skills.

Subject learning outcomes

Code	Outcomes in terms of	Learning outcomes	Examination methods
Knowledge - Student:			
W1	Explains and defines terminology and methods of introduced in the course.	EVP_K2_W01, EVP_K2_W02	Project
W2	Is introduced to the basic concept of energy flux and matter circulation in the environment (soil-plant-atmosphere system).	EVP_K2_W01, EVP_K2_W02, EVP_K2_W04, EVP_K2_W08	Project
W3	Is aware of methods and field techniques of the estimation of heat and mass exchange between the ecosystems and the atmosphere.	EVP_K2_W02	Project
W4	Learns the application for calculation methods for estimating climate-ecosystem interactions.	EVP_K2_W01, EVP_K2_W02	Project
W5	Analyzes the climate-ecosystems processes by using of heat and mass balance estimation methods.	EVP_K2_W01, EVP_K2_W02, EVP_K2_W04	Project
W6	Understands and interprets the impact of meteorological processes on ecosystems.	EVP_K2_W02, EVP_K2_W07, EVP_K2_W08	Project
Skills - Student:			
U1	Introduces methods and field techniques for estimating heat and mass exchange between ecosystems and the atmosphere.	EVP_K2_U01, EVP_K2_U03	Project
U2	Learns the application of calculation methods for climate-ecosystem interactions estimations.	EVP_K2_U03	Project
U3	Analyzes the climate-ecosystems processes by using of heat and mass balance estimation methods.	EVP_K2_U03	Project

Code	Outcomes in terms of	Learning outcomes	Examination methods
U4	Understands and interprets the impact of meteorological processes on ecosystems.	EVP_K2_U02, EVP_K2_U04	Project
U5	Learns the communications and cooperation skills within the working group.	EVP_K2_U08	Project
Social competences - Student:			
K1	Explains and defines terminology and methods of introduced in the course.	EVP_K2_K01	Project
K2	Is introduced to basic concept of energy flux and matter circulation in the environment (soil-plant-atmosphere system).	EVP_K2_K04	Project
K3	Learns the understanding and interpretation of meteorological processes impact on the ecosystems.	EVP_K2_K01	Project
K4	Learns the communications and cooperation skills within the working group.	EVP_K2_K06	Project

Study content

No.	Course content	Subject learning outcomes	Activities
1.	Energy transfer and mass circulation in the ecosystem-atmosphere system.	W1, W2, W4, U2, K1, K4	Lecture, Classes
2.	Heat and mass (e.g. water vapor, CO ₂) balances and exchange between the plants and the atmosphere.	W2, U1, U3, U4, K1, K2	Lecture, Classes
3.	Techniques of the estimations of heat and mass exchange between the ecosystems and the atmosphere.	W1, W2, U3, K3, K4	Classes
4.	Methods of estimation of heat and mass exchange between the ecosystems and the atmosphere.	W1, W2, U3, K3, K4	Lecture, Classes
5.	The examples of interactions between the ecosystems and climate.	W1, W2, W3, W4, W5, W6, U1, U2, U3, U4, U5	Lecture, Classes

Additional information

Activities	Teaching and learning methods and activities
Lecture	Lecture with a multimedia presentation of selected issues, Demonstration and observation
Classes	Discussion, Problem-based learning, Project method

Activities	Credit conditions
Lecture	<p>Very good (bdb; 5,0): the very good knowledge, excellent abilities and both personal and social competence;</p> <p>Good plus (+db; 4,5): the very good knowledge, satisfactory abilities and both personal and social competence;</p> <p>Good (db; 4,0): the good knowledge, satisfactory abilities and both personal and social competence;</p> <p>Satisfactory plus (+dst; 3,5): the good knowledge, satisfactory abilities and both personal and social competence but with considerable shortcomings;</p> <p>Satisfactory (dst; 3,0): satisfactory knowledge but with numerous mistakes, abilities and both personal and social competence;</p> <p>Unsatisfactory (ndst; 2,0): the insufficient knowledge and abilities, unsatisfactory personal and social competence.</p>
Classes	<p>Very good (bdb; 5,0): the very good knowledge, excellent abilities and both personal and social competence;</p> <p>Good plus (+db; 4,5): the very good knowledge, satisfactory abilities and both personal and social competence;</p> <p>Good (db; 4,0): the good knowledge, satisfactory abilities and both personal and social competence;</p> <p>Satisfactory plus (+dst; 3,5): the good knowledge, satisfactory abilities and both personal and social competence but with considerable shortcomings;</p> <p>Satisfactory (dst; 3,0): satisfactory knowledge but with numerous mistakes, abilities and both personal and social competence;</p> <p>Unsatisfactory (ndst; 2,0): the insufficient knowledge and abilities, unsatisfactory personal and social competence.</p>

Literature

Obligatory

1. Oke, T.R.: Boundary Layer Climates, 2nd Edition, Routledge Taylor & Francis Group, -, 1987
2. Stull, R.B.: An Introduction to Boundary Layer Meteorology, Kluwer Academic Publisher Group, -, 2003

Calculation of ECTS points

Activities	Activity hours*
Lecture	15
Classes	15
Preparation of a project	30
Preparation for classes	20
Reading the indicated literature	10
Student workload	Hours 90
Number of ECTS points	ECTS 3

* academic hour = 45 minutes

Efekty uczenia się dla kierunku

Kod	Treść
EVP_K2_K01	The graduate is ready to critical assessment of received information on environmental protection as well as formulation of rational judgments on this subject
EVP_K2_K04	The graduate is ready to recognition of the importance of professional, ethical and social responsibility for the state of the environment
EVP_K2_K06	The graduate is ready to acting as a scientific promoter of biodiversity protection, sustainable development and environmental protection
EVP_K2_U01	The graduate can creatively use his/her knowledge in the field of environmental protection, i.e. search for, formulate and solve complex problems, conduct a critical analysis of information from various sources
EVP_K2_U02	The graduate can independently plan and conduct research as well as analyse the correctness of tasks performed and the reliability of the results obtained, and draw conclusions useful in environmental protection
EVP_K2_U03	The graduate can use the tools, methods and research techniques applied in laboratory and field work, especially for monitoring and assessment of the state of the environment
EVP_K2_U04	The graduate can analyse, evaluate and - consequently - predict the direct or indirect impact of humans on other organisms and the environment
EVP_K2_U08	The graduate can cooperate and work in a group, playing various roles in it
EVP_K2_W01	The graduate knows and understands theories, processes, facts, and objects related to general knowledge about environmental protection and related sciences
EVP_K2_W02	The graduate knows and understands phenomena, theories and processes as well as principles of their practical use in the field of air quality assessment and pollution prevention
EVP_K2_W04	The graduate knows and understands rules of practical use of theoretical knowledge in assessing the condition of terrestrial environments and maintaining or restoring them to their proper condition
EVP_K2_W07	The graduate knows and understands problems of counteracting environmental degradation and pollution as well as waste management
EVP_K2_W08	The graduate knows and understands economic, legal and social conditions related to scientific, educational and promotional activities in the field of environmental protection